



“Mapping Environmental Injustice in the Yadkin River Basin”

Final Report by

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2022-2023 Spatial Justice Studio Fellows

Yadkin Riverkeeper is a nonprofit, membership organization whose mission is to protect and enhance the Yadkin River basin by engaging citizens in clean water issues through education, advocacy, and action. Our overarching goals are to ensure clean drinking water and a healthy, safe river for the benefit of all the basin's nearly 3 million residents.

Research Project

In our original project proposal, we identified the following scope for our research project:

We are identifying and empowering environmental justice communities in the Yadkin River Basin by creating an interactive StoryMap designed to amplify local stories of environmental injustice. The StoryMap will include interviews with residents of these communities and will provide resources to enhance knowledge of associated environmental injustices.

Anticipated highlights include:

- 1. Local impact on water quality resulting from the Winston Weaver Co. fertilizer plant fire
 - a. Montview Neighborhood - Winston Salem, NC**
- 2. Property loss due to erosion of Brushy Fork Creek caused by non-permitted development at Smith-Reynolds Airport
 - a. Barkwood Neighborhood - Winston Salem, NC**
- 3. Discharge of fluoride, cyanide, and other contaminants of concern from hazardous waste disposal sites located at the former Alcoa Aluminum plant
 - a. West Badin Neighborhood - Badin, NC**

From this original proposal, we narrowed our scope to focus on two out of the three proposed community highlights. Since we had already made connections with community members in West Badin and Northeast Winston-Salem, we felt that it would be best to focus our efforts on sharing their stories in detail. We compiled these community highlights in collaboration with community members who are living at the frontlines of environmental injustice.

While our StoryMap is currently under construction through the end of June, we will be showcasing our progress in combination with a community activist panel discussion on Friday, June 9th. The purpose of this meeting is to (1) gather feedback from community members about the current structure of our data visualization, (2) amplify the voices of local environmental activists, and (3) build comradery within the Yadkin Watershed as we partner with Environmental Justice Communities of Concern.

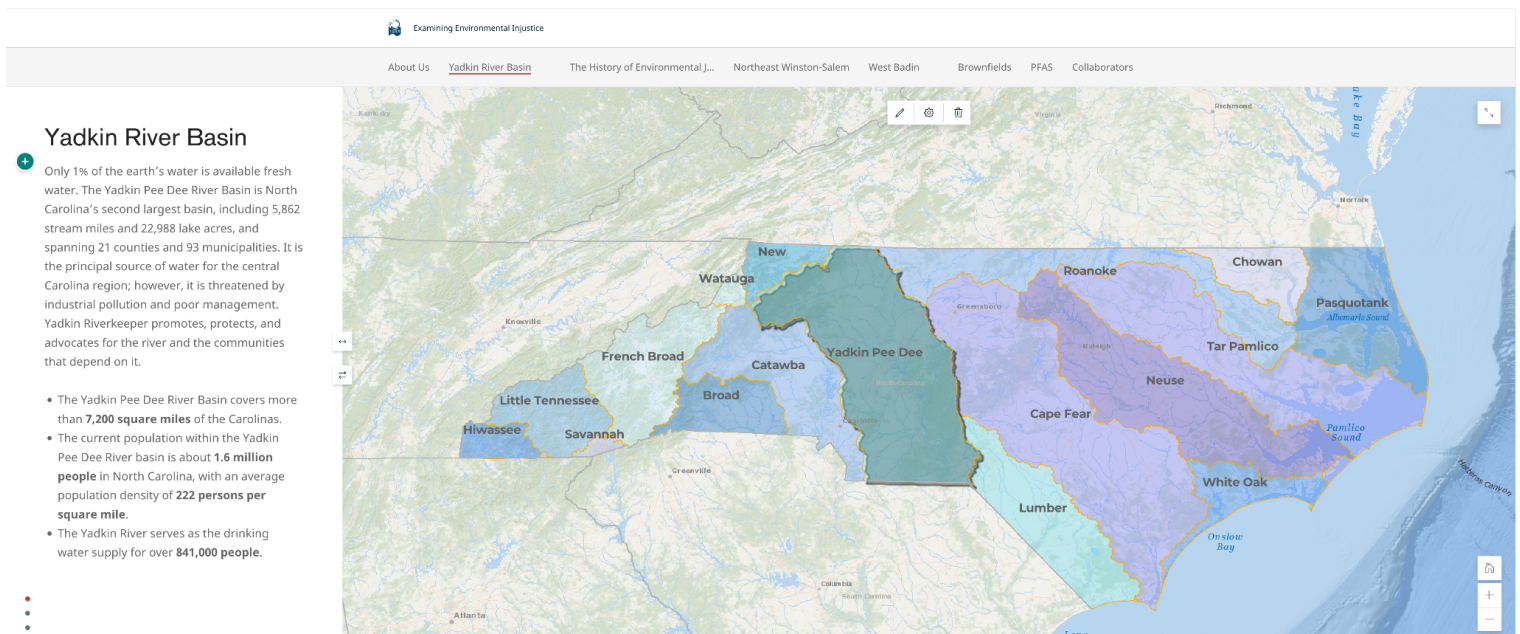
We understand that this StoryMap does not represent a comprehensive depiction of every frontline community facing environmental injustice within the Yadkin River Basin. It is not our place to speak for residents nor to define their struggles without consent. We view this research project as an opportunity to extend our reach to low-income and BIPOC communities who are experiencing water quality concerns and would like to learn more about local efforts to address environmental injustice.

