Community as a Core Principle: Restoring Urban Headwaters and Implementing Green Infrastructure in the Upper Flint River Basin

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Degree: MCRP'21

Spring 2021

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Acknowledgements

First and foremost, I would like to thank Hannah Palmer and Finding the Flint for the support and resources provided to complete this paper. I would also like to thank my research advisor Michael Elliott for pushing me to dig deeper and encouraging me to use fewer commas in my writing.

Special Thanks to the following organizations: Aerotropolis Atlanta, American Rivers, Atlanta Regional Commission, Eco-Action, Elemental Impact, Flint Riverkeeper, GA Association of Water Professionals, Hartsfield-Jackson Atlanta International Airport, State of Georgia – Office of Innovation, The Conservation Fund, and Woodward Academy.

Introduction

This Applied Research Paper will present strategies for incorporating community engagement in green infrastructure projects. More specifically, it will develop strategies for engagement within Finding the Flint, a project seeking to daylight the Flint River and create a Nature Preserve Park in College Park, Georgia. This paper focuses on Finding the Flint because the project exemplifies both the obstacles and opportunities associated with increasing community voice in watershed management issues. The paper is broken down into seven key sections: the history of the Flint River and Finding the Flint, a brief overview of the impacted neighborhoods, a literature review on green infrastructure and community engagement, two case studies on green infrastructure projects that incorporate community engagement, a deeper dive into Finding the Flint, stakeholder interviews, and recommendations. The paper argues that increased participation will lead to better outcomes for vulnerable communities, co-benefits for the Flint River and impacted neighborhoods, and that such participation is not only desirable but practically possible as well.

Finding the Flint is a project created by American Rivers, The Conservation Fund, and the Atlanta Regional Commission (ARC) in 2017. The Flint River, the second longest river in Georgia, starts in East Point and flows 344 miles to Florida where it joins the Chattahoochee to create the Apalachicola River. Currently, the headwaters of the Flint are buried underground. Stream daylighting brings buried waterways back to life by physically uncovering and restoring them. Revitalizing these buried ecosystems can have a positive effect on the community but to be truly beneficial, it is important that the community is actively involved the planning process. Community engagement should empower citizens to take control in the political and economic process and enable current residents, particularly the poor, to share in the benefits of the improved environments.

History

The focus of this paper will be the Upper Flint River Basin. This section of the river basin lies completely within the Piedmont province. Additionally, the basin covers 556 square miles (11 percent) of the North Georgia Metro Water District.[1] The Flint river starts just south of Georgia's largest city and state capital, Atlanta, in humble origins in the city of East Point and adjacent to the World's busiest airport—Hartsfield-Jackson Atlanta International Airport (HJAIA). The urban headwaters mark the beginnings of a river that flows south to the state of Florida where it then connects with Georgia's other major river, the Chattahoochee, to form the Apalachicola River. Together the three rivers encompass the Apalachicola-Chattahoochee-Flint (ACF) River Basin.

Figure 1. Apalachicola-Chattahoochee-Flint (ACF) River Basin. Photo Credit: Finding the Flint

The river basin is surrounded by both developed and undeveloped land. The Water District estimates that an additional three percent of the basin will be developed in the next 25 years (from the start year 2012), resulting in 52 percent developed.[2] This growth is likely to occur in South Fulton and North Clayton counties around the Airport. Developed land poses challenges to watersheds, including the level of impervious surface. Research indicates that impervious surface can negatively affect the health of a watershed. This negative impact can

[1] "Water Resource Management Plan," Metropolitan North Georgia Water Planning District, December, 2016, http://northgeorgiawater.org/wp-content/uploads/2016/12/Appendix-A-Upper-Flint-River-Basin-Profiles.pdf.
[2] "Water Resource Management Plan," Metro Water District, 8.

occur even when impervious surface is as low as 10 percent of land coverage.[3] Currently, the area around the headwaters has an effective impervious surface that is greater than 20 percent. This is a significant threshold because research indicates that when impervious surfaces constitute 25 percent or more of a watershed, streams are no longer able to support viable biotic communities.[4] The Georgia EPD water quality data indicates that out of the 240 miles of streams in the Metro Water District, 52 percent did not meet state 2014 water quality standards. In addition, 43 percent of assessed streams did not meet water quality standards for fecal coliform bacteria, as a result of nonpoint source pollution.[5] These, among other challenges outlined below, have sparked dialogue among stakeholders to preserve the health of the upper Flint River.

The Flint River is significant for a multitude of reasons, including but not limited to, it is the second longest river in Georgia (the first being the Chattahoochee River), flowing for 344 miles and is the longest river that both starts and ends within the state's boundaries.[6] Additionally, the river flows unimpeded (i.e., by a dam) for more than 200 miles, one of 40 rivers in the U.S. that does so.[7] In all its glory, the river is not without its challenges; in 2016, American Rivers named the ACF River Basin as the most endangered river in the United States.[8] This was on the heels of a 2013 report by American Rivers and the Flint River Keeper, *Running Dry: Challenges and Opportunities in Restoring Healthy Flows in Georgia's Upper Flint River*

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[3] Peter Flinker, "The Need to Reduce Impervious Cover to Prevent Flooding and Protect Water Quality," Providence Water Supply Board and the National Park Service, revised May, 2010, 3, http://www.dem.ri.gov/programs/bpoladm/suswshed/pdfs/imperv.pdf.

[4] Ibid, 9.

[5] Ibid, 11.

[6] Ferdinand Bada, "The 10 Longest Rivers in Georgia," World Atlas, July 12, 2018, https://www.worldatlas.com/articles/the-10-longest-rivers-in-georgia.html.

[7] Flint River," Georgia River Network, accessed April 17, 201, https://garivers.org/flint-river/#:~:text=The%20Flint%20River%20flows%20unimpeded,in%20the%20contiguous%2048%20states.

[8] "Apalachicola-Chattahoochee-Flint River Basin Named #1 "Most Endangered," American Rivers, April 16, 2016, https://www.americanrivers.org/conservation-resource/news-acf-basin-endangered/#:~:text=(Washington%2C%20DC)%20American%20Rivers,basin%20at%20a%20breaking%20point.

Basin.[9] As the title suggests, the upper Flint River has been running dry in recent years, despite being located in an historically water-rich area. Lastly, the management of the Flint River is subject to the Apalachicola-Chattahoochee-Flint River Basin decades long "water wars" between Alabama, Georgia, and Florida.

The known history of the Flint River dates back centuries. Time and time again, the river has been named 'flint' in one form or the other. The ancient Eastern Woodland tribes called the river 'Thronateeska', the Muskogee Indians called the river 'Hlonotiskahachi', both names refer to flint in English. When European colonizers discovered the river in the 1500s it was named 'Rio Perdernales', also referring to flint in English.[10] The Cambridge dictionary defines flint as, a piece of shiny gray or black stone that is like glass.[11]

The Flint River Valley was used to support the cotton industry of the state of Georgia. Settlement near the headwaters can be traced back to the Macon and Western Railroad, opened in 1846. The expansion of railways near the headwaters led to the formation of the tri-cities: East Point (1870), College Park (1890), and Hapeville (1891). The first large-scale development around the headwaters, the Atlanta Speedway, was constructed in Hapeville in 1909. The 290 acres purchased by the Candler family (founders of the Coca-Cola company) for the Speedway was farmland and swampy pastures near the headwaters of the Flint River.[12] This site was chosen because it is one of the few areas in the Atlanta region characterized by flat countryside.[13] The

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[9] Ben Emanuel, Gorden Rogers, "Running Dry, Challenges and Opportunities in Restoring Healthy Flows in Georgia's Upper Flint River Basin," American Rivers, Flint Riverkeeper, April 2013, https://www.americanrivers.org/wp-content/uploads/2016/05/running-dry-flint-river-report.pdf.

[10] "Flint River History and Facts," Flint Riverkeeper, accessed April 17, 2021, https://flintriverkeeper.org/flint-river-history-and-facts/#:~:text=The%20Flint%20River%20was%20integral,Bainbridge%20and%20the%20Chattahoochee%20junction.

[11] Cambridge Dictionary, s.v. "flint", accessed April 17, 2021, https://dictionary.cambridge.org/us/dictionary/english/flint.

[12] "The Birth of the Atlanta Speedway," The Atlanta Speedway, Asa Jr, accessed April 17, 2021, https://www.asasbriarcliff.com/the-atlanta-speedway-birth.

[13] David P Henderson, "Atlanta Airport: in the Beginning," Sunshine Skies, accessed April 17, 2021, https://www.sunshineskies.com/atl-in-the-beginning.html.

speedway included a 2-mile racetrack, 30,000 grandstand seats, and additional buildings and garages for vehicles and staff. The speedway officially operated for one season. After failing to secure enough interest in racing, Asa Cadler Jr. attempted to attract spectators through other means, including aviation. In 1910, the first aircraft landed in the area that would become the Hartsfield-Jackson International Airport.[14] However after a few racing and aviation events in 1910, the land remained dormant for nearly a decade. In March of 1919, the land was donated to be a landing place for air crafts. This potential new role for the 290 acres of land was embraced by the county, city, and major leaders of the 1920s.

On December 31, 1927, the airport was open for commercial air flights and within two years the city of Atlanta purchased the property. The airport grew quickly, taking over neighboring properties and changing the natural landscape. Topographic and aerial images show how close the Flint River borders Candler Field. As the airport's operations continued to expand, consideration had to be given to their aquatic neighbor. During the 1940s, through a Works Projects Administration (WPA) program, the river was channelized and buried to extend the Airport's runways.[15] The process of burying the river continued for over 40 years, as new terminals and runways were added to the ever-expanding airport. In 2004, construction of the fifth runway required the piping of Sullivan creek, one of the tributaries of the Flint River and fenced off more than mile of river.[16]

The urbanization around the Flint Headwaters has significantly increased the variability of flow in the river, increasing both instances of flash flooding and of the river running dry. Data from the USGS Carsonville gauging station show increased instances of low flows since 1999. In

[14] David P Henderson, "The Rise and Fall of the Atlanta Speedway," Sunshine Skies, accessed April 17, 2021, https://www.sunshineskies.com/atlanta-speedway.html
[15] "History," Finding the Flint, accessed April 17, 2021, https://findingtheflint.org/history.
[16] "History," Finding the Flint.

the last twenty years, there have been four droughts in the upper Flint.[17] Water flow on the driest days of recent droughts are more than 30 percent lower than comparable droughts of the 1950s to 1980s.[18] The river has been losing its resiliency against these damaging low flows due to the demand on its water, making the river more vulnerable when it faces dry weather conditions. Even when the river is not in a drought, the average annual flows show an 18 percent decline in flow since 1975.[19] The low flows can significantly damage the watershed. For example, Line Creek in Peachtree City, roughly twenty miles south of the Airport, registered less than one cubic foot per second for half of the 2012 calendar year.[20]

In 2017, American Rivers stated the Flint river suffered more strain from previous and ongoing droughts than any river in the southeast or eastern U.S.[21] The Flint has been running dry largely from human influence. While historically, the river has always suffered from droughts, the increased occurrence, lower levels of water during drought, and the threats of climate change, raise concerns for the future. Human activities and development exacerbate the impacts of drought. Increased impervious surface blocks rainwater from entering ground water supply and instead cause the water to expel quickly in flash floods. Moreover, of the water withdrawn from the Upper Flint, approximately one-third is returned to the river system via wastewater discharges with the remainder exported via inter-basin transfer or utilized for large consumptive uses (i.e., septic tanks, landscape irrigation).[22]

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[17] Ben Emanuel, Daniela Galeano, "Ensuring Water Security for People and Nature: Collaborative Efforts in Georiga's Upper Flint River Basin," 2019 Georgia Water Resources Conference, April 16-17, 2019, https://gwri.gatech.edu/sites/default/files/files/docs/2019/1.1.4.pdf
[18] Ben Emanuel, Gorden Rogers, "Running Dry," American Rivers, Flint Riverkeeper, April 2013, 10.
[19] Ben Emanuel, Gorden Rogers, "Running Dry," American Rivers, Flint Riverkeeper, April 2013, 11.
[20] Ben Emanuel, Gorden Rogers, "Running Dry," American Rivers, Flint Riverkeeper, April 2013.
[21] Ben Emanuel, Daniela Galeano, "Ensuring Water Security for People and Nature," Georgia Water Resources Conference, April 2019.
[22] Ibid.

