

BRINGING COMMUNITY MINDFULNESS TO GREEN INFRASTRUCTURE FLOODING SOLUTIONS IN DETROIT

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I. INTRODUCTION

In the summer of 2021, Detroit flooded.¹ On June 26, the city was inundated with four to eight inches of rain in a span of four hours.² According to the National Weather Service, the flooding caused an

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1. E.g., Mark Hicks & Charles E. Ramirez, *Rains, Storms Flood Areas of Metro Detroit*, DETROIT NEWS (Aug. 11, 2021, 1:28 PM), <https://www.detroitnews.com/story/news/local/michigan/2021/08/11/thunderstorms-push-across-michigan-risks-afternoon-tonight/8095419002/> [<https://perma.cc/ZGL3-K3U6>]; Stateside Staff, *Why Metro Detroit Keeps Flooding—And How to Fix It*, MICHIGAN RADIO (June 29, 2021, 1:07 PM), <https://www.michiganradio.org/environment-science/2021-06-29/why-metro-detroit-keeps-flooding-and-how-to-fix-it> [<https://perma.cc/SZ5T-XWG7>].

2. NATIONAL WEATHER SERVICE, STORM DATA AND UNUSUAL WEATHER PHENOMENA – JUNE 2021 (2021), <https://www.weather.gov/media/dtx/stormdata/June2021.pdf> [<https://perma.cc/QU8R-3PH2>].

estimated \$140 million in damages.³ Highways were impassable.⁴ Basements filled with stormwater and sewage⁵ from Detroit's combined sewage-stormwater system.⁶ People affected by the flooding lost flooring, walls, furniture, appliances, and cars.⁷

The flooding was a “100-year flood”⁸—a flood of such severity that it would only be expected to be equaled once every century.⁹ But flooding on a comparable scale has occurred far more recently: in August of 2014, areas of Detroit received more than six inches of rain,¹⁰ and another rainstorm in August of 2021 brought yet more flooding with two to four inches of rain.¹¹ As global climate change continues, storms in southeast Michigan will continue to become stronger and more frequent.¹² Detroit's stormwater infrastructure is unprepared to meet storms of this severity year after year, and its residents cannot afford to recover from flooding again and again.¹³ Nor, however, can they compete with out-of-city money looking to capitalize on investments in their communities meant to solve this problem.¹⁴

This Note will examine the ways Detroit is beginning to address its flooding problem through green infrastructure investments. Green infrastructure is a necessary part of a city's stormwater management plan and also brings a broad range of ancillary benefits to the community in

3. *Id.*

4. See generally Ari Shapiro et al., Transcript, *Severe Flooding Tests Detroit's Aging Infrastructure*, NPR (Sept. 13, 2021, 4:12 PM), <https://www.npr.org/2021/09/13/1036696811/severe-flooding-tests-detroits-aging-infrastructure> [<https://perma.cc/NN83-DUTE>] (discussing various damages and complications resulting from flooding).

5. *Id.*

6. Stateside Staff, *supra* note 1.

7. See generally Shapiro et al., *supra* note 4 (describing the extent of just one resident's flood damage from the June 26, 2021 storm).

8. See *id.*; see also Stateside Staff, *supra* note 1.

9. Karen Dinicola, *The “100-Year Flood,”* U.S. GEOGRAPHICAL SURV. (1997), https://pubs.usgs.gov/fs/FS-229-96/pdf/FS_229-96.pdf [<https://perma.cc/5G6U-8KKB>].

10. Gus Burns, *A Look Back at the Disastrous Flooding That Hit Detroit Three Years Ago*, MLIVE (Aug. 29, 2017, 5:04 PM), https://www.mlive.com/news/detroit/2017/08/a_look_back_at_the_disastrous.html [<https://perma.cc/9YD6-ZPPX>].

11. Hicks & Ramirez, *supra* note 1.

12. Laura Gersony, *Detroit Flooding Previews Risks from a Warming Climate*, GREAT LAKES NOW (July 1, 2021), <https://www.greatlakesnow.org/2021/07/detroit-flooding-risks-warming-climate/> [<https://perma.cc/L3GG-WDLE>] (“[F]or every 1 degree Celsius that the atmosphere warms, the amount of moisture that it can hold—and then potentially release as rainfall—increases by roughly 7% . . . Between 1958 and 2012, the heaviest 1% of storms in the Midwest became 37% more powerful. Similarly, the annual number of extreme storms in southern Michigan doubled between 1964 and 2013”).

13. See generally Shapiro et al., *supra* note 4 (describing the economic hardship caused by the June 2021 and prior storms).

14. See discussion *infra* Section II.E.

which it is built.¹⁵ However, it can also carry unintended, pernicious consequences in the form of green gentrification as communities become more desirable to outside investment and property values begin to price out long-time residents.¹⁶ These unintended consequences can be planned around and mitigated through a variety of strategies that center community members and community needs in the development of green infrastructure investment. I call this approach “community mindfulness.”¹⁷ This Note will conclude by analyzing Detroit’s green infrastructure plans, the extent to which they accord with community mindfulness strategies, and how Detroit’s approach could improve.¹⁸

II. BACKGROUND

A. Disproportionate Impacts of Flooding

Historically disadvantaged communities suffer the worst impacts of the severe weather events heightened and accelerated by climate change.¹⁹ Lower income neighborhoods are often situated in areas more prone to flooding than wealthier neighborhoods.²⁰ These communities are also less likely to have access to preventative mitigation infrastructure, the capacity to implement such infrastructure at an individual or community scale, the resilience to cope with the immediate effects of a disaster, and the resources to build back afterwards.²¹ Furthermore, government response program strategies and bureaucracy often direct the most resources to wealthier disaster victims who need aid less.²² Low-income communities

15. See generally Craig Anthony Arnold, *Resilience Justice and Community-Based Green and Blue Infrastructure*, 45 WM. & MARY ENV’T L. & POL’Y REV. 665 (2021).

16. See generally Ana Terra Amorim Maia et al., *Hidden Drivers of Social Injustice: Uncovering Unequal Cultural Ecosystem Services Behind Green Gentrification*, 112 ENV’T SCI. & POL’Y 254 (2020).

17. See discussion *infra* Section II.G.

18. See discussion *infra* Part III.B.

19. See generally Michelle Zaludek, *Surviving Climate Change: An Examination of Government Disaster Response and Its Effect on People Impacted by Poverty*, 31 ALB. L.J. SCI. & TECH. 226 (2021) (describing many factors that contribute to these disproportionate impacts); see also Christine Fazio, *Ensuring Equitable Disaster Relief to Homeowners and Businesses Impacted by Natural Disasters*, 26 FORDHAM ENV’T L. REV. 1, 3–5 (2014) (same).

20. *Id.* at 236–37.