Our advocacy for environmental justice is modeled after three strands of justice outlined by Rowangould et al. (2016)¹:

1. **distributional justice**, which ensures that “no community is over-burdened by environmental hazards and that all have access to environmental benefits,”
2. **procedural justice**, which ensures that “those suffering from environmental injustices have a meaningful voice in shaping public policy and corporate actions,” and
3. **recognition**, which ensures that “diverse kinds of knowledge are considered legitimate when shaping policies and plans.”

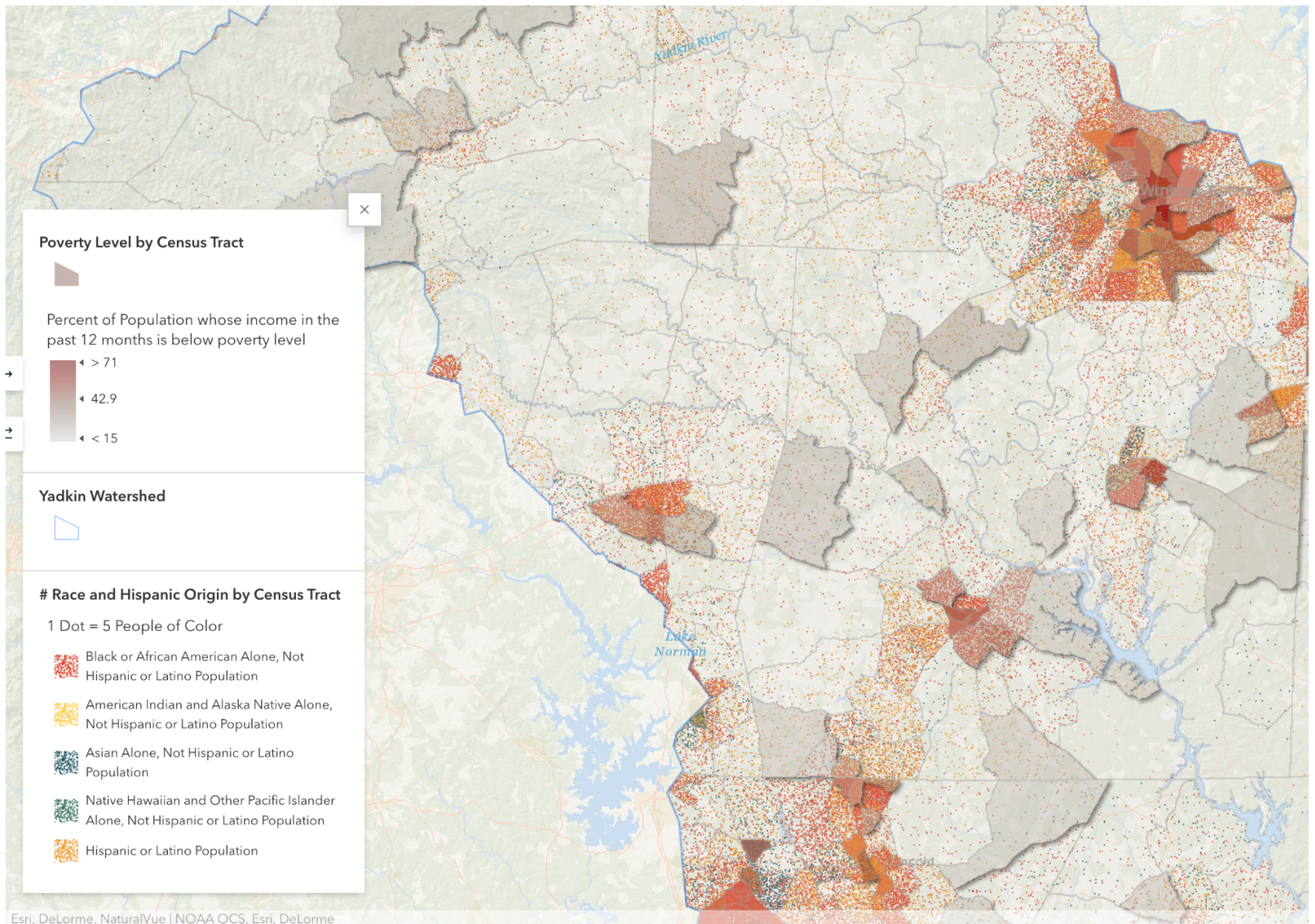
StoryMap

Our StoryMap begins with an introduction to the study area: the Yadkin River Basin. We first offer an explanation of how water flows within a watershed throughout the larger river basin. This section provides context for our research so that residents who visit the site will have a better understanding of pollution impacts on water and surrounding communities.



¹ Rowangould, D., Karner, A., & London, J. (2016). Identifying environmental justice communities for transportation analysis. *Transportation Research Part A: Policy and Practice*, 88, 151–162. <https://doi.org/10.1016/j.tr.2016.04.002>

