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Getting Campbell's Planning Triangle Wet: Evaluating Sustainable Development in Philadelphia's Floodplain

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Getting Campbell's Planning Triangle Wet:
Evaluating Sustainable Development in Philadelphia's Floodplain

Abigail McGuckin

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requirements for the degree of the
Bachelor of Arts
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I. Abstract

Campbell's (1996) planning triangle for sustainable development needs an update to account for the projected effects of flooding due to climate destabilization. The triangle of economic development, environmental preservation, and social equity are worthy tenants to uphold but do not prioritize relocation, an essential aspect of planning for climate destabilization. The Philadelphia Redevelopment Authority proposed sustainable development via the Lower Eastwick Public Land Strategy (LEPLS) in 2019 for the Eastwick neighborhood, the site of a massive Urban Renewal failure and severe flooding. The LEPLS illustrates the weakness of using sustainable development as a mechanism to deal with projected flooding due to climate destabilization.

II. Introduction

In Philadelphia, city planning interventions have routinely caused environmental, economic, and social devastation to Eastwick. As the site of a failed Urban Renewal project, a Superfund site, disinvestment, and short-dumping, residents have come to call Eastwick the “stepchild of the City” (Heavens 2013). The Redevelopment Authority of Philadelphia (RA)— known today as the Philadelphia Redevelopment Authority (PRA)—evicted 8,636 residents who were a part of the Meadows, Clearview, and Elmwood neighborhoods in the late 1950s to make way for the New Eastwick Project (Citizens’ Council 1953). The Urban Renewal process dismantled one of the few integrated neighborhoods in Philadelphia. It was hampered by going over budget and the difficulties in creating an integrated neighborhood (McKee 2001).

In an attempt to remedy past Urban Renewal failures and flooding in Eastwick, the Philadelphia Redevelopment Authority (PRA) established the Lower Eastwick Public Land Strategy (LEPLS). According to the PRA, the final version of the LEPLS is the product of a community-driven planning process aimed at creating economic development and not exacerbating flooding (PRA 2019).

I examine the historical and hydrological context of Eastwick as well as analyze the final version of the Lower Eastwick Public Land Strategy using Campbell's (1996) planning triangle to evaluate the

PRA's claim sustainable development. I determined the LEPLS does not offer sustainable development because it does not incorporate community input and would increase flooding and reduce green space if built. Additionally, the LEPLS missed the opportunity to deliver social equity and environmental preservation—which between, Campbell argues, lies the most difficult challenge—by preserving open space for flood mitigation. This paper also reveals the limitations of sustainable development, as defined by Campbell, for sites at severe flood risk due to climate destabilization. The planner's triangle focuses on solving issues on a single site, limiting the realm of possibility for climate adaptation planning. If land could become uninhabitable by the end of the century and flood catastrophically in the mean time, why bother with sustainable development? As a result of planning for sustainable development on the site, the LEPLS does not consider alternatives for Eastwick, like managed retreat, off of the site.

III. Background

A. Sustainable Development According to Campbell: The Planner's Triangle

“Green Cities, Growing Cities, Just Cities? Urban Planning and the Contradictions of Sustainable Development” by Scott Campbell (1996) explains that sustainable development involves a balance of environmental preservation, social equity, and economic development. Campbell (1996, p. 1) states:

Nothing inherent in the discipline steers planners either toward environmental protection or toward economic development—or toward a third goal of planning: social equity. Instead, planners work within the tension generated among these three fundamental aims, which, collectively, I call the "planner's triangle," with sustainable development located at its center. This center cannot be reached directly, but only approximately and indirectly, through a sustained period of confronting and resolving the triangle's conflicts.

Furthermore, Campbell (1996) states that planning has historically come at the cost of displacing the poor and marginalized to benefit those already better off. Despite the difficulties of carrying out

sustainable development, Eastwick residents demanded it given the past city planning interventions which largely created the social equity, economic, and environmental problems in Eastwick (EFNC 2018).

The three priorities for the planner's triangle are social equity, economic development, and environmental preservation. To paraphrase Campbell (1996): The equity planner sees the city as the site of conflict between those with and without power over the distribution of goods, services, and access. This manifests in segregation and environmental justice. The economic development planner is one who views the city as the locus of innovation and the manifestation of the market. The built environment is a market that can be invested into for the purpose of generating returns. The environmental planner sees the city as the abuser of resources and producer of waste.

Campbell (1996) argues that between each point on the sustainable development triangle lies a conflict. He concludes that the development conflict between social equity and environmental preservation is the most challenging. The development conflict attempts to solve of the two other conflicts—the property conflict between social equity and economic development and the resource conflict between social equity and economic development—at once. Campbell (1996, p. 6) asks, “How could those at the bottom of society find greater economic opportunity if environmental protection mandates diminished economic growth?” and then notes that poor urban communities often face lose-lose choices between “economic survival and environmental quality.” Campbell cites Dr. Robert Bullard, the grandfather of the environmental justice, as one of the various scholars and activists who have explicated what he calls the development conflict.

1. The Planner's Triangle and Flooding

Although the development conflict arises between them, social equity and environmental preservation are complementary goals in the case of Eastwick's public lands. Social equity—which in this scenario is ensuring public safety from floods—calls for environmental protection because open space is the best form of flood mitigation. Best practices of floodplain management include protecting open space and enhancing its natural ability to hold water (National Flood Insurance Program 2015). For

example, the National Flood Insurance Program's Community Rating System—a program that rewards communities for implementing approved floodplain management practices in exchange for reduced federal flood insurance rates—includes a significant credits for "preserving open space on floodplains" and "acquiring flood-prone land and returning it to its natural state" (National Flood Insurance Program 2015).

Although using open space for flood mitigation resolves the development conflict, what about economic development? The "avoidance" strategy of open space preservation for flood mitigation removes the possibility of economic damage. Additionally, restored wetland areas in these open space may further increase flood safety around the site (Brody and Highfield 2013). Kousky and Wells (2014) concluded in their paper entitled "Floodplain conservation as a flood mitigation strategy: Examining costs and benefits," "The proximity benefits alone exceed the opportunity costs [of preserving floodplains]; the avoided flood damages further strengthen the economic case for floodplain conservation (p. 119)." Although open space preservation does not generate revenue, there is an economic argument for leaving the public land undeveloped in the LEPLS.

To set a higher standard for floodplain management, the Association of Floodplain Managers (ASFPM) developed the No Adverse Impact (NAI) strategy (2003):

No Adverse Impact floodplain management is an approach that ensures the action of any community or property owner, public or private, does not adversely impact the property and rights of others... NAI does not mean no development. It means that any adverse impact caused by a project must be mitigated, preferably as provided for in the community or watershed based plan (p. 8).

