

# *The Not-So Livable Forest: An Environmental Autobiography*

by Ainsley Gill

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The first time it flooded, I was twelve, excited to spend the day at my grandparents' house to avoid the inconvenience of rising waters. The second time it flooded, my friends got stuck at their middle school—a chaotic afternoon while parents waited for the roads to clear. The morning of the third flood, I was supposed to start high school but instead sat in my completely dry cul-de-sac, knowing the water was coming. I came back home three days later to five-foot-high watermarks and the sound of hammers hitting damp plaster as friends, family, and complete strangers cleared out the damage. With floodwaters over five feet high in many of the homes and schools across my community and exceeding seven feet high in the center of town, flooding quickly became the new normal, but we rebuilt together. The fourth time it flooded, we barely flinched, and nobody reached for hammers. Flooding was our new normal. The fifth time it flooded, we didn't blink. Flooding was routine.

For many in the greater Houston area, flooding quickly became common. There was no rhyme or reason to it, no cause beyond the heavens, and nothing to question about it, even as flood patterns changed to disproportionately affect certain groups and neighborhoods. No, flooding was something that just happened, whether because of a hurricane, tropical storm, or even an especially bad thunderstorm. However, it was not always this way. As I grew up, my community developed and changed around me. New buildings went up, new homes were built, concrete was poured, and old wooded areas were cleared out. As the area settled into a pattern of flooding, the rising waters and flooded homes became unsurprising and almost inevitable. This pattern of rising development and the recurrence of relatively milder floods since Hurricane Harvey has normalized a moderate degree of flooding and masked the rise of slow violence within Kingwood's Elm Grove neighborhood. Witnessing this change has instilled in me a strong belief in our shared

communal responsibility to protect each other from environmental hazards and help one another heal, rebuild, and construct our communities to prevent future harm.

## **Relationship to the Environment in Early Childhood**

Growing up, every time my parents' car drove off the highway and turned into our suburb, we passed big signs on either side of the road proclaiming the suburbs' self-assigned nickname: the Livable Forest. Filled with parks, greenbelts, man-made ponds, and designed to maximize tree coverage, the Kingwood of my childhood lived up to its name—carefully and intentionally designed to appeal to young couples, often those employed by the oil industry in downtown Houston. When I was younger, I thought that every suburban neighborhood looked like mine, with trees taller than power lines and deer running through the front yards. As I got older, I felt lucky and privileged to grow up in a place that seemed to value nature so highly.

I've always felt a personal responsibility to the environment around me. This was instilled in me in part by the extensive time spent in nature through Girl Scouts and the values that curriculum taught me, partly by the bike rides I enjoyed through Kingwood's greenbelts, and partly by the yearly family vacations taken to national parks across America. This sense of personal responsibility manifested itself in well-meaning, if not always productive ways. For example, my second-grade crusade to save the squirrels by leading my classmates in helping them hide acorns for winter probably didn't do much, as they had long been surviving Houston's hot and humid winters without our help. My yearlong protest against hand dryers (because they still used energy) was likely similarly ineffective.

At this time, I viewed the environment as something passive, reciprocal, and straightforward in its relationship. People could either harm the

environment by polluting, littering, or wasting water or they could or they could protect the environment by championing recycling, cleaning up after themselves, and turning off the lights after they left the room. As I understood it then, your actions directly reflected your experience of the environment: your park could be pristine or covered in trash and your electric bill could be low or high to penalize you for unsustainable use of resources. In short, your experience of the environment was dependent primarily on the individual choices you made. However, the events I began to witness as I entered high school made it unfortunately clear that the irresponsible decisions of just a few people could easily have widespread and disparate impacts as others were left to reckon with the environmental consequences of others' choices.