21. See *id.* at 228, 236–37, (synthesizing research and data showing the trend between lower income and lower resilience resources).

22. See *id.* at 249 (claiming that state disaster recovery efforts “disproportionately benefi[t] affluent and primarily White communities”); see also Tracey Ross, *A Disaster in the Making: Addressing the Vulnerability of Low-Income Communities to Extreme Weather*, CTR. FOR AM. PROGRESS (Aug. 13, 2013), <https://www.americanprogress.org/>

may be farther from disaster relief facilities or aid distribution centers.²³ Federal aid programs contain many bureaucratic hurdles that delay relief for deserving applicants—applicants with the least ability to make do in the interim.²⁴ Because federal aid involves federal agency activity, the Federal Emergency Response Agency (FEMA), it must comply with various statutes and regulations regarding the environment generally, historic places, wetlands, endangered species, floodplains, and other subjects of federal concern.²⁵ Meanwhile, those affluent enough to afford adequate flood insurance will not need to rely on federal aid, allowing them to begin rebuilding almost immediately, thus lowering their costs associated with mitigating their present damage.²⁶

With federal assistance requiring lengthy bureaucratic delays and flood insurance out of the financial reach of those who need it the most, low-income communities must rely on other sources of aid. However, state and municipal aid programs are often inadequate, extending the disparate impact to disparate capacity for recovery as well.²⁷

When flooding is recurrent it can compound the impact, especially on low-income residents.²⁸ Residents with sufficient funds or preparation to deal with the damage from one flood may not be able to do so again within a small span of years.²⁹ For residents who cannot afford flood insurance, the proclivity of houses in historically Black and low-income neighborhoods to flood is a devastating one-two punch: those least able to prevent and recover from flooding damage are the people most likely to suffer from it.

article/a-disaster-in-the-making/ [https://perma.cc/5QG5-JR4T] (summarizing the ways federal and state responses to Hurricane Sandy left low-income populations behind).

23. See Zaludek, *supra* note 19, at 246 (summarizing difficulties low-income populations faced in accessing federal disaster relief after Hurricane Katrina).

24. Fazio, *supra* note 19, at 3–4 (listing the federal statutes mandating reviews of various factors before the federal government can grant aid).

25. *Id.* at 4.

26. *Id.* at 4.

27. See Press Release, Michigan Department of Health and Human Services, MDHHS Provides State Emergency Relief to Low-Income Residents Who Need Home Repairs Because of Flooding (June 29, 2021), https://www.michigan.gov/-/media/Project/Websites/msp/EMHSD/pdfs/flood_assistance_press_release.pdf?rev=53f25a5c6a0840718d7b538c1fe5d7f4 [https://perma.cc/6C53-DMB9] (Michigan's state assistance program, which caps at \$1,500 per household); see also *SBA Application Guide*, CITY OF DETROIT, <https://detroitmi.gov/es/taxonomy/term/8171> [https://perma.cc/WGS5-6XGH] (last visited Feb. 19, 2023) (Detroit's municipal flood recourse).

28. See Shapiro et al., *supra* note 4 (“Some members of Pangborn’s Congregation have replaced appliances three times in five years, and they tell her what a strain it’s having on their lives.”).

29. See generally *id.*

B. Environmental Justice

Because the recurrent flooding disproportionately impacts low-income communities and communities of color, the problem carries heavy environmental justice implications.³⁰ Environmental justice is defined by the Environmental Protection Agency (EPA) as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies.”³¹ It is at once an activist movement and a guiding principle written into federal environmental law.³² The environmental justice movement seeks to discover and rectify inadvertent, structural, and intentional environmental racism in public policy.³³

Environmental racism refers to public policy decisions that cause, intentionally or not, disparate adverse environmental impacts on communities of color.³⁴ Statistics show that facilities that cause adverse environmental, human health, and aesthetic impacts are most often sited in and around low-income communities of color for a very simple reason:

[C]orporate decision makers, regulatory agencies and local planning and zoning boards had learned that it was easier to site such facilities in low-income African-American or Latino communities than in primarily white, middle-to-upper-income communities. Poor communities and communities of color usually lacked connections to decision makers on zoning boards or city councils that could protect their interests. Often they could not afford to hire the technical and legal expertise they’d need to fight a siting.³⁵

30. See, e.g., NATALIE SAMPSON ET AL., HOUSEHOLD FLOODING IN DETROIT 5 (2021), https://drive.google.com/file/d/1TRtT29Hvq8kOz_pPhIEWLPtzGaHhFGZB/view [<https://perma.cc/A6BB-H9D2>] (outlining the disparate impacts of flooding in Detroit).

31. *Learn About Environmental Justice*, EPA (2021), <https://www.epa.gov/environmentaljustice/learn-about-environmental-justice> [<https://perma.cc/P7AY-3SS8>].

32. See generally *id.*; see also Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 Fed. Reg. 7629 (directing federal agencies to “identif[y] and addres[s], as appropriate, disproportionately high and adverse human health or environmental effects of its programs”).

33. See Renee Skelton & Vernice Miller, *The Environmental Justice Movement*, NRDC (Mar. 17, 2016), <https://www.nrdc.org/stories/environmental-justice-movement> [<https://perma.cc/D87U-3YH6>] (explaining the origins and motivations of the environmental justice movement).

34. *Id.*

35. *Id.*

Environmental racism is part and parcel with larger structures of systemic racism.³⁶ It both feeds from and contributes to ongoing racial disparities in America.³⁷ These processes are especially present in the city of Detroit.³⁸

Activists have tried a number of legal tools to pursue environmental justice, but not all have been successful.³⁹ Regulations modeled after Title VI of the Civil Rights Act of 1964 have mandated nondiscrimination in EPA funded programs since 1984.⁴⁰ In 1992, President Clinton signed Executive Order 12898, which directed federal agencies to “make achieving environmental justice part of its mission,” as well as specific actions to that end, such as the creation of an interagency working group to develop a strategy for addressing environmental injustice.⁴¹ In 1998, the EPA proposed regulations that would allow the use of the disparate impact method to show discrimination for the purposes of a Title VI claim, but the regulations were not approved and were abandoned in *In re Select Steel Administrative Complaint File No. 5R-98-R5*.⁴² Instead, the court ruled that compliance with the National Ambient Air Quality Standards (NAAQS) precluded a finding of discrimination.⁴³ Furthermore, the Supreme Court stated in *Alexander v. Sandoval* that there is no private right of action to enforce agency application of Title VI,⁴⁴ upon which many environmental justice claims were based.⁴⁵ Instead, the strategy

36. See generally Arnold, *supra* note 15 (“Many of the most important movements for justice with respect to environmental conditions, including environmental justice . . . are connected to broader movements for racial and social justice.”).