Eastwick Friends and Neighbors Coalition—an active and vocal community group in Eastwick since 2012—stated that the LEPLS should ensure that any changes to the site do not adversely impact adjoining communities, including the John Heinz National Wildlife Refuge occur as a result of new development (EFNC 2018).

IV. Methodology

This methodology focused on providing a historical and hydrological context for Eastwick context for Eastwick in order to analyze the final version of the Lower Eastwick Public Land Strategy using Campbell's (1996) planning triangle. This analysis is a culmination of fieldwork conducted from January 2017 to May 2019 and draws upon historical document analysis, observing community meetings, historical and contemporary newspaper analysis, correspondence with City of Philadelphia officials, and six semi-structured interviews with floodplain management experts. The City of Philadelphia officials that I corresponded with included the Executive Director of the PRA (Gregory Heller), two employees of the Philadelphia Water Department (Joanne Dahme and an unidentified official), and the Floodplain Manager of Philadelphia (Joshua Lippert). The floodplain management experts included four Certified Floodplain Managers (CFMs), the Assistant Manager of the Watershed Coordinator for the Jacques Cousteau National Estuarine Research Reserve (Lisa Auermueller) and the Recovery Planning Manager for New Jersey Future (David Kutner). The four CFMs and two other floodplain management experts took roles in their local or national Association of Floodplain Managers (ASFPM) chapters.¹ They have held positions including New Jersey Regional ASPM Director (Mark Mauriello) and Former Special Assistant for Flood Mitigation and Planning, PA Department of Environmental Protection (Kerry Wilson). The NJ Future Recovery Planning Manager worked closely with the ASFPM and NJAFPM in his work with coastal communities vulnerable to sea level rise. No floodplain management expert interviewee had previous experience with or knowledge of Eastwick. The interviews were transcribed and coded for details regarding floodplain management best practices; if the plan upheld best practices; the role of local governments in preventing flood disasters; local government's conflicting demands for economic growth and ensuring flood safety.

V. Data Results and Analysis

A. Historical and Hydrological Context of Eastwick

¹ No interviewees are speaking in any way on behalf of the ASFPM.

1. Historical Context

a. Urban Renewal (1950-1975)

The boundaries of present day Eastwick encompassed three neighborhoods—the Meadows, Clearview, and Elmwood—before Urban Renewal (Citizens Council 1956, Eastwick Area 1957). The character of these neighborhoods was semi-rural (Eastwick Planners 1953, McKee 2001). There were large swaths of vacant land; narrow, poorly, or unpaved roads; and a mix of housing types. Serious environmental hazards existed including industrial sites, low-lying land, a high water table which created poor drainage, dumping, and open pits of sewage due to a lack of city sewers (Eastwick Planners 1953). Eastwick's racially integrated population, various environmental issues, vacant land, and widespread tax delinquency contributed to its blight designation in 1950 and subsequently to Urban Renewal (Cahn



2014, Eastwick Planners 1953).

However, residents organized and fought back against their eviction (McKee 2001). Residents denied the Redevelopment Authority of Philadelphia (RA) officials access to their homes for real estates

assessment and signed petitions opposing development. Protestors—consisting of both African-American and white residents—took to City Hall and the Pennsylvania Convention Center (McKee 2001). Despite the fierce community opposition, the Redevelopment Authority of Philadelphia seized 2,140 acres using their powers of eminent domain and evicted 8,636 people to carry out their Urban Renewal plan (McKee 2001, Leonardo 1982).

The vision of the RA for Eastwick was grand and progressive for the time (McKee 2001). Guian McKee's piece entitled "Liberal Ends Through Illiberal Means: Race, Urban Renewal, and Community in the Eastwick Section of Philadelphia, 1949-1990" (2001) highlights the Eastwick as a unique Urban Renewal project distinct from past projects for its "liberal" goals. For example, the community was supposed to be racially integrated and inspired by Ebenezer Howard's famous Garden Cities in which was an early model for sustainable development (McKee 2001, Philadelphia Builders 1960). However, as McKee (2001) explains, the realities of creating a racially integrated community on flood prone land proximate to various sources of pollution hampered the project. By 1975, the vast majority of Urban Renewal construction in Eastwick was completed (Office of Property Assessment n.d.). From then on, Eastwick's population became predominantly African-Americans (McKee 2001).

Map 1: Aerial Map of Lower Eastwick (Google Maps)

b. Korman Era (2012-2018)

Unbeknownst to Eastwick residents, a series of lawsuits between the City of Philadelphia, the Philadelphia Redevelopment Authority (PRA), and the Korman Corporation—a descendent of the development company that built Eastwick during Urban renewal—ensued over the mid 2000s over who had the right to develop on a remaining 128-acres vacant parcel of land next to the John Heinz National Wildlife Refuge (Map 1, Site A), the nation's first urban and state's largest tidal freshwater marsh (Cahn 2014). Ultimately, the PRA struck a deal with the Korman Corporation that they could develop an

apartment complex of 722 units on one-third of the land if the City could build 1,034 parking spaces for the Philadelphia International Airport on the remaining two-thirds (Cahn 2014, Pacheco 2012). Eastwick residents were unaware of this deal until two residents noticed surveyors close to their homes and inquired about their activity (Cahn 2014). They found out that the area was being surveyed as the location of a proposed 100 million dollar residential development project (Gates 2012, Pacheco 2012). In fact, the Philadelphia City Council was likely to pass the necessary zoning changes because the lots were for single-family homes (Gates 2012, Pacheco 2012).

A portion of Eastwick residents were astonished by the news and organized in response. Ten residents quickly established the Eastwick Action Committee and joined with Friend of Heinz Refuge to establish Eastwick Friends and Neighbors Coalition (EFNC 2014). EFNC made their goal to prohibit development until the community could see the entirety of the City's and developer's plans. EFNC's goal was—and still is—to ensure that their neighbors and the John Heinz Wildlife Refuge are not adversely affected by planning decisions (EFNC 2014).

On June 12, 2012, Eastwick residents, EFNC members, and allies of EFNC testified the City Council Rules Committee Hearing at City Hall to oppose the zoning bill that would allow the apartment complexes and parkings to be built. More than 100 Eastwick residents attended. EFNC submitted a petition to City Council signed by 404 residents in opposition to the Korman Corporation's proposed development (EFNC 2012).

