ABSTRACT

Title of Thesis: RE-RO(O/U)TING: RECONFIGURING MOBILITIES AND MATERIALITIES THROUGH THE DESIGN OF A GREEN-BLUE INFRASTRUCTURE CORRIDOR IN BALTIMORE, MARYLAND

Bryn Martin, Master of Landscape Architecture, 2022

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This thesis engages with Ecological Urbanism through a literature review and design project. Through a literature review which reads ecological urbanism with other contemporary social theory, the thesis raises a question: how might an approach centering the materiality of landscape and its relation to mobility inform the interdisciplinary work of translation and interpretation which is central to ecological urbanism? This approach is examined through a design project examining the landscape of the lower Jones Falls, a small, culverted urban river. The project profiles some of the past and present mobilities and materialities shaping this urban environment. These observations inform a design project envisioning a daylighting of the culverted Jones Falls as a focal intervention in the reimagination of an urban expressway corridor as a twenty-first century ecological mobility corridor: a landscape of green and blue spaces, ecological infrastructure multimodal streetscapes, and a reinvigorated public realm.

RE-RO(O/U)TING: RECONFIGURING MOBILITIES AND MATERIALITIES THROUGH THE DESIGN OF A GREEN-BLUE INFRASTRUCTURE CORRIDOR IN BALTIMORE, MARYLAND

by

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Chapter 1: Re-Ro(o/u)ting

We do not even know what a landscape is capable of.[1]

More than 66% of the streams which once flowed through present-day Baltimore City are buried. In the darkness beneath the streets and sidewalks lies a hidden archive of the city's variegated histories of colonization and development: a sprawling, dendritic, watery body of evidence (Elmore & Kaushal, 2008). The burying and piping of streams has catastrophic consequences for the functioning of entire ecosystems (Khirfan et al., 2020; Pinkham, 2000), but the vanished waterways are not truly gone. During heavy rain events, streams and rivers reappear, coursing through the streets, and water collects in low-lying places, recalling the wetlands which once wove through stream corridors.

This thesis is a projective experiment in drawing out the potentiality latent within the landscape of the lower Jones Falls: a small, partly culverted river which occupies a central (if often overlooked) location in the geography and history of Baltimore, Maryland. It is also an engagement with the discourse of ecological urbanism (Mostafavi et al., 2013; Spirn, 2014). In this

[1] This is a variation on one of Gilles Deleuze's favorite "battle cries:" the philosopher Baruch Spinoza's declaration that "[w]e do not even know what a body is capable of."

thesis, I intend to muddle[2] through some of the viscous, troublesome questions haunting this discourse by projecting these questions over the thick variegated pastpresents (King, 2010) of Baltimore's terrain.

Grounding Ecological Urbanisms

This thesis engages with recent critiques of the objectivist, ecological model of the city as the conceptual basis of a data-driven decision-making paradigm. These critiques raise questions related to 1) claims to objectivity made by designers and decision makers employing such an approach and 2) the potentially depoliticizing effect which these technocratic, ostensibly indisputable managerial technologies might have on environmental decision-making processes and the overall governance of the city (De Block, 2016; Gandy, 2015; Swyngedouw, 2011; Swyngedouw & Ernstson, 2018; Vicenzotti, 2017; Wakefield, 2020). My ambition is sketch out an ecological urbanism which could become response-able (*sensu* Haraway, 2016) to these critiques through the cultivation of transdisciplinary (Barad, 2008) and ways of paying attention to the relational, agential nature of their knowledge practices and the situatedness of their objectivity (Haraway, 2018). Such a

[2] Haraway proposes "muddle" (from the old Dutch word for "muddying the waters,") as a means challenging logical tropes of unobstructed vision and vacuous space (Haraway, 2016, p.174). Muddling, as a trope for scholarship, emphasizes the necessity of generative agitation and stirs up deep-seated cultural anxieties about purity and contamination.

project of ecological urbanism might also be an ecology of networked practices for multispecies flourishing (Gatto & McCardle, 2019; Houston et al., 2018; Tran & Khan, 2021) capable of answering Donna Haraway's call to "make trouble, to stir up potent response to devastating events, as well as to settle troubled waters and rebuild quiet places," through an "affective ecology in which creativity and curiosity characterize the experimental forms of life of all kinds of practitioners, not only the humans," (2016, p. 68) like that which Hustak and Myers describe. I mediate between the world of Haraway and her kin (*sensu* Haraway) and that of Ecological Urbanism (Mostafavi et al., 2013) by way of Felix Guattari's (Guattari, 1995, 2005) Ecosophy.

The vector by which I approach an explicitly relational and transdisciplinary practice of ecological urbanism in this thesis is, to my knowledge, somewhat novel: I propose that paying attention to the materialities and mobilities which compose urban landscapes might offer a means of grounding ecological urbanism while simultaneously discovering and activating new potentialities. This approach could be loosely described as an engagement with New Materialism (Coole & Frost, 2010), but I will attend closely to a number of thinkers who have typically not gone out of their way to gather under this sign. The substrate of this approach is a material, empirical and relational orientation toward landscape which I refer to as a "low theory of landscape," taking McKenzie Wark's (2015) adaptation of low theory (Halberstam, 2011) as its starting point. A low theory of landscape is a rich

humus, a symchthonic composting[3] of arts and sciences which thrives in the company of a particular projective ecology (Lister & Reed, 2020) which I refer to as re-ro(o/u)ting.

Ecological urbanism is an unavoidably interdisciplinary undertaking (Spirn, 2014), but it only presents the possibility—not the guarantee—of trandisciplinarity: in other words, of not simply combining different disciplinary knowledges but “inquiring into the histories of the organization of knowledges and their function in the formation of subjectivities ... mak[ing] visible and put[ting] into crisis the structural links between the disciplining of knowledge and larger social arrangements" (Hennessy, 1993, as cited in Barad, 2007, p. 93). Following Karen Barad’s (2008) agential realism, I propose that a transdisciplinary ecological urbanism is one which not only understands the agential nature of practices of measurement and representation, but it is accountable for the active role which these practices play in producing the world, and the ways in which this situates the practitioner’s objectivity. Such a practice of design might take inspiration from Haraway’s assertion that “[t]he point is to make a difference in the world, to cast our lot for some ways of life

[3] See Haraway (2016, pp. 30-57) on her use of compost and the (sym-)chthonic as tropes. These earthly concepts are excellent companions to low theory: “Symchthonic stories are not the tales of heroes; they are the tales of the ongoing” (p. 76). Also see footnote 21 in this thesis.

and not others. To do that, one must be in the action, be finite and dirty, not transcendent and clean" (2018, p. 36). Rather than a transcendent, planetary techno-managerial master narrative, I intend to outline the story of an ecological urbanism which is partial and situated. An ecological urbanism rooted in, and routed through, the layered, compressed ground of the city takes on new particularities as it winds its way through the material and semiotic sediments underlying the city's surface. The project of ecological urbanism, projected through the pores and particles of this earthy-watery anthropogenic realm, materializes differently at each turn.

This focus on mobilities and materialities would form the basis of a low theory of landscape, through which designers might reckon with both the limited nature of their agency and the sheer complexity of the manifold agencies at work in the continually unfolding materialization of landscapes.

