

Project Title: *Richland Creek Watershed Plan*

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- Name of Project Coordinator/Principal Investigator/Author
 - Piedmont Triad Regional Council, Cameron Colvin (resigned 3/26/21) and Grace Messinger, started with PTRC 6/14/21
- Date of Final Report: September 13, 2021
- Project URL address (if applicable):
 - On PTRC website: [Richland Creek Watershed Action Plan](#)
 - NCDEQ DWR: [Richland Creek Story Map](#)

Acknowledgements

List project partners and acknowledge any person or organization that helped during the project or in writing the final report.

- Piedmont Triad Regional Council: Malinda Ford, GIS Manager; Jesse Day, Planning Director; Danica Heflin, Environmental Programs Coordinator
- Southwest Renewal Foundation: Dorothy Darr, Executive Director
- City of High Point: Andy Piper, Senior Planner; Justin Gray, Public Services Manager; Robby Stone, Deputy Public Services Director; Rebecca Coplin, Keep High Point Beautiful Supervisor; Kelsie Burgess, Stormwater Specialist; Derrick Boone, Asst Public Services Director; Terry Houk, Public Services Director; Lee Tillery, Director of Parks & Rec
- Guilford County: Teresa Andrews, Stormwater Program Admin; Jamie Walker, Soil and Water Conservation District Supervisor; Millie Langley, SWCD
- NC DEQ DWR: Nora Deamer, Cape Fear Basin Planner; Cam McNutt, Environmental Program Consultant Water Quality
- Piedmont Triad Regional Water Authority: Greg Flory, Executive Director
- NC Wildlife Resources Commission: Brooke Massa, Land Conservation Biologist; Olivia Munzer, Western Piedmont Habitat Conservation Coordinator

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List of Tables, Figures, Abbreviations

Richland Creek Watershed Action Plan- interactive story map allows users to toggle through various tabs associated with data and information applicable to the watershed. This has been overlaid with current GIS database layers. Specific best management practices and stormwater control measures were noted and locations most appropriate for implementation in the watershed are identified. Citizens can interact with the data and information as well as through various applications, stakeholders can further identify areas of need in the watershed as well as track progress made towards water quality improvements.

[Richland Creek Watershed Action Plan Story Map:](#)

- Watershed Action Plan (WAP) Overview: jurisdictional map
- Water Quality Issues, Information and Data: Impaired waters image
- Development Patterns: Landcover image- indicates developed areas (in red) to undeveloped areas (green)
- Source Assessment: static map identifying areas under most “stress” due to various factors that ultimately effect the water quality of the watershed
- Code and Ordinance Worksheet: identification of areas with need to employ conservation measures for protection of water quality; initial identification of green infrastructure project types
- Riparian Assessment: assessment of health of riparian areas along Richland Creek, indicating areas of most need
- Roles and Responsibilities- Who is Involved?
- Goals, Objectives and Actions
- Community Involvement NC Stream Watch: link to NC Stream Watch process
- Outreach & Education
- WAP Plan Development Tools SCITS and WIPS: introduction to use of tool that identifies areas of need within watershed
- WAP Project Development Tools
- Effectiveness Monitoring- Are we making a difference: static map of current TMDL monitoring efforts by City of High Point
- Technical and Financial Assistance Resources

[Richland Creek Companion Guide](#)

Figure: Richland Creek Watershed Jurisdictional Map

Table: Impaired Waterbody Table

Figure: Richland Creek Watershed Water Quality Map

Figure: Comparison Chart of 2006 to 2016 National Land Cover Data categories

Figure: Richland Creek Watershed Impervious Cover

Figure: Richland Creek Impervious Coverage Map

Figure: EPA Waterbody Report for Richland Creek

Table: Fecal Coliform Richland Creek vs. Water Quality Std

Table: Richland Creek Peak Flows chart

Figure: City of High Point Water Quality Sampling locations

Code and Ordinance Worksheet Results Table

Figure: Image, Eastside Wastewater Treatment Plant

Table: GIS Data Parameters: Stress Assessment

Figure: Richland Creek Stress Catchment Rating Map

Table: Areas of greatest need for restoration

Figure: SWHP Proposed Green Infrastructure projects
 Table: Riparian Buffer Classification: Richland Creek Values
 Figure: Adopt-a-Stream volunteers
 Sources of Financial Assistance
 Sources of Technical Assistance
 EPA 9-Element cross walk document to Story Map

Abbreviations

Piedmont Triad Regional Council	PTRC
NC Division of Environmental Quality Division of Water Resources	NC DEQ DWR
Hydrologic unit code	HUC
Total Maximum Daily Load	TMDL
National Land Cover Data	NLCD
Wastewater Treatment Plant	WWTP
Water Supply	WS
Upper Cape Fear River Basin Association	UCFRBA
Total Suspended Residue	TSS
Code and Ordinance Worksheet	COW
Center for Watershed Protection	CWP
National Pollutant Discharge Elimination System	NPDES
Municipal Separate Storm Sewer System	MS4
Minimum Control Measures	MCM
Source Conveyances Identification Tool	SCITS
Watershed Improvement Project Tracker	WIPS
Water Resource Valuation Tool	WR Val
Ambient Monitoring System	AMS