Brice Baker, an Eastwick resident whose home floods, testified:

Come out there the next time we have a heavy rain, and look at what we have to put up with. Look at the stress in our lives. Every time it rains, I gotta take off from work and stand around my house to try to do the Water Department's job of making sure that the sewer system can handle the water and not ruin my home (Dunn 2012).

Other Eastwick residents testified and argued that whatever the cause of the flooding, the more important problem was putting more than 1,000 new residents in flood prone neighborhood before water issues were resolved (Gates 2012).

Officials from the City and the Philadelphia Water Department also testified. Rina Cutler (2012), the Deputy Mayor at the time, testified that the flooding in Eastwick was either an unsolvable problem or the fault of residents who did not clean their backyard drainage systems. The Philadelphia Water Department Commissioner, Howard Neukrug (2012), testified that the type of flooding that destroyed Eastwick could only be resolved from a levee which the city could not afford and that residents' modification to their back yards significantly contributed to flooding. Ultimately, City Council delayed voting on the proposed rezoning bill. Councilman Kenyatta Johnson rescinded the rezoning bill altogether, denying the developer's ability to build the apartment complex (EFNC 2012). This was a massive win for EFNC but prompted questions about the site's future.

To determine what residents and stakeholders envisioned for Eastwick as a whole and specifically for the vacant 128 acres, EFNC conducted the Eastwick Resident and Stakeholders Assessment Survey in 2014. Residences south of 84th Street (Map 1, Region A), next to the open 128-acre-parcel took the survey and 244 of 250 residences (93%) responded. The key findings were that the vast majority of residents supported: 1) preserving the 128-acre parcel to help reduce flooding if a system could help lower flood insurance rates 2) using federal money to purchase the 128-acre parcel to preserve as a park or an extension of the Heinz refuge 3) prioritizing safety from floods over property development 4) community driven development because they are concerned about having input into planning Eastwick's future (EFNC 2014). EFNC conducted the survey to serve as a research document and tool guiding Eastwick's future which was uncertain specifically in the 128 acres but also in the neighborhood as a whole (EFNC 2015a).

Two days before Christmas in 2015, the PRA invited EFNC to a specially called board meeting in which the PRA unanimously voted to end the largest Urban Renewal agreement in history (Luyre 2015).

This was another massive win for Eastwick residents bolstered by the fact that the PRA publicly pledged to lead a community-based planning process for the undeveloped land (EFNC 2015b). Brian Abernathy, the Executive Director of the PRA at the time, said, “The PRA and the City will begin a community planning process and determine the best uses for these parcels. We hope the final development will be done with the community as a partner so the residents can be part of the process” (Burdo 2015). The PRA set two goals for the Lower Eastwick Public Land Strategy: 1) empower Eastwick residents through an inclusive process to shape the future of their community; and 2) provide a framework for responsible land use decisions to build a resilient neighborhood (PRA 2019).

The community planning process took the form of three public meetings and three round-tables facilitated by Interface Studios, an urban design and planning firm selected by the PRA (PRA n.d.). The roundtable sessions were based off of the Urban Alchemy Framework from Mindy Fullilove, a clinical psychiatrist who featured Eastwick in her book *Root Shock* about psychological effects of Urban Renewal on communities (PRA 2019). To ensure the momentum of the process, the PRA assembled a steering committee. City agencies represented nine out of the seventeen members (PRA n.d.). Three steering committee members were residents, two community representatives and one EFNC liaison (PRA 2019).

Surveys were conducted during the public meetings and roundtable presentations to assess support for the proposed land uses: 1) light industrial and residential in the 128-acre parcel and residential housing 2) commercial and/or institutional in the areas north and west of 84th Street. The PRA argued that development on the 128-acre could be supported by using the technique of cut and fill in which land is dug out to create room for water and piled atop a portion of the site for added elevation (PRA 2019).

The survey conducted during the second public meeting yielded modest support for each of the proposed land uses. Between 12 and 15 out of 43 participants (27-36%) supported the proposed development in each of the zones. The other responses were segmented into categories such as: keep

open, flood mitigation, disagree, or different use. One in three participants mentioned flooding in their disagreement to each proposed land use (PRA 2018).

The LEPLS does not distinguish between the two types of flooding in Eastwick: stormwater and coastal floodwater (PRA 2019, EFNC 2018). This is important because the ways to manage stormwater versus coastal floodwater are very different. Development can be made reduce stormwater but not to reduce coastal floodwater (Auermuller, L 2018, Telephone interview, 17 October). The LEPLS proposes stormwater development solutions to handle coastal floodwater in Eastwick (PRA 2019, EFNC 2018). The PRA did not explain why the distinction between stormwater and coastal floodwater was not acknowledged. This is significant because Eastwick residents fought development on the 128-acre parcel of land on the basis that it would increase both types of flooding in June 2012.

In response to the PRA's public meetings and roundtables, EFNC held a public meeting on October 25, 2018 and sent an open letter to the PRA summarizing the presentation to voice their gratitude, comments, and concerns about the LEPLS. From the outset of their presentation, EFNC affirmed the sentiments of the Eastwick Residents and Stakeholders Assessment Survey conducted in 2014: "Residents' safety must be the highest priority before any other priorities are met" (EFNC 2014). EFNC gathered members and experts to assess whether the LEPLS ensures residents' safety from flooding above all else.

EFNC critiqued the proposed use of cutting and filling as well as the PRA's refusal to differentiate between stormwater and coastal floodwater, given the projected effects of climate destabilization on flooding. One slide reads, "The filling legacy must not continue," referencing the failures of fill in Eastwick today that the PRA deposited in Eastwick during Urban Renewal to prop up development which is still flood prone. The next slide analogized the PRA's refusal to distinguish between stormwater and coastal floodwater like "comparing apples to oranges" (EFNC 2018). EFNC explained that the Philadelphia Water Department acknowledged that they cannot manage coastal floodwater but are using stormwater management tools anyway. This was put into the perspective that rising sea levels could put large swaths

of Eastwick underwater by the end of the century and severely impact flooding events from now on (EFNC 2018).