37. *Id.*

38. See, e.g., Drew Costly, *The Blackest City in the US Is Facing an Environmental Justice Nightmare*, GUARDIAN (Jan. 9, 2020), <https://www.theguardian.com/us-news/2020/jan/09/the-blackest-city-in-the-is-us-facing-an-environmental-justice-nightmare> [<https://perma.cc/WH97-2GT3>].

39. See generally Alma Lowry & Tom Stephens, *Environmental Justice*, 80 MICH. B.J. 24 (2001) (summarizing the history of environmental justice legal actions and their successes and failures).

40. Nondiscrimination in Programs or Activities Receiving Federal Assistance from the Environmental Protection Agency, 40 CFR § 7 (1984).

41. Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 Fed. Reg. 7629.

42. *Select Steel Co. of Am.*, 1998 WL 34374777 (E.P.A. Sept. 11, 1998); see also Lowry, *supra* note 39, at 26 (presenting the history and holding of *Select Steel*).

43. Lowry & Stephens, *supra* note 39, at 26.

44. See *Alexander v. Sandoval*, 532 U.S. 275, 288–89 (2001).

45. See Lowry & Stephens, *supra* note 39, at 26 (explaining the impact of the *Sandoval* decision on environmental justice legal strategy).

developed to plead environmental justice claims under 42 U.S.C. § 1983, which does give a private right of action.⁴⁶

While Title VI regulations inject environmental justice considerations into every federal agency action, they do not provide a method of obtaining individualized relief for flood victims.⁴⁷

C. Green Infrastructure

Gray infrastructure is what most people would usually think of as traditional infrastructure: in the context of stormwater management, this would be pipes, drains, pumping and storage facilities, wastewater treatment plants, and the like.⁴⁸ As opposed to gray infrastructure, green infrastructure is made of natural organisms, ecosystems, and landscapes.⁴⁹ Green infrastructure uses natural processes to filter and absorb stormwater so that rainwater goes through the stormwater system over a much longer time span, if at all.⁵⁰ It includes things like rain gardens, rain barrels, permeable pavements, bioswales, and even simple tree cover.⁵¹ Essentially, green infrastructure is anything that prevents rainwater from going through the drain system, either through immediate recycling (like water stored in a rain barrel and used by a resident) or through a natural ecological process (like a plant absorbing water to grow).⁵²

Green infrastructure tends to carry additional benefits to a community beyond its direct stormwater management effects.⁵³ Trees and gardens in cities can improve air quality and reduce summer air temperatures in cities, which tend to be hotter than surrounding non-urban areas, by providing shade and absorbing carbon dioxide in the atmosphere.⁵⁴ Parks can provide numerous benefits to a community, including increased recreation,

46. *Id.* at 27.

47. *See, e.g.*, Pohutski v. City of Allen Park, 465 Mich. 675, 641 N.W.2d 219 (2002) (failing to argue or obtain relief on environmental justice grounds); CS&P, Inc. v. City of Midland, 229 Mich. App. 141, 580 N.W.2d 468 (1998) (same).

48. *What is Green Infrastructure?*, EPA (2021), <https://www.epa.gov/green-infrastructure/what-green-infrastructure> [<https://perma.cc/27XH-8PC5>]; *see also* Arnold, *supra* note 15, at 666–67 (defining and providing examples of green infrastructure and its benefits).

49. *See What is Green Infrastructure?*, *supra* note 48.

50. *See id.* *See also* Arnold, *supra* note 15.

51. *See id.*

52. *See* Melissa Denchak, *Green Infrastructure: How to Manage Water in a Sustainable Way*, NRDC (Mar. 4, 2019), <https://www.nrdc.org/stories/green-infrastructure-how-manage-water-sustainable-way> [<https://perma.cc/K2J4-WMJX>].

53. *See, e.g.*, Arnold, *supra* note 15 (listing many ancillary benefits from green infrastructure in a community); *see also* Denchak, *supra* note 52 (same).

54. *See* Denchak, *supra* note 52; *see also* Arnold, *supra* note 15, at 667–68 (noting higher rates of asthma in neighborhoods with fewer parks and trees).

lowered rates of obesity, better mental health, improved childhood development, and social cohesion.⁵⁵ Community gardens provide food and education opportunities.⁵⁶ The installation and maintenance of green infrastructure can provide local job opportunities and even lower crime rates.⁵⁷ Green infrastructure also offers aesthetic benefits.⁵⁸ These benefits taken together generally increase the quality and property values of a community.⁵⁹

But low-income minority communities are disproportionately underserved by green infrastructure.⁶⁰ Green infrastructure in such communities tends to be lower in quantity, less well maintained, and farther away than in more affluent neighborhoods.⁶¹ This disparity is especially egregious when considering the flood mitigation effects of green infrastructure: the communities most likely to be inherently flood-vulnerable also have the least access to the infrastructure that might counteract that vulnerability.⁶²

D. Green Gentrification

Unfortunately, lack of access to green infrastructure cannot be fixed simply by investing in green infrastructure in traditionally underserved communities.⁶³ Because green infrastructure investment raises property values and makes an area more attractive to outside investment, long-time residents can be displaced by the very investments that were supposed to benefit them.⁶⁴ This process is known as green gentrification (or environmental gentrification).⁶⁵ Green gentrification can be seen as a reflection of the systemic inequality endemic to modern Western

55. Arnold, *supra* note 15, at 676–78.

56. *Id.* at 676.

57. Denchak, *supra* note 52.

58. *See, e.g.*, Arnold, *supra* note 15, at 678 (listing aesthetics as a major benefit of green infrastructure in a community).

59. *Id.* at 678; Denchak, *supra* note 52.

60. *See* Arnold, *supra* note 15, at 666–68 (noting this lower access in such communities and the consequences for residents).

61. *Id.* at 666–67.

62. *Id.* at 668.

63. *See id.* at 668 (explaining the potential negative consequences of well-meaning but poorly executed green infrastructure investment); *see generally* Hamil Pearsall & Isabelle Anguelovski, *Contesting and Resisting Environmental Gentrification: Responses to New Paradoxes and Challenges for Urban Environmental Justice*, SOCIO. RSCH. ONLINE (Aug. 31, 2016), <https://www.socresonline.org.uk/21/3/6.html> [<https://perma.cc/5AFD-QFMY>].