### **Kingwood's Development**

As I grew up, the landscape of my community changed around me. Previously undeveloped areas of land were clear cut and concrete was poured to make room for new homes and businesses. In 2015, an area with tree cover and greenspace in the heart of town that had previously housed an apartment complex, was clear cut and demolished to make room for a major commercial development project anchored by a new HEB grocery store. Previously forested areas along the main roads were cleared to facilitate the construction of new subdivisions, retail pads, and a disproportionate number of storage unit facilities. This trend was playing out not just in my community but across the greater Houston area. From 2001-2011, Houston experienced the highest levels of urban growth nationally, with the resulting surge in asphalt and concrete rapidly increasing the runoff ratio. This rising urbanization amplified the impact of extreme precipitation, as the percentage of impervious surfaces rose. Flood mitigation methods that historically functioned in the community now failed due to the inhibition concrete imposes on natural drainage systems and water cycle function (Zhang et al., 2018).

### **Floodwaters Rise**

I soon saw the reality of the theoretical impacts of urbanization play out in my community with increasing severity. While I was in middle school, two major high precipitation events brought significant

and unexpected flooding far beyond the impact of a typical thunderstorm. In 2015, heavy rains on Memorial Day necessitated the rescue of hundreds of residents from the rising waters and resulted in over \$460 million dollars in damage. Less than a year later, in April of 2016, over 24 inches of rain fell within a 24-hour period, flooding almost 10,000 homes ("Rained out," 2018).

However, the city was truly forced to come to terms with the consequences of its rapid urbanization in August 2017, when Hurricane Harvey hit. Harvey dumped over 33 trillion gallons of rain and set a record for the continental US in rainfall at nearly 52 inches (Schultz & Galea, 2017). Ultimately, over 4.5 million people were impacted, over 140,000 homes and businesses flooded, and the total damage amounted to over \$125 billion, making it the second most devastating storm in US history (Harris County Flood Control District, 2018; Mooney, 2018). In Kingwood, over 4,800 homes, including mine, were flooded in addition to countless businesses, restaurants, and my public high school (Rehak, 2018). Though this was a city used to weathering storms, Harvey was the first major hurricane to hit since 1999 and its extreme rainfall exposed the weaknesses urbanization created in the city's drainage system (Houston/Galveston, TX Weather Forecast Office, n.d.). The greater development occurring across the city increased the impact of flood waters and precipitation, increasing the city's flood risk twenty times over (Zheng et al., 2018). Those who suffered the most damage were often the most vulnerable, as over 80% of those affected by flooding lacked flood insurance due to the high premiums, additional financial expense, and the fact that many of the affected homes were not predicted to flood, per the federal 100-year floodplain (Adriano, 2018).

In the aftermath, the community came together, united by shared tragedy and Houston Strong campaigns. Strangers came together to muck out flooded houses, deliver meals, and wash clothes. Yet, despite the efforts of community support networks, there was substantial inequity in terms of both who flooded and who was able to rebuild, often due to systemic patterns of development and the placement of drainage infrastructure. In Harvey, as the impacts of development, urbanization, and extreme precipitation combined to result in substantial flooding beyond FEMA's predicted floodplains,

over 50% of the flooding that occurred beyond the predicted area affected land parcels inhabited by Latinx residents, despite the fact that they represent no more than 38% of the population (Greater Houston Partnership, 2022). Not only does floodplain location affect residents' awareness of personal risk and, in some cases, mandate that they have flood insurance, but it also determines the resources available to them as they recover. Even beyond flood insurance, homes outside the floodplain have less access to funds as they rebuild and have been found to be at a distinct disadvantage in the recovery process. As such, the Latinx community in Houston was disproportionately impacted by flooding, both in its onset and its aftermath.

However, while Harvey might have been the largest flood event, it would be far from the last one. Since Harvey, flooding has continued, even under far less extreme weather conditions. Tropical storms and even heavy thunderstorms have been capable of flooding Kingwood, though their impacts have been concentrated in certain areas. One neighborhood in particular continues to be impacted again and again—Elm Grove. One of Kingwood's oldest neighborhoods, home to over 1,500 single family homes, as well as apartments and townhomes, Elm Grove is also one of the most diverse. In contrast to the largely White affluent neighborhoods of Kingwood, Elm Grove is in the 65th percentile for racial diversity, with about 76-80% of residents considered low income, depending on the exact subsection of the neighborhood (Environmental Protection Agency, n.d.).