The challenges faced by the Flint River led to the formation of the Upper Flint River Working Group, a voluntary collaborative of staff leadership of all the large water utilities in the upper basin, local conservationists, non-profit conservation organizations and sustainability staff at HJAIA.[23] The working group formed in 2013 with the purpose to keep the upper Flint River and its tributary streams flowing to protect the social, ecological, recreational and economic values the river system provides.[24] The group has been able to share information on environmental issues in the different portions of the river basin, hold technical sessions, and host site visits to different areas of the basin. Following the formation of the working group and their previous report *Running Dry: Challenges and Opportunities in Restoring Healthy Flows in Georgia's Upper Flint River Basin*, American Rivers published an *Upper Flint River Resiliency Action Plan* in October 2014 to guide work by a variety of stakeholders to restore drought resilience.[25]

In 2015, HJAIA in collaboration with American Rivers, studied the stormwater management of the airport and conducted a suitability analysis for green infrastructure. Concurrently, the Aerotropolis Alliance, a non-profit membership organization and coalition was being built by the ARC and other stakeholders. By 2016, the Aerotropolis Alliance released the Aerotropolis Atlanta Blueprint, a strategy and vision to leverage the airport as a major asset to drive economic investment, job growth, and quality of life in the airport area.[26] The following year, American Rivers, ARC, and the Conservation Fund partnered to fund Finding the Flint, an

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[23] Ibid.
[24] "Upper Flint River Working Group," American Rivers, accessed April 17, 2021, https://www.americanrivers.org/rivers/discover-your-river/southeast-rivers/upper-flint-river-working-group/#:~:text=The%20Upper%20Flint%20River%20Working,values%20the%20river%20system%20provides.
[25] "Upper Flint River Resiliency Action Plan," American Rivers, October 2014, https://www.americanrivers.org/wp-content/uploads/2016/05/AmericanRIvers_UpperFlintActionPlan2014.pdf.
[26] "The Aerotropolis Atlanta Blueprint, A Vision and Strategy for the Atlanta Region," Aerotropolis Atlanta, 2016, https://aeroatl.org/blueprint/.

initiative to restore the urban headwaters of the Flint River. In October 2017, the first meeting of the Finding the Flint Working Group gathered to begin discussions on how to turn the vision into a reality.

Impacted Neighborhoods

College Park, GA

Population: approx. 15,000

Pop Density: 1,384 per Sq. Mi.

Median Household Income: $32,039

Median Property Value: $167,900

Homeownership Rate: 25.9%

Poverty Rate: 31.5%

City of College Park

Located on the border of south Fulton County and north Clayton County is the City of College Park. The City, slightly larger than 10 square miles sits just south of the City of Atlanta and partially houses the HJAIA. Originally founded in 1890, the City was called Atlantic City before the locals renamed it to Manchester. Several years later the name changed again to College Park due to it housing both Cox College and Conservancy and Georgia Military Academy, now known as Woodward Academy. The history of College Park can be seen through its architecture. The City contains 867 structures on the Historic Register, the fourth largest of any city in Georgia.[27] The City prides itself on their location to the airport and the City of Atlanta, while also being a charming and friendly small town.

The City has a population of about 15,000 as of 2019 census estimates. 79.3 percent of the City's population identifies as Black or African American (Non-Hispanic), 14 percent White (Non-Hispanic), 1.56 percent Multiracial (Non-Hispanic), and 1.91 percent as Hispanic.[28] The median household income in College Park is $32,039, 43 percent below the average in Metro Atlanta ($55,733). Of the residents in College Park, 9.4 percent both live and work within the City limits. For residents that work outside city limits, 43.9 percent work less than 10 miles away from home and generally North or North East of the City.[29]

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[27] "College Park History," City of College Park, accessed April 17, 2021, https://www.collegeparkga.com/about_us/college_park_history.
[28] "College Park, GA" Data USA, accessed April 17, 2021, https://datausa.io/profile/geo/college-park-ga.
[29] "On the Map" United States Census Bureau, accessed on April 17, 2021, https://onthemap.ces.census.gov/.

As of 2016, based on public input, the following are issues facing the City.[30] The foremost issue is crime and the perception of crime. Often what is referred to as College Park is much larger than the actual city limits, therefore the city faces negative externalities from the surrounding, unincorporated Fulton and Clayton County areas. The second most prominent issue is the impact of HJAIA. While the airport is an asset, noise and land use restrictions also burden the City. The Federal Aviation Administration (FAA) restricts land use, building height, and building standards require noise mitigation. This impacts the urban form and increases the cost to build around the airport. Additionally, HJAIA has a variety of negative environmental impacts including stormwater runoff, water quality, and air quality. Other issues identified through public input are community appearance (vacant land, and older developments), lack of services (most services are located outside the city), and workforce development (the workforce is less educated than the Atlanta region). Currently, College Park is updating their comprehensive plan which may reshape community issues moving past 2021.

City of East Point

The town of East Point was first incorporated in 1887 and was given its name because, at that time, it was the eastern most stop of the Atlanta and West Point Railroad.[31] The city grew as a manufacturing city and was prosperous due to its ability to adapt to various

East Point, GA

Population: approx. 35,000

Pop Density: 2,297.4 per Sq. Mi.

Median Household Income: $40,882

Median Property Value: $118,800

Homeownership Rate: 40.5%

Poverty Rate: 22.4%

[30] "City of College Park Comprehensive Plan 2016 – 2036," City of College Park, 2016, https://www.collegeparkga.com/UserFiles/Servers/Server_11492833/File/Departments/Planning%20and%20Growth/CollegeParkComprehensivPlan2016-2036.pdf

[31] Mable Shurling, "History of East Point," East Point Historical Society, American Community, Spring Quarter, 1948, https://static1.squarespace.com/static/5eff842dea8c4f6fe1b5a43b/t/5f822e7551299276ce1c715d/1602367101480/Shurling_EP_History_1948.pdf

transportation modes, from the railroad to the streetcar, and even today the commercial downtown relies on the MARTA station located on Main Street.[32] The City covers 14.67 square miles in Fulton County with College Park and Hapeville on its south border and the City of Atlanta bordering the north, east, and west. Like the College Park, East Point offers the charm of a small city with the luxuries of a big city.

The City has a population of about 35,000 as of 2019 census estimates. The breakdown of the City's population is 75.3 percent Black or African American (Non-Hispanic), 12.7 percent White (Non-Hispanic), 5.15 percent White (Hispanic), and 2.82 percent Other (Hispanic).[33] The median household income in East Point is $42,079, 24 percent below the average in Metro Atlanta ($55,733). Of the residents in East Point, 5.3 percent both live and work within the City limits. For residents that work outside city limits, 46.5 percent work less than 10 miles away from home and generally work North East of the City.[34]

In 2017, East Point updated their comprehensive plan. Based on community input and the 2012 Comprehensive Plan, the 2017 Plan identifies the following as issues and opportunities facing the city.[35] Of primary concern, land use and economic development goals focus on making the downtown a destination to visit, supporting small businesses, and reinvesting and expanding on the current commercial corridors. Second, natural and cultural resources goals include increasing participation in land conservation, adding more public art, turning stream buffers and undeveloped flood zones into community greenspace, and using greenspace to treat stormwater and reduce runoff. Third, population and housing goals center around attracting

[32] "City of East Point Comprehensive Plan Update," City of East Point, 2017, https://www.eastpointcity.org/wp-content/uploads/2020/09/Comprehensive-Plan-Update-2017.pdf
[33] "East Point, GA," Data USA, accessed on April 17, 2021, https://datausa.io/profile/geo/east-point-ga
[34] "On the Map" United States Census Bureau.
[35] "City of East Point Comprehensive Plan Update," City of East Point, 2017.

young professional to live in the area and providing diverse housing choices. Finally, transportation goals focus on the lack of sufficient and safe pedestrian infrastructure, traffic congestion, and lack of dedicated bike paths, multi-use trails, or bike lanes in city limits.

City of Hapeville

Hapeville, GA

Population: approx. 6,500

Pop Density: 2,648.8 per Sq. Mi.

Median Household Income: $46,875

Median Property Value: $113,100

Homeownership Rate: 41.1%

Poverty Rate: 15%

The origins of the City of Hapeville are also connected to railroad transit, when in 1871, Dr. Samuel Hape and other investors purchased 500 acres of land on the Macon and Western Central Railroad.[36] The Village of Hapeville was chartered in 1891. Today, the city is 2.4 square miles and is situated between the city of Atlanta to the north and HJAIA to the south. The most significant impact on the City has been the development of the HJAIA from the beginning days as a racetrack to 1929 when the City of Atlanta purchased the area that would become the airport. Its location has attracted major businesses and corporations to locate in the area. Hapeville is home to Delta Air Lines, Inc. and a former Ford Motor Assembly Plant that now houses Porsche North American headquarters. The City also benefits from the location of the Aerotropolis Atlanta Community Improvement Districts (CIDs) which covers portions of Hapeville's office core and Corporate Crescent.