My objective is a re-ro(o/u)ting—the expression of a projective ecology (Lister & Reed, 2020) responsive to the specific mobilities and materialities which compose a place, with the goal of composing novel ecologies of regenerative, reciprocal relations of metabolism and desire. The proposal will re-route numerous mobilities, altering the ambiences and rhythms of daily maintenance movements, and creating new opportunities for encounters and events. The proposal will also rethink the materiality of the city through the concept of porosity. The reconfigurings of mobilities and materialities in the city progress synergistically with many re-rootings: the re-membering (*sensu*

Barad, 2021) of entanglements above and below the ground plane, the rebuilding of soil assemblages, and the diagrammatic projection of new histories and futurities.

Figure, Diagram, Project

Diagrams are more than representations which more or less faithfully reflect some external condition elsewhere—they are projective and performative; they are material-semiotic practices; they world worlds; they body forth[4]; they are figurations[5]; they express a virtuality.[6] While early instances of projective drawing as an architectural technology can be found as early as the fourteenth century, with precedents in antiquity (Evans, 1997), the use of projective drawing as a "codified space of translation and mediation into the production of the built environment" (Douglas, 2015) rose to prominence during the sixteenth century. What distinguished these projective drawing techniques from earlier generative and performative technologies of representation and figuration was their degree of abstraction and

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[4] James Corner borrows this phrase, crediting it to Samuel Taylor Coleridge, but the quote he includes, "body forth the form of things unknown" (quoted in Corner, p. 269), is nearly identical with a line from act V of Shakespeare's "A Midsummer Night's Dream."

[5] *Sensu* Haraway: "performative images that can be inhabited," (2018, p. 11).

[6] This sense of "virtuality" is borrowed from the work of Gilles Deleuze. Wark (2004) and Massumi (1999) usefully develop the concept of the virtual.

standardization, which was made possible through new, emerging, rationalized conceptions of space.

Nina-Marie Lister and Chris Reed propose “projective ecologies” (2020) as a pluralistic and transdisciplinary approach attentive to the agential, performative capacity of techniques of representation. Bruno Latour (2012) sees design as a humble, grounded undertaking which offers a promising approach to problem-solving in the conditions of the Anthropocene. To design, in this view, is always to redesign; designing is closer to tinkering and bricolage than to proper poeisis. Latour challenges designers with the task of “drawing together” all of the relations which make up things, rendering them as “matters of concern so as to offer to political disputes an overview, or at least a view, of the difficulties that will entangle us every time we must modify the practical details of our material existence” (Latour, 2012, p. 12). In this thesis, I will sketch out re-ro(o/u)ting as an orientation of ecological urbanism toward a projective material-semiotic practice of design which draws out latent potential through the (recon)figuring of real, material landscapes. This approach is attuned to the limited agency of individual designers and seeks to compose transversal (*sensu* Guattari, 1995) alliances between heterogeneous discourses, humans, and nonhumans; in other words, its approach is what Haraway (2016) calls sympoietic. Rather than a project with a unitary master narrative, re-ro(o/u)ting is a manifold; its projection is rhizomatic and its agency is networked. The present thesis develops a

framework plan, an arrangement of patternings akin to Haraway's string figuring, or Isabelle Stenger's description of Felix Guattari's "relaying": "consenting to an ongoing process, accepting that what is added can make a difference to the process, and becoming accountable for the manner of that difference, the manner in which the thinker casts his or her lot for some ways of going on and not others" (Stengers, 2017 p. 396).

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Ecological Urbanism

Ecological Urbanism is a simple proposition; in Anne Spirn's words, it "weds the theory and practice of city design and planning, as a means of adaptation, with the insights of ecology – the study of the relationships between living organisms and their environment and the processes that

shape both – and other environmental disciplines, such as climatology, hydrology, geography, psychology, history, and art" (Spirn, 2014). Beneath the placid surface of this seemingly straightforward imbrication of urban design and ecology, however, lies a swirling, chaotic depth of complexity and ambiguity: in other words, a great deal of trouble. This is the trouble which I intend to stay with throughout this thesis.

Consider, for instance, the city of Las Vegas: a wonder of mid-century terraforming, an urban garden blooming in the desert. The construction of Las Vegas required the interdisciplinary coordination of diverse engineering expertise, as well as considerable knowledge of hydrology and hydraulics, topography, agriculture and horticulture, and indoor climate control (Rothman & Davis, 2002). It is probably not, however, what most people would consider an eco-city of the future, in spite of reported efforts at water conservation in fountains and hotel amenities. Is there an objective, irrefutable reason for this? One might argue that the city is a case study in bad urban design, built in the golden age of car-focused cities. However, this argument verges dangerously close to the realm of aesthetics and ethics. One could also argue that Las Vegas is unnatural—it is a dense human settlement exactly where such a settlement should not be, required major alteration of the Colorado River, the creation of Lake Mead and the displacement desert ecosystems, and it continually requires large energy inputs. This comes closer to an operational definition of "good" and "bad" cities, but questions of value—

questions of what matters, still lurk in the background. Particularly troubling is the notion of “natural” in operation here. Discursive delineations of “natural” and “unnatural,” however thoroughly instrumentalized and steeped in positivist science, may ultimately reflect power relations and social norms rather than transcendent facts about nature; Anne Spirn is certainly well aware of this fact (Spirn, in Johnson & Hill 2002). If, as I have been suggesting, questions of ethics and aesthetics are inseparable from technical questions in the design of the city, what implications does this have for the practice of ecological urbanism?

Conversations about ecological urbanism which dive into the philosophical “deep end of the pool” commonly reference Felix Guattari’s late-career work in ecosophy, explored in his *Three Ecologies* (2005) and *Chaosmosis* (1995). Guattari noted the simultaneous devastation of social, mental, and material ecologies, asking how transversal solutions might simultaneously intervene in each of these ongoing catastrophes. His Ecosophic problematic centered on subjectivity as a constantly unfolding, ecological process, in which one’s agency was inextricable from the imbricated ecologies of media, values, ideas, and routines in which it is embedded.

This thesis engages Guattari’s ecosophic problematic through a literature review and design project. Its trajectory is not particularly that of a deep dive into Guattari’s philosophy, or a grand tour of the storied forebears

of contemporary ecological urbanism (though both of these directions constitute worthwhile projects). Rather, I will pursue a more rhizomatic, mycelial, tentacular (Hayward, 2010; cf. Haraway, 2016) strategy—seeking out connections with other thinkers who conceptualize creative, relational approaches to working through challenging problems.

Diverging Modernities

How can we, Latour's invincible Moderns (with our forked tongues and our dualisms[7]), imagine futures of abundance[8] and conviviality when our very ontologies and epistemologies are based in the a priori assumptions of

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[7] Latour's (1993) *We Have Never Been Modern* references Native American peoples' historic use of the "forked tongue" idiom to indicate the duplicitousness of white settlers. His point is that the two-faced doublespeak of these Western moderns was not limited to their treaty violations, or their judicial interpretation of words like "men" and "equal." Rather, these hypocrisies, in Latour's view, were indicative of the contradictory dualisms immanent to the "Modern constitution." Stengers (2008) offers an interesting reading of Latour's Moderns alongside the work of her friend and colleague, Felix Guattari.