To sum up their comments and concerns, EFNC posed questions to the PRA about the Lower Eastwick Public Land Strategy. These questions explicitly probed at the claims of sustainable development made about the strategy by the PRA:

Of these 3 concerns—economic, environmental, and social equity—which, if any, have been successfully addressed? Will development address Eastwick’s issues and challenges? Is it prudent to develop in Eastwick’s FEMA 100-year floodplain), even if it is legal? Who benefits and who pays the costs in the proposed strategy? (EFNC 2018, p. 22)

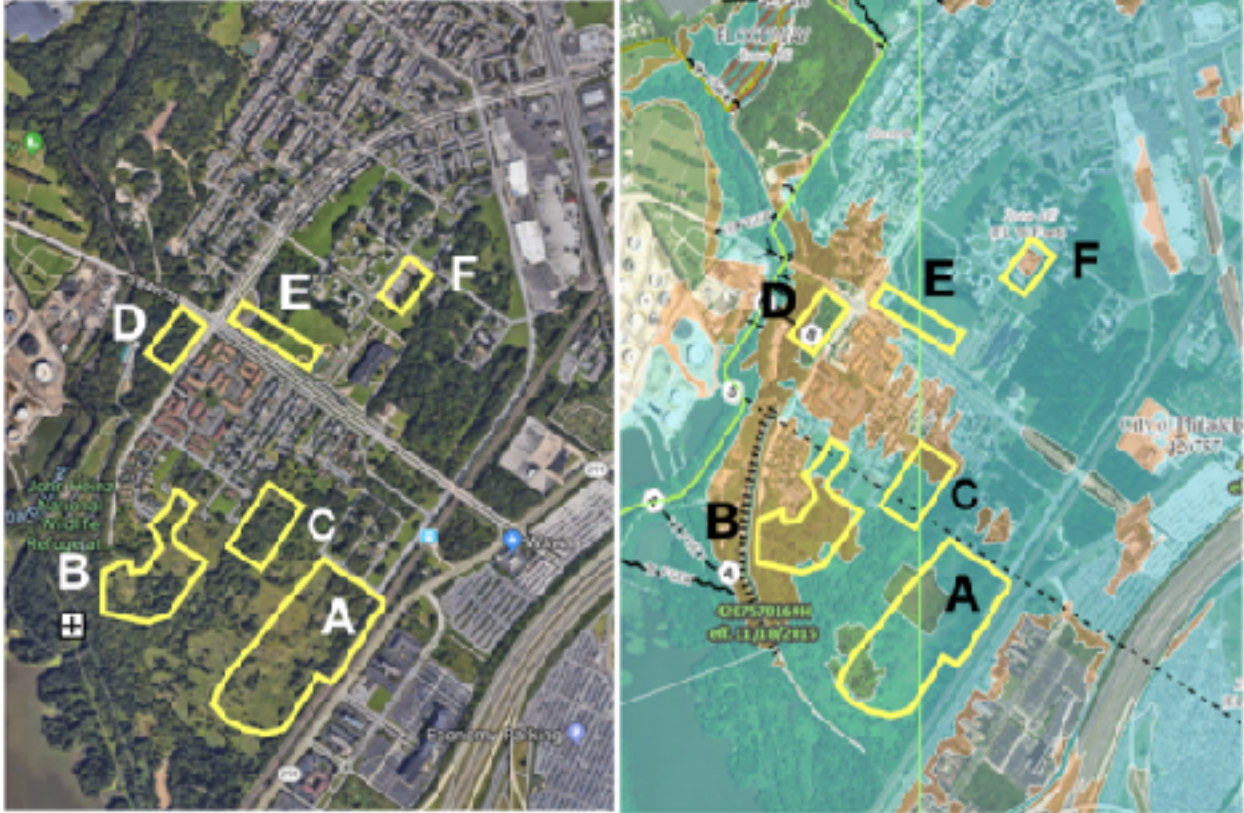
The presentation then reviewed each of the proposed land uses and inquired how decisions about each of these spaces were made. The meeting concluded with a comment form for attendees to submit their own thoughts about the LEPLS to the PRA as a part of the public comment period.

2. Hydrological Context

The Darby and Cobbs Creeks border Eastwick. Their confluence is at Clearview Landfill next to a sub-neighborhood called the Planet Streets (Map 1, Site B; USACE 2014). The two creeks are apart of the Darby and Cobbs watersheds respectively and border Eastwick which is in the Schuylkill watershed.

According the US Army Corps of Engineers (2014), Eastwick is subject to frequent and severe flooding. The worst flood in recent memory was Hurricane Floyd in 1999. The City of Philadelphia evacuated 1,000 houses in Eastwick due to flood risk (Graham & Williams 2016). The four feet of flood water ruined the first floor of homes, carried away cars, and inundated roads, trapping residents (Melamed 2015). Ramona Rousseau-Reid, as Eastwick resident, reported a “wall of water” coming down 84th Street (Cahn 2014).

The neighborhood is vulnerable floods due to tidally influence of the Delaware River and from stormwater runoff from the urbanized landscape (USACE 2014). Urbanized watersheds like the lowest parts of Darby, Cobbs, and the Schuylkill’s face a unique flooding scenario in which rain falls in densely



Map 2: Aerial Map of Eastwick Overlaid with Proposed Development Sites (Google Maps).

Map 3: FEMA Flood Map of Eastwick Overlaid with Proposed Development Sites. Blue is the 100-year floodplain (Google Maps).

populated areas of impervious surfaces, overwhelming drainage systems (PWD 2006, USACE 2014). In the past twenty years there were ten significant rainfall events that caused flooding as reported by residents (USACE 2014).

During a riverine flooding event, water from Darby and Cobbs Creeks comes over behind Clearview Landfill and flows through the Planet Streets, down 84th Street, and into Pepper Middle School (Pollack C, 2019, Telephone interview, 3 May).² Additionally, water can flow up through the 128-acre parcel along the tracks of the Airport Line train (Pollack 2019). Flooding is increased by local runoff that exceeds the storm water capacity (USACE 2014). Philadelphia area waters are projected to rise 19

² Christian Pollack is a Certified Flood Manager that conducted hydrological evaluations of Eastwick via her employer, Princeton Hydro.

inches by 2050 and four feet by 2100. Three feet of sea level rise nearly divides Eastwick and the new development from the rest of Philadelphia. Four feet of sea level rise puts Lindbergh Boulevard—one of Eastwick’s main corridors—underwater (NOAA 2019).

The 2014 US Army Corps of Engineers evaluation of flooding in Eastwick’s Planet Streets concluded, “The most likely solution to the flooding problem is a levee along the left bank of Cobbs Creek” (USACE 2014). The Army Corps estimated the levee to cost \$2,880,000 and have two main effects: 1) encroachment on the active floodplain which can raise the water surface elevation independent of an increased flow and 2) prevention of flow leaving the Cobbs Creek. The Army Corps’ study revealed potential for negative externalities as a result of a levee.