The City has a population of about 6,500 as of 2019 census estimates. The City's population is 39.3 percent Black or African American (Non-Hispanic), 27.7 percent White (Non-Hispanic), 17.1 percent White (Hispanic), 5.73 percent Multiracial (Non-Hispanic), and 4.63 percent Other (Non-Hispanic).[37] The median household income in Hapeville is $46,875, 16 percent below the

[36] "Hapeville History," City of Hapeville, accessed on April 17, 2021, https://www.hapeville.org/107/History.
[37] "Hapeville, GA," Data USA, Accessed on April 17, 2021, https://datausa.io/profile/geo/hapeville-ga.

average in Metro Atlanta ($55,733). Within one year, the homeownership rate jumped from 33.7 percent in 2017 to 41.1 percent in 2018. Of the residents in Hapeville, 4.9 percent both live and work within the City limits. For residents that work outside city limits, 49.3 percent work less than 10 miles away from home and generally work North of the City (towards Atlanta) or Southwest of the City (HJAIA).[38]

The community participation process conducted for the 2017 Comprehensive Plan and LCI study identified three main community goals: transportation, land use, and vision and character.[39] transportation goals focused on enhancing walkability in the city, beautification of the streetscape, enhanced bikeability, improved transit options, and a shuttle option for visitors. Land use goals focused on attracting a local grocer to the area, increasing sustainability of businesses, providing a range of housing options with more affordable, senior and higher density housing, providing more green space in the form of community gardens and pocket parks, and supporting the growth of Corporate Crescent. Within Vision and Character, residents would like to see the city preserve its small town character, encourage and grow its art scene, work to improve the school system and quality of life, and create a sense of identity and character.

Unincorporated Clayton County

Just south of HJAIA lies areas of unincorporated Clayton County. As an unincorporated area, information on the population, economy, and other demographics of the area is not readily available. For the purpose of this paper, the focus in unincorporated Clayton County will be in the boundaries of the Old Dixie/ Tara Boulevard Master Plan, completed in 2018.[40] This

[38] "On the Map" United States Census Bureau.
[39] "City of Hapeville Comprehensive Plan/LCI Study Update," City of Hapeville, June 2017, https://hapeville.org/DocumentCenter/View/3105/FINAL-Hapeville-LCI-CompPlan-June-2017?bidId=.
[40] "Old Dixie/Tara Boulevard Master Plan," Development Authority of Clayton County, October 2018, https://www.claytoncountyga.gov/home/showdocument?id=10762

encompasses Old Dixie Road and Tara boulevard from I-75 to Holiday Boulevard, including adjourning residential parcels in Tara Crossing and Southern Regional Medical Center. The plan notes, it is the first mixed use commercial and residential node south of HJAIA. This includes two apartment complexes, mobile homes, single-family homes, and a strip mall. Additionally, after re-emerging from pipes under HJAIA, this study area is one of the first locations to see the river in all its glory. The river runs adjacent to the Southern Regional Medical Center. This has caused problems during flash floods when the main road has had to be shut down due to the Flint River overflowing. This will be discussed in greater detail later in the paper.

The Master Plan was done in conjunction with the Master Plan for Mountain View by the Development Authority of Clayton County. The public engagement process for both plans were done together over a two-day workshop. Eleven community goals came out of the public engagement process and they include[41]:

1. To Create a Live/Work/Play mix of uses.
2. To make land more easily available for redevelopment: Consolidation, regulations (zoning), incentives.
3. To implement a Design Overlay.
4. To rebrand and beautify (focus on Old Dixie/ Tara Boulevard)– lighting, landscape, signage.
5. To redesign I-75/Old Dixie/Tara Boulevard Intersection.
6. To leverage the Flint River and AeroATL Greenway trail connectivity.
7. To create a medical/healthcare focused mixed use district
8. To provide uses complementary to hospital.

[41] "Old Dixie/Tara Boulevard Master Plan," Development Authority of Clayton County, October 2018.

9. To improve safety and perception of crime
10. 10. To connect to Mountain View, Southlake Mall, Clayton State University
11. To enhance Workforce development, anchored on Southern Regional and Clayton State University

Methodology

Research Design

This study will employ qualitative methods to assess community engagement in green infrastructure. The primary tools that will be used include case study analysis of green infrastructure projects with successful community engagement plans incorporated and stakeholder interviews. The stakeholder interviews will be analyzed using a thematic analysis. The process of thematic analysis will be described in the Stakeholder Engagement chapter. Qualitative research is complex and requires rigorous and methodical methods to ensure trustworthiness and credibility. Thematic analysis is a method for identifying, analyzing, organizing, describing, and reporting themes found within a data set.[42] Recommendations provided will be based on a combination of literature review, case studies, and stakeholder interviews.

Research Questions

This paper seeks to explore the following research questions:

- What are the roles of technical experts and community members in green infrastructure projects?
- What are the different strategies that foster effective community involvement in urban ecological restoration?
- What are useful strategies to ensure the needs of the community are met with new development projects?

[42] Lorelli S. Nowell, et al, "Thematic Analysis: Striving to Meet the Trustworthiness Criteria," International Journal of Qualitative Methods, Vol 16, 2017, https://journals.sagepub.com/doi/pdf/10.1177/1609406917733847.

Literature Review

Sustainable Development and Environmental Justice

The historic roots of sustainable development signify the concept emerges at a compromise between 'growth' and 'conservation'. The most common and well accepted definition of sustainable development, from the 1987 Brundtland Report, is 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'.[43] Additionally, the report expressed that social equity, economic growth, and environmental maintenance are simultaneously possible and are the three fundamental components of sustainable development, often referred to as the triple bottom line.[44] Otherwise known as the "three E's" of sustainability: Economy, Environment, and Equity. It is helpful to visualize the model as a three-legged stool, with equal emphasis placed on each of the legs when applying this model so the project is balanced and remains stable.[45]

Historically, a preponderance of attention has been given to the economy to the detriment of the second two E's. Recent urban planning practice has given more consideration of the environment but there still lacks equal consideration of the three pillars, with equity garnering the least regard. A heightened focus of the interconnectedness between the environment and equity has been around in academic literature since the 1980s at a nexus of the Civil Rights and Environmental Movements. Specifically, in 1982, when civil rights activists organized in North Carolina to stop the state from dumping polychlorinated biphenyls (PCBs) in Warren County—

[43] "Brundtland Report," WCED, 1987, 43.
[44] Jacobus Du Pisani, "Sustainable development – historical roots of the concept," *Environmental Sciences*, Vol 3, No 2, (2006): 93.
[45] Jarrar, Al-Zoabi, "A sustainable city paradigm: criteria and indicators of efficiency," *WIT Transactions on Ecology and The Environment*, Vol 204 (2016): 145.

which had the highest proportion of African Americans.[46] This brought attention to the environmentalist movement that people of color and poor communities were facing far greater risk.[47] Known as "environmental racism," factors like distribution of wealth, housing and real estate practices, and land use planning place Black, Latinx, and Native Americans at greater health and environmental risk.[48]

Often considered the "Father of Environmental Justice," Robert Bullard coined environmental justice as the principle that "all people and communities are entitled to equal protection of environmental and public health laws and regulations."[49] The most often cited evidence of environmental injustice is in the realm of distribution, specifically the inequitable share of environmental ills.[50] Along with a more equitable distribution of environmental hazards and amenities, the movement also claims the necessity of a fair decision-making process for the location of hazards and amenities, while also acknowledging the needs of diverse communities.[51] The demand for authentic, community-based participation comes out of the experience of disenfranchisement, therefore the construction of inclusive, participatory decision-making institutions is at the center of environmental justice.[52]

With heightened attention given to both sustainable development and environmental justice, despite their historically different origins, there exists an area of theoretical compatibility between the two. Just sustainability is a paradigm shift that requires a redistributive function

[46] Mohai, et. al., "Environmental Justice," Annua Review of Environment and Resources, Vol 34, 2009.
[47] Mohai, et. al., "Environmental Justice," 2009.
[48] Robert Bullard, "Race and Environmental Justice in the United States,"1990.
[49] Bullard, "Race and Environmental Justice in the United States 1990.
[50] David Schlosberg, "Reconceiving Environmental Justice: Global Movements and Political Theories," Environmental Politics, Vol. 13, No 3 (2004): 522.
[51] Alessando Rigolon, "Parks and young people: An environmental justice stud of park proximity, acreage, and quality in Denver, Colorado," Landscape and Urban Planning, Vol. 165 (September 2017): 74.
[52] Schlosberg, "Reconceiving Environmental Justice," 522-523.

within sustainability discourse, where justice and equity take center stage.[53] To Agyeman, the Just Sustainability Paradigm foregrounds four focal areas of concern that have not *all* been represented by previous environmental paradigms: quality of life; present and future generations; justice and equity; living within ecosystem limits.[54]

Green Infrastructure

Green Infrastructure (GI) is regarded as one of the vital approaches to achieve sustainability. There is no universal definition of GI, but comprehensive research conducted by Wang and Banzhaf in 2018 found that definitions of GI consistently contain natural and human-made components as fundamental elements.[55] The most commonly cited definition of GI is an interconnected network of green space that conserves natural ecosystem values and functions and provides associated benefits to human populations.[56] A more specific definition provided by the Environmental Protection Agency (EPA) under Section 502 of the Clean Water Act (CWA) defines GI as measures that use plant or soil systems, permeable pavement or other permeable surfaces or substrates, stormwater harvest and reuse, or landscaping to store, infiltrate, or evapotranspirate stormwater and reduce flows to sewer systems or to surface waters."[57]

The advantage of GI is that it uses natural elements and practices to restore nature's processes to manage water and create healthier urban environments. The natural elements are not restricted to features that support native species, but include parks, forest reserves, terrestrial, freshwater, coastal, and marine areas, as well as man-made elements like ecodunes.[58] These

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[53] Julian Agyeman, "Toward a 'just' sustainability'," Continuum, Vol. 22, No. 6 (2008): 752.
[54] Agyeman, "Towards a 'just' sustainability," 755.
[55] "Jingxia Wang, Ellen Banzhaf, "Towards a better understanding of Green Infrastructure: A critical review," Ecological Indicators, Vol. 85 (2018): 760.
[56] Mark Benedict, Edward McMahon, "Green Infrastructure: Smart Conservation for the 21st Century,", Renewable Resources Journal, Vol. 20 (2002): 12.
[57] "Green Infrastructure in Parks," U.S. Environmental Protection Agency, June 2017.
[58] "Wang, Banzhaf, "Towards a better understanding of Green Infrastructure," 759.

elements comprise two main components of GI: hubs and links. Hubs are the origins and destinations for wildlife and ecological processes and are the anchor of GI; links are the connections tying the system together and enabling networks to work[59] This all takes place in the urban landscape, a diverse mosaic of patches distinguished by the heterogeneous composition of built and green space, diverse use, and management pattern.[60] A variety of green spaces can be found in the urban fabric including green on buildings (green roofs, walls, etc.) to green near built structures (community gardens, street greening, railway banks, etc.) and includes blue spaces (lakes, ponds, canals, etc.).[61]

The range and extent of GI means it can perform multiple functions at different scales, while accounting for numerous interactions and connections that are essential to nature.[62] Often this is referred to as multifunctionality and means that multiple ecological, social, and economic functions shall be explicitly considered instead of being a product of chance.[63] This multifunctionality is an important conceptual evolution and is the optimum approach to achieve success in urban spatial planning.[64] GI is a strategic approach to land conservation because it analyzes conservation values and actions in concert with land development, growth management, and built infrastructure planning.[65]