[8] "Abundance" has enjoyed somewhat of a resurgence recently, seemingly as a counternarrative to ubiquitous discourses of austerity and simplification (see, for instance Collard et al., 2015). The "abundance" seems to overlap with the Cornucopian position, which refutes the catastrophist concept of carrying capacity in favor of the sentiment that 'there's plenty for everyone' (Jonsson, 2014), as well as with discussions of permaculture (Heckert, 2014).

scarcity (Dempsey, 2015) and separateness (Barad, 2007; Haraway, 2018)? How can we tell new stories of multiplicity, adaptation and change, real change, when the world of our imaginary is still the beautiful, cold, mechanical Newtonian universe of inert matter and vacuous space (Haraway, 2016, p. 174; cf. Smith, 2008)? How can we envision new ecologies of kinship and landscapes of care[9] when the *oikos* and the *landskip* themselves both seem to be firmly rooted in particular masculinist (con)figurations(Barad, 2007) of relations of mastery?

Modernity, Humanity, and Crisis

The old, triumphalist story of modernity (Latour, 2012) stipulates that abundance and comfort are always contingent upon logics of simplification and domination (Haraway, 2016, p. 178). This is the old story of Man, the tragic hero of modernity, who emancipates himself from nature at great cost in order to rule over nature. Man is the rational (white, cis-, European, able-bodied) referent subject (Parker, 2018; Wynter, 2003) of the Renaissance and the Enlightenment, the modest witness of modern technoscience whose claim

[9] Haraway (2004) has developed one of the better-known theorizations of kinship, but many scholars have worked with this concept in the context of ecology, often as a means of translating between Indigenous knowledges and Western science (Salmón, 2000). Heather Davis (2015) develops a particularly novel account of kinship through a focus on toxic ecologies of plastic waste.

to impartiality is founded on his own self-invisibility (Haraway, 2018, p. 23), the implicit universal measure of "the human" in relation to whom some human differences become salient and some bodies marked as other, barring these "negative referents" from the status of rational agents (Parker, 2018; Wynter, 2003). The iterative reconfiguration (*sensu* Barad, 2007) of Man during the transition to modernity proceeded co-constitutively with the development of new concepts of space, nature and time.[10]

A profusion of events have cast doubt on the humanist account of Man as the sole world-maker and agent of history: it has been undermined over the past century as the "new sciences" have chipped away at the conceptions of space, time, and matter which Newton's models proposed (Prigogine & Stengers, 1984; Barad, 2008; Reed and Lister, 2010). At the same time, findings stacking up from a variety of biologies have troubled any hopes that an objective basis might be found for unqualified claims to anthropocentrism, bounded individuality, and the constitutive mind/body split of the Cartesian subject (Haraway, 2016; Hight, 2020). There is also, of course, the

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[10] In this thesis, I emphasize the continuity between different iterations of "Species Man" (Haraway, 2016), the referent subject (Wynter, 2003) of Humanist modernity, largely for the sake of simplicity. This figure of Man is a generative muddling of other composite images: Man of the Renaissance and Man of the Enlightenment, Sylvia Wynter's Man_1 (*homo politicus*) and Man_2 (homo *oeconomicus*).

unavoidable fact of ecological crisis which interrupts the basic assumptions of ever-increasing production and consumption within an essentially stable world (Haraway, 2016; Stengers, 2015).

If modern technoscientific discourse has always been a “millenniarian discourse about beginnings and ends, first and last things, suffering and progress, figure and fulfillment,” (Haraway, 2018, p. 10), then the narrative of the Anthropocene, centered on the figure of Anthropos (“Species Man”, looking skyward) might be the formal retooling of this narrative for a time of crisis (Haraway, 2016, p. 47). The concept of the “Anthropocene” has gained traction rapidly across a variety of fields since it first appeared in a 2000 article written by meteorologist and atmospheric chemist Paul Crutzen and diatom researcher Eugene Stoermer. The term denotes that we are no longer living in the Holocene, but in a new earth epoch in which human activity has become a dominant force in the history of the planet (Rockstrom et al., 2009; Steffen et al., 2018).

Prometheus, Gaia and the Matter of Being Human in the Anthropocene

Recently, in discussions of technological responses to ecological crisis, the terms “Gaian” and “Promethean” have become fashionable shorthand for

the techno-optimist and techno-pessimist positions, respectively.[11] This dichotomy is limited in its utility and invites the risk of flattening complex political issues (Haines, 2020), but in order to situate the present discussion of ecological urbanism amid broader debates about technology and ecology (with their underlying ontological and epistemological tensions) it will be useful to posit two polar opposite positions: one which urges caution in the extreme, insisting that any claims to knowing or managing the biosphere as a whole are hubristic and doomed to fail (Gaian), and one which cleaves to the eco-modernist contention that continued economic growth can be uncoupled from ecological destruction[12] (Promethean).

The Promethean position is often summarized[13] with Stewart Brand's pithy remark: "we are as gods and have to get good at it" (cited in Mitman et al., 2018). There are certainly some versions of this story which I personally find compelling. Erle Ellis writes about the possible future of the "Good

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[11] While this dichotomy is most closely associated with the subject of geoengineering (Thiele, 2019), it has gained usage in discussions of a wider range of issues (Dryzek et al., 2009; Haines, 2020).

[12] "An Ecomodernist Manifesto" (Asafu-Adjaye et al., 2015) outlines the ecomodernist position. Caradonna et al. (2015) critique the manifesto, providing commentary specifically on the issue of growth

[13] To be fair, this is perhaps most true of ecomodernists' critics, and of scholars critiquing those critics (cf. (Hamilton, 2016; Mitman et al., 2018)

Anthropocene," and proposes a vision of responsible global land management which stresses the importance of recognizing indigenous peoples' sovereignty and their leadership as stewards of land (Ellis, 2019; Ellis et al., 2019; Garnett et al., 2018). Ellis strengthens his position from the outset in the way that he historicizes the Anthropocene. While other conceptualizations have proposed that the "Columbian exchange," the industrial revolution, or the "great acceleration" of the 1950s (Waters et al., 2016), Ellis sets the beginning of the Anthropocene at the start of the agricultural revolution, approximately 50,000 years ago. This approach resonates well with the slow reorientation of environmentalist rhetoric toward reckoning with the fact that many of the "wild" lands which Europeans encountered were often landscapes which had been carefully managed for centuries and even millenia[14]. In the long arc of the "early Anthropocene," the mass ecosystem destruction and culling of biodiversity beginning at the outset of colonization (Collard et al., 2015; MacKinnon, 2013) and accelerating through the present (McCallum, 2015) is a horrific event, but it is not the beginning of humans' role as ecosystem engineers, and it need not be the end. Ellis has contributed to volumes on ecological urbanism (Lister & Reed, 2020), and he articulates a concise vision for sustaining "high levels of

[14] It now seems likely, for instance, that the Amazon rainforest may in fact be a carefully cultivated food forest (Levis et al., 2017).

biodiversity conservation by restoring and protecting endangered species and habitats, by implementing highly productive, wildlife-friendly farming practices, by developing dense green cities designed for healthful and desirable urban lifestyles, and by facilitating low conflict wildlife habitation and mobility through wildlife corridors, bridges, tunnels, and other conservation measures" (Ellis, 2019 p. 166).

While the triumphalist Promethean narrative of technomanagerial transcendence has its appeals, it is not without hazards. First, of course, there is the question of whether the Good Anthropocene remains a possibility within the trajectory of present global social, economic, and ecological trends. Unprecedented issues of governance join the looming threats of technological lock-in and unintended consequences which haunt geoengineering schemes and other Promethean responses to ecological crisis (Jinnah & Nicholson, 2019).