Within this section of the StoryMap, we provide a closer look at the socioeconomic disparities within the Yadkin River Basin. Using ACS (American Community Survey) data at the census tract level, we have mapped the location of high-poverty areas and areas with a higher concentration of People of Color. This data visualization allows us to concentrate on the intersectional demographics of Race and poverty when evaluating environmental disparities in water quality.



In the following section, we explain the environmental justice movement by highlighting the work of Robert Bullard and the significance of protests in Warren County, North Carolina. which led to greater awareness of environmental disparities among low-income households and Communities of Color across the nation.



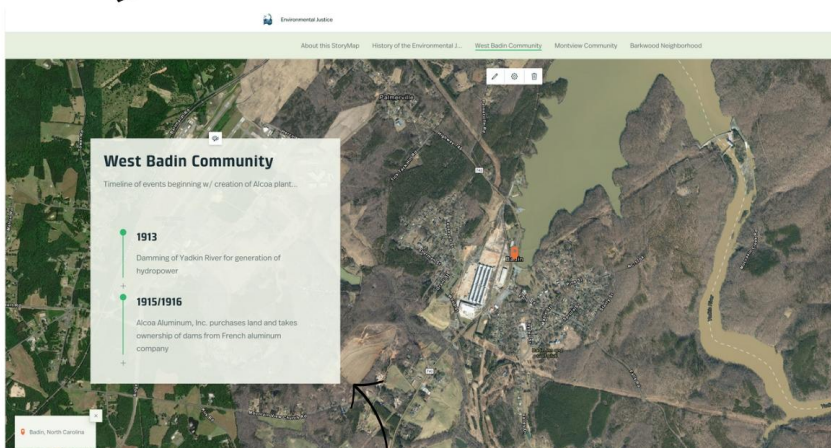
Image courtesy of Upstream Solutions

In the sections containing community highlights, we include timelines of key events that have affected local waterways, leading to environmental concerns among residents.

Goal:

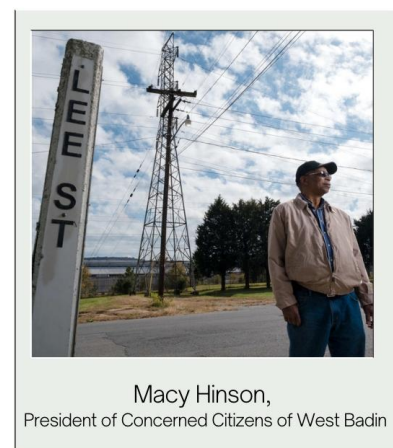
to increase spatial awareness of environmental injustice

Aerial view of Impacted Communities



Timeline of key events

Highlight Community narratives and oral histories



Macy Hinson,
President of Concerned Citizens of West Badin

Image courtesy of UNDARK Magazine 2021

BARKWOOD DRIVE



ENVIRONMENTAL JUSTICE CONCERNS:

- Brushy Fork Creek eroding residential land in predominantly Black neighborhoods
- Elevated levels of bacteria detected
- Proposed bill to de-annex Smith Reynolds Airport from W-S City limits