64. Arnold, *supra* note 15, at 668.

65. Pearsall & Anguelovski, *supra* note 63.

structures of power.⁶⁶ Structural racism and economic inequality insidiously twist efforts to improve the lives of residents of traditionally underserved neighborhoods. They can instead create more hardship for the intended beneficiaries of green investment while benefitting those who least need public investment.⁶⁷ This inversion creates a paradox where residents of low-income, minority communities often fight strongly against environmental investments—and are often arguably right to do so.⁶⁸ The paradox ultimately works to prevent members of such communities, either by lack of investment or by displacement after investment, from ever seeing the benefits of adequate green infrastructure.⁶⁹

Green gentrification can be intentional, such as when cities invest in “green locally unwanted land uses” to attract investment from outside the community,⁷⁰ but this Note is more concerned with unintentional green gentrification. This happens when investments that truly intended to benefit the residents of a community instead have displacing and gentrifying effects.⁷¹

Green gentrification is pernicious in that it often results from policies that seem vital.⁷² For example, nearby toxic contamination can reduce property values by a significant margin, acting as a kind of toxic subsidy for those who cannot afford to live anywhere healthier; remediation that ends this toxic subsidy can lead to the current residents suddenly being priced out of their neighborhood, often to somewhere just as unhealthy, just to maintain access to affordable housing.⁷³ Investments in green amenities for a neighborhood can have a similar effect.⁷⁴ Rising property values and rents associated with green neighborhood improvements tend to gentrify the neighborhood, especially when the improvements are not

66. See Arnold, *supra* note 15, at 668 (“Public policies to remedy unequal green and blue infrastructure in low-income neighborhoods of color often fail because inequality and racism are deeply embedded in social systems and institutions”).

67. See *id.*; see also Pearsall & Anguelovski, *supra* note 63.

68. See generally Pearsall & Anguelovski, *supra* note 63. (“Opposition to urban environmental improvements seems contradictory, particularly when it comes from the long-time residents who have withstood the presence of contamination and lack of environmental amenities for decades”).

69. See *id.*

70. *Id.*

71. See Arnold, *supra* note 15, at 668.

72. See Pearsall & Anguelovski, *supra* note 63.

73. See *id.* (“environmental contamination depresses property values—up to 45%—through the inherent undesirability of living on or near a polluted site, and property values rise again following environmental remediation”) (internal citations omitted).

74. *Id.*

tailored to the community's needs through meaningful community involvement.⁷⁵

Studies have found that certain kinds of green infrastructure investment are more likely to contribute to gentrification than others.⁷⁶ Green infrastructure investment should involve community input to establish what long-time residents need, rather than catering to inherently oppressive systemic ideas about what will benefit a community.⁷⁷ Green infrastructure investment that prioritizes aesthetics (through art, architecture, and landscape design) and recreation tends to contribute to gentrification, while infrastructure that prioritizes sports facilities, socialization, and community culture tends not to.⁷⁸ As further studies help us understand the process of green gentrification and what does and does not contribute to it, we will be able to overcome the green investment paradox—if policy makers listen to what the studies and their communities have to say.⁷⁹

E. Flooding and Stormwater Infrastructure in Detroit

1. Current Detroit Flooding and Infrastructure

Along with the unusual severity of these recent severe storms, Detroit's geography and its current stormwater infrastructure also contribute to the scale of the flooding.⁸⁰ Detroit sits on the banks of the Detroit River, and the greater metro-Detroit area is largely situated between the Clinton and Rouge Rivers.⁸¹ Before European settlement, the area was largely comprised of wetlands where waters from farther inland collected around the rivers mentioned above.⁸² Given the area's geographical tendency to collect water at or near the surface, it is

75. See Arnold, *supra* note 15; see also Maia et al., *supra* note 16 (showing that investments in parks that fostered socialization and cultural identity were more prevalent in parks that did not have gentrifying effects on their communities).

76. See generally Maia et al., *supra* note 16; see also generally Arnold, *supra* note 15.

77. See generally Arnold, *supra* note 15 (emphasizing community involvement and power sharing); see also Pearsall & Anguelovski, *supra* note 63 (noting that green locally unwanted land uses contribute to green gentrification).

78. See generally Maia et al., *supra* note 16 (studying the comparative effects on community gentrification near parks associated with each of these factors).

79. See generally *id.*; see also generally Arnold, *supra* note 15.

80. See generally Stateside Staff, *supra* note 1.

81. View of the Detroit Metro Area, GOOGLE MAPS, <https://www.google.com/maps/@42.4508702,-83.0937884,10.87z> [<https://perma.cc/3WVS-4QS4>] (coordinates in the URL approximate the particular view).

82. Stateside Staff, *supra* note 1.

unsurprising that the city is prone to flooding,⁸³ especially considering that the wetlands were replaced not just with buildings and homes, but roads, parking lots, and other impermeable surfaces (surfaces that resist absorbing water, instead allowing it to pool on and flow across the surface).⁸⁴ Many of Detroit's highways are built below ground level and require pumps to remove water when it rains.⁸⁵

In addition to pumping water from subsurface highways, Detroit's stormwater infrastructure relies on its combined sewer-stormwater system.⁸⁶ A combined system, seen primarily in older municipalities,⁸⁷ drains stormwater into the same pipes that carry residential and industrial waste.⁸⁸ When, as happens during a severe storm, millions of gallons of extra water is added to the system in a short amount of time, the pipes overflow and the mixture of storm- and wastewater floods homes, businesses, and roads and can flow untreated into waterways.⁸⁹

In Detroit, as elsewhere, low-income communities of color are disproportionately impacted by floods.⁹⁰ A study specific to the city noted that renters, who tend to be lower income,⁹¹ "were 1.7 times more likely to report household flooding than homeowners."⁹² Residents of older homes, homes with other maintenance issues, and residents of primarily Black communities also reported more flooding.⁹³ Surface flooding on roads blocks transit, impacting the ability for residents to go to work.⁹⁴ Sewage backs up from drains, damaging floors, furniture, and people's

83. *Id.*

84. *See* Denchak, *supra* note 52 (noting that impermeable surfaces cause urban areas to generate five times the runoff that the same area of forest would).

85. Stateside Staff, *supra* note 1.

86. *See id.*; *see also* Shapiro et al., *supra* note 4 (describing the way flooding causes combined storm and wastewater to come up through drains).

87. *See* John Tibbets, *Combined Sewer Systems: Down, Dirty, and Out of Date*, 113(7) ENV'T HEALTH PERSPECTIVES A464 (Jul. 2005), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1257666/> [<https://perma.cc/777M-DLB6>] (surveying the history of U.S. combined sewer systems).

88. Denchak, *supra* note 52.

89. *Id.*; *see also* Lee DeVito, *Historic Flooding Rocks Detroit, Again. Why?* DETROIT METRO TIMES (June 28, 2021, 1:39 PM), <https://www.metrotimes.com/news/historic-flooding-rocks-detroit-again-why-27489775> [<https://perma.cc/Z8EZ-GA2U>] (quoting a Michigan State Police tweet describing the hazardous quality of floodwaters in the June 2021 flooding).

90. *See generally* SAMPSON ET AL., *supra* note 30 (summarizing a 2012 Home Safety Assessments survey of flooding impacts in Detroit).