If Stewart Brand supplies the Promethean battle cry, the Gaians' response might be Latour's (2010) call to "*stop* going further *in the same way* as before toward the future[15]" [emphasis his] (p. 473). While Prometheans Latour (2017), Haraway (2016), and Stengers (Stengers, 2015, 2017) have each drawn upon the "Gaia hypothesis" originally proposed by Ann Margulis

[15] As Latour notes, this sounds more like a warning than a war cry.

and James Lovelock, for whom Gaia is not really a person or an entity but a figure of sympoietic[16] complexity (Haraway, 2016, 43-44) and a form of transcendence which interrupts human claims to autonomy and mastery.

Gaians typically charge ecomodernists and other Prometheans with techno-positivist hubris and depoliticization of the (to borrow a term from Rob Nixon, 2013) “slow violence” of environmental devastation. The proponents of the mainstream Anthropocene narrative, and its attendant discourses, like that of resilience, are typically painted as unwitting handmaidens, at best, and, at worst, as co-conspirators manufacturing consent for increasingly repressive responses to global crisis through empty promises and bad-faith framings (Collard, et al., 2013; Walker & Cooper, 2011; Grove & Chandler, 2016; Rappel, 2016; cf. Fleming, 2016; Swyngedouw & Ernstson, 2018). The latter variant of this position is exemplified in Erik Swyngedouw’s assertion that “An extraordinary techno-managerial apparatus is under way, ranging

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[16] Haraway argues that what Lynn Margulis referred to as autopoietic processes are more truly sympoietic (2016, p. 61), a term which was first proposed in M. Beth Dempster’s (1998) environmental planning Master’s thesis. This connection, along with the collegial relationship which seems to have existed between Haraway and Anne Whiston Spirn during the 1990s (Haraway, 2019, p. x; Spirn, 1997, p.46), inspired me to ask what generative tensions might emerge in a diffractive reading of ecological urbanism through the work of Haraway and her frequent interlocutors.

from new ecotechnologies of a variety of kinds to unruly complex managerial and institutional configurations, with a view to producing a socioecological fix, to make sure nothing really changes fundamentally in the socio-ecological structuring of the Anthropocene" (2011, p. 79).

Gaians and their kin may decry the callousness of the Ecomodernist "misanthropocene" (Wark, 2015) and "anthrobscene" (Swyngedouw & Ernstson, 2018; cf. Parikka, 2015), but the Gaians have their own troubling relationship to the thorny matter of being human in the Anthropocene. One problem is James Lovelock himself: Stengers (2015) even criticizes Lovelock's promulgation of climate doom and the "murderous and obscene abstraction" implicit in his advocacy for extreme population reduction (p. 47). By comparison, Haraway's comfort with Lovelock is disquieting, as is Latour's recent fascination with Carl Schmitt (Latour, 2017, p. 228-253).[17]

Swyngedouw (2018) simultaneously characterizes the ecomodernist Anthropocene narrative as cynical and depoliticizing, while leveling the same criticism toward some of its most prominent Gaian critics. Swyngedouw (2016) posits that this depoliticization is achieved through the construction of a flat ontology which collapses distinctions between the human and nonhuman. a term which he uses not only to refer to the work of David

[17] Wark (2011) opines that Schmitt's "renewed popularity with scholars is one of the more bizarre signs of failure of critical thought in the early twenty-first century" (p. 141).

Abram, but Latour, Haraway, Stengers and Jeffrey Morton,[18] among others.[19] Swyngedouw's critique claims that these theorists' "more-than-human ontologies" function as a "relational straitjacket," effectively offstaging the political.

While the 21st century presents tremendous uncertainty, projective ecologies offer the possibility of transversal and transdisciplinary alliances capable of making a difference in the generative tension between immanence and necessary, limited transcendence, between earthliness and poetics, and between the Gaian and Promethean positions—not exactly through compromise but through the work of relaying and translation. The practices of meaning-making which occur in this *terra fluxus* demand that participants go beyond the frame of strict objectivity, recognizing that decisions and knowledges, however dry and technical, are never simply matters of fact, but also matters of concern—a point which Latour stresses (2004).

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[18] This grouping is somewhat unwieldy to refer to collectively because some of its members diverge so significantly from one another. Morton's Object-Oriented Ontology has, in fact, been described as "negative new materialism" (Mróz, 2020a). They share a common interest in the Gaia hypothesis, but this is not part of Swyngedouw's argument.

[19] It seems that Matthew Gandy's (2015, p. 4) review of ecological urbanism was prescient in pointing out the fault lines developing between Urban Political Ecology and thinkers like Latour around issues of agency

Matters of Fact and Matters of Concern

"Things," for Latour, are always social in nature; they are always "matters of concern" (2004). Latour speaks of things as "gatherings," while rejecting any Heideggerian distinction between things and objects. For Latour, design always involves "drawing things together," and, in the spirit of MAKING THINGS PUBLIC, the exhibition he co-curated in 2005, he challenges designers to try to draw out everything that a thing is, in all of its stringy, webby complexity. The landscape architecture firm SCAPE, headed by Kate Orff, have taken inspiration from Latour in projects like their entry for the Resilient by Design Bay Area Challenge, which calls for "mak[ing] sediment public." Latour's account of the performative nature of drawing, as a practice through which things appear recalls the fact that drawings are figurations, "performative images that can be inhabited," in Haraway's words (2018, p. 11).

Care, Agency, and Subjectivity

Latour describes the narrative of care, caution and entanglement as being always present, but "hidden" within the official, Promethean triumphalist narrative (of transcendence, mastery, emancipation, and domination). He offers the example of the care and caution which one would pay while donning a spacesuit before a spacewalk. In fact, care might always necessitate the immunological task of setting up good boundaries, or

‘envelopes,’ in the language which Latour (2010) borrows from the philosopher Peter Sloterdijk. One example of this boundary-drawing might be Foucault’s ‘care of the self,’ an active cultivation of one’s own subjectivity (i.e. subjectivation) through the development of ethics which establish a relation of interiority and exteriority. O’Sullivan (2010) usefully relates this to Guattari’s model of subjectivation, in which the infinite is partly folded in during a creative process of subjectivation. This diagram is reminiscent of the form of the walled garden: a boundary is constructed, fixing specific conditions of interiority and exteriority, and cultivation proceeds through the careful, mindful folding-in of the outside, and attentive nurturing of this interior. The iterative shaping of attention is vital in this account of care: the philosopher Bernard Stiegler, discussing the same practices comprising the ancient Greek “care of the self” which Foucault discussed, asserts that they are all techniques of focusing and holding attention (Cohen, 2017).

Guattari’s figure of the “fold” is the basis of a relational and processual approach in which bodies, subjects, and objects are not seen as fully separable, pre-existing givens, but are rather understood as being continually constituted through ongoing iterative processes of materialization. Another word for this might be called a performative approach (Barad, 2008, p. 213). Performative approaches, as the theoretical physicist and philosopher Karen Barad notes, trouble some of the basic foundations of normative realist paradigms: “representationalism (the independently

determinate existence of words and things), the metaphysics of individualism (that the world is composed of individual entities with individually determinate boundaries and properties), and the intrinsic separability of knower and known (that measurements reveal the preexisting values of the properties of independently existing objects as separate from the measuring agencies)" (Barad, 2007 p. 195). Barad's agential realism is similar in this regard: Barad conceives of matter as "a dynamic intra-active becoming that is implicated and enfolded in its iterative becoming" (2007, p. 151). Barad draws upon their background as a theoretical physicist (something which Guattari might have appreciated, given his affinity for the thinking of the "new sciences.") Agential realism approaches materiality and discursivity, matter and meaning as entangled and open to reconfiguration through the world's continual becoming. The type of limited transcendence configured through a folding-in in Guattari's image of subjectivation is similar to the "agential separability" which, for Barad, results from a "cut," the boundary-drawing practices through which it becomes possible to perceive separate bodies and individual agents. This theory poses a challenge to modern humanism, but it does not argue that the boundaries demarcating individuals, or separating the human and nonhuman, are meaningless. Rather, boundaries, meanings, and knowledges are situated and subject to reconfiguration through agential and representational material-discursive practices.