B. Evaluating the Lower Eastwick Public Land Strategy Using Campbell’s (1996) Planning Triangle

1. Social Equity and the Lower Eastwick Public Land Strategy

This section evaluates social equity within the context of the Lower Eastwick Public Land Strategy in two ways, by examining: a) the extent to which residents’ feedback and preferred goods and services are incorporated and b) if the plan ensures safety from flooding.

a. Social Equity and Incorporating Resident Feedback and Preferences

Overall, the Lower Eastwick Public Land Strategy does not largely incorporate residents feedback and preferred land uses into the final version. One exception is that the final version of strategy does recommend a re-use for the Communications Technology High School (Map 2, Site F), which EFNC supported from the outset. However, the other land uses do not align with the community’s preferred uses by the survey done throughout the Lower Eastwick Public Land Strategy and as defined in the 2014 Eastwick Residents and Stakeholders Assessment Survey.

In response to the survey question from the Eastwick Residents and Stakeholders Assessment Survey, “In your opinion, what type of businesses and services do not exist in Eastwick and should be a priority for the neighborhood?,” 20% of respondents said retail, 15% said community and cultural

organization, and 14% said groceries and eateries (EFNC 2014). However, the market analysis of the final plan revealed that the possible land uses in the study area could support: warehouse/distribution and light manufacturing uses (Map 2, Site A), townhouse or twin homeownership uses (Map 2, Site B), affordable senior apartments (Map 2, Site D), professional services/medical offices (Map 2, Site E), market rate garden apartments (Map 2, Site E), and a hotel (Map 2, Site E). The mismatch between community preferences and market analysis is legitimate, but the PRA asked residents what they wanted despite the limitations of what the market could support. The economic development decisions were made with respect to the market analysis not to the community input or environmental constraints, as the plan claims.

EFNC also addressed the lack of response to or incorporation of their feedback into the final version of the strategy. In October 2018, EFNC responded to the July 26, 2018 version of the LEPLS through a public meeting and a letter to the PRA which summarized the October 25th presentation. In response to the proposed senior housing apartments which backs up onto the 100-year floodplain and is on dangerous intersection (Map 3, Site D), EFNC said, “The plan originally mentions using the site as a gateway to the Heinz Refuge but that idea was discarded. How was that decision made? There are several large affordable senior housing projects currently in the planning and design process, is senior housing still a critical need? Should affordable senior housing be located closer to services such as Penrose Plaza?” (EFNC 2018).

Ultimately the question is, who benefits from the economic development proposed in the Lower Eastwick Public Land Strategy? The City of Philadelphia would receive tax revenue from the development, but Eastwick residents would live with a warehouse or distribution center, hotel, and senior housing on the neighborhood’s most dangerous intersection completely surrounded by the 100-year floodplain. Additionally, the strategy would not deliver the retail or the groceries or eateries that residents expressed the need for. Given the weak support for the proposed land uses according to the

surveys conducted at LEPLS public meetings and the 2014 Eastwick Resident and Stakeholders Assessment Survey, the city's priorities trump residents' in the LEPLS.

b. Social Equity and Ensuring Safety from Floods

As explained in Section V.1.b, EFNC evaluated the ability of the LEPLS to ensure safety from floods. Studies conducted by their allies from PrincetonHydro and the University of Pennsylvania, EFNC determined that the LEPLS: "Addresses stormwater NOT floodwater, Fills the 100-year floodplain, reduces flood storage, fills low area along former Route 37 trolley tracks, propels floodwater to spread out into adjoining neighborhoods, creates a stormwater basin: large cut-in area with high water table likely to fill up with ground water." EFNC demanded that the plan ensure public safety by not increasing flood risk and found that the plan in its current version could significantly increase flooding.

The six floodplain management experts said that: 1) if built in its current state, the plan would not fair well with respect to projected climatic conditions, 2) Eastwick's tidal influence should necessitate flood management best practices, and 3) the use of stormwater regulations to manage floodwater is not appropriate. In these ways the LEPLS does not ensure public safety. When asked what floodplain management standards the LEPLS upheld, Joshua Lippert, the floodplain manager for Philadelphia, Joshua Lippert (2018, Email to author, 2 November), wrote, "[R]epresentatives from PWD (Philadelphia Water Department) and [the Office of] Sustainability, who serve on the City's Flood Risk Management Task Force served to advocate for best practices in floodplain management. The Task Force is developing a strategic plan to integrate best practices for floodplain development into planning documents. But in today's ecosystem, a planning study such as this would not require and floodplain review. However, all subsequent development would have to comply with Zoning and Building Codes."

In short, the LEPLS legally only has to comply with minimum floodplain management standards and not uphold best practices. FEMA's minimum standards are far from best practices (ASFPM 2003). Cynthia Bianco (2018, Telephone interview, 6 November), the Community Resilience Program Manager for Tetra Tech, a private engineering and program management consulting firm, and Certified Floodplain

Manager, said, “Following the minimum FEMA requirements doesn't make you a wise community—it's a step in the right direction. I think that the City of Philadelphia should use NAI [No Adverse Impact] to ensure that they're not creating worse problems.”

Interviewees universally affirmed that open space is the best form of mitigation and three specified that the No Adverse Impact toolkit should be used to guide any change to land use. French Wetmore (2018, Telephone interview, 26 October), former Chief of Local Floodplain Programs for the Illinois Division of Water Resources and State Flood Insurance Coordinator, said, “[No adverse impact] is based on the premise that the NFIP is the base for a local floodplain management program, but the criteria should be refined based on local needs and particularly on the desire to not adversely impact someone else. FEMA's criteria slows down flooding problems, but does not prevent them... If this plan was pure NAI, [the PRA] wouldn't consider developing there in the first place.” Interviewees universally noted the unique flood situation in Eastwick and advocated for best practices to be implemented.

Floodplain management experts lamented the persistent drive of local governments to develop on urban floodplains and acknowledge how often they saw local governments fail to ensure public safety by doing so. David Kutner (2018, Telephone interview, October 11), Senior Advisor for New Jersey Future, the state's leading smart growth policy and advocacy resource organization, said:

[Local government] can make the difference in shifting development to be more cognizant of the risk that [residents] are facing. It is difficult to get [local governments] thinking about these issues because they've told us point blank they are scared that people won't invest in their communities. They told us point blank that they're gonna lose their tax base and their constituents... I know the PRA is tasked with generating returns in the economy, but they don't have to do it in a way that puts people at risk.