While, on paper, Elm Grove is not within the 100-year floodplain and is reported to have relatively low flood risk compared with other parts of Kingwood, recent history tells a different story. In May of 2019, a storm brought 16 inches of rain within only 24 hours, flooding nearly 200 homes (Rice, 2019; Rehak, 2019). Just a few short months later, in September, Tropical Storm Imelda produced 30 inches of precipitation and flooded over 600 homes, largely in Elm Grove (Mehrtens, 2019; Rehak, 2022). Notably, Elm Grove did not previously flood during Hurricane Harvey, but has been the primary area of Kingwood affected by flooding since then. This pattern of flooding is no coincidence, but rather, like much of the flooding in Kingwood, is primarily the result of irresponsible, profit-driven development.

In this case, the development of a new neighborhood subdivision to the northwest of Elm Grove has been identified as the source for the shift in drainage patterns that exacerbated the flooding. Drainage patterns, channels that collect surface runoff and are less resistant to erosion, are an effective indicator of flood risk and can easily be disrupted by development and the introduction of impervious surfaces (Nelson, 2015). Before development began, the area was "heavily wooded" and part of runoff's natural path into a nearby culvert and drainage stream (King, 2019). Since then, the 260-acre plot has been clear cut by the developer Perry Homes as they develop the Woodridge Village neighborhood, resulting in the disruption of these natural drainage systems and the creation of new blockages that divert water flow down towards Elm Grove as shown in the figure below (Rice, 2019; King, 2019).



Figure 1: Drainage Patterns Before and After Clear Cutting for Woodridge Village

Though these instances of flooding represented a significant break from major flooding events in the past, in the mind of the public, they were simply the

latest instance of the pattern of extraordinary and unpredicted flooding that had become normalized in Harvey.

### **Environmental Justice Applications**

Though this pattern has developed within the past decade, a relatively smaller time frame than is typical for the theory, considering it within Rice's criteria for slow violence offers insight into the new development's unjust ramifications. This phenomenon of slow violence describes harm being imposed on a community slowly over a period of time. The essential characteristics of slow violence include a gap between initial exposure and adverse consequences, the normalization of this slow change, and a lack of salience that make change and action more difficult to achieve. These characteristics were all present, albeit within a compressed time frame, in the case of Elm Gove. First, development occurred slowly, almost unnoticed, causing drainage conditions to gradually get worse. Eventually, the development of the more affluent Woodridge Village neighborhood affected the existing drainage system so significantly that it no longer adequately manages water flow. Due to the mass flooding during Harvey, this change was normalized. The event established that nearly everyone in Kingwood was vulnerable to random devastating flooding, making it easier to dismiss the pattern of repeated flooding in concentrated areas since then. Second, Harvey's extreme nature made it harder and harder to determine whether severe rain or unsustainable development is to blame for flooding, especially because the answer is often both as unsustainable development amplifies the impact of rainfall. As a result, flooding events are increasingly subject to different causal interpretations, including designating it as "an act of God" or understanding it as solely the result of intense precipitation, making it more difficult to pinpoint blame and hold irresponsible actors accountable.

Furthermore, this development occurred gradually, thereby obscuring responsibility and making it harder to gain consensus around holding a particular actor, like the affluent neighborhood's development company, accountable for the harm. Finally, this flooding has also been made invisible through normalization. Since Harvey set the standard that anyone in the community could flood,

it stopped becoming unusual when a smaller group continued to flood later on, despite the fact that they weren't originally affected. Flooding became accepted as something that happens now as a matter of course, instead of a problem with a root cause to be examined and questioned. As a result, I believe what I've seen in Elm Grove can be understood, in part, as an issue of slow violence.