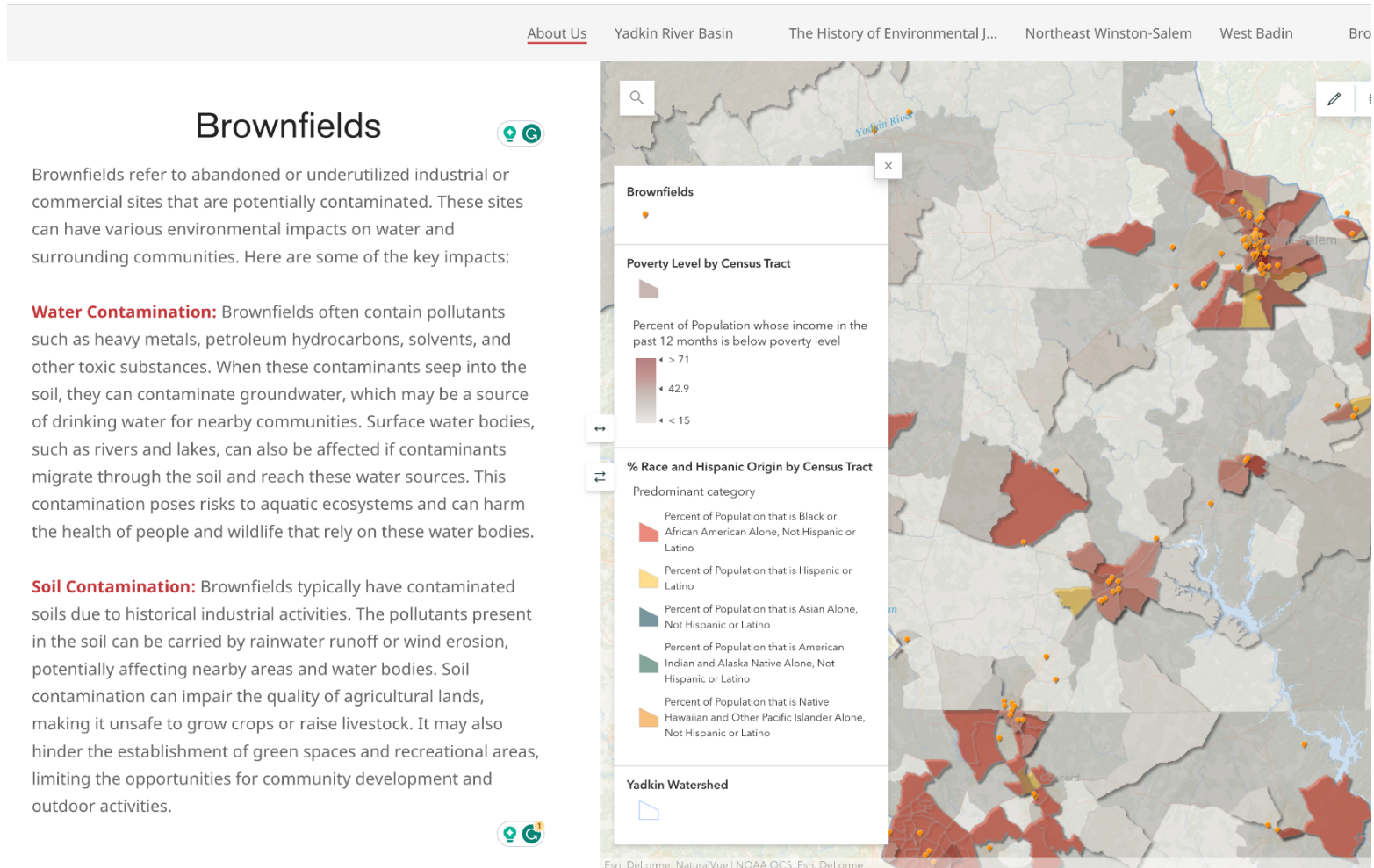


Backyard of resident on Barkwood Drive

As we continue to engage and advocate with residents of West Badin and Northeast Winston-Salem, we plan to edit the StoryMap to reflect key updates regarding grassroots organizing, policy initiatives, resident testimonials, and changes in data.

**** Following our environmental justice event on June 9th, we will submit a report detailing the reception of the map and key areas for improvement prior to our June 30th release date.**

In the final analysis portion of the StoryMap, we have compiled data for the location of brownfields in relation to ACS poverty and Race datasets. The image below is a screenshot of that section.



It is very clear to see the overlap between placement of brownfields (as indicated by orange dots) and the concentration of Black and Latinx residents. We have provided a detailed explanation of brownfields and their potential impacts, including:

- Water contamination
- Soil contamination
- Health risks
- Ecological impacts
- Economic and social implications