91. Neil Bhutta et al., *Changes in U.S. Family Finances from 2016 to 2019: Evidence from the Survey of Consumer Finances*, 106 FED. RESRV. BULL. 5, 11 (2020).

92. SAMPSON ET AL., *supra* note 30, at 5.

93. *Id.*

94. *See* Shapiro et al., *supra* note 4 (interviewing Palencia about the June 2021 flooding).

cars outside.⁹⁵ For example, the Hope Community Church in Northeastern Detroit had to gut its social hall and undergo mold remediation.⁹⁶ And this comes after prior flooding prompted the church to raise thousands of dollars from its congregation for flood prevention measures like sump pumps.⁹⁷

Geographical surveys of Detroit continue to tell the story of the disproportionate impact of flooding on low income and historically disadvantaged communities.⁹⁸ For example, the neighborhood bounded by Eight Mile to the north and Van Dyke Avenue to the west has one of the lowest median incomes in Detroit⁹⁹ and is also a dense hotspot for flooding.¹⁰⁰ The same correlation appears in the communities surrounding Dearborn.¹⁰¹ The inverse—high median income and distinctly lower rates of flooding—appears along Detroit’s riverfront, in Midtown, and in the residential areas north of I-75 and west of the I-75/I-96 interchange.¹⁰²

2. Green Infrastructure Investment in Detroit

Pursuant to its 2013 National Pollutant Discharge Elimination System (NPDES) permit, Detroit has been investing in green stormwater infrastructure along the upper Rouge River in northwest Detroit.¹⁰³ The permit required \$15 million of green infrastructure investment by 2017 and a total of \$50 million by 2029.¹⁰⁴ The city’s plan to meet this investment goal predominantly consists of installations of permeable pavement, installation of bioswales along roads and in parks, incentivizing downspout disconnection on private property, planting trees, and

95. *Id.*

96. *Id.*

97. *Id.*

98. See generally SAMPSON ET AL., *supra* note 30, at 5 (showing a map of flooding hot and cold spots in Detroit); see also Stephen Lindley, *Map: Detroit Median Income Normalized 1990–2018*, DETROITOGRAPHY (Jan. 22, 2021), <https://detroitography.com/2021/01/22/map-detroit-median-income-normalized-1990-2018/> [<https://perma.cc/WJ4D-84S8>] (showing maps of median household income in Detroit by census tract); see also Alex B. Hill, *Detroit Redlining Map 1939*, DETROITOGRAPHY (Dec. 10, 2014), <https://detroitography.com/2014/12/10/detroit-redlining-map-1939/> [<https://perma.cc/YW N2-UBXE>] (showing areas historically disadvantaged by the practice of redlining).

99. See Lindley, *supra* note 98.

100. See Sampson, *supra* note 30, at 6.

101. See Lindley, *supra* note 98; see also SAMPSON ET AL., *supra* note 30, at 6.

102. See Lindley, *supra* note 98; see also SAMPSON ET AL., *supra* note 30, at 6.

103. *Green Stormwater Infrastructure Projects*, CITY OF DETROIT (2021), <https://detroit.mi.gov/departments/water-and-sewerage-department/dwsd-projects/green-stormwater-infrastructure-projects> [<https://perma.cc/9CAA-RY9Z>].

104. *Id.*

demolition and greening of vacant properties.¹⁰⁵ The city is also accepting green infrastructure development concepts for future green infrastructure investment opportunities.¹⁰⁶ The majority of Detroit green infrastructure investment has been sited in parks, along residential roads, and on private property.¹⁰⁷

Park projects such as the Stoepel Park project, the Liuzzo Park project, and the updates to Rouge Park as part of the West Warren Green Infrastructure and Sewer Separation Project represent the City's approach to green infrastructure investment in parks.¹⁰⁸ Park projects typically include the replacement of impervious surfaces with permeable alternatives and the installation of water retention infrastructure in the form of catch basins, rain gardens, and bioswales.¹⁰⁹ The water retention infrastructure also presents an opportunity for beautification through the planting of native perennials.¹¹⁰ Park investment projects will sometimes also take the opportunity to improve the useability or community access to the park, such as the Liuzzo park walking path¹¹¹ or the proposed additional pedestrian connection to walking trails in Rouge Park.¹¹²

105. *Id.*

106. *See generally* DETROIT WATER & SEWAGE DEP'T, GREEN INFRASTRUCTURE PLAN FOR THE UPPER ROUGE TUNNEL AREA (2014), https://detroitmi.gov/sites/detroitmi.localhost/files/2018-05/dwsd_gi_upper_rouge_tunnel_area_08-01-2014.pdf [<https://perma.cc/W5FD-MCV6>] (setting out opportunity criteria for each listed method of green infrastructure stormwater management in the plan); *see also Green Stormwater Infrastructure Projects*, *supra* note 103 (highlighting concepts currently in development or planning).

107. *See* DETROIT WATER & SEWAGE DEP'T, GREEN INFRASTRUCTURE PROGRESS REPORT: UPPER ROUGE TRIBUTARY AREA (2021), https://detroitmi.gov/sites/detroitmi.localhost/files/2021-06/FINAL%20DWS%20GSI%20Annual%20Report%20April%201%202021_Formatting%20edited.pdf [<https://perma.cc/9ZB3-Q3WG>].

108. *See generally* DETROIT WATER & SEWAGE DEP'T, GREEN INFRASTRUCTURE AND COMMUNITY ENHANCEMENT IN STOEPPEL PARK NO. 1 (2016), [https://detroitmi.localhost/files/2018-05/2016%20Stoepel%20Park%20Number%201%20project%20fact%20sheet_final.pdf](https://detroitmi.gov/sites/detroitmi.localhost/files/2018-05/2016%20Stoepel%20Park%20Number%201%20project%20fact%20sheet_final.pdf) [<https://perma.cc/YZN2-CVJP>]; DETROIT WATER & SEWAGE DEP'T, BRINGING GREEN INFRASTRUCTURE TO VIOLA LIUZZO PARK IN 2016 (2016), https://detroitmi.gov/sites/detroitmi.localhost/files/2018-05/2016%20Viola%20Liuzzo%20Park%20fact%20sheet_final%20for%20mailing_062416.pdf [<https://perma.cc/75UP-NP8V>]; and DETROIT WATER & SEWAGE DEP'T, WEST WARREN GREEN INFRASTRUCTURE AND SEWER SEPARATION PROJECT (2020), https://detroitmi.gov/sites/detroitmi.localhost/files/2020-05/05_28_2020%20DWS%20Stakeholder%20Meeting.pdf [<https://perma.cc/A87Y-JDF4>].

109. *See, e.g.*, STOEPPEL PARK, *supra* note 108 (listing these features in the plans for that park).

