Purpose
- Provide the public with a consolidated assessment of the river’s health
- Create a framework for tracking changes over time
- Assimilate data from all relevant sources into a single archive

Scope
While geographically comprehensive this report distills only the most recent water quality data into a simplified index. Temporal trends will be the subject of future reports. Due to the variety of users, data available, and hydrologic variability, a new basin-specific index was created. Data inclusion, weightings, and groupings were created solely from the Riverkeeper’s informed opinion. The scores generated are a simplified interpretation of the underlying data and most useful for identifying general threats deserving more attention and resources.
Methods
The 5610 mi² basin was divided into 4 sub-watersheds for analysis; Northern Catawba, South Fork, Central Catawba, and Southern Catawba – Wateree. While subdividing into more watersheds would provide a more precise assessment, it would also increase the report length and decrease the amount of data for each watershed. Our groupings roughly follow the USGS HUC-10 delineations and subject to change on future reports.

The criteria for data inclusion was recent (≥2015), publicly available, quality assured, and known to the Riverkeeper. When multiple years were present, only the most recent complete year was used. This report is designed to be a snapshot of the most current watershed health. Links to the data collected can be found on our website.

A water quality rubric was created to provide simplified ratings for the sub-watersheds, and specific attributes. We grouped the data sets into 5 characteristics:

- Monitoring – How well is the water monitored? What is being done with the data?
  - Ex. Sample site number and distribution, data reporting, 303d listings, TMDLs
- Point-Sources – How much pollution is permitted? Are the facilities in compliance?
  - Ex. Active NPDES permits, compliance enforcement, CAFOs
- Nonpoint Sources – What pollutants are mobilized during rain events?
  - Ex. MS4 permits, population, plastics removed, stormwater permits
- Water Quantity – How are we using the water? Do we have enough? Flooding?
  - Ex. Withdrawals, USGS gages, population, flood buyouts
- Recreation - Is the water accessible? Is it safe to swim and fish?
  - Ex. Boat launches, Swim Guide, algal blooms, invasive, fish consumption

Each of these data groups was then scored using a Likert scale (1 to 5). We chose this scale both for its familiarity to the public and to best represent the subjectivity of weighing so many kinds of data. Each type of score, like recreation vs monitoring, will have slightly different interpretations of the following rubric:

5 Excellent – No major challenges, meeting all needs for all users
4 Good – At least 1 minor challenge, meeting most needs for most users
3 Fair – At least 1 major challenge, not meeting the needs of many users
2 Poor – Several challenges, not meeting the needs of most users
1 Very Poor – Severe challenges, not meeting the needs of any users

Limitations and Revisions
This report is not a fully comprehensive or peer reviewed scientific study and should not be cited as such. Areas that score lower than others are not necessary more polluted or less safe for swimming. Informed, but subjective decisions were made in the creation and execution of the scoring rubric.

Because of the volume and diversity of data assembled for this report, only cursory analysis has been performed. We encourage interested parties to submit additional information. These are our initial findings; the document will be revised as needed.
Northern Catawba Basin - Average score 3.8

The Northern Catawba basin extends from the westernmost headwaters, near Old Fort, to the Lookout Shoals dam above Lake Norman. It has a high percentage of protected land, little industry and generally has excellent water quality. Morganton is the largest city.

Monitoring - 2
- Only 4 monitoring sites downstream of Lake James
- Data is has not been updated since 2018
- Hundreds of unregulated dry litter poultry operations

Point Source Pollution - 4
- Few major dischargers,
- Only major violations were by City of Marion and Town of Valdese WWTPs

Nonpoint Source Pollution – 3
- Outside of Pisgah, consistently high (>25 ntus) turbidity after rains in streams where we have data
- Most of the basin is not covered by a stormwater ordinance or local sediment erosion control

Water Quantity – 5
- No major flooding or drought concerns
- New drinking water intake is being permitted in Lake James, no definitive timeline

Recreation – 5
- Greatest density of recreation access; launches, trails, planned releases
- Congressionally designated Wild&Scenic Wilson Creek, Linville Gorge Wilderness
South Fork Basin – Average score 2.8
The South Fork of the Catawba begins in South Mountain State park as the Henry Fork and Jacob Fork. After merging they meander south through Lincolnton, passing Gastonia on the way into Lake Wylie. It is highly impaired from historical and current land uses.