Kerry Wilson (2018, Telephone interview, 8 October), Former Special Assistant for Flood Mitigation and Planning, PA Department of Environmental Protection, echoed Kutner's point when he cited redevelopment along the Susquehanna River in Harrisburg as an example of a local government

fostering development on flood prone land due to economic pressures, “The city was faced with tax limitations on its real estate. Since real estate and property taxes bring in a lot of revenue any chance or opportunity the city has to build on vacant land is a development opportunity that is difficult to turn down.” Kutner and Wilson both acknowledged the difficult positions local governments and redevelopment agencies are put in with the opportunity to develop on urban floodplains. They are both organizations responsible for generating revenue and the non-permanent disruption of flooding makes economic growth in these areas appear viable. However, given the increased flood risk due to climate change, it is not wise to develop in these areas. It puts the new development at risk and, more importantly, puts nearby residents at risk in two ways: 1) it encourages their habitation in dangerous land (Burby 2006) and 2) can increase flooding on nearby properties (ASFPM 2003).

Given the resounding agreement by floodplain management experts and from the research delivered by EFNC about how the proposed development would affect the site, it is serious concern that the PRA dismissed EFNC’s October 25, 2018 presentation. The final version of the LEPLS states:

During the public comment period, EFNC held an additional meeting in which neither the consultant team or the Redevelopment Authority were in attendance... It is noteworthy that some of the strategies surrounding building in the floodplain that had been presented by the consultant team were misrepresented in that presentation (PRA 2019).

This paragraph of the LEPLS attempts to discredit EFNC and delegitimize their concerns about flooding which are substantiated with various hydrological surveys conducted on the site. This type of behavior does not deliver “social equity” or community driven planning. The LEPLS does not explain what the “misrepresentations” are or address them.

Overall, the LEPLS does not deliver social equity because it neither incorporates residents’ feedback and preferred goods and services nor ensures safety from floods. Furthermore, it attempts to delegitimize and dismiss EFNC, a vocal community group with high technical capacity from their allies and partners including the Delaware Riverkeepers Network, Keystone Conservation Trust, the PA Chapter

of the Sierra Club, the Public Interest Law Center of Philadelphia, and the Urban Studies Program at the University of Pennsylvania (EFNC 2014). Despite the promise and formalized process of community driven planning, the LEPLS does not uphold social equity per Campbell's definition.

2. Economic Development and the Lower Eastwick Public Land Strategy

The LEPLS proposes economic development. This is expected given the PRA's mission of role as "the City's implementation arm for community development, and partner agency with the Department of Planning & Development" (PRA n.d.B). In short, the PRA's job is to create economic development and promote growth. The LEPLS proposed land uses according to a market analysis conducted by the advisory firm Real Estate Strategies (RES). RES determined that a mix of residential, commercial, and industrial development were viable in Eastwick.

The key findings of the market analysis were that over the next five years Eastwick could support: a warehouse/distribution and light industrial space, a hotel of approximately 150 rooms or an office with ground floor retail, sixty-five to seventy-five units of affordable senior housing, 200 to 250 townhouse or twin home-ownership units, and possibly small commercial uses such as a professional center or urgent care facility. Other land uses are considered but were left out of the key findings. For example, the LEPLS notes that the site of proposed affordable senior housing could also be a drive-thru commercial establishment or a gas station (PRA 2019).

The proposed economic development in Eastwick fits into the Philadelphia City Planning Commission's (PCPC) Lower Southwest District Plan (2016). The economic development proposed in the Lower Southwest District Plan include commercial and light industrial development as well as protection and expansion of the Philadelphia international Airport's operations. The proposed additional streets, green space, and proposed light industrial spaces, commercial, and offices spaces in the in the Lower Southwest District Plan are nearly identical to those propose in the LEPLS. The PCPC's website showcases the LEPLS calling it a "consultant-led plan" by the PRA designed to "guide new development on a large 132-acre site" (PCPC 2016).

Unlike the Lower Southwest District Plan, the LEPLS goes into depth about the limitations of building in Eastwick given its location in the FEMA designated 100-year floodplain. The LEPLS qualifies the proposed land uses, noting that building in the FEMA designated 100-year floodplain adds costs. The LEPLS estimated the redevelopment costs of building on the floodplain are about \$250 per foot (PRA 2019). Additionally, the LEPLS notes that financing projects in the floodplain may be difficult given the recent hurricanes across the country and the uncertainty of the National Flood Insurance Program (PRA 2019).

3. Environmental Preservation and the Lower Eastwick Public Land Strategy

The Lower Eastwick Public Land Strategy proposed to leave roughly half of the land undeveloped. I argue in Section III.A.1 that flooding creates the opportunity to uphold environmental preservation and social equity in the planner's triangle because open space is the best form of flood mitigation. Additionally, environmental preservation in the 128-acre parcel (Map 1, Site A) is a priority the Eastwick Residents and Stakeholders Assessment Survey—82% of respondents would support the use of federal money to purchase the 128-acre development site for preservation (EFNC 2014). The Conservation Fund offered to buy the 128-acre parcel in 2006. The Keystone Conservation Trust offered to the same parcel again in 2012 and 2015 (Pilling R, 2019, Email to author, 1 May).³

Residents defended environmental protection in the 128-acre parcel because of its co-benefits of flood mitigation. This was the basis for the fight against the Korman Corporation's apartment complex development in 2012. Although preserving the open space in Eastwick would have fulfilled residents' preferences and not increased flood risk, the PRA and the LEPLS proposed development on each of the sites except Site C. In Site C there are wetlands that they legally have to protect. Ultimately, the LEPLS proposed to preserve half the currently undeveloped space. However, any develop increases flood risk because the land is almost entirely in the 100-year floodplain (ASFPM 2003).

D. Discussion

³ Ross Pilling is one of the two Principals for Keystone Conservation Trust.

The Lower Eastwick Public Land Strategy neither proposes sustainable development nor considers alternatives for the residents which would reduce or eliminate their risk of flooding. Campbell defines sustainable development as a balance between the competing priorities of social equity, economic development, and environmental preservation. The LEPLS does not plan for social equity or environmental preservation and misses the opportunity to uphold both of these points by preserving open space for flood mitigation.