Adrian Mróz offers an interesting reading of Karen Barad's agential realism, diffracting it through Bernard Stiegler's technics and substituting techne in place of the apparatus. Techne, (art, technique, technology, science) comprise those exteriorizations of the self through prostheses which extend the body (Mróz, 2020b). Techne make cuts, reconfiguring agency and producing agential separability. Following Bernard Stiegler, Mróz's account of techne emphasizes that they are also *pharmaka*, a multivalent philosophical term with meanings including 'cure', 'poison', 'scapegoat' and 'artifice'. The ambiguity of the *pharmakon*, for Mróz, emphasizes the agential and unstable nature of materiality. Mróz is interested in the relationship between techne and behavior, where behavior is "matter's way of moving in constant flux" (Mróz, 2020, p. 81).

Techne reconfigure aesthetic, temporal, and agential relations to the world. This can be seen in a diffractive re-telling of Gregory Bateson's (Foxman & Bateson, 1973 p. 323) classic example of the labor involved in felling a tree: the ax is a prosthesis, an artificial extension of the body which redirects the body's force through a simple lever and wedge. Each swing is timed in coordination with information relayed through the bodily sensorium, and each swing articulates a relation to time expressed as an expected outcome (the notch deepening, the tree falling, etc.).

Thinking with Care

Knowledges, in Haraway's account, need not be figurative in nature, but they are always tropic. The concept of trope in operation here is less responsive to literary theory or rhetoric than it is to Haraway's background in biology. Tropism, in biology, concerns all or part of a body turning toward something: roots, for instance, typically exhibit hydrotropic behavior. Figures are tropes; maps are tropes. Tropes concern the material-semiotic practices through which relations are reconfigured. This figuration of trope emphasizes that knowledge is always embodied, situated, sensual and aesthetic.

What Haraway calls "staying with the trouble" is an approach which is both creative and mindful in its consideration of the tropes which one thinks-with. Haraway draws together a host of figures to illustrate accounts of agency which emphasize multiplicity and intra-action. One is sf: a manifold comprising string figuring (which is itself a neologistic manifold of string games including what is known in the United States as "Cat's Cradle"), science fact, and speculative feminisms, among others (Haraway, 2016). Haraway and her former graduate student, Eva S. Hayward, both conceive of thinking, sensation, and agency as occurring in a multitude of stringy and enfolded worlds. Hayward (2010, 2012) writes cities, bodies, and sensoria as enfoldings of webby, ciliated surfaces. Haraway picks up Hayward's trope of tentacularity, with its shift from a detached, visual model of thinking to one which is more haptic, reaching out, risking something, not "containing the

other in oneself but…touching the other such that bodily forces are unleashed" (Hayward, 2012, p. 183; cf. Haraway, 2016). The former also folds in to her thinking Hustak and Myers' theory of "involution," (2012), developed from the observations of many multispecies enfoldings, including Charles Darwin's own wonder at the sensuous involvements of orchids and various insects (Haraway, 2016, p. 68).

Designing with Care

Ian McHarg was no stranger to matters of concern. He spent much of his career calling attention to ecological devastation, molding the discipline of landscape architecture into what he believed was urgently needed: an objective science of land planning with the rhetorical power of a replicable methodology for working with large data sets at large scales (Herrington, 2010). His messaging strategy was powerful—he diagnosed the problem and prescribed the solution in the voice of the unbiased expert, unafraid to weigh in on politicized issues, but also ostensibly disinterested in social issues. Yet just over half a century after McHarg and five other landscape architects signed the 1966 Declaration of Concern, Billy Fleming (the director of the McHarg Center at the University of Pennsylvania) argues that McHarg put the discipline on poor footing for contemporary politics, in a searing article which opens with the sentence, "I don't know when the myth of landscape architects

as climate saviors began, but I know it's time to kill it" (Fleming, 2019, para. 1).

The nucleus of McHarg's rhetorical strategy—the figure of the rational, unemotional expert—seems to have fallen precipitously out of vogue. How can landscape architects make a difference in the media ecology and attention economy of the digital age? Landscape architects certainly design some outstanding places which nurture humans and nonhumans, but it is hard to refute Fleming's charge that the profession is not presently positioned to make serious progress toward any declared intent of averting apocalypse, given its focus "on sites, not systems; and on elite desires, not public interests" (2019, para. 16). Fleming sees a profession which needs to remake itself entirely, and his focus is on landscape architects' involvement at the level of national politics. This makes sense, given that the article was advocating for a Green New Deal, at a time when that still felt like an imminent possibility.

All of Fleming's points stand up three years later, but I wonder if there might be a case to be made for a more molecular (*sensu* Guattari, 2006) perspective. What latent capacities might be activated, what reorientations of desire and knowledge might be set in motion through, in Christopher Hight's (2019) words, "the mediating domain of the subjective and affect?" This is what I find compelling, for instance, about Elizabeth Meyer's (2008) argument that the aesthetic performativity of designed spaces and the experiences of

joy, surprise, and care which they facilitate, matter every bit as much as characteristics which might be more easily operationalized. Meyer explores the generative possibilities of landscape as a medium in which aesthetics, ethics are shaped through movement and sensory experience, offering possibilities for the reorientation of systems of value toward ethics of care.

Landscape: Cultivation and Figuration

Cultivation is an unusual word. It hints at the intertwined histories of the development of religious ritual, the development of shared social technologies (i.e., culture), and the development of agricultural techniques. I am less interested in the theological implications of this common root than I am in the technological production of meaning and reality. Cultivation regulates and exercises biopower through techne which have the tropic effect of causing some things to live and grow in particular ways. Cultivation is enacted through habit; it regulates the behavior of matter through patterns, repetitions which are not identities but are rather more like what Deleuze and Guattari (1989) call refrains: the rhythms by which territories are sustained.

One iconic point of imbrication between histories of practices of cultivation, subjectivity, and figuration in Western culture occurs in the image of the Virgin Mary in the hortus conclusus. This image expressed a set of relations concerning the cultivation of a spiritual practice, the cultivation of the garden, and the cultivation of the mind. During the transition to modernity, this

image was reconfigured as that of Venus in the field (Cosgrove, 2008). The project of cultivation was reconfigured as a projection of the hortus conclusus outward over the face of the earth. New terraforming technologies altered entire landscapes through practices of representation (cartography and landscape painting), instrumentation (measuring and configuring terrain in absolute space) and habitat alteration (including the extensive draining of wetlands and the logging of forests) (Corner, 2014, pp. 133-156; Linebaugh, 2000, pp. 43-47).