Executive Summary

Richland Creek, a headwater tributary of the Deep River, located in High Point, NC, flows into the Deep River within the Cape Fear River Basin. From its source to the Deep River, Richland Creek, has been listed on the federal 303(d) impaired waters list since 1998 for failing to adequately support a diverse fish community and meet water quality standards for fecal coliform bacteria. It is suspected that much of these impairments are a result of urban stormwater runoff as impervious surfaces make up approximately 28% of the watershed.

A Total Maximum Daily Load (TMDL) was established for Richland Creek in 2004 that outlines a strategy for an 82% reduction in fecal coliform bacteria. The NC Division of Water Resources (DWR) also identified Richland Creek as one of the Cape Fear River Basin's top restoration priorities in 2009. However, no local watershed plan had been developed to further identify sources of impairment and coordinate restoration efforts.

The *Richland Creek Watershed Action Plan* was developed in consultation with local stakeholders to guide water quality improvements and coordinate restoration efforts. The plan investigates potential sources of pollution in the watershed and identifies collaborative, cost-effective strategies to enhance and protect surface waters. The purpose of the plan is to describe methods and present a timeline to reduce the amount of bacteria pollution in the Richland Creek watershed as it drains to the Deep River and into Randleman Reservoir.

The top priority is to reduce bacteria contamination in Richland Creek watershed by 82% through the implementation of stormwater control measures.

This information, in combination through field verification, stakeholder and community feedback, coupled with the comprehensive Southwest Renewal Foundation's Green Infrastructure Plan (August 2019) is the basis for the Richland Creek Story Map and the Richland Creek Watershed Companion Guide.

Introduction /Background

PTRC has been working with the Southwest High Point Renewal Foundation for several years on various green infrastructure and stormwater control measure potential projects. The stakeholders recognized that there was no approved Watershed Action Plan for the Richland Creek watershed. A TMDL was drafted for the watershed in 2004 and the no significant action or changes have occurred. The project team and stakeholders felt it necessary to draft an approved 9-Element Watershed Action Plan in order better formalize the projects needed to address stormwater, flooding and/or water quality impairments in the watershed.

The watershed has on-going and noted impairments for bacterial contamination and over 28% of the watershed is impervious.

The Richland Creek Watershed Action Plan was developed to

- Provide a strategy for assessing problems and implementing solutions to restore water quality in Richland Creek watershed.
- Provide a strategy for assessing and implementing preventative measures to protect the Richland Creek watershed from future degradation.
- Identify opportunities for land acquisition, conservation easement and public, private and public/private opportunities for stormwater control measure implementation projects.

- Establish priorities, identify funding opportunities, coordinate partners and policies (ordinances) and establish timelines for implementation.
- Support existing watershed restoration, community redevelopment efforts and incorporation of green infrastructure as a model to improve quality of life, water, natural resources and a sense of community in a watershed located in the City of High Point.

By partnering with NC DEQ Division of Water Resources, this plan will be accessible via an on-line Story Map whereby the required 9-element U.S. Environmental Protection Plan requirements to compose a watershed restoration and protection plan will be met. By hosting this information in the on-line story map format, project partners, High Point personnel and Board members, engineers, teachers, students and the community at large can access the information and start to take Action Now to make improvements and/or to get involved. Therefore giving life to this Action Plan in order for it to be successful and it not to just be left on a shelf as a static document.

Purpose and Goals

- Goal: To create an EPA 9-Element watershed action plan for the Richland Creek watershed that is hosted by the NCDEQ DWR as an on-line, interactive story map, that once implemented will reduce the fecal coliform contamination by 82%.
- Objectives:
 - Review and analyze existing watershed conditions: water quality, local ordinances, land-use and environmental characteristics
 - Watershed stakeholders will draft Richland Creek Watershed Plan that identifies areas of most need that once best management practices and/or stormwater control measures are implemented, would help to achieve the fecal coliform reduction.
 - Stakeholders will complete the Center for Watershed Protection's *Code & Ordinance Worksheet* in reviewing the current City of High Point and Guilford County codes and ordinances.
 - A GIS geodatabase will be created to include topography, soil, land cover, land use and point source data in order to further identify areas of need, such as areas most in need of restoration as well as analyze data to assess riparian buffer conditions and areas most in need of protection or conservation
 - PTRC will host stakeholder meetings to obtain watershed specific project ideas, illicit feedback, assist with outreach and promotion of the watershed planning effort
 - PTRC will work with local stakeholders to prioritize non-point source management measures and develop a reasonable timeline to ensure local capacity and feasibility.
 - Richland Creek Watershed Action Plan will include suggested BMPs for implementation, estimated timeline for implementation, funding options, and estimated load reductions via SNAP tool.
 - Information will be access through the NCDEQ DWR ESRI ArcGIS Online Story Map
 - PTRC will complete the 9-element checklist and submit for review and approval.