Additionally, the LEPLS fails to consider alternatives that would make Eastwick residents safe from flooding. One option was a levee between Eastwick and Cobbs Creek, which the US Army Corps of Engineers suggested. This would block off most of the major flooding events. However, it could increase flooding up stream and down stream (USACE 2014). In theory, it could eventually give way with the increasing flooding due to climate change, drowning Eastwick. Levees fail, notoriously New Orleans'. Another alternative would be to buy out homeowners slowly over time. This would fragment the community, but the residents would move to out of the dangerous floodplain as the projected effects of climate destabilization set in. Finally, Eastwick could be relocated as a whole, ensuring residents' safety and attempting to maintain the community. This scenario is called "managed retreat" (Hino et al. 2017). Campbell's (1996) planning triangle and the LEPLS do not consider these options, in part, because sustainable development focuses on fixing problems on a site. The LEPLS reveals the limitations of the planner's triangle as well as planning as a discipline to deal with the spatial effects climate destabilization

VI. Conclusions

Evaluating the LEPLS using Campbell's (1996) planner's triangle reveals the difficulty of carrying out sustainable development and the its limitations to deal with the projected effects of climate change. The three points of sustainable development were mutually important for the PRA and Eastwick residents. However, as EFNC (2018) argued, the PRA did not uphold the triangle's principles although the PRA claimed to deliver sustainable development in the LEPLS. This raises Campbell's (1996, p. 8) concern

that the term “sustainable development” may be useless, “After all, if both the World Bank and radical ecologists now believe in sustainability, the concept can have no teeth.” However, Campbell (1996) also acknowledges that the widespread acceptance of the term may reveal that sustainability has won and become part of the dominate development narrative. The next task for planners is bridging “theory and practice” (Campbell 1996, p. 9).

Yet, what good is planning for sustainable development if the site could be underwater by the end of the century? The points of economic development and environmental preservation plan for the future, but the point of social equity looks back. It sees the city as a product of inequality and attempt to redistribute what has historical been in the hands of a few. This is essential for social equity planning, however planners must also look to the future, especially in the face of climate change. In the case of Eastwick, both the City and floods have displaced residents. The latter is projected to increase for frequency and force over the coming decades.

Moreover, there are many “Eastwicks.” Racist housing and development policies persisted across the United States (Rothstein 2017). In some cases, these policies pushed African-Americans to low-lying land, creating what Ueland and Warf (2006, p. 50) coin “racialized topographies.” Their study found that housing markets in Southern cities tend to segregate African-Americans into “flood-prone and amenity-poor” areas of cities. This papers reveals that site specific planning, even for sustainable development, may be useless for communities like Eastwick in the face of climate destabilization. The task is to integrate climate adaptation into city planning. This is essential for “racialized topographies” in which minorities are disproportionately exposed to flood risk.

References

- Association of Floodplain Managers (2003) *No Adverse Impact: A Toolkit for Common Sense Floodplain Management*, rep., Association of Floodplain Managers. Available from: https://www.floods.org/NoAdverseImpact/NAI_Toolkit_2003.pdf (accessed 4 May 2019).
- Brody, S.D. & Highfield, W.E. 2013, "Open space protection and flood mitigation: A national study", *Land Use Policy*, vol. 32, pp. 89-95.

- Burby, RJ (2006) Hurricane Katrina and the paradoxes of government disaster policy: Bringing about wise governmental decisions for hazardous areas. *Annals of the American Academy of Political and Social Science*. [Online] 604171–191.
- Burdo A (2015) Eastwick Neighbors To Be Part of Planning 129 Acres Near Philadelphia International Airport . *NBC Philadelphia*, NBC, 24th December. Available from: <https://www.nbcphiladelphia.com/news/local/Eastwick-Neighbors-to-be-Part-of-Planning-129-Acres-Near-Philadelphia-International-Airport-363469131.html> (accessed 5 May 2019).
- Cahn, AL (2014) On Retiring Blight as Policy and Making Eastwick Whole. *Harvard civil rights-civil liberties law review*. 49 (2), 449–492.
- Campbell, S. 1996, "Green cities, growing cities, just cities?: Urban planning and the contradictions of sustainable development", *American Planning Association. Journal of the American Planning Association*, vol. 62, no. 3, pp. 296.
- Citizens' Council on City Planning (1956) *A guide to Eastwick Redevelopment. A guide to Eastwick Redevelopment*, rep., Philadelphia, PA: Citizens' Council on City Planning.
- Cutler R (2012) Testimony of Deputy Mayor for Transportation and Utilities. *PlanPhilly*, Philadelphia: Philadelphia City Council. Available from: http://planphilly.com/uploads/media_items/http-planphilly-com-sites-planphilly-com-files-
- Dunn M (2012) Eastwick Residents Say City of Phila. Failing To Control Flooding in Neighborhood. *CBS Local*, 9th October. Available from: <https://philadelphia.cbslocal.com/2012/10/09/eastwick-residents-say-city-of-phila-failing-to-control-flooding-in-neighborhood/> (accessed 5 May 2019).
- Eastwick area include Eastwick, Elmwood, Clearview, and 'Meadows' (1957) *The Inquirer*, ProQuest Historical Newspapers, 13th July. Available from: <https://proxy.library.upenn.edu/login?url=https://proxy.library.upenn.edu:2174/docview/532149255?accountid=14707> (accessed 5 May 2019).
- Eastwick Friends and Neighbors Coalition (2012) Eastwick Hails Success at City Council Hearing on June 12, 2012. *Eastwick Friends and Neighbors Coalition*. Available from: <https://eastwickfriends.wordpress.com/2012/06/12/success-at-city-council-hearing/> (accessed 5 May 2019).
- Eastwick Friends and Neighbors Coalition (2014) *Eastwick Residents and Stakeholders Assessment Survey: Results and Analysis. Eastwick Residents and Stakeholders Assessment Survey: Results and Analysis*, rep., Eastwick Friends and Neighbors Coalition. Available from: <https://eastwickfriends.files.wordpress.com/2016/02/efnc-community-survey-final-05152015-color-2-3.pdf> (accessed 5 May 2019).
- Eastwick Friends and Neighbors Coalition (2015a) Eastwick Community Assessment Survey. *Eastwick Friends and Neighbors Coalition*. Available from: <https://eastwickfriends.wordpress.com/about/eastwick-community-assessment-survey/> (accessed 5 May 2019).
- Eastwick Friends and Neighbors Coalition (2015b) Eastwick Urban Renewal Agreement Ends, New Chapter Begins for Community. *Eastwick Friends and Neighbors Coalition*. Available from <https://eastwickfriends.wordpress.com/2015/12/23/eastwick-urban-renewal-agreement-ends-new-chapter-begins-for-community/>(accessed 5 May 2019).
- Eastwick Friends and Neighbors Coalition (2018, October 25) 'Eastwick Public Lands Strategy: Comments and Concerns Public Meeting' [PowerPoint presentation]. Embassy Suites Hotel Philadelphia, PA. Available at: <https://eastwickfriends.files.wordpress.com/2018/10/efnc-public-mtg-final-presentation-2018-1025.pdf> (accessed 4 May 2019).
- Eastwick Planners (1953) *The Eastwick Redevelopment Area. The Eastwick Redevelopment Area*, rep., Philadelphia, PA: Philadelphia City Planning Commission.
- Gates KP (2012) City says feds need to build earthen berm to provide flooding relief in Eastwick, and 722 apartments won't make it worse. *PlanPhilly*, WHYY, 10th October. Available from: <http://>