Many of the technologies were distinctly optical in nature: practices of cartography and landscape painting developed new aesthetic relations to place, to humans and to nonhumans. The Claude glass, the painter's "black mirror" (so called in honor of the brilliant neoclassical landscape painter Claude Lorrain) played an enormous role in the (con)figuration of a new concept of nature. The painter in the field, with his back turned to the scene, offers a diagram of a new relation between the self and the world. The material world, in the emerging humanist cosmology, was excremental and untrustworthy, and the techniques of cultivation necessary to master and refine it required distance, the simplification of rough edges, and the imposition of new ideals. Techniques of refinement relied heavily upon optical logics of unimpeded vision, critical distance, and clear reflection. This was just as true in art as it was in the emerging natural sciences. The foundations of this new realism were articulated by Newton and Descartes. This mechanistic

universe also allowed the rise of the logic of the commodity: standardization, equivalency, transportability.

At the same time, the nature of the techniques of figuration which were essential to the development of modern science and the development of landscape painting required careful cultivation of attention. If Man was carrying out the will of the Divine in his working of nature, it was certainly necessary to acknowledge the need for some artifice and some careful judgment. The instruments by which things are rendered “natural” and inevitable today, by comparison, are far more blackboxed, flattened, unimpeachable. Algorithms and satellite images claim to show the whole picture, and withhold nothing, occluding their own tropic nature (Haraway, 2018; cf. Safransky, 2019, (Cárdenas, 2016; Safransky, 2020)).

The Arcadian image of Venus in the field, for Cosgrove, contains a world of anxiety about boundaries: the world-shattering exploration and subsequent colonization of the New World, the violation of the skin by epidemic, disfiguring diseases, the enclosure of the commons, and the exploration and mapping of the body’s internal physiology through the dissection table (Cosgrove, 2008). For Cosgrove, Arcadia has always been a story about colonization and empire. The violent birth of modernity brought with it incredible achievements for some, often won at a staggering cost to many. Today, amid conversations about the end of the world, it is worth remembering, as Debora Danowski and Eduardo Viveiros de Castro

(Danowski & Castro, 2017) do, that for many natures and many cultures, the world has already ended. The boundaries of the human and nonhuman continue to raise deep-seated concerns about purity and contamination, foreclosing many lines of flight which might lead toward the composition of new, adaptive, creative ways of being.

Forgetting the performative, porous, and malleable nature of boundaries invites the fallacy of reification, or what Alfred North Whitehead called the fallacy of misplaced concreteness[20] (Whitehead, 2010 pp. 51-70; Whitehead et al., 1978 p. 7) Hardening the boundaries which demarcate things (*sensu* Latour) and neglecting the relational nature existence produces bad ontologies, bad ontologies produce bad relations, and bad relations produce bad ecologies. Caring for the self requires an appreciation of the elasticity of the self (Cohen, 2017). For Guattari, depressive and neurotic symptoms are indicative of the immobilization of desire and the "hardening" of the existential refrain into obsessive and ritualistic behavior (Guattari, 1995, p. 17). Escaping this trap requires resingularization—freeing up desire through the improvisational creation of new behaviors and new subjectivities (Guattari, 1995; cf. Stengers, 2008). Theory can easily become immobilized under the

[20] See also Haraway on the influence of Whitehead's concept of the concrete on her thinking (2018, p. 146-147), particularly in relation to the work of Isabelle Stengers and the task of critiquing "bad ontolog[ies]" (Haraway, 2018, pp. xxiv-xvx).

weight of paranoid affects without reparative ways of knowing (Sedgwick & Frank, 2003 pp. 122-151). If critique truly has run out of steam (Latour, 2010; Latour, 2004) then perhaps some generative muddling of natures and cultures, and arts and sciences might be well-warranted. This is the rationale behind re-ro(o/u)ting.

Re-rooting/Re-routing

For ecological urbanism to stay engaged with Guattari's ecosophic problematic in the twenty-first century requires an ongoing, iterative, networked, practice of many re-ro(o/u)tings. Rooting is tropic and tentacular: it necessitates reaching out, risking something, forming networks with diverse others. This is almost never done alone: roots are not merely extractive; they are communicative, sharing information and sustenance through chemical exchange. Roots illustrate that survival is not a simple zero-sum game. Roots are interfaces between species, Rooting, like tropism, is a behavior which is not strictly limited to plants. Rooting may also describe the behavior of mammals, particularly pigs, in which the attention of the senses is turned toward the ground, or toward the other. This is not merely the result of a utilitarian food drive; it can also be a communicative, expressive behavior. Rooting involves searching and feeling in the hope of discover something. It is

symchthonic; not caught up in Apollonian heliotropisms[21]. Rooting is turning toward sympoietic worldings. Re-rooting implies a history of transplantation, or adaptation in response to a disruption or uprooting. Re-rooting, as a projective ecology, turns its attention toward the earth; its tropisms are toward alterity and becoming. Re-rooting seeks out new porosities, breaking up the

[21] A consistent throughline in Haraway's diverse oeuvre is a critique which portrays masculinist technoscientific aesthetics as occupying a perspective compromised by a disregard for the earth and an adoration of the sun (cf. Haraway, 2016 p.53, p. 182-183 n. 45; Haraway 2018 p. 83, p.255; Haraway & Wolfe, 2016, p. 14). Her essay "The Promises of Monsters" pairs a typical formulation of this image with a call to action: *"Troping, we turn to nature as if to the earth, to the primal stuff-geotropic, physiotropic. Topically, we travel toward the earth, a commonplace. In discoursing on nature, we turn from Plato and his heliotropic son's blinding star to see something else, another kind of figure"* (Haraway, 2004, p. 65). While never explicitly stated, this concept seems to implicitly invoke Nietzsche's concept of the Apollonian power—an insinuation which corresponds to Haraway's apparent subversion (never explicitly confirmed) of Camille Paglia's concept of the chthonic (which Paglia substitutes for Nietzsche's Dionysian power in a lengthy 1990 text which I will not cite here). Also see footnote 3 in this thesis for a discussion of Haraway's advocacy for an earthly, symcthonic perspective. She explicitly links the motif of sun-worshipping technoscience to Irigaray's critique of the masculinist figuration of knowledge central to Plato's cave allegory (Haraway, 2018 p. 83), which also closely resembles her account of "sky-gazing Anthropos" (Haraway, 2016, p. 53) and this figure's etymological origin (Haraway, 2016 p. 182-183 n.45).

concreteness of the modern metropolis and re-routing its materialization toward new possibilities.

Re-routing playfully recalls the Situationist practice of *detournement*, bearing in mind Wark's call for a *detournement* of the Situationist legacy itself (Wark, 2010, p. 144). *Detournement*, like other situationist practices, was an art oriented toward a re-routing of attention and meaning. Re-routing concerns the redirection of manifold mobilities and metabolisms. Re-routing pertains not only to molar matters but to the molecular: it orients desire toward new becomings.

Chapter 2: Toward a Low Theory of Landscape

What harmonies and productive frictions emerge at the points of overlap between stories of infrastructure, ecology, landscape, and design in the twenty-first century? What does it mean to design in the twenty-first century, when landscape has been recast as infrastructure and infrastructure has been reimagined as ecology? Where do designers situate themselves within the swiftly converging discourses of information and technology, security and surveillance, critical infrastructure and resource management? Twentieth-century architects and engineers may have been the heroes of the technoscientific story of Man mastering nature, but today there seems to be an increasing lateral consolidation of disparate disciplines within information architectures of “management” (Hight, 2020).