Prior to the onset of GI, most solutions to spatial planning were met through grey infrastructure—man-made solutions that impede natural processes. Grey infrastructure is still the standard solution to provide communities with services. However, under a sustainable

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[59] Benedict, McMahon, "Green Infrastructure,"12.
[60] Pauleit, et. al., "Urban Landscapes and Green Infrastructure," *Oxford Research Enclycolpedia of Environmental Science*, (June 28, 2017) 5.
[61] Pauleit, et. al., "Urban Landscapes and Green Infrastructure," 5.
[62] Wang, Banzhaf, "Towards a better understanding of Green Infrastructure," 759.
[63] Rieke Hansen, Stephan Pauleit, "From Multifunctionality to Mutiple Ecosystem Services? A Conceptual Framework for Multifunctionality in Green Infrastructure Planning for Urban Areas," AMBIO, Vol. 43 (2014): 518.
[64] Wang, Banzhaf, "Towards a better understanding of Green Infrastructure," 769.
[65]Pauleit, et. al., "Urban Landscapes and Green Infrastructure," Stephan, 3.

development framework or a Just Sustainability paradigm, its increasingly important to transition to GI when possible. Davies and Roe characterize the two infrastructure types as a grey-green continuum with some functions in the middle, like cycle routes.[66] Grey infrastructure is often criticized for overlooking ecosystems and increasing vulnerability over the long run. Often the most effective approach is a hybrid that combines green, blue, and grey infrastructure. Examples of the different strategies are described in Table 1.

Table 1. Infrastructure Strategies based on Typology[67]

Grey	Hybrid	Green and Blue
Hard, engineering structures	Blend of biological-physical and engineering structures	Biophysical, Ecosystems and their services
e.g. canals, pipes and tunnels of drainage systems. Dikes, wastewater treatment plants, water filtration plants.	e.g. bioswales, porous pavement, green roofs, rain gardens, constructed wetlands, Sustainable Urban Drainage Systems	e.g. wetlands restoration; installation of grass and riparian buffers, urban trees, stream restoration, rivers, lakes, ponds, oceans, and seas

Daylighting

One type of green infrastructure is urban stream "daylighting." Stream daylighting is an approach to bring buried waterways back to life by physically uncovering and restoring them.[68] This GI intervention has garnered attention over the years as the current stormwater management system is showing signs of weakness and failure. However, this could just be a process of time as many of today's urban stormwater management systems are replications of technology that

[66] Clive Davies, Maggie Roe, "Green Infrastructure Planning Guide," November 2015.
[67] Nadja Kabisch, et. al. "Nature-based Solutions to Climate Change Adaptation in Urban Areas," Springer Nature (Cham, Switzerland, 2017): 95.
[68] "Daylighting Streams: Breathing Life into Urban Streams and Communities," *American Rivers*, 1.

emerged in the 19th century.[69] During the industrialization period, the U.S. buried most small streams and since their importance was not yet fully understood, cities often used them as sewer pipes.[70] As a result of stream burial, urban and suburban areas are losing benefits of important services provided by streams including, nutrient pollution reduction and flood controls.

In a natural area, rainfall is stored in vegetation, soil, or surface depressions and naturally infiltrate and recharge groundwater supplies and streamflow over time.[71] By channelizing diverting and burying headwater streams, the natural area is impacted by altering runoff patterns, changing water availability downstream and eliminating habitats. The network of sewers used to replace the natural drainage system often has less capacity to store water. Additionally, land development degrades streams by causing flashier hydrographs, altered channel stability, reduced biotic richness, and elevated concentrations of nutrients and contaminants.[72] The long-term effects include increased downstream flooding, inability to retain nutrients and other pollutants effectively, pressure on stream fish and wildlife populations due to extreme high and low flows, and decreased groundwater recharge leading to less drinking water availability.

The archetype of daylighting is a 1984 project in Berkeley, California that daylit a section of Strawberry Creek and it is considered that the project's designer, Douglas Wolfe, coined the term to help describe the project.[73] Pinkham identified at least 20 benefits of daylighting, including: increase hydraulic capacity, reduce runoff velocities, improve water quality, diverting urban runoff, and providing recreational amenities, amongst other benefits.[74]

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[69] Tracy Buchholz, Tamim Younos, "Urban Stream Daylighting: Case Study Evaluation," Virginia Water Resources Research Center, Virginia Polytechnic Institute and State University, July 2007.
[70] American Rivers, "Daylighting Streams," 3.
[71] American Rivers, "Daylighting Streams," 5.
[72] American Rivers, "Daylighting Streams," 6.
[73] Richard Pinkham, "Daylighting new life for buried streams," Rocky Mountain Institute (Old Snowmass, CO, 2000): IV.
[74] Pinkham, "Daylighting new life for buried streams," IV-V.

Strawberry Creek Park converted an abandoned railyard into a park with playing courts, grassy meadows, native vegetation, and a babbling brook—it was supported by citizens that launched a leafleting campaign and largely attended public meetings[75].

Community Engagement

> *Participation of the governed in their government is, in theory, the cornerstone of democracy – a revered idea that is vigorously applauded by virtually everyone. The applause is reduced to a polite handclap, however, when this principle is advocated by the have-nots…and when the have-nots define participation as redistribution of power, the American consensus on the fundamental principle explodes into many shades of outright opposition.*
> *– Sherry Arnstein (1969)*

Community engagement should empower citizens to take control in the political and economic process and enable the have-not citizens to share in the benefits of the affluent. By participation, citizens exert power and the redistribution of power enables the have-not citizens (which have been excluded from the political and economic process) to be deliberately included in decision making.[76] Additionally, lack of meaningful inputs in the planning process from the community leads to barriers to successful environmental management.[77] The emphasis on public engagement in environmental and water resource planning was a relatively recent innovation in the early 2000s, prior to that water resource management was driven by policy makers and experts with limited stakeholder input.[78] Additionally, the shift from point source pollution to non-point source pollution has demanded that citizens and other stakeholders be incorporated in environmental management as the challenges shift towards "place-based" rather than "issue-

[75] Pinkham, "Daylighting new life for buried streams," 18.
[76] Sherry Arnstein, "A ladder of citizen participation," *JAICP*, Vol 35, No 4 (July 1969).
[77] Linda P. Wagenet, Max J. Pfeffer, "Organizing Citizen Engagement for Democratic Environmental Planning," *Society and Natural Resources*, Vol 20, No 9, (2007): 802.
[78] Wagenet, "Organizing Citizen Engagement for Democratic Environmental Planning," 802.

based" problems.[79] The EPA in promoting community engagement has released a Public Participation Toolkit to manage processes where public input is important to decision-making. Additionally, the EPA released a guide for green infrastructure in parks with a focus on collaboration, funding, and community engagement.

[79] Wagenet, "Organizing Citizen Engagement for Democratic Environmental Planning," 803.

Case Studies

Selection Criteria

A case study selection and analysis process were completed to provide ideas and descriptions of river revitalization approaches that included community engagement that have been successful in the United States. The case studies were identified during the literature review and were selected based their ability to fit the six headwater principles of the Flint River Working Group:

1. **Improve the health of the Flint River:** Projects that meet this principle will demonstrate their success in improving the health and viability of their river.
2. **Connect people to the river physically and culturally:** Projects that meet this principle will demonstrate their functionality through usability, education, amenities, and other features that work to connect people to the river physically and culturally.
3. **Benefit the community equitably:** Projects that meet this principle will demonstrate the river as a community asset that benefit the community socially and economically.
4. **Provide solutions to the airport:** Projects that meet this principle will provide solutions for revitalization projects near or within airport boundaries.
5. **Add beauty and soul to any development:** Projects that meet this principle will demonstrate community character and thoughtful design.
6. **Inspire the next generation of river advocates:** Projects that meet this principle will include educational components, engage local schools and universities, or other strategies that will inspire the next generation of river advocates.

Seven Canyons Trust

Location: Salt Lake Valley, Utah

Demonstrated Principles: Improve the health of the river; connect people to the river physically and culturally; benefit the community equitably; add beauty and soul to any development; inspire the next generation of river advocates.

Seven Canyons Trust is nonprofit organization located in in the Salt Lake Valley of Utah. The organization began in 2014, when students from the University of Utah developed *100 Years of Daylighting*, a master plan for the valley with the mission to uncover the water that once flowed freely: restoring health, beauty, connection, and kinship between the seven creeks, their communities, and the natural environment.[80] Their website, sevencanyonstrust.org, highlights six projects of riparian restoration in the valley. Additionally, the organization facilities community building and stewardship through a series of events, environmental education, and workshops. Lastly, the organization is currently in the process of completing a community visioning with the public that will provide the framework for their *Seven Greenways Vision Plan.*[81]

One project that was born out of the *100 Years of Daylighting*, is the Three Creeks Confluence. The project was first presented in 2014 and included three creeks that all spill into the Jordan River as the same location. The site was paved over and neglected. More than $3 million was secured to uncover 200 feet of combined stream and a 120-foot bridge to connect to

[80] "100 Years of Daylighting," The Seven Canyons Trust, University of Utah City and Metropolitan Planning, accessed April 17, 2021, https://static1.squarespace.com/static/530e3f55e4b088e83bb95f08/t/5ebeff30144cfc6dde17080a/1589575511114/Seven_Canyons_Trust_Doc.pdf.
[81] "Seven Greenways Vision Plan," Seven Canyons Trust, accessed April 17, 2021, https://sevengreenwaysvisionplan.org/#process.

the Jordan River Trail. In a community survey, 64 percent of participants did not know that a creek was flowing under the site. 75 percent

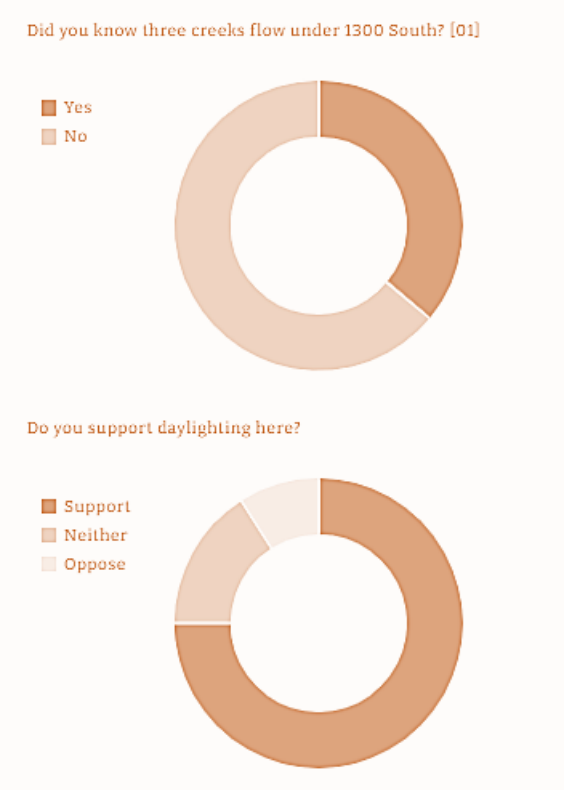

Figure 2. Community Engagement Survey by Seven Canyons Trust. Photo Credit: Seven Canyons Trust.

of participants supported daylighting the creek at that location and 16 percent of participants were neither for nor against daylighting the creek. In 2017, the Seven Canyons Trust received an Achievement Award from the Utah American Planning Association for the innovative project design and creative community engagement process.