Monitoring - 2
- Only one sampling site off the main channel, no recent data available
- While most segments have been identified as impaired, little has been done to improve water quality

Point Source Pollution – 4
- Few major facilities
- No significant violations reported in the last 3 years

Nonpoint Source Pollution – 2
- Notoriously turbid, data available indicates the problem is widespread
- Examples of urban, sub-urban, and rural runoff
- Most areas not covered by stormwater ordinance

Water Quantity - 4
- Few reported issues of flooding, no dams are used for flow management
- No organization of withdrawers

Recreation - 2
- South Mountain State park is excellent, but crowded
- Few access points, numerous log jams and dams between the State Park and Carolina Thread Trail Blueway
- High levels of bacteria consistently detected in southern half of basin

Samples collected by the Riverkeeper. Florescence indicates fecal contamination.
Central Catawba – Average score 3.4
The Central Catawba basin is defined it’s three large reservoirs Lake Norman, Mountain Island Lake, and Lake Wylie. It’s highly developed along the eastern edge following the I-77 corridor. It supplies over 2 million people with drinking water and electricity. It has some of the greatest water quality challenges and strongest protections.

Monitoring – 4
- Duke, Charlotte Water, and Charlotte Stormwater extensively test the lakes
- Data is available quickly upon request, but not browsable
- Few testing sites in tributaries outside Mecklenburg County

Point Source Pollution – 3
- Concentrated heavy industry and large WWTPs
- Several large sewer overflows
- Spills are well documented and mitigated by local environmental compliance

Nonpoint Source Pollution - 3
- Large areas of impervious surface developed pre stormwater ordinances
- Rapid development across basin.

Water Quantity - 4
- About 150 MGD is withdrawn for drinking water or evaporated for electricity
- Average flow is about 4000 MGD
- Mountain Island Lake flooding continues to be a concern

Recreation – 3
- Few access points if you don’t have a boat, public beaches are crowded
- Scattering of failed bacteria tests, algal blooms, and invasive aquatic vegetation
- Mercury and PCB fish consumption advisories

Allen Coal Fired Power plant in Belmont, NC
Southern Catawba and Wateree Basins – Average score 3.4
The Southern Catawba basin extends from Charlotte and Rock Hill down to the Lake Wateree Dam. The Wateree basin extends from the dam to its confluence with the Congaree River at Congaree National Park. It is highly developed at the northern end and mostly rural otherwise with smaller cities such as Lancaster.

Monitoring – 5
• Charlotte Stormwater Services, DHEC, Lake Wateree Water Watch, SC Adopt-a-Stream, Catawba Riverkeeper, and USC monitor this area
• Most of this data is available real time or regularly updated online
• DHEC is actively engaged in creating and enforcing a nutrient reduction plan

Point Source Pollution – 3
• Largest dischargers including Charlotte WWTPs and the Resolute papermill
• 35 significant violations in the last 3 years, however most are reporting failures

Nonpoint Source Pollution – 2
• Urbanized half of watershed disproportionally adds plastics during rain
• Downstream status combined with the current and past land practices lead to rain driven high turbidity and nutrient loading

Water Quantity – 4
• Intake improvements have increased resiliency, and potential for development
• Wateree Dam flood control construction is underway

Recreation – 3
• Long stretches with no access, launches near urban areas are crowded
• Consistent algal bloom on Lake Wateree, other sporadic bloom across basin
• Mercury and PCB fish consumption advisories