The strategy adopted by some architecture firms seems to be to stretch the boundaries of the discipline, engulfing the singularity, accreting levels of ‘meta’ like rings on a tree. One could call this the BIG strategy: masterplanned active carbon capture infrastructures as architecture (Ciara Nugent, 2020), deep-sea mining as architecture (Nate Berg, 2021), corporate headquarters in the metaverse and Non-Fungible Tokens as architecture (Lynn Myers, 2022). An alternate approach might look like strategic retreat, battening down the hatches of disciplinary identity and jockeying to be able to stay relevant and choose one’s masters (Hight, 2020). While ecological

urbanism is not without historical precedents, its interdisciplinary nature is often seen as antithetical to the discourse of disciplinary autonomy (Hight, 2020).

Triangulations: Subjectivity in the Time of Digital Media Ecologies

How can one locate oneself within the thick present of the 21st century? Spatiotemporal location could be said to be a more settled matter than ever before in history: satellites chirp away in orbit around the planet, each of their movements preordained, already modeled and choreographed with the beautiful certainty of Newton's clockwork universe. This swarm of heavenly bodies make it possible for anyone to authoritatively determine their precise place in the world with the use of any handheld cell phone.

Each cell phone and each satellite is produced from materials extracted from the earth through large geotechnical operations: mines and oil rigs collect materials which are processed, distributed and disposed of through global supply chains. The smart phones and satellites produced from these raw materials form a prosthetic visual network of remote sensing devices and smart phones encircling the planet and shaping the sensory experience of billions of people. This compound eye is powered by a vast infrastructural network: fiber-optic cables snaking through the earth and microwaves filling the air. The diagram of this optical apparatus is vertiginous

in its sheer recursivity. The twenty-first century is the time of planetary aesthetics.

I am interested in what it means to design within the disorienting terrain of the twenty-first century. I am interested in what it is to design within the "soupy matrix of details and repeatable formulas" which the architect Keller Easterling calls "infrastructure space." Infrastructure space, in Easterling's account, comprises the "operating system for shaping the city." (2014, p. 10). The architects of the twentieth-century metropolis may have been able to imagine themselves as Nietzschean overmen, allying with engineers to defeat the tyranny of ornament and construct radiant cities full of beautiful smooth surfaces. Now, however, it seems that the disciplines of architecture and urban design have been relegated to the role of a peculiar hyper-industrial ornamentation, a subtype of user interface design supporting the real architecture of the platform city (Easterling, 2014; Wark, 2020). Benjamin Bratton describes a similar relationship between power, information, and technology in his concept of the stack: an already-extant planetary architecture of information, composed of six concatenated, independently governed levels (2016). The stack, Bratton asserts, has not only disrupted geopolitics; rather, it has displaced and become geopolitics (2016).

Questions of identity, temporality, causality and agency become complex for any user entangled in this architecture of information, in which desires, aesthetic sensibilities, and knowledge are shaped through

interactions mediated by devices fashioned from metals and oils scooped out of the earth itself. In recent years, a number of insightful approaches to theorizing new media ecologies have emphasized the relational nature of aesthetic experience. Wark argues that the new currency of power is the "aesthetic power" exercised through digital platforms which govern the flow of information, shaping appearances, perceptions, and the ways in which information is processed (in other words, aesthetics) (Wark, 2020). Yves Citton builds on Wark's concept of the vector to propose an "ecology of attention," rather than attention economy, emphasizing that attention is not simply paid by pre-existing subjects; rather, subjects are continually being shaped through the attention which they pay. Jussie Parikka, observing the geological time scale over which the materials of modern material culture form and break down, proposes a geology of media, taking Robert Smithson's anti-McLuhan "abstract geology" as a starting point.

In different ways, all of these thinkers draw upon the work of Felix Guattari, and this is no coincidence. Guattari took an acute interest in how media, art, and technology shape the production of subjectivity. His ecosophy pursued this question in light of the simultaneous devastation of social, mental, and physical ecologies, which he configured within a trifold plenum. At the heart of Guattari's ecosophic problematic are questions concerning subjectivity: "[h]ow do we produce it, capture it, enrich it, and permanently reinvent it in a way that renders it compatible with Universes of mutant value?

How do we work for its liberation, that is, for its resingularisation?" (2006 p 135). Values and ethics, as Guattari knew, are not simple individual matters; they are relations which are shaped in an ecological manner. For this reason he asserted that "[n]ow more than ever, nature cannot be separated from culture; in order to comprehend the interactions between ecosystems, the mechanosphere and the social and individual Universes of reference, we must learn to think 'transversally'" (2006 p. 43)

I am interested in ecological urbanism because it occupies the interstices between multiple grand master narratives of our time, proposing linkages and translations: ecology as infrastructure as landscape. Individually, each of these terms has a tendency to take on the meaning of "everything" in transcendent, planetary narratives of human mastery, culminating in either salvation or tragic devastation. Yet each of these terms also has the ability to trouble the modern narratives of anthropocentrism and bounded individualism at the root of the humanist cosmology and eschatology. As Susan Leigh Star knew, analytically speaking, infrastructure can only be understood in relational terms (Star & Ruhleder, 1996, p.5). Similarly, I will argue that landscape and ecology have each proven to be generative concepts across heterogeneous knowledge work because they invite relational thinking.

The Landscape of Modernity

Landscape is a peculiar word. The story of the landskip, the framed scenic image, is inextricable from the story of modern Man's heroic quest to achieve the domination and cultivation of nature in its entirety. The rise of landscape paintings during the transition to modernity signaled the formation of a new worldmaking project which turned the *hortus conclusus* outward to remake the entire surface of the earth in the image of Man (Cosgrove, 2008). The scale of this project was planetary, and its consequences were immense: worlds destroyed, peoples displaced and brutalized, landscapes completely transformed by the instrumental rationalities of simplification and optimization.

The Renaissance and Enlightenment also made possible remarkable technological and infrastructural achievements, facilitated by new conceptions of space (as uniform void), matter (as inert substance), and time (as a linear, forward progression). Descartes and Newton described a clockwork universe, in which Man, through the rational discernment and application of fixed, predictable laws, could engineer the world to his will with both incredible precision and on an unprecedented scale.

Examining the roots of landscape reveals the immutably aesthetic nature of the practices of figuration which underlie contemporary technoscientific discourses. James Corner follows the trope of what he calls "synoptic vision" (2010, pp. 133-155) through the development of cartographic techniques and landscape painting, and all the way to contemporary aerial

photography. Synoptic vision is close to the perspective of Haraway's modest witness, who claims to see all while remaining self-invisible (Haraway, 2018). Synoptic vision, for Corner, is also the top-down, authoritative perspective of Ian McHarg's planning, as well as the gaze of the latter toward a photograph of the earth from space while declaring humanity to be a planetary disease. The rhetorical strength affordd by this vantage point comes at the cost of denying one's own earthliness and ignoring the tropic nature of all knowledge (Haraway, 2018). Corner connects this shift to other Enlightenment ideas: the development of rational, universal measures, and the splitting of the object and subject and the mind and body.

The emergence of landscape painting during the transition to modernity is inextricable from the development of new cartographic and surveying techniques (Corner, 2010; Cosgrove, 2008). The perspectivism of landscape paintings, the precision of mapping in the ages of exploration and colonization, and the proportionality of the Vitruvian man were guided by a common rationality which follows the figure of Man from Da Vinci's Vitruvian man to Le Corbusier's Modulor and from the Villa D'este to the Ville Radieuse (Carl, 1991).