Another such project currently undertaken by Seven Canyons is Herman Franks Park. In 2015, students at a local college were on a walk to trace Emigration Creek and discovered the creek flowed underneath community greenspace. Seven Canyons Trust began community engagement in 2016 and in total have completed a stakeholder meeting, hung 1,200 flyers on neighborhood doors, two community workshops with 50 community members, 5 presentations to community councils, wrote numerous community newsletters and articles, participated in tabling events, engaged 256 students for watershed walks, and received 150 comment forms. Out of the process an Emigration Creek Vision was implemented based on community member prioritization with water quality as the highest priority, followed by community amenity and wildlife habitat.

Saw Mill River Coalition & Groundwork Hudson Valley

Location: Yonkers, New York

Demonstrated Principles: Improve the health of the river; connect people to the river physically and culturally; benefit the community equitably; add beauty and soul to any development; inspire the next generation of river advocates.

One of the negative externalities associated with urbanization is increased flooding, something those in the Saw Mill River watershed have known since the 1940s. A growing population in the watershed caused the land use to go from predominately forested and vegetated cover to 64 percent urban use. Like many other watersheds, Saw Mill is not located in one jurisdiction, instead it crossed through 12 municipalities and no entity took responsibility over the watershed. In 1998, the US EPA and the National Park Service incentivized the creation of non-profits dedicated to working with communities to improve their local environment. Community leaders answered the proposal and a non-profit was founded with the focus of restoring the river, including daylighting the river in downtown Yonkers. Twenty years later, the organization has grown its mission to create sustainable environmental change in urban neighborhoods through community-based partnerships that promote equity, youth leadership, and economic opportunity.[82]

For a decade, Groundwork Hudson Valley and its branch organization, The Saw Mill River Coalition, worked to daylight the Saw Mill River. The groups, with the help of other stakeholders and advocates were able to secure $34 million from the Governor's office to see the

[82] "Groundwork Hudson Valley," Groundwork Hudson Valley, accessed April 17, 2021, https://www.groundworkhv.org/.

plan through.[83] Ensuring the project would benefit the community was a fundamental principle to the organizations, for this reason they established a Community Benefits Agreement and held charettes for a five-year period. Phase I of the project was completed in 2012, Van der Donck Park is a 13,775 square foot aquatic habitat with permeable pavers and garden beds that can serve as an emergency floodplain during surge events. Some of the cultural and education amenities included are colorful mosaics, an outdoor classroom, seating, and a footbridge with a sound installation. Phase II of the project, Mill Street Courtyard, 100-foot portion of the river was daylit in 2016 and includes amenities like bioswales, public art, and historic artifacts from the city's past.

[83] "Daylighting the Saw Mill River," Groundwork Hudson Valley, 2019, https://www.groundworkhv.org/wp-content/uploads/2020/08/Daylighting-Curriculum-Gr-3-8-compressed.pdf.

Finding the Flint

Finding the Flint launched in October 2017 with the goal of redefining the Flint Headwaters and connecting communities through river restoration. The initiative was formed through collaboration between American Rivers, The Conservation Fund and the ARC. At the time of the initiative's formation several key things were happening. First, the state of Georgia was in the middle of a Supreme Court lawsuit with the state of Florida over depleting water resources in the ACF river basin. Second, the ARC was devoting resources to economic development in the southside, which led to the formation of the Aerotropolis Alliance. The Aerotropolis Alliance released the Blueprint, a strategy to leverage the airport as a major asset and drive economic investment, job growth, and quality of life in the areas around HJAIA.[84] Through the process, the team interviewed stakeholders to develop priorities and guiding principles. Four major priorities were identified, one of those being the creation of a Green Corridor to tie together the natural, historic and cultural resources of the Aerotropolis Atlanta region. Third, American Rivers had named the Flint River Basin as the most endangered river in 2016. Finding the Flint was started as a multi-beneficiary initiative to demonstrate Atlanta's stewardship to the water source that flows through the entire state of Georgia and into Florida, promote economic development around the airport, and to protect and restore the health of the river.

Through grants from both the Pisces Foundation and the Kresge Foundation, American Rivers, The Conservation Fund, and the ARC were able to hire Sixpitch, an urban design consultancy to produce the Finding the Flint Vision.[85] Additionally, the three organizations were able to hire Hannah Palmer, an urban designer, author, and native to airport area. Palmer is

[84] "The Aerotropolis Atlanta Blueprint," Aerotropolis Atlanta, 2016.
[85] "FAQ," Finding the Flint, accessed on April 30, 2021, https://findingtheflint.org/faq/

currently the only staff of Finding the Flint but works closely with the Aerotropolis Alliance and the founding organizations on the mission of Finding the Flint. Palmer was selected to direct the Finding the Flint initiative because she is a resident of the area, has knowledge of the issues facing the communities around the airport, and has a unique storytelling capability that brings life to Finding the Flint. In 2018, Finding the Flint received an additional grant from the Turner Foundation that helped the initiative form the Working Group. Additional resources including meeting space and transportation have been donated by local businesses, schools, and other organizations.

The second phase of the project has been coalition building. The core team was expanded to include the organizations Eco-Action and the Partnership for Southern Equity to guide the community engagement for the project. Eco-Action is an organization with the aim of strengthening communities as they organize to confront and resolve environmental health threats with a focus on assisting those with the fewest resources.[86] The Partnership for Southern Equity's mission is to advance policies and institutional actions that promote racial equity and shared prosperity for all in the growth of metropolitan Atlanta and the American South.[87] In 2018, the ARC awarded a short-term contract to develop site concepts along the headwaters. These concepts are used as visioning aids to get stakeholders and the community to begin envisioning what the headwaters can look like in certain areas.

Finding the Flint will soon transition from phase two to phase three as the big vision is beginning to be realized in certain areas. Phase three includes the distinct projects along the headwaters. However, before projects can be realized, the work of Finding the Flint has been to

[86] "Eco-Action," Eco-Action Environmental Community Action Inc., accessed April 17, 2021, http://eco-act.org/.
[87] "Partnership for Southern Equity," Partnership for Southern Equity, accessed April 17, 2021, https://psequity.org/.

educate the community and the different stakeholders about the headwaters. The organization has discovered that most people do not even know the headwaters is in their neighborhoods or piped under the HJAIA. Finding the Flint has been engaged in numerous methods to educate the southside about the river, its threats, and solutions moving forward. These engagements include headwater tours, community conversations, water quality monitoring training, clean-ups, youth education, and more. A list of all known community engagement efforts can be found in Table 2.

Community Engagement Strategy	**Count**
Headwater Tours	8
Community Conversations	4
Participation in Events/Festivals	6
Speaking Engagements	2
Water Quality Monitoring Training	3
Clean-ups	2
Atlanta Watershed Learning Network	2
Youth Education	2
Press and Publications	8

Table 2. Different community engagement strategies of Finding the Flint between 2017-March 2021.

Stakeholder Engagement

Figure 3. Word bubble of most common words said by interviewees.

To gain a better understanding of the initiative Finding the Flint and its goals, objectives, and opportunities, a series of stakeholder interviews were conducted. Stakeholders were identified based on their participation in the Finding the Flint Working Group. The Finding the Flint Working Group meets on a quarterly basis and approximately 30 stakeholders are in attendance. Eleven stakeholders agreed to participate in the interview process and represent the wide array of stakeholders including, public officials, non-profits, technical experts, and residents. Interviews were semi-structured, and participants were informed beforehand that the information shared will not be directly attributed to them. Interviews ran from 30 minutes to an hour, with the majority of interviews being between 45 minutes to an hour. Interviewees were asked a range of questions to understand the organization structure of Finding the Flint, stakeholder perspectives, and strategies to engage the community. To better understand the organization structure, interviewees were asked what they were trying to accomplish by participating in the process and how their background contributed to the initiative. Additionally, key stakeholders were asked about the origins of the initiative and how their organization got involved. The stakeholder perspectives were addressed through identification of key issues and a follow up question on whether or not other stakeholders shared this perspective. Finally, the interviewees were asked to identify strategies to engage the

impacted neighborhoods and their participation in broader events. Interviewees were also given the opportunity to identify gaps in knowledge and share any information that was not covered through the interview questions.

A thematic analysis was conducted on the interview data to uncover themes and patterns to answer research questions. There are seven steps to thematic data analysis: transcription, reading and familiarization, coding, searching for themes, reviewing themes, defining and naming themes, and finalizing the analysis.[88] Eight codes were identified after familiarization of the transcripts: Role of the technical expert, role of the community, strategies, benefits to participating organizations, goals of Finding the Flint, key issues, stakeholder perspectives, and gaps in knowledge.

Once codes were identified, they were applied to excerpts of the transcripts to find subthemes. In total, 17 subthemes were found in the transcripts that have been grouped into five main themes. In summary, the main themes uncovered were:

1. The roles of technical experts and community members are multi-faceted and evolve throughout the phases of the initiative.
2. Finding the Flint has been and will continue to be a necessary strategy to achieve the principles of the Upper Flint Watershed Working Group.
3. Stakeholders share an agreement on the key issues and goals that Finding the Flint should address.
4. Finding the Flint provides the opportunity for stakeholders to engage in meaningful discussions among each other and the community.

[88] Victoria Clarke, Virginia Braun, *Successful Qualitative Research: A Practical Guide for Beginners*, (London: Sage, 2013).

5. Finding the Flint can be an exemplar project on achieving sustainable development in the state of Georgia.

The roles of technical experts and community members are multi-faceted and evolve throughout the phases of the initiative.

Through stakeholder interviews it became apparent that the role of technical experts and community members are multi-faceted and continue to evolve throughout the phases of the initiative. Green infrastructure has been gaining popularity among technical experts for its ability to complement existing infrastructure while providing additional benefits that are seen as community assets. The process of identifying green infrastructure strategies and designing green infrastructure implementation is a technical process that requires expertise in planning, engineering, and related fields. However, for green infrastructure to be successful it needs community buy-in and support. It is therefore imperative that community members be included in the planning process to ensure the longevity of the project.

