

Overview of Water Resources in the Watauga River Basin

The basin plan begins with a general overview of basin characteristics and includes land use, population, nonpoint source pollution and classifications and what they mean. The overview will also include a general discussion as it relates to stream flow, climatic events, potential contaminants as well as natural and protected areas in the basin. More detailed information and water quality assessments can be found the watershed chapters.

- 1.1 Geography and Ecoregion Characteristics
- 1.2 Population and Land Cover
 - 1.2.1 Population Projections
 - 1.2.2 Land Cover
- 1.3 Nonpoint Source Pollution and Aquatic Nuisance Species
 - 1.3.1 Agriculture
 - 1.3.2 Forestry
 - 1.3.3 Controlling Stormwater Runoff
 - 1.3.4 Golf Courses
 - 1.3.5 Aquatic Nuisance Species – Whirling Disease and Gill Lice
- 1.4 Classifications and Standards
 - 1.4.1 Primary Recreation (Class B)
 - 1.4.2 Water Supply Watersheds (Class WS)
 - 1.4.3 Trout Waters (Class Tr)
 - 1.4.4 High Quality Waters (Class HQW)
 - 1.4.5 Outstanding Resource Waters (Class ORW)
- 1.5 Stream Flow and Impoundments
 - 1.5.1 Stream Flow
 - 1.5.2 Impoundments

Monitoring Data and Water Quality Assessment

This chapter takes a look at how monitoring data is used to assess water quality. Chemical, physical and biological parameters are used to determine how well waterbodies are meeting their best-intended use. Uses include aquatic life, recreation, fish consumption and water supply. Water quality is then assessed on a monitored or evaluated basis based on the type of data available. Each waterbody is assigned a category that is then reported to the Environmental Protection Agency (EPA) every two years in order to fulfill the reporting requirements of Section 305(b) of the federal Clean Water Act (CWA). Procedures used to evaluate water quality and assign categories are explained in detail in the Integrated Report (IR) methodology. The IR also provides the most recent water quality assessment and category assignments.

- 2.1 Interpreting Data
- 2.2 Biological Monitoring Data
 - 2.2.1 Benthic Communities
 - 2.2.2 Fish Community
- 2.3 Ambient Data
 - 2.3.1 Turbidity
 - 2.3.2 pH

- 2.3.3 Dissolved Oxygen (DO)
- 2.3.4 Fecal Coliform Bacteria (FCB)
- 2.3.5 Specific Conductance
- 2.3.6 Temperature
- 2.3.7 Nutrient Enrichment
- 2.4 Groundwater Quality

In the absence of routine ambient ground water quality monitoring, the best available indicators in the Watauga River basin come from the routine sampling of newly-constructed private drinking water wells. Under the statewide private well testing program administered by Department of Health and Human Services (DHHS) and local health departments, all new private drinking water wells are sampled by local health departments and analyzed for a standardized list of chemical constituents by the State Laboratory of Public Health in DHHS. In addition to their value to individual well users, these samples are the most abundant source of data on the status of ground water quality across the state.

Watershed Chapters

These chapters include detailed information on the watershed scale and are written on a HUC 10 or HUC 12 scale. Hydrologic unit codes (HUC) are arranged or nested within each other, from the largest geographic area (2-digit HUC) to the smallest geographic area (12-digit HUC). Each hydrologic unit is identified by a unique sequence of numbers based on the scale of the HUC. More general information about the river basin can be found in the overview chapter and includes a description of the river basin (geography and ecoregion), county population projections, land use, streamflow, classifications and standards, programs in place to protect water quality, and concerns identified in the basin. An overview of monitoring data and how water quality is assessed in the basin can be found in the monitoring data and water quality assessment chapter. Each chapter has the following structure:

- 3.1 Name of the watershed and HUC number followed by an overview that includes land use and estimated population (combined table), NPDES wastewater and stormwater permits (tables), non-discharger permits (table)
 - 3.1.1 Stream Assessments
 - 3.1.1.1 Stream name and individual stream assessment
 - 3.1.1.2 Stream name and individual stream assessment
 - 3.1.1.3 Special studies
 - 3.1.1.3.1 Stream name and individual stream assessment
 - 3.1.2 Water Use (includes table of entities with a public water supply identification number)
 - 3.1.2.1 Local Water Supply Plans (LWSP)
 - 3.1.2.2 Water Withdrawal & Transfer Registration Database
 - 3.1.3 Classifications and Management Strategies
 - 3.1.4 Protecting Water Resources
 - 3.1.4.1 NCDEQ Division of Mitigation Services (DMS)
 - 3.1.4.2 NC Wildlife Resources Commission (WRC)
 - 3.1.4.3 NCDA&CS Agriculture Cost Share Program (ACSP)
 - 3.1.5 References

Watershed chapters include:

- 3.1 Watauga River Headwaters HUC 060101030301
- 3.2 Dutch Creek HUC 060101030303
- 3.3 Cove Creek HUC 060101030302
- 3.4 Beaverdam Creek HUC 060101030304
- 3.5 Beech Creek HUC 060101030305
- 3.6 Elk River HUC 0601010302

Permitted and Registered Activities in the Watauga River Basin

There are several programs in place to protect North Carolina’s water resources. These include wastewater and stormwater programs, land application of wastewater effluent and biosolids, wetland and buffer programs, animal operations, source water protection, ground water and drinking water protection programs, and general planning. This section includes brief descriptions of the programs, management strategies and resources available for protecting waters of the state. More information about each of the programs can be found on the [NC Department of Environmental Quality \(DEQ\)](#) website and in the [Supplement Guide to Basinwide Planning](#) (2008) and well as county websites responsible for permitting or compliance issues.