Troubling Landscapes

The story of landscape's resurgence as a topic of scholarship has long been troubled by questions pertaining to landscape's ontological status

(Vicenzotti 2017). This question often comes down to a choice between a real, physical object or something perceptual (Wylie, 2007, p. 6-7). The standard position within landscape urbanism has been pluralistic, open to both landskip and landschaft, and for Corner, the “dialectical middle ground” between them (quoted in Vicenzotti, 2017), but Vera Vicenzotti finds this answer unsatisfactory.

The most influential concept of landscape operative in contemporary design practice, and particularly in discussions of ecological urbanism, is probably not that of landscape painting or the English Garden. Rather, the concept of landscape which holds sway in ecological urbanism, as well as landscape urbanism, often seems to be that of landscape ecology. Landscape Urbanism proponent Friedrick Steiner (2011) argues that this engagement with landscape ecology is not nearly deep enough, and he proposes a unitary “landscape ecological urbanism” founded on the theory of landscape ecology. In recent years, Steiner’s vision has been at least partly realized with the emergence of firms driving large, detailed plans through the use of parametrics and other sophisticated digital modeling capacities. (De Block, 2016; Waldheim, 2016).

Some recent critical reviews of ecological and landscape urbanism have fiercely rejected the orientation of the field toward a natural-scientific concept of landscape. Vicenzotti, in a 2017 critical review of landscape urbanism, states that “[a] reductionist approach to landscape is inevitable if

and when the ‘science of ecology’ (Weller 2006, 74), understood as ‘the study of species as they relate to their natural environments” (Waldheim 2006b, 43), is ascribed a crucial role in developing an understanding of landscape.” Vicenzotti builds this argument upon a prior article she co-authored in 2013, which argues in favor of a “strict distinction between natural scientific (e.g. ecological) views and aesthetic-symbolic views of nature,” and goes as far as to assert that the assert that the subject of landscape ecological research should not properly be called “landscape” at all (Kirchoff et al, 2s013).

Critiques of natural-science concepts of landscape often overlap with broader concerns about the depoliticization and securitization of infrastructure and cities (De Block, 2016; Easterling, 2014; Gandy, 2015; Vicenzotti, 2017; Wakefield, 2020). De Block (2016) describes the “quasi-Orwellian” character of schemes for “supposedly ‘self-organizing’” cities which attain stated sustainability goals through extensive, integrated systems of surveillance which incorporate the functions of ecological monitoring, resource management, infrastructure, security and surveillance.

Rough Edges: Sketching a Relational Concept of Landscape

For both Vicenzotti and De Block, any mingling of the natural and cultural invites confusions of meaning and dangerous naturalizations of social relations (de Block & Vicenzotti, 2018; Vicenzotti, 2017; De Block, 2016; Kirchhoff et al., 2013). They insist upon strict separations of nature and

culture and a return to Kantian aesthetics and logics of separation, detachment, and critical distance. I share some of these authors' anxieties, but I also worry that any project which embraces aesthetics and epistemologies founded on the logics of distance and separation is bound to be an insufficiently critical one if it simply dismisses the critiques of these very logics which have been advanced by thinkers like Haraway (2018) and Latour (1993).

The anthropologist Anna Tsing writes patchy, disturbed, indeterminate, vibrant landscapes where "[h]umans join others in making landscapes of unintentional design" (2015, p. 152). For Tsing, landscapes are

"radical tools for decentering human hubris. Landscapes are not backdrops for historical action: they are themselves active. Watching landscapes in formation shows humans joining other living beings in shaping worlds…Disturbance realigns possibilities for transformative encounter. Thus precarity is enacted in more-than-human sociality" (Tsing, 2015 p.152)."

Tsing skillfully plays with the language of landscape ecology to evoke the entangled naturecultures (Haraway, 2004) which emerge at the haggard edges of sites of destruction and devastation. This is not a safe project; a less agile poetics than Tsing's could easily verge into the territory of fetishizing ruin, exploitation and precarity, and she has indeed received this criticism. However, I think that the risks which Tsing takes are urgently necessary in

our time. Seeking out hope in the signs of life which spring up amid the rubble of blasted landscapes is, as Tsing knows, a matter of survival.

Low Theory

Low theory, a concept which the philosopher Jack Halberstam adapts from Stuart Hall, seeks out “the in-between spaces that save us from being snared by the hooks of hegemony and speared by the seductions of the gift shop,” while making “peace with the possibility that alternatives dwell in the murky waters of a counterintuitive, often impossibly dark and negative realm of critique and refusal” (Halberstam, 2011, p. 2). Low theory requires transversalizing high and low cultures in search of a “new, spongy relation to life, culture, knowledge, and pleasure” (Halberstam, 2011, p. 2). In the present thesis, I propose taking landscape on a detour through low theory by focusing on the materialities and mobilities which compose urban landscapes.

The media scholar Wark turns to materiality while imagining the project of a low theory for the Anthropocene, configured for “designing integrated solutions on a collaborative basis, which includes many kinds of people’s experience of the labors of the molecular” (Wark, 2015). The “molecular” at work here is Guattari’s mode of “flows, transitions, phase transitions and intensities,” opposed to the grander narrative of the molar (quoted in Wark, 2015). The ubiquitous language of “flows” can come off as hackneyed and downright obfuscatory in contemporary scholarship, as Sutherland (2013)

argues. Wark, however, is calling for theorists to pay attention to the very material manner in which human agency intra-acts (Barad, 2008) with the matter which it encounters.

Humans do not simply exercise their will against the stable inertia of an inert nature. Nature is also terroir and grain and patina; it is the memory of words scratched out long ago, still held in the skin of the palimpsest. It is the violence of the Little Ice Age vibrating still in the wood of Stradivarius's violins. Human desires and intentions are diffracted (Barad, 2008; Haraway; 2018) through media; work necessitates change, and in this differential exchange, one also becomes different.

Perhaps it should be obvious that landscape is an unavoidably material medium. After all, in everyday conversation, landscape is often a relatively straightforward, if somewhat frivolous, affair. Landscape is the product of landscaping, the material labor performed by landscapers. Landscape architects are all too aware of the prevalence of this conception, and many have likely had the experience of trying to explain to someone that, in fact, their work rarely involves picking up a shovel.

It makes sense that some landscape architects might want to reaffirm their profession's professionalism (and, implicitly, their distance from landscape contractors) by tracing their lineage to the ranks of Claudian painters and English gentleman improvers. There is a great cultural wealth to be found in both of these traditions. I wonder, however, whether the typical

landscape architect today has anything more in common with John Constable than with the English peasants he so picturesquely portrayed. The architect and critic Kate Wagner (2020), in a poignant “Letter to a Young Architect,” points out that: “[a]rchitects have forever thought themselves above the construction labourers that build their works, but this is no longer the case in the age of the global, multi-national firm and its increasingly stratified divisions of labour” (2020). Furthermore, if the practice of urban design takes place not just within the city but within Easterling’s infrastructure space (2014) or Bratton’s Stack (2015), then even the agency of starchitects might seem rather limited and superficial.

A low theory of landscape involves a shift in perspective similar to James Corner’s turn toward the landschaft (the productive, worked landscape) and away from the landskip (Corner, 2010, pp. 241-255). A low theory of landscape approaches the landscape as