Debris pile where Charlotte’s runoff enters the main channel.
Conclusion

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By our scale the most of Catawba and Wateree River Basins are in fair to good condition. The South Fork basin faces the greatest challenges. Nonpoint source pollution is a problem across the basin. As the population in our area continues to grow so will the threats. We recommend increases in state funding for monitoring, particularly in NC, and the widespread adoption of proactive stormwater ordinances.
Partners

We like to thank the following organization for providing data and/or supplemental information.
About Catawba Riverkeeper Foundation

History
In 1992, the Centralina Council of Governments (CCOG), a regional planning agency in Charlotte, NC, partnered with counties and businesses to develop the Catawba River Corridor Study. This study brought together the counties of Union, Mecklenburg, Gaston and Lincoln, NC and York, SC, as well as Duke Energy, Jentzen Corporation and approximately 100 citizens from the various counties along the Catawba to identify potential threats and solutions for the Catawba River. The study was a comprehensive overview of the river corridor from Lake Norman to Lake Wylie including extensive analysis on land use, demographics, water quality, plant and animal life, recreational facilities and public utilities. In 1995, the study was complete, and the task forces established to evaluate the Catawba River’s water quality, land use and resource development, and community cooperative planning mechanisms, made eight recommendations which were adopted by the steering committee.

The committee’s FIRST recommendation was to “Establish a river-keeping system on the Catawba River.”

Concurrently, the Lake Wylie and Lake Norman Marine Commissions conducted a joint workshop to evaluate the effectiveness of the Neuse Riverkeeper program in eastern NC. Based on this and other information, the Marine Commissions decided that a Riverkeeper program could greatly benefit the entire Catawba River.
With financial support from both marine commissions, a small group of passionate residents formed the Catawba River Foundation, a 501c3 non-profit corporation dedicated to protecting and restoring the Catawba River and applied for application for a Riverkeeper license. In August, 1997, we were granted a license - becoming the 21st waterkeeper organization in the United States. Today, we are a part of a global network of waterkeepers that number over 400 through membership in the Waterkeeper Alliance.

The Riverkeepers
In January 1998, a year earlier than expected, the Catawba Riverkeeper Foundation Board of Directors hired the first Catawba Riverkeeper – Donna Lisenby. Since then, the focus of this successful Riverkeeper program has been on directly improving water quality through monitoring and conservation advocacy, and on increasing public awareness through education and strong partnerships. The Riverkeeper is the chief scientist and advocate for the Catawba Riverkeeper Foundation and the title has been held by 5 different individuals since 1998.

Catawba Riverkeepers (term)
Donna Lisenby (January 1998- January 2008)
Rick Gaskins (Interim Riverkeeper, February-May 2008)
David Merryman (May 2008 – March 2012)
Rick Gaskins (March 2012 – June 2013)
Sam Perkins (June 2013-November 2018)
Brandon Jones (November 2018 – present)
Today and Beyond
Currently, the Catawba Riverkeeper Foundation has a professional staff of scientists, educators, and passionate environmentalists executing programs across the basin. Although much has changed since 1997, the original vision of the founders to preserve and protect the waters of the ENTIRE Catawba-Wateree River Basin and to do it with on-the-water educational and advocacy programs lives on. We accomplish this work through our three key pillars — EDUCATE, ENGAGE, and PROTECT. A committed group of staff, board members, volunteers, and community members assist in executing programs within each mission area.
Supported by more than 5,600 members across 26 counties in North and South Carolina, the Catawba Riverkeeper Foundation strives to always “protect our waters without compromise.” For more than two decades, CRF has been the primary public interest watchdog dedicated to protecting the Catawba-Wateree River Basin. We are the voice of the citizens on behalf of the Catawba River and we are proud of our heritage of protection and advocacy. As we approach our 25th anniversary, we are excited to continue this work through greater collaboration, increased testing, enhanced education programming, and deeper engagement in the communities we serve. Together, we will advance the important work of preserving our most valuable resource: OUR WATER. For more information about Catawba Riverkeeper Foundation, please visit www.catawbariverkeeper.org.