Subtheme 1: The role of the technical expert is to share knowledge that motivates community action. Finding the Flint was born out of the threats to the health of the Flint River. These threats were identified by American Rivers, a national organization with the knowledge and capacity to identify the environmental problem and what is required to restore the health of the river. However, specific solutions that neighboring communities can take ownership of require local collaboration. Through interviews, technical experts noted that one of their roles is to galvanize residents into action. This is done through providing technical assistance, educating, problem solving, securing funding, building trust, and negotiating. For example, the first headwaters tributary starts in East Point nestled in between a residential neighborhood and industrial uses. One stakeholder identified that this incompatible land use being an issue

residents in the tri-cities were concerned about. As a regional planner, this stakeholder was able to identify their role as providing technical assistance and negotiating between city officials in the different jurisdictions to solve the incompatible land use. Additionally, as residents become aware that the Flint River starts in their neighborhoods, they can become advocates for daylighting the river and creating a buffer around the river that will also serve as a separation between their neighborhoods and adjacent industrial uses.

Subtheme 2: Community members are experts of their own neighborhood. When Finding the Flint was launched, the core team noticed they were successful in engaging stakeholders but were not attracting community members in the same ferocity. This led the team to start the community conversations. Community conversations were a tool to ensure that residents remained at the center of decision making and have a voice in the visioning process for Finding the Flint. Through the community conversations, residents were able to point out a property currently owned by MARTA property that could serve as the Headwaters Nature Preserve. This property was not identified on the original list of opportunities, yet it was a viable option worth exploring due to resident support and environmental benefit. This demonstrates the principle that community members are experts of their own neighborhood and offer meaningful insight that guide the planning process. By attending local meetings and hearing the stories of residents, the core team was able learn about this property and the community's desire to increase greenspaces.

Subtheme 3: Knowledge-sharing is a reciprocal process that is mutually beneficial to technical experts and community members. Interviewees noted multiple benefits from when community members become engaged and knowledgeable about the Flint River. The exchange that occurs between technical experts and community members is reciprocal process

that results in benefits to all parties involved. Multiple stakeholders were involved in training community members to conduct water testing in the river. Water testing can help identify sewage leaks, provide information on local pollutants, and helps track the health of the river. As one stakeholder shared, they are the only member of their organization that actively conducts water testing along the river. By training volunteers and community members to conduct water testing, it assists in their job of tracking the health of the Flint River and helps the mission of their organization. At the same time, it empowers the community to take action and ownership of the Flint River.

Subtheme 4: The role of community members evolves and strengthen as they receive more information. The role of the community is to first acquire knowledge, then gain skillsets, and finally vocalize demands. Through this evolving process, community members gain ownership of solutions and reclaim the natural assets of the river that flows through their community. One stakeholder interviewed is a community member that was originally unaware of the Flint River until engaging with Finding the Flint at another event. This sparked the process of acquiring knowledge to be able to talk about the river and inform other community members about the issues facing the river. Another community member decided to attend a watershed training program with the organization Eco-Action after participating with Finding the Flint. Through this community member, Finding the Flint was able to identify Eco-Action as a core team member. Finding the Flint can keep community members central to their mission by continuing to educate the community through headwater tours. This innovative approach requires participants to find where the headwater starts and track the river as it makes its way to the airport and then as the river daylights again in North Clayton County. Once community members

are educated on the issue, they can go on to advocate for the river, connect with other organizations, and take ownership of the Flint River.

Finding the Flint has been and will continue to be a necessary strategy to achieve the principles of the Upper Flint Watershed Working Group.

Finding the Flint has been an effective strategy that complements the work of the Upper Flint Watershed Working Group. Stakeholder Interviews demonstrated the initiative's ability to address the six headwaters development principles. Interviewees were asked to identify the key issues of Finding the Flint, a common theme among answers was to improve the health of the Flint River. This also happens to be the first principle of the Upper Flint Watershed Working Group. Furthermore, Finding the Flint has demonstrated their ability to carry out the additional headwater development principles through the different strategies the initiative employs to gain awareness and advocate for river restoration. Through headwater tours, the initiative has been able to connect people to the river physically and culturally. Community conversations can lead a path towards community equity. Partnerships with other local organizations like Aerotropolis Alliance can lead to creating solutions with the airport. The initiative's commitment to ensuring future developments will include the input of residents will add beauty and soul to forthcoming projects. Lastly, partnerships with other local community organizations help to inspire the next generation of river advocates.

Subtheme 1: Community Engagement Strategies have been able to connect people to the river both physically and culturally. Interviewees shared anecdotes of past events that Finding the Flint has hosted or attended that were intended to connect people to the river. These events include headwater tours, working with water professionals to do water testing and training, community conversations, and attending local events and festivals. Finding the Flint has

been able to get support from the community through the different engagement strategies. The initiative also uses online platforms to engage the community, this includes being responsive on social media and e-mail, and being able to adapt to online community engagement strategies when the COVID-19 pandemic hit. Instead of taking community members on a headwaters tour, the organization has been able to host virtual tours and have included a virtual tour on their website that users can go through on their own time.

Subtheme 2: Stakeholders agree that the strategies employed by Finding the Flint are unique. Interviewees that identified themselves as technical experts all shared a common admiration for the strategies employed by the initiative. One interviewee shared, “you go out on the tour and you literally have to find the headwaters. I have been in the business for 20 years and have never gone through this process and its really unique.” Another stakeholder shared a similar sentiment, that it was “a creative approach not seen before with a water resource” and that the storytelling aspect has been instrumental in getting people on board. On the other hand, one stakeholder reflected that the bar is currently low with including community engagement in infrastructure projects. The interviewee shared, “no one focus grouped the interstate highway system or had a community conversation for expanding the airport.” However, the strategies employed by Finding the Flint have had an impact on the technical experts that reinforce their commitment to using community engagement strategies to promote natural resource restoration.

Subtheme 3: Finding the Flint incorporates youth education and involvement that inspires the next generation of river advocates. Interviewees shared several strategies that have been used to connect and educate local youth to the Flint River. Finding the Flint has partnered with Clayton State University and students have been able to test water levels in the Flint headwaters. Additionally, Finding the Flint and American Rivers worked with Atlanta

Urban Ecologists to educate the youths in 8th to 12th grade on how urban development impacts the local watershed. Finally, Woodward Academy, located in College Park has been working with Finding the Flint and provided them school buses to use during headwater tours and several teachers have been involved with the project and sharing the information in the classroom and with other local public schools. These different youth engagements that target students throughout different stages of their education demonstrate Finding the Flint's ability to inspire the next generation of river advocates.

Subtheme 4: The success of Finding the Flint moving forward will be its ability to foster relationship building among stakeholders. The challenges facing the Flint River span multiple municipalities and counties. Currently, a regional strategy to address these challenges does not exist. Interviewees shared a common sentiment that Finding the Flint has been one of the first attempts to address the multiple issues facing the water basin. Interviewees shared that Finding the Flint is a necessary stakeholder for municipalities and regional planners to partner with in the creation of new greenspaces and other green infrastructure strategies. One stakeholder shared that once the city of College Park is able to create the Headwaters Nature Preserve, Finding the Flint will work on the community engagement strategy to get community input. Another stakeholder mentioned that in their own organization's board meetings they often seek to bring in Finding the Flint to discuss how the initiative can positively benefit their organization mission. There are multiple avenues and methods Finding the Flint employs to foster relationship building among stakeholders. The ability of the initiative to continue to act as a liaison between different organizations and municipalities will be beneficial and effective to the success of future projects.

Stakeholders generally agree on the key issues and goals that Finding the Flint should address.

Interviewees were asked to share the key issues that Finding the Flint should address. Most stakeholders were knowledgeable on the issues and identified common concerns to the Flint River, this includes lower than average water levels in the river, more common droughts, flash flooding, watershed degredation, pollution, and loss of biodiversity. Stakeholders focused on issues related to the natural system of the river. This demonstrates that the primary concern of Finding the Flint should be on the health of the Flint River. However, when discussing solutions or goals of the initiative, it was more common to hear concerns of equity and community involvement.

Subtheme 1: Stakeholders are able to connect the interrelated issues of environmental protection and equity. While all the key issues identified by interviewees were related to natural features, interviewees were able to relate the negative impacts on the watershed to threats and concerns to the surrounding communities and downstream communities. For example, in the tri-cities the abundance of impervious surface leads to a lack of biodiversity and watershed degredation which translates to a lack of greenspace and natural amenities for the community. By addressing the issues facing the watershed, Finding the Flint also has the opportunity to improve the quality of life of residents by ensuring solutions include opportunities for greenspace, recreation, and access to nature. Downstream, the impervious surface causes flash flooding and reduces the ability for groundwater recharge. The community is also affected by the flash flooding. In Clayton County there have been numerous occurrences of homes flooding and major roads flooding. When metro Atlanta faces a major storm the Flint River floods Upper Riverdale Road, this creates an equity issue because community members lose

access to Southern Regional Medical Center. One interviewee shared that vulnerable areas in Clayton County flood even though they did not experience rain, but it did rain in Fulton County.

Subtheme 2: The goals of Finding the Flint are equally designed to address the needs of the community and the health of the Flint River. A common theme of the interview process was that the solutions and goals of the project must concurrently strengthen the natural systems and improve quality of life for the community. As one stakeholder stated, "the most important goal is to improve the health of the river while simultaneously creating equitable benefits to the community." Interviewees shared that restoration projects will be designed to include greenspaces for the public in contrast to a detention pond that lacks community amenities. One interviewee elaborated further that by improving the quality of life for residents it will create a ripple effect of benefits that include attracting businesses and private investment to the area. Thus, while the main objective of Finding the Flint is to restore the health of the Flint River, the process of achieving this goal is also meant to benefit the surrounding communities.

Subtheme 3: Stakeholders are interested in the creation of a regional stormwater management plan. The Upper Flint River Basin is made up of over a dozen cities and several counties, each with their own goals and objectives. These municipalities are not incentivized to consider the effects their development may have on surrounding jurisdictions. Several interviewees mentioned that because of the scale and complexity of the river basin, they were interested in creation of a regional stormwater management plan. A regional plan could help facilitate standard guidelines and practices that would promote development that is safe and equitable to downstream communities. One stakeholder shared a concern that investments in economic development in South Fulton County could negatively impact North Clayton County and since their agency's role is to promote economic development, they could be a culprit for

blame. However, if a regional stormwater management plan looked at challenges facing the river basin, it could help guide where new projects are best suited and offer recommendations for low impact development or green infrastructure solutions that could prevent negative downstream impacts.

Finding the Flint provides the opportunity for stakeholders to engage in meaningful discussions among each other and the community.

Almost all stakeholders shared that they utilized Finding the Flint as a means of networking. Finding the Flint has provided the opportunity for a wide range of stakeholders to come together in an environment where they can share information and learn from one another. Many interviewees noted that this is one of the reasons that they continue to be involved and support Finding the Flint. The initiative has been an inclusive environment where stakeholders from different backgrounds can come together in a shared vision and discuss strategies that will be beneficial to a wide variety of interests. Nonetheless, multiple interviewees shared that while this is currently the right group of stakeholders, the initiative could benefit from including voices that they currently have not been able to reach.