110. *See, e.g., id.*

111. BRINGING GREEN INFRASTRUCTURE TO VIOLA LIUZZO PARK, *supra* note 108, at 2.

112. WEST WARREN GREEN INFRASTRUCTURE, *supra* note 108, at 33.

Road and roadside green infrastructure investments use similar strategies.¹¹³ Detroit installed bioswales along Tireman Avenue¹¹⁴ and permeable pavement along Artesian and Keeler Streets.¹¹⁵ Furthermore, the city is working on plans to place sub-surface stormwater storage material under plant-based bioretention in the median of Oakman Boulevard.¹¹⁶ The combination of surface and subsurface retention across the wide median is intended to keep stormwater out of both the sewer system and residents' basements.¹¹⁷

For personal property, the city has given a series of seminars to residents on downspout disconnection.¹¹⁸ Downspout disconnection is relatively cheap and easy, but each homeowner must perform the disconnection at their own expense.¹¹⁹ The city is also planning to create bioretention basins on the property of the Charles Wright Middle School, removing five acres of impervious land surface and completely removing the stormwater that falls on the property from the sewer system.¹²⁰

Throughout these projects, the city makes a clear effort to communicate with the communities into which these investments are installed.¹²¹ Each project involves a presentation of the project¹²² to the

113. *See generally id.*; DETROIT WATER & SEWER DEP'T, BRINGING GREEN INFRASTRUCTURE TO TIREMAN AVENUE IN 2016 (2016), <https://detroitmi.gov/sites/detroitmi.localhost/files/2018-05/2016%20Tireman%20Ave%20project%20fact%20sheet.pdf> [<https://perma.cc/L7MS-D5VC>]; DETROIT WATER & SEWER DEP'T, BRINGING GREEN INFRASTRUCTURE TO ARTESIAN STREET IN 2016 (2016), <https://detroitmi.gov/sites/detroitmi.localhost/files/2018-05/2016%20Artesian%20Street%20project%20fact%20sheet.pdf> [<https://perma.cc/7LXD-MN7N>].

114. TIREMAN AVENUE, *supra* note 113, at 1.

115. ARTESIAN STREET, *supra* note 113, at 1; DETROIT WATER & SEWER DEP'T, BRINGING GREEN INFRASTRUCTURE TO KEELER STREET IN 2016 (2016), <https://detroitmi.gov/sites/detroitmi.localhost/files/2018-05/2016%20Keeler%20Street%20project%20fact%20sheet.pdf> [<https://perma.cc/9RUT-V9QU>].

116. GREEN INFRASTRUCTURE PROGRESS REPORT, *supra* note 107, at 22–23.

117. *Id.*

118. GREEN INFRASTRUCTURE PLAN, *supra* note 106, at 34.

119. DETROIT WATER & SEWER DEP'T, DOWNSPOUT DISCONNECTION PROGRAM (2018), <https://detroitfuturecity.com/wp-content/uploads/2018/03/Downspout-Disconnection-Program-Detroit-Water-and-Sewerage-...-2.pdf> [<https://perma.cc/V53P-GBN8>].

120. DETROIT WATER & SEWER DEP'T, DWSD COMMUNITY MEETING: CHARLES WRIGHT ACADEMY BIORETENTION (2021).

121. *See* GREEN INFRASTRUCTURE PLAN, *supra* note 106, at 22–29 (outlining the overall plan's approach and commitment to outreach); *see also e.g.*, DETROIT WATER & SEWER DEP'T, BRINGING GREEN INFRASTRUCTURE TO TIREMAN AVENUE AND ARTESIAN STREET: A COMMUNITY DISCUSSION WITH DETROIT WATER AND SEWAGE DEPARTMENT (DWSD) AND DETROIT PUBLIC WORKS DEPARTMENT (2015) https://detroitmi.gov/sites/detroitmi.localhost/files/2018-05/tireman_artesians_meetingsummary012015.pdf [<https://perma.cc/9LHW-8K9Q>] (summarizing a community outreach discussion regarding a project).

122. *See, e.g.*, TIREMAN AVENUE, *supra* note 113.

community or panels with interested community members,¹²³ with the opportunity to voice concerns or suggestions. The city seems to at least nominally respond to resident input regarding the infrastructure projects.¹²⁴ Occasionally, the department will use these presentations as a way for residents to decide between different approaches the project could take, such as whether a new storm sewer should be placed under a road or in the park along the road, how communal spaces in a park should be redesigned, or what assortment of flowers to plant in a bioretention basin.¹²⁵ In Liuzzo Park, for instance, the park's redesign featured a walking path and children's play equipment at the urging of residents in one-on-one conversations with project officials.¹²⁶

F. Community Mindfulness

Though the concept is relatively recent, the issue of green gentrification has attracted scholarship from a broad range of doctrinal foundations, from law and policy to sociology and urban planning.¹²⁷ The common thread linking these works is the idea that community engagement, leadership, and initiative produce policies that conform to the community's needs and prevent unintended consequences for the community.¹²⁸ Essentially, policies made with a deep mindfulness of the intended beneficiary community and its needs will be better at benefiting that community. This concept is what I call community mindfulness. Many factors involved in policymaking contribute to community mindfulness. I will summarize them here.

The work of Maia, et al., gives a basic but strongly data-driven outline of what factors cause parks to contribute to green gentrification.¹²⁹ By studying the pictures people tended to take of various parks in Barcelona, Spain, and comparing them based on an array of factors to areas that

123. See, e.g., COMMUNITY DISCUSSION, *supra* note 121.

124. See, e.g., DETROIT WATER & SEWER DEP'T, BRINGING GREEN INFRASTRUCTURE TO KEELER STREET: A COMMUNITY DISCUSSION WITH DETROIT WATER AND SEWAGE DEPARTMENT (DWSD) AND DETROIT PUBLIC WORKS DEPARTMENT (2015), https://detroitmi.gov/sites/detroitmi.localhost/files/2018-05/keeler_meetingsummary012015.pdf [<https://perma.cc/8NNGE-C65M>] (noting that the department will contact the Rosedale Historical District regarding the project "at the suggestion of meeting participants").

125. See WEST WARREN GREEN INFRASTRUCTURE NEIGHBORHOOD MEETING, *supra* note 108 (asking these questions about the project's options to attending residents).

126. LIUZZO PARK, *supra* note 108, at 2.

127. See generally Arnold, *supra* note 15 (environmental law and policy), see also generally Maia et al., *supra* note 16 (empirical sociology).