Further complicating the process of achieving environmental justice in Elm Grove is the fact that both it and the new Woodridge Village development sit on the boundary of Harris and Montgomery County (Contreras, 2019). As such, the difficulty of merging data across counties further distorts and obscures the impacts and causes of flooding, affirming Pellow's (2018) emphasis on the importance of a multiscalar approach in understanding and addressing issues of environmental justice. Furthermore, the resulting jurisdictional ambiguity makes it increasingly difficult to leverage legal mechanisms and authority for justice. Two other pillars of Pellow's Critical Environmental Justice framework, which include an intention of intersectionality and the belief that all are indispensable in the creation of a just future, are present as well. First, applying intersectionality provides an important dimension to understanding this injustice considering the concentration of diversity that's otherwise rare in a neighborhood in this community. Furthermore, this pillar also calls for a focus beyond human stakeholders, valuing sustainability in the built environment—an issue that was heavily neglected in the lead-up to Harvey and the flooding affecting Elm Grove. Second, Elm Grove's resilience and continued commitment to rebuild is evidence of a strong belief in their own indispensability. Additionally, though the effort is not as far reaching nor as intensive as that following Harvey, a small subset of the Kingwood community has demonstrated their own belief in Elm Grove's indispensability as they continue to show up to help muck out flooded homes and began the rebuilding process once again.

While Pellow broadly discourages turning to the state as a mechanism for justice, it has proved effective in the case of Elm Grove. After the two instances of flooding less than six months apart in 2019, a group of over 200 Elm Grove residents filed a lawsuit against the developers of Woodridge Village on the grounds that they were responsible for the

flooding, pointing out the damage these developers had done to the upstream drainage system, virtually “ridding Elm Grove of proper drainage” (Contreras, 2019). Two years later, in 2021, a settlement was reached denying the developers’ “act of God” defense and awarding the victims via settlement offers that “resolved [the issue] to our satisfaction” per lead attorney Jason Webster (Rehak, 2021). However, at the end of the day, it was simply a payoff that, while it may have made a great difference in those individuals’ lives, does little to protect them, their community, and similar communities from future flooding. The settlement’s failure to mandate the restoration of natural drainage systems or impose limits on current and future developers’ activities further supports Pellow’s point that the state is rarely the best or most effective actor in achieving environmental justice.

### **Looking to the Future**

As I look towards the future, I am not optimistic about Kingwood’s prospects. While some reforms have taken place and some justice has occurred with the settlement of the Elm Grove lawsuit, it seems that, for the most part, the lessons of Harvey, Imelda, and Elm Grove have not changed my community’s behavior. Some protections have been put in place, including individuals purchasing flood insurance when financially feasible and the installation of a new flood gate system at my public high school, designed to mitigate future damage and prevent the costly 8 feet of water that flooded my school during Harvey.

However, the behaviors that have historically exacerbated flooding and its disparate impact in my community have largely gone unchanged. Despite the disastrous impacts of Hurricane Harvey on community homes, businesses, schools and the 2015 HEB commercial development project, it seems that developers failed to learn from their mistakes. Less than one year after Harvey, over 50 acres of land along one of the main roads that connects my suburb to the highway was cut and cleared for another major commercial development project termed Kingwood Place, which includes retail sites and an HEB grocery store over 100,00 square feet in size (Feuk, 2018). Eerily, this development mirrors the same one that similarly destroyed greenspace and laid concrete in the center of town, also anchored by an HEB, though this new project is even larger. As the

effects of climate change create stronger and stronger hurricanes while development continues, rising floodwaters never seem too far away, especially for areas like Elm Grove.

Ultimately, experiencing Harvey, Imelda and the handful of smaller floods impacting Kingwood drastically radicalized my relationship to the environment from a naive, juvenile understanding of just reciprocity and isolated individual interaction to one of community solidarity and responsibility. In Harvey, I witnessed how tragedy and devastation brought Kingwood together to rebuild, forging a community that saw recovery as a journey we were all on together. However, I also saw firsthand the limits of that community to take responsibility beyond the hurricane for the ways in which we allowed the Harvey flooding to happen in the first place through unsustainable development and the ways in which we remain complicit in that ongoing development and how it continues to affect members of our community. As such, I now strongly believe not only in considering how my environmental choices impact my own life, but also the lives of others. While much of the agency in irresponsible environmental choice rests with developers, companies, and local governments, we owe it to each other to consider how the neighborhood we choose to live in, the businesses we choose to support, and the candidates we elect affect the environmental outcomes for our community. Whether our community is and remains a “livable forest” is up to all of us, together.

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