Deliverables

Deliverable	Format
Create EPA 9-element Watershed plan	Analyzed, compiled water quality, local ordinances, land use & environmental characteristics- via desktop GIS datasets
	Obtained and utilized water quality data from Upper Cape Fear River Basin Association
	Conducted four stakeholder meetings/work sessions to obtain input and feedback
	Attended two public events to engage with community at large
	Conducted field work to verify GIS results; investigated additional areas of concern or in need of improvement
	Researched funding mechanisms available
	Researched existing planning documents appropriate for water quality improvements
	Overlaid Southwest High Point Green Infrastructure Plan projects within watershed
	Conducted SNAP calculations to best determine load reductions
Richland Creek Watershed Action Plan Story Map	Created on-line GIS interactive web map Story Map
	PTRC worked with NCDEQ DWR to upload narrative/text that correlates with the mapping/images discussing issues and proposed opportunities within the watershed
	PTRC worked with NCDEW DWR to upload supporting graphics, education and data layers

Methodology/Execution

The proposed project was to draft an EPA 9-element watershed restoration and protection plan for the Richland Creek watershed, where one did not currently exist. Due to the stakeholder involvement in the drafting of the Southwest High Point Green Infrastructure Plan, the PTRC felt it had a great opportunity to obtain support to compile the Watershed Action Plan. Additionally, based on the past success of the Story Map created for Haskett Creek, PTRC felt confident this approach would be successful.

A few challenges occurred along the way. Most notably the COVID-19 pandemic was in full swing dictating that any stakeholder engagement and team meetings would most likely only be virtual. With a 2-month no-cost time extension, this allowed the project team to engage in a few in-person events held in High Point at outdoor venues and events.

Another challenge is that the PTRC Project Manager, Cameron Colvin, left PTRC with only a few months remaining to complete the project. There was a slight delay in securing a new staff member, but in the meantime other staff from the Planning Department were able to help keep the project moving forward.

Since this project's goal was to compile a watershed plan, not a lot of external constraints arose. The Project Manager worked to better highlight the on-line, interactive, mapping process of the watershed action plan opposed to a robust written report that rarely gets revisited. By hosting the information on the ESRI ArcGIS Online Story Map platform as supported by the NC DWR, PTRC was able to display the data and

information in a more user friendly, interactive format. However, the Project Manager felt it was still important to have a companion piece that could be more easily referenced or shared with the community if internet access is an issue. Therefore a concise report was drafted, the Richland Creek Watershed Action Plan Companion Guide, with the anticipation that this document enriches the information found on the story map.

Results and Conclusions

The funding to support the creation of an on-line Story Map, coupled with the Companion Guide highlighting the Richland Creek Watershed Action Plan was achieved. The stakeholders involved are better informed of the issues occurring in the watershed, they are better informed of the progress made thus far and what steps they can take towards water quality and watershed health improvements.

The hard work now begins in implementing the plan. Funding for the proposed projects has to be secured along with final decisions regarding land purchases and designing the most appropriate best management practices. The Southwest Renewal Foundation, a local non-profit organization, has started making headway in getting funding awarded to start with buffer planting projects that would occur in parallel to the Southwest Heritage Greenway, which in many areas overlaps with Richland Creek footprint.

It proved challenging at times to engage with the community and stakeholders only in a virtual format as there is nothing like taking people out to see the problem areas so they can see for themselves the issues that exist. However, many of the stakeholders already engaged are already familiar with the areas that have the biggest issues or present the biggest challenges. Again, funding is a key point that has been secured to implement the plan as well as to support staff to facilitate the plan and projects. More in-depth site specific investigations, followed by detailed engineering and design is imperative to ensure that the most appropriate SCM or BMP is chosen and constructed in an area as to show improvement and not to cause more harm.

PTRC was able to engage with NC DEQ DWR to establish a GIS collaboration, making it easier to upload data and information into the on-line story map format. This made the transfer of materials more streamlined and efficient. PTRC feels that with the on-line format becoming more popular that this format allows for more public engagement, support and feedback for project implementation.

Appendices

- Richland Creek Action Plan
 - [Richland Creek Watershed Action Plan Companion Guide](#)
 - [ESRI ArcGIS NCDEQ DWR Online Story Map](#)
- [Richland Creek Kick-off Meeting Presentation](#)
- [Richland Creek Headwaters Deep River Factsheet](#)
- [Richland Creek Muddy Creek Fecal TMDL](#)
- [Richland Creek WAP Objectives- Actions- Schedule](#)
- [Southwest High Point Green Infrastructure Plan](#)

*Budget

- With the final invoice (due within 45 days of contract end date), provide a copy of the budgeted and actual expenditures of both federal and matching funds.