128. See generally Arnold, *supra* note 15; see also generally Maia et al., *supra* note 16.

129. See Maia et al., *supra* note 16.

experienced green gentrification, the researchers were able to link certain park features to green gentrification and, more importantly, identify other park features that did not contribute to the problem.¹³⁰ Specifically, park features that most contributed to green gentrification were aesthetics—which included art installations, modern architecture, and built environment—and recreation spaces.¹³¹ Park features found in areas that did not experience gentrification instead featured spaces for socialization, communal use, and fostering cultural identity.¹³² Another notable lesson is that ecological spaces do not impact the gentrifying effect of a park in either direction; rather, the gentrifying effect of the park lives in its built environment and amenities.¹³³ Ultimately, when green park features are combined with built amenities that meet the community's existing needs, desires, and identity, the park does not tend to gentrify the community.¹³⁴ While the study was limited to parks, it contains lessons that should be taken into consideration when designing any green infrastructure investment. Essentially, green infrastructure should be made to benefit the community in which it is placed on that community's own terms. It should be deeply mindful of what that community truly wants and needs.

Arnold's *Resilience Justice* symposium article dovetails neatly with these data-driven pointers with an analysis of the normative policies that best lead to the successful design and implementation of green infrastructure with these features.¹³⁵ Arnold's call for resilience-justice based policy centers on the importance of green infrastructure in creating resilience for low-income communities of color while working to avoid the green gentrification problem.¹³⁶ Indeed, what takes environmental justice to resilience justice is a focus on community mindfulness in urban ecological policymaking.¹³⁷

Arnold focuses on the holistic and systemic nature of injustice, especially the injustices facing low-income communities of color.¹³⁸ Resilience justice, he argues, is a more effective framework than environmental justice because it recognizes the fact that environmental problems cannot be solved in a vacuum.¹³⁹ As exemplified in this paper,

130. *Id.* at 256–57.

131. *Id.* at 261.

132. *Id.*

133. *Id.*

134. *Id.*

135. *See generally* Arnold, *supra* note 15.

136. *See generally id.* at 691–94 (describing the features of community resilience while calling attention to the dangers of green gentrification for marginalized communities).

137. *Id.*

138. *See id.* at 691–94.

139. *See id.*

green gentrification can cause a breakdown of environmental justice initiatives not through environmental causes, but through economic and housing-policy causes. Therefore, to achieve resilience in these communities, the approach to policymaking must be holistic.¹⁴⁰ Fair housing policy may not be an environmental issue, but it is absolutely a resilience issue.¹⁴¹

To achieve resilience, Arnold calls for a broad range of factors to be implemented in future policies.¹⁴² He centers his discussion around green infrastructure, but he links it to the entire web of a community's infrastructure, including its social, food, housing, and transportation infrastructures.¹⁴³ He emphasizes the need for systemic reforms targeting underlying inequities in access to food, housing, jobs, education, and economic attainment.¹⁴⁴ Most importantly for this paper, he shows how the best avenue by which to achieve this holistic resilience reform is through powerful, effective, mindful co-governance between the communities to be benefitted and the political powers with the authority and resources to implement the necessary investments and reforms.¹⁴⁵

III. ANALYSIS

A. Requirements for Effective Community-Mindful Co-Governance

A resilience-justice-driven model of co-governance must have an equitable division of power between the affected communities, as well as the communities and the larger political structures they are joined with.¹⁴⁶ This will require some humility from the governing political power to get itself to let go of its control and vest meaningful power into the governed communities. Achieving this humility and the necessary, true power-sharing it can lead to will be one of the most difficult barriers to justice-driven co-governance.

Furthermore, the people in the communities themselves need to be motivated and mobilized to participate in the co-governance.¹⁴⁷ There can be no true power-sharing if the people in the community do not care or are not informed enough to grasp and wield the power vested in them. One of

140. *See generally id.*

141. *See id.* at 693–94 (noting the importance of progressive housing reform strategies as a way to protect vulnerable communities from the effects of green gentrification).

142. *See generally id.*

143. *Id.* at 691–92.

144. *Id.* at 692, 709, 716.

145. *Id.* at 693; *see also id.* at 696 (listing features of just and effective co-governance).

146. *Id.* at 696.

147. *Id.*

the best ways to get people motivated to be involved in the co-governance is to more thoroughly democratize the control of the power.¹⁴⁸ When people have a platform to voice ideas in their community and feel that their voice matters, people will be more driven to use their voices. This is especially true when they are given the opportunity to directly participate in the decision-making through a participatory government structure.¹⁴⁹ The people in a community engaging in effective and just co-governance must have a way of making sure that their voice as a community is accurately being heard and that the political structures above are sharing power to the extent that they should be.¹⁵⁰ The regulations and avenues of adjudication must not only exist, but they must do something as well.¹⁵¹ Ineffective recourse simply is not recourse at all.

Synthesizing these points, we come to a clear model of effective community-based co-governance to help direct community-minded investments in green infrastructure. Green infrastructure developments should be based on the community's needs and identity, rather than ideals imposed on the community from more distant sources of political power. To ensure that the community's own needs are being met in a way that will not cause displacement or other inadvertent harms to the community, the community should be given real decision-making power as to the kind of investments it receives and the way that it receives them.

B. Statistical and Community Mindfulness Efficacy of Detroit's Green Infrastructure Investment in the Upper Rouge River Area

Detroit's recent and near-future green infrastructure investment in aggregate is a simple but likely effective way to realize the benefits of green stormwater infrastructure—both the direct flood abatement effects and the ancillary community benefits of green spaces.¹⁵² Progress is slow, however. The projects completed as of April 1, 2021, manage stormwater for only one hundred acres of the 24,000-acre Upper Rouge Tributary area on which the investment plan focuses.¹⁵³ These initiatives together retain in biomass or detain in soil systems 2.35 million gallons¹⁵⁴ in a model storm (based around the projected most severe twenty-four hours of

148. *Id.*

149. *Id.*

150. *Id.*

151. See Arnold, *supra* note 15, at 694–96.

152. See generally *id.*

153. GREEN INFRASTRUCTURE PROGRESS REPORT, *supra* note 107 at 5, 44; GREEN INFRASTRUCTURE PLAN, *supra* note 106, at 7.

154. GREEN INFRASTRUCTURE PROGRESS REPORT, *supra* note 107, at 44.

weather in a two-year period)—close but not quite the 2.8-million-gallon goal for 2017.¹⁵⁵

The initiatives focus on the area around the Rouge River and its floodplain, which centers benefits in communities that have faced significant, recurrent flooding.¹⁵⁶ Much of the investment has occurred in high-vacancy neighborhoods as well.¹⁵⁷ The investments have primarily occurred in residential areas or in the parks nearby,¹⁵⁸ which increases the ancillary benefits of the infrastructure improvements for the residents of the investment areas.