- planphilly.com/articles/2012/10/10/city-says-feds-need-build-earthen-berm-provide-flooding-relief-eastwick-and-722-apartments-wont-make (accessed 5 May 2019).
- Graham, J. & Williams (2016) Living Downstream in Eastwick: A Grassroots Organizing Success in an Environmental Justice Community [PowerPoint presentation]. Philadelphia, PA. Available at: <http://www.delawariverkeeper.org/sites/defaultfiles/Living%20Downstream%20in%20Eastwick-A%20Grassroots%20Organizing%20Success.pdf> (accessed 4 May 2019).
- Heavens A (2013) Town By Town: Eastwick conveniently located but feeling overlooked. *The Inquirer*, 4th August. Available from: https://www.philly.com/philly/business/real_estate/town-by-town/20130804_Town_By_Town__Eastwick_conveniently_located_but_feeling_overlooked.html (accessed 4 May 2019).
- Hino, M., Field, C. & Mach, K. 2017, "Managed retreat as a response to natural hazard risk", *NATURE CLIMATE CHANGE*, vol. 7, no. 5, pp. 364-364.
- Kousky, C. & Walls, M. 2014, "Floodplain conservation as a flood mitigation strategy: Examining costs and benefits", *Ecological Economics*, vol. 104, pp. 119-128.
- Lurye S (2015) After 64 years, country's largest urban renewal project ends in Philly. *Philly Voice*, 27th December. Available from: <https://www.phillyvoice.com/after-64-years-countrys-largest-urban-renewal-project-ends/> (accessed 5 May 2019).
- Mckee, Guian A (2001) Liberal Ends Through Illiberal Means. *Journal of urban history*. [Online] 27 (5), 547-583.
- Melamed S (2015) City seeks end to troubled 60-year Eastwick urban renewal effort. *The Inquirer*, 16th October. Available from: https://www.philly.com/phillyliving20151016_City_seeks_end_to_troubled__60-year_Eastwick_urban_renewal_effort.html
- National Flood Insurance Program (2015) *Natural Functions and CRS. Natural Functions and CRS*, issue brief, Federal Emergency Management Agency. Available from: <https://www.fema.gov/media-library-data/1459276443255-663d02584edc3ac6cda2f4a7f337100b/Natural-Functions-and-CRS.pdf> (accessed 4 May 2019).
- Neukrug H (2012) Testimony of Water Commissioner Howard Neukrug. *PlanPhilly*, Philadelphia: Philadelphia City Council. Available from: http://planphilly.com/uploads/media_items/http-planphilly-com-sites-planphilly-com-files-
- National Oceanic and Atmospheric Administration (n.d.) Sea Level Rise Viewer. Office for Coastal Management. Available from: <https://coast.noaa.gov/slr/#/layer/slr/0/-8375817.6366493935/4852621.227524344/12/satellite/none/0.8/2050/interHigh/midAccretion> (accessed 2 July 2019).
- Office of Property Assessment (n.d.) Property. City of Philadelphia. Available from: <https://property.phila.gov/> (accessed 5 May 2019).
- Pacheco L (2012) The Riches of Eastwick. *Grid Magazine*, 7th September. Available from: <https://www.gridphilly.com/grid-magazine/2012/9/7/the-riches-of-eastwick.html> (accessed 5 May 2019).
- Philadelphia Builders Eastwick Corporation (1960?) *Philadelphia Builders Eastwick Corporation presents a proposal for redeveloping Eastwick urban renewal area*. Philadelphia Redevelopment Authority (ed.), *Philadelphia Builders Eastwick Corporation presents a proposal for redeveloping Eastwick urban renewal area.*, rep., Philadelphia, PA: Philadelphia Builders Eastwick Corporation.
- Philadelphia City Planning Commission (2016) *Lower Southwest District Plan. Lower Southwest District Plan*, rep., City of Philadelphia. Available from: <https://www.phila2035.org/lower-southwest> (accessed 5 May 2019).
- Philadelphia Redevelopment Authority (2018) *Lower Eastwick Public Land Strategy*. 2nd ed. *Lower Eastwick Public Land Strategy*, Philadelphia, PA: Philadelphia Redevelopment Authority. Available from: https://www.dropbox.com/s/yi9pyj8ub7udmei/7_26_PublicMtg_darker.pdf?dl=0 (accessed 5 May 2019).

- Philadelphia Redevelopment Authority (2019) *Lower Eastwick Public Land Strategy*. 3rd ed. *Lower Eastwick Public Land Strategy*, Philadelphia, PA: Philadelphia Redevelopment Authority. Available from: <https://philadelphiaredevelopmentauthority.org/wp-content/uploads/2019/03/Lower-Eastwick-Public-Land-Strategy-March-25-2019.pdf> (accessed 5 May 2019).
- Philadelphia Redevelopment Authority (n.d.A) *Lower Eastwick Public Land Strategy*. <https://philadelphiaredevelopmentauthority.org>, City of Philadelphia. Available from: <https://philadelphiaredevelopmentauthority.org/community-engagement/lower-eastwick-public-land-strategy/> (accessed 5 May 2019).
- Philadelphia Redevelopment Authority (n.d.B) *About Us*. <https://philadelphiaredevelopmentauthority.org>, City of Philadelphia. Available from: <https://philadelphiaredevelopmentauthority.org/about-us/> (accessed 5 May 2019).
- Philadelphia Water Department (2006) *The Schuylkill River Watershed Source Water Protection Plan. The Schuylkill River Watershed Source Water Protection Plan*, rep., City of Philadelphia. Available from: http://www.phillywatersheds.org/doc/Schuylkill_SWPP_2006.pdf (accessed 5 May 2019).
- Rothstein R (2017) *The Color of the Law: A Forgotten History of How Our Government Segregated America*. 1st ed. New York , NY: Liveright Publishing Corporation.
- Ueland, J. & Warf, B. 2006, "Racialized Topographies: Altitude and Race in Southern Cities", *Geographical Review*, vol. 96, no. 1, pp. 50-78.
- US Army Corps of Engineers Philadelphia District (2014) *Eastwick Stream Modeling and Technical Evaluation. Eastwick Stream Modeling and Technical Evaluation*, tech., Philadelphia, PA: US Army Corps of Engineers.