- 4.1 Wastewater Management
 - Table 4.1: NPDES Permits – Watauga River Basin
- 4.2 Pretreatment, Emergency Response and Collections System (PERCS)
- 4.3 On-Site Wastewater Treatment Systems (Septic Systems)
 - Table 4.2: NPDES General Permit – Single Family Domestic Wastewater Discharge
 - Table 4.3: Number of Septic Systems in the Watauga River Basin (based on 1990 Census data)
- 4.4 Non-Discharge Permitting (NDPU) and Land Application of Wastewater Effluent
 - Table 4.4: Non-Discharge Permits – Watauga River Basin
- 4.5 Wetlands and Buffer Permitting Programs
- 4.6 Transportation Permitting
- 4.7 Stormwater Programs
 - Table 4.5: NPDES Stormwater Permits – Watauga River Basin
- 4.8 Animal Operations
- 4.9 Public Water Systems
 - Table 4.6: Types of Public Water Supply Systems (PWS)
- 4.10 Source Water Assessment Program
- 4.11 Wellhead Protection (WHP) Program
- 4.12 Local Water Supply Plans (LWSP)
 - Table 4.7: Public Water Systems Required to Submit Local Water Supply Plans (LWSP) (2015)
- 4.13 Water Withdraw
 - Table 4.8: Water Withdrawal & Transfer Registration (WWATR) (2015)
 - Table 4.9: Total Water Use of Registered Withdrawers by Type (2015)
- 4.14 Ground Water and the Ground Water Management Branch (GWMG)
- 4.15 Underground Storage Tanks

Water Use and Availability in the Watauga River Basin

The chapter titled Permitted and Registered Activities in the Watauga River basin provides an overview of the programs in place to protect water resources across the state and includes general information regarding water

use and drinking water supplies. This chapter provides a more detailed summary of water use in the basin and identifies where more information is needed to fully understand total water use in the basin.

- 5.1 Geology and Ground Water
 - 5.1.1 Ground and Surface Water
 - 5.1.2 Ground Water Demand and Availability
 - Table 5.1: Ground Water Supply and Demand in the Watauga River Basin
- 5.2 Water Use on a County Scale (USGS)
 - Table 5.2: Surface versus Ground Water Use in Avery and Watauga Counties (USGS, 2010)
 - Figure 5.1: Water Use by Type in Avery and Watauga Counties (USGS, 2010)
- 5.3 Water Use Reported in Local Water Supply Plans (LWSP)
 - Table 5.3: Public Water Systems Required to Submit Local Water Supply Plans (LWSP) (2015)
 - Table 5.4: Water Use Reported in LWSPs – Average Use (mgd) (LWSP, 2015)
 - Figure 5.2: Current and Projected Water Use Reported in the LWSPs (2015)
 - Figure 5.3: Current Water Use – Percent Use by Type (2015)
- 5.4 Water Supply and Availability Reported in the Local Water Supply Plans
 - Table 5.5: Beech Mountain Water Use Projections with Existing Supply (LWSP, 2015)
 - Figure 5.4: Beech Mountain Water Use Projections with Existing Supply (LWSP, 2015)
 - Table 5.6: Beech Mountain Water Use Projections with Future Supply (LWSP, 2015)
 - Figure 5.5: Beech Mountain Water Use Projections with Future Supply (LWSP, 2015)
- 5.5 Public Water Supply versus Private Ground Water Wells
 - Table 5.7: Population Served by Public Water Supply versus Private Ground Water Wells
- 5.6 Water Use Reported in the Water Withdraw and Transfer Registration (WWATR) Database
 - Table 5.8: Entities Registered with the WWATR in the Watauga River Basin (2015)
 - Table 5.9: Total Water Use of Registered Water Users by Type (2015)
 - Figure 5.5: Total Water Use of Registered Water Users by Type (2015)
- 5.7 Total Water Use and Availability Based on Information Presented in the LWSPs and WWATR Database
 - Figure 5.6: Total Estimated Water Use as Reported in the LWSPs and WWATR
 - Table 5.10: Total Estimated Water Use by Type and Source as Reported in LWSPs and WWATR
- 5.8 Water Use and Agriculture
- 5.9 Management During Drought Conditions
 - Figure 5.7: Drought Monitor History for Watauga River Basin (January 2000 - December 2016)
 - Figure 5.8: North Carolina Drought Monitor Map (December 2007)
 - Table 5.11: Streamflow Rankings by Climatic Year (USGS Station 03479000 Watauga River)
- 5.10 Regional Planning
- 5.11 Conclusions
- 5.12 References

Conclusions (Emerging Issues)

Summary of water quality assessment in the Watauga River basin as well as any additional items identified for follow-up actions or investigations. These can include issues related to point sources, nonpoint sources, water use and availability and/or any waterbodies not meeting criteria.