The green infrastructure projects in the Rouge River area have largely proven at least moderately successful at improving the management of stormwater runoff.¹⁵⁹ The city has found that fully half of the completed projects in the region are capable of managing the entire stormwater load in their area in the projected heaviest twenty-four-hour rain event in a two-year period.¹⁶⁰ The rest of the projects range in efficacy from 33% to 93%.¹⁶¹ The completed projects remove a total of ten million gallons of water from the Detroit sewer system annually, and the projects currently under construction or design are projected to remove up to ten times that amount.¹⁶²

As for community mindfulness, the projects so far implemented by the city do well when judged by the criteria set forth by Maia's research. The permeable repaving projects on Artesian and Keeler streets feature none of the design elements that tended to either contribute or prevent green gentrification. They are neither aesthetic nor recreational, nor cultural or social.¹⁶³ They merely address a city- and resident-identified need to keep stormwater out of the sewer system so it doesn't back up into residents' basements. The simple, unaesthetic utility of these projects is unlikely to attract outside attention that might lead to displacement.¹⁶⁴ It is a good reminder that a utilitarian, no-frills approach to investing directly against community problems is an effective, though narrow-scoped method.

155. GREEN INFRASTRUCTURE PLAN, *supra* note 106, at 7.

156. *Id.* at 8.

157. *Id.* at 11.

158. *See* GREEN INFRASTRUCTURE PROGRESS REPORT, *supra* note 107, at 17–25 (listing completed and ongoing projects, all of which are along residential streets, in parks, or on school property located in residential areas).

159. *See* GREEN INFRASTRUCTURE PROGRESS REPORT, *supra* note 107 at 42–44.

160. *Id.*

161. *Id.* (phase 1 of the Tireman Avenue project only managed 7% of its projected two-year, twenty-four-hour rainfall, but its efficacy increased to 87% after the second phase was completed).

162. *Id.* at 44.

163. *See generally* Maia et al., *supra* note 16.

164. *See generally id.*

While repaving streets with permeable surfaces may help keep the water out of people's basements, it does not carry with it any of the ancillary benefits of greener green infrastructure.

While the city's investments along these two streets do not raise any of the alarm bells identified by Maia as potential causes of green gentrification, the city's approach does not reach the level of community mindfulness and involvement that Arnold identifies as essential to building resilient communities. While the overall project's plan ensures communication between the city, the Detroit Water and Sewage Department, and relevant parts of the state and federal governments, as well as neighborhood groups, Department of Neighborhoods district managers, and involved non-profit organizations,¹⁶⁵ the communication with residents has been largely one-way. Most of the outreach is through mailed fact sheets about the project sent to residents in the affected area, as well as meetings in advance of the project's implementation where residents can ask questions, make suggestions, and occasionally voice a preference between a few options DWSD is considering.¹⁶⁶ This has been effective for projects like Liuzzo Park, the design for which was heavily influenced by the needs nearby residents described to the city during the design phase.¹⁶⁷

The city is taking the right steps in ensuring communication with the affected communities and valuing their input, but the city has failed to implement any structural form of power-sharing whereby the affected community can have any real control over the investment process in their neighborhoods. On the one hand, for projects like Artesian Street and Keeler Street, the lack of community input is unlikely to be problematic due to the equal lack of potential green gentrification forces associated with the projects. On the other hand, for projects like the Tireman Avenue bioswales, the lack of real community decision-making power early in the project could lead to resilience problems down the line. Residents can opt into or out of having flowers planted in the bioswales in front of their property, but aside from the maintenance of the underground drainage infrastructure, maintenance falls entirely on the property owners.¹⁶⁸

Aside from this minor but unilateral burden placed on property owners in the neighborhood, this communication style typified by only minor resident feedback and control could lead to displacement and other

165. See GREEN INFRASTRUCTURE PLAN, *supra* note 106 at 23–26 (listing outreach partners).

166. See GREEN INFRASTRUCTURE PROGRESS REPORT, *supra* note 107 at 35 (describing community outreach process).

167. LIUZZO PARK, *supra* note 108.

168. See TIREMAN AVENUE, *supra* note 113; see also COMMUNITY DISCUSSION, *supra* note 121.

perverse effects from the green investment in parks and at the Charles Wright Academy. These are the projects most likely to facilitate green gentrification. The beautification of Stoepel, Liuzzo, and Rouge Parks, while a boon to the community, also relies on an aesthetic, built environment. Investment in aesthetics was identified by Maia to be one of the driving forces behind green gentrification.¹⁶⁹ On the other hand, the Liuzzo Park and Rouge Park projects focused on meeting community needs and providing social areas in Liuzzo Park's walking path¹⁷⁰ and Rouge Park's open mounds.¹⁷¹ So far, the Department has given community voices considerable deference but only on topics that the Department has opened for community say.¹⁷² When projects ride the line between factors indicative of green gentrification and factors indicative of stability, the need for meaningful, structural community mindfulness is evident. Without structural power for community involvement, the Department could decide to pursue an action that the neighborhood would recognize as harmful, and the neighborhood's residents would have no recourse.

IV. CONCLUSION

The green infrastructure investment project in the Upper Rouge Tributary area is the kind of investment Detroit needs to address its flooding problem. Every neighborhood that receives these kinds of investments will likely see its stormwater resilience increase. In that sense, there is little cause to question the investments' efficacy. However, whether the improvements in stormwater resilience will reach the current residents of those neighborhoods is another question. If the investments set off a series of events that ends in current residents being displaced to neighborhoods that have not yet improved their stormwater resilience while more affluent outsiders move in to take advantage of the newfound stormwater resilience, then the investments have failed the community. The neighborhood may have been improved by the green infrastructure, but the community has not benefited from it.

The Detroit Water and Sewer Department has so far avoided any investment plan that directly implicates green gentrification issues. Furthermore, the Department has communicated effectively with the

169. Maia et al., *supra* note 16 at 261.

170. LIUZZO PARK, *supra* note 108.

171. WEST WARREN GREEN INFRASTRUCTURE NEIGHBORHOOD MEETING, *supra* note 108.

172. See GREEN INFRASTRUCTURE PLAN, *supra* note 106, at 37 (describing outreach initiatives for the Far West Detroit project, which includes the Rouge Park updates).

community and tailored its investments to the community's feedback, though the tailoring has been narrow in scope. The investment plan seems to recognize the importance of community mindfulness. However, while the plan gives those with the most mindfulness of their community, its residents, opportunities to engage with investment plans that affect their neighborhoods, it retains all the power for the Department. With no effective (or even attempted) formal power-sharing between the city and the neighborhood associations and individual residents in the affected neighborhoods, any lapse in community mindfulness could undermine the resilience the green infrastructure intended to give these neighborhoods. Giving the residents a meaningful ability to shape the course of investment in green infrastructure in their neighborhoods would lead to a more just allocation of the benefits the green infrastructure brings to the city.