Subtheme 1: Finding the Flint is a multifaceted project that provides stakeholders the opportunity to engage with one another and the community. Prior to Finding the Flint, there was no place for those concerned about the Upper Flint River Basin to gather and discuss relevant concerns. Individually, several stakeholders have tried to address the issues to the river basin within their organization alone. For example, one stakeholder shared that their agency had conducted multiple studies on how to mitigate the impact of flooding and other issues facing the Flint River and the results only show a miniscule impact. Finding the Flint gave their agency the opportunity to collaborate with other agencies and organizations to effectively address key

issues. Another stakeholder shared that their organization primarily works with downstream communities in the Flint River Basin and Finding the Flint has provided a platform to tap into communities near the headwaters, where they previously did not have the resources to have a major presence.

Subtheme 2: Stakeholders have different short-term priorities but agree on the larger vision of Finding the Flint. When interviewees were asked if other stakeholders shared the same perspective as them, many answers were in the form of "yes, but…" Often stakeholders felt that they agreed on the larger vision of the project but have different priorities for getting there. For example, stakeholders in downstream communities are not going to be as involved in the creation of the Headwaters Nature Preserve in College Park. However, they are aware that projects like the Nature Preserve can help to mitigate downstream impacts. Short-term priorities may differ from the larger vision depending on the organization the stakeholder is involved with. Environmentalists will want to see the river restored for better water quality while those involved in economic development believe that river restoration will attract the right businesses to the area. At the end of the day both groups would like to see Finding the Flint be successful, albeit for different reasons.

Subtheme 3: Finding the Flint has room to expand stakeholders to include more of the residential and business community. When discussing the current gaps in knowledge, several stakeholders shared that one challenge faced is creating more dialogue among stakeholders. For example, it has been difficult to find an authentic role for the community in unincorporated north Clayton County. While there are some residential uses in this area, stakeholders see the heavy industrial use as a barrier to meaningful dialogue with this community and are looking to find the right resources and capacity to engage these residents. Additionally,

there has been difficulty in leveraging the private sector as a stakeholder. Interviewees noted they face challenges in pitching Finding the Flint to certain property owners as an initiative that can benefit them. This has become more apparent with the COVID-19 pandemic which has shown stakeholders that disruptions to the economy can affect whether or not local businesses will have the capacity to support the initiative.

Finding the Flint can be an exemplar project on achieving sustainable development in the state of Georgia.

"The future does not have to look like how it looks now. We can do something different, spark redevelopment and create a new narrative for the airport area." This quote embodies the attitude that stakeholders shared about the initiative. Another stakeholder shared this kind of project has not been done in the State of Georgia yet. As green infrastructure and low impact development becomes a more prominent development strategy, Finding the Flint could be an example for future projects in Georgia.

Subtheme 1: Stakeholders are interested in the continued success and progress of Finding the Flint. All stakeholders shared a positive mentality towards Finding the Flint and the possibility of turning the Flint River into a household name in the Atlanta area. One interviewee that identifies as resident shares that part of the reason they participate in this initiative is because it is a perspective they do not get to hear all the time. The interviewee would like to see more parks, sidewalks, and other community benefits that other neighborhoods in Atlanta have. Similarly other stakeholders shared excitement for upcoming projects and future community engagements planned for 2021 and beyond. While some stakeholders felt the project was set back with the COVID-19 pandemic, they remained optimistic for the future of the project and its ability to be resilient.

Subtheme 2: The most immediate priority is to continue to educate the community about the Flint River. Moving forward, the priority for Finding the Flint is to continue to educate people, industries, and political figures about the challenges and opportunities facing the flint river. A common gap in knowledge stakeholders identified is education. As one stakeholder put it "the more people that care about the river, will advocate for the river, will then call their representatives to defend the river." And then shared the analogy, "if you don't name a stray pet you can ignore it, but if you name it, it's yours." Other stakeholders shared that many residents and community members are still unaware of the Flint River and the fact that it runs beneath the airport. As long as people are unaware the river, one of the primary goals of the initiative will continue to be to educate people and help them find the Flint.

Subtheme 3: Addressing the current barriers to Finding the Flint. In order for Finding the Flint to be a success and model project for future large scale green infrastructure developments it must first address the current barriers to accomplishing green infrastructure or low impact development. Interviewees noted challenges with achieving green infrastructure at the airport. HJAIA has explored strategies to integrate green infrastructure on their property but interviewees felt that these strategies do not go far enough to have significant impact to the health of the river or flooding concerns on downstream communities. One interviewee noted that support from major institutions like the airport boil down to short-term politics. Another interviewee mentioned another project that has faced barriers is the creation of an airport-area park or greenspace. Current regulations prohibit waterbodies around the airport, as it can attract bird species that can get caught in the engine of airplanes. This has limited the type of green infrastructure strategies the airport can achieve. Nonetheless, interviewees expressed a desire to

continue to find solutions that will be beneficial for all actors involved and will continue to work with the airport and surrounding institutions.

Recommendations

After understanding the context, hearing from stakeholders, and discovering case studies, three recommendations are proposed to further advance the cause of Finding the Flint.

1. Prioritize vulnerable neighborhoods.
2. Re-strategize green infrastructure approach for existing and future development.
3. Develop a strategy that ensures existing communities' benefit from future development.

Recommendation 1:Prioritize vulnerable neighborhoods. Through interviews and research, it was evident that the most vulnerable area along the Upper Flint River Basin is unincorporated Clayton County near upper Riverdale road. Finding the Flint should partner with the newly created Clayton County Office of Resilience and Sustainability to ensure the needs of these vulnerable populations are met. Including, finding solutions for hospital access when Upper Riverdale Road floods and assisting residents that live in the floodplain.

Additionally, Finding the Flint can take an advocacy role when necessary, to bring voice to the environmental justice issues facing unincorporated Clayton County. As one interviewee revealed, Clayton County would welcome any mitigation that occurred around the airport. One way Finding the Flint could be an advocate is through holding a Working Group meeting specifically designed to address the concerns of Clayton County and discuss the feasibility of solutions. This would include identifying key stakeholders, relevant grants, and desired outcomes.

Prioritizing vulnerable neighborhoods would also require community participation from those within unincorporated Clayton County. Through the interviews it was evident that this

demographic has been missing from Community Conversations and other public engagement strategies. Interviewees revealed that it has been difficult to find existing community groups of residents around Upper Riverdale Road and community groups that have been identified have not had meaningful engagement with Finding the Flint. One way this could be addressed is through transforming conversations from "issue-based" to "place-based" problems (see page 24).

Recommendation 2: Re-strategize green infrastructure approach for existing and future development. Strategies to incorporate green infrastructure at the airport have not met the needs of downstream neighborhoods. The airport faces restrictions set out by the Federal Aviation Administration that are intended to prevent attracting birds close to the airport. However, green infrastructure is still a feasible strategy that can benefit downstream communities. Chicago's O'Hare airport has been proactively applying strategies that reduce the airport's environmental impact including green infrastructure strategies. For example, the airport has installed over 529,000 square feet of vegetated green roofs.[89] The airport used a plant species list that complies with FAA Advisory Circular AC No: 150/5200-33B *Hazardous Wildlife Attractants on or near Airports*. The Chicago Department of Aviation estimate that the vegetated roofs retain 70-90 percent of the precipitation that falls on them in the summer and 25-40 percent in the winter.[90] Finding the Flint and partners can work with HJAIA to come up with comparable plant species list the airport can use in future green infrastructure strategies.

Recommendation 3: Develop a strategy that ensures existing communities' benefit from future development. Finding the Flint should work to ensure that forthcoming projects include community benefits and avoid displacement. Several

[89] "Vegetated Roofs," Chicago Department of Aviation, accessed April 30, 2021, https://www.flychicago.com/community/environment/vegetatedroofs/Pages/default.aspx.
[90] "Vegetated Roofs," Chicago Department of Aviation.

interviewees were interested in pursuing strategies that created equitable benefits for the surrounding neighborhoods but were uncertain on how to approach the topic. In Atlanta, the Stadium Neighborhoods Community Trust Fund Committee was created by the city after the sale of Turner Field and surrounding properties. An initial $5 million was initially designated by the city and the authorizing ordinance states that the funds are to be used for economic and community development initiatives, such as affordable housing and job training.[91] The fund has been given out in grants to support the surrounding neighborhoods, including emergency support COVID-19 grants for emergency rent/mortgage/utility relief and food distribution. Other grants have gone to the Atlanta Volunteer Lawyer Foundation, Greening Youth Foundation, HouseProud Atlanta, and ECO-Action.

In 2013, students at Portland State University drafted a set of strategies for preventing the displacement of low-income residents in the Cully neighborhood as new investments were coming into the area. The strategies presented were based on community-identified strengths and needs the team found through conversations, interviews, walks tours, and small group discussions. The strategies presented included: acquire and set aside land for affordable housing development; provide information about tenant rights, foreclosure, and home values to residents; provide direct assistance and information to lower home utility costs and maintenance costs; provide assistance to priority population small business owners; connect priority populations to targeted employment and prepare them for long-term success; and provide affordable childcare to working parents.[92]

[91] "Fact Sheet," Stadium Neighborhoods Community Trust Fund Committee, accessed April 17, 2021, https://snctrustatl.org/fact-sheet.
[92] "Not in Cully: Anti-Displacement Strategies for the Cully Neighborhood," Living Cully: A Cully Ecodistrict, June 2013, https://www.urbanwaterslearningnetwork.org/wp-content/uploads/2019/03/Not-in-Cully-Full-Report.pdf.

Conclusion

This paper examines the history and significance of the Flint River. The headwaters have long been ignored and their forgotten origins have negatively impacted downstream communities. A recent effort, Finding the Flint has been working to restore the river, daylight the river where it can be done, and ensure the future projects will be equitable to surrounding neighborhoods. This paper provides case studies for Finding the Flint to utilize in future daylighting projects. Additionally, stakeholder interviews were conducted to better understand Finding the Flint and ensure that community members are kept central to planning efforts. Three recommendations were made to aid the initiative moving forward, this includes protecting vulnerable communities, strategizing green infrastructure projects at the airport, and ensuring that future projects include community benefits and avoid displacement. The intent of this paper is to show that increased participation will lead to better outcomes for vulnerable communities, co-benefits for the Flint River and impacted neighborhoods, and that such participation is not only desirable but practically possible as well.

Bibliography

Agyeman, Julian. “Toward a ‘just’ sustainability’,” Continuum, Vol. 22, No. 6, 2008.

“Apalachicola-Chattahoochee-Flint River Basin Named #1 “Most Endangered” American Rivers, April 16, 2016. https://www.americanrivers.org/conservation-resource/news-acf-basin-endangered/#:~:text=(Washington%2C%20DC)%20American%20Rivers,basin%20at%20a%20breaking%20point.

Arnstein, Sherry “A ladder of citizen participation” *JAICP*, Vol 35, No 4, July 1969, 216-224.

Bada, Ferdinand. “The 10 Longest Rivers in Georgia,” *World Atlas*, July 12, 2018. https://www.worldatlas.com/articles/the-10-longest-rivers-in-georgia.html.

Benedict, Mark, McMahon, Edward. “Green Infrastructure: Smart Conservation for the C21st Century,”, *Renewable Resources Journal*, Vol. 20, 2002.

Buchholz, Tracy, Younos, Tamim. “Urban Stream Daylighting: Case Study Evaluation.” *Virginia Water Resources Research Center*, Virginia Polytechnic Institute and State University, July 2007.

Bullard, Richard. Dumping in Dixie: Race, class, and environmental quality. Boulder, CO: Westview, 1990.

Cambridge Dictionary, s.v. “flint”. Accessed April 17, 2021, https://dictionary.cambridge.org/us/dictionary/english/flint.

Clarke, Victoria, Braun, Virginia. *Successful Qualitative Research: A Practical Guide for Beginners*. London: Sage, 2013.

“City of College Park Comprehensive Plan 2016 – 2036” City of College Park, 2016. https://www.collegeparkga.com/UserFiles/Servers/Server_11492833/File/Departments/Planning%20and%20Growth/CollegeParkComprehensivPlan2016-2036.pdf

“City of East Point Comprehensive Plan Update” City of East Point, 2017. https://www.eastpointcity.org/wp-content/uploads/2020/09/Comprehensive-Plan-Update-2017.pdf

“City of Hapeville Comprehensive Plan/LCI Study Update” City of Hapeville, June 2017. https://hapeville.org/DocumentCenter/View/3105/FINAL-Hapeville-LCI-CompPlan-June-2017?bidId=

College Park, GA” Data USA. Accessed April 17, 2021, https://datausa.io/profile/geo/college-park-ga.

"College Park History," City of College Park. Accessed April 17, 2021, https://www.collegeparkga.com/about_us/college_park_history.

"Community Benefits 101." *The Partnership For Working Families*, Apr. 27 2016, www.forworkingfamilies.org/page/community-benefits-101.

Curl, Eric. "Savannah residents call for community benefits from arena, sales tax funding," Savannah Now, October 21, 2018. https://www.savannahnow.com/news/20181021/savannah-residents-call-for-community-benefits-from-arena-sales-tax-funding.

Davies, Clive, Roe, Maggie. "Green Infrastructure Planning Guide," November 2015.

"Daylighting Streams: Breathing Life into Urban Streams and Communities" *American Rivers*, May. 2016.

Daylighting the Saw Mill River" Groundwork Hudson Valley, 2019. https://www.groundworkhv.org/wp-content/uploads/2020/08/Daylighting-Curriculum-Gr-3-8-compressed.pdf.

"East Point, GA" Data USA. Accessed on April 17, 2021, https://datausa.io/profile/geo/east-point-ga

"Eco-Action" Eco-Action Environmental Community Action Inc. Accessed April 17, 2021, http://eco-act.org/.

Emanuel, Ben, Rogers, Gordon. "Running Dry, Challenges and Opportunities in Restoring Healthy Flows in Georgia's Upper Flint River Basin," American Rivers, Flint Riverkeeper, April 2013. https://www.americanrivers.org/wp-content/uploads/2016/05/running-dry-flint-river-report.pdf.

Emanuel, Ben, Galeano, Daniela. "Ensuring Water Security for People and Nature: Collaborative Efforts in Georiga's Upper Flint River Basin," 2019 Georgia Water Resources Conference, April 16-17, 2019. https://gwri.gatech.edu/sites/default/files/files/docs/2019/1.1.4.pdf

"Fact Sheet" Stadium Neighborhoods Community Trust Fund Committee. Accessed April 17, 2021, https://snctrustatl.org/fact-sheet.

Finding the Flint, findingtheflint.org/.

Flinker, Peter. "The Need to Reduce Impervious Cover to Prevent Flooding and Protect Water Quality" Providence Water Supply Board and the National Park Service. Revised May 2010. http://www.dem.ri.gov/programs/bpoladm/suswshed/pdfs/imperv.pdf.

"Flint River" Georgia River Network. Accessed April 17, 201. https://garivers.org/flint-river/#:~:text=The%20Flint%20River%20flows%20unimpeded,in%20the%20contiguous%2048%20states.

"Flint River History and Facts" Flint Riverkeeper. Accessed April 17, 2021, https://flintriverkeeper.org/flint-river-history-and-facts/#:~:text=The%20Flint%20River%20was%20integral,Bainbridge%20and%20the%20Chattahoochee%20junction.

"Green Infrastructure in Parks" *U.S. Environmental Protection Agency*, June 2017. Accessed Nov. 4, 2020. https://www.epa.gov/sites/production/files/2017-05/documents/gi_parksplaybook_2017-05-01_508.pdf

"Groundwork Hudson Valley" Groundwork Hudson Valley. Accessed April 17, 2021, https://www.groundworkhv.org/.

Hansen, Rieke, Pauleit, Stephan. "From Multifunctionality to Mutiple Ecosystem Services? A Conceptual Framework for Multifunctionality in Green Infrastructure Planning for Urban Areas," AMBIO, Vol. 43, 2014, 518.

"Hapeville History" City of Hapeville. Accessed on April 17, 2021, https://www.hapeville.org/107/History

"Hapeville, GA," Data USA. Accessed on April 17, 2021, https://datausa.io/profile/geo/hapeville-ga.

Henderson, David P. "Atlanta Airport: in the Beginning," Sunshine Skies. Accessed April 17, 2021. https://www.sunshineskies.com/atl-in-the-beginning.html.

Henderson, David P. "The Rise and Fall of the Atlanta Speedway," Sunshine Skies. Accessed April 17, 2021. https://www.sunshineskies.com/atlanta-speedway.html

Kabisch, Nadja, et. al. "Nature-based Solutions to Climate Change Adaptation in Urban Areas," *Springer Nature*, Cham, Switzerland, 2017.

Marcello, David. "Community Benefits Agreements: New Vehicle for Investment in America's Neighborhoods," Urban Lawyer 39, No 3, 2007, 657-670.

"Not in Cully: Anti-Displacement Strategies for the Cully Neighborhood" Living Cully: A Cully Ecodistrict, June 2013. https://www.urbanwaterslearningnetwork.org/wp-content/uploads/2019/03/Not-in-Cully-Full-Report.pdf.

Nowell, Lorelli S., et al. "Thematic Analysis: Striving to Meet the Trustworthiness Criteria," International Journal of Qualitative Methods, Vol 16, 2017. https://journals.sagepub.com/doi/pdf/10.1177/1609406917733847.

"Old Dixie/Tara Boulevard Master Plan" Development Authority of Clayton County, October 2018. https://www.claytoncountyga.gov/home/showdocument?id=10762

"On the Map" United States Census Bureau. Accessed on April 17, 2021. https://onthemap.ces.census.gov/.

Partnership for Southern Equity" Partnership for Southern Equity. Accessed April 17, 2021, https://psequity.org/.

Pauleit, Stephan, et. al., "Urban Landscapes and Green Infrastructure." *Oxford Research Enclycolpedia of Environmental Science*, June 28, 2017.

Pinkham, Richard. "Daylighting new life for buried streams" *Rocky Mountain Institute*, Old Snowmass, CO, 2000.

Pisani, Jacobus Du. "Sustainable development – historical roots of the concept" *Environmental Sciences*, Vol 3, No 2, 2006, 83-96.

"Public Participation Guide" *U.S. Environmental Protection Agency*. Accessed Nov. 4, 2020. https://www.epa.gov/international-cooperation/public-participation-guide-view-and-print-versions

Rigolon, Alessando. "Parks and young people: An environmental justice stud of park proximity, acreage, and quality in Denver, Colorado," Landscape and Urban Planning, Vol. 165 (September 2017): 74.

Schlosberg, David. "Reconceiving Environmental Justice: Global Movements and Political Theories," *Environmental Politics*, Vol. 13, No 3, 2004.

"Seven Greenways Vision Plan" Seven Canyons Trust. Accessed April 17, 2021, https://sevengreenwaysvisionplan.org/#process.

Shandas, Vivek, Messer, Barry W. "Fostering Green Communities Through Civic Engagement: Community-Based Environmental Stewardship in the Portland Area" *Journal of the American Planning Association*, 2008,74:4, pp.408-418.

Shurling, Mable. "History of East Point" East Point Historical Society, American Community, Spring Quarter, 1948. https://static1.squarespace.com/static/5eff842dea8c4f6fe1b5a43b/t/5f822e7551299276ce1c715d/1602367101480/Shurling_EP_History_1948.pdf

"The Aerotropolis Atlanta Blueprint, A Vision and Strategy for the Atlanta Region" Aerotropolis Atlanta, 2016. https://aeroatl.org/blueprint/.

"The Birth of the Atlanta Speedway" The Atlanta Speedway, Asa Jr. Accessed April 17, 2021, https://www.asasbriarcliff.com/the-atlanta-speedway-birth.

"Upper Flint River Resiliency Action Plan," American Rivers, October 2014. https://www.americanrivers.org/wp-content/uploads/2016/05/AmericanRIvers_UpperFlintActionPlan2014.pdf.

"Upper Flint River Working Group," American Rivers. Accessed April 17, 2021, https://www.americanrivers.org/rivers/discover-your-river/southeast-rivers/upper-flint-river-working-group/#:~:text=The%20Upper%20Flint%20River%20Working,values%20the%20river%20system%20provides.

"Vegetated Roofs" Chicago Department of Aviation. Accessed April 30, 2021, https://www.flychicago.com/community/environment/vegetatedroofs/Pages/default.aspx.

"Water Resource Management Plan" Metropolitan North Georgia Water Planning District. December, 2016. http://northgeorgiawater.org/wp-content/uploads/2016/12/Appendix-A-Upper-Flint-River-Basin-Profiles.pdf.

"What is Green Infrastructure?" *U.S. Environmental Protection Agency*. Accessed Nov. 4, 2020. https://www.epa.gov/green-infrastructure/what-green-infrastructure.

Wagenet, Linda P. Pfeffer, Max J. "Organizing Citizen Engagement for Democratic Environmental Planning" *Society and Natural Resources*, 2007, 20:9, pp. 801-813.

Wang, Jingxia, Banzhaf, Ellen. "Towards a better understanding of Green Infrastructure: A critical review," *Ecological Indicators*, Vol. 85, 2018.

"100 Years of Daylighting" The Seven Canyons Trust, University of Utah City and Metropolitan Planning. Accessed April 17, 2021. https://static1.squarespace.com/static/530e3f55e4b088e83bb95f08/t/5ebeff30144cfc6dde17080a/1589575511114/Seven_Canyons_Trust_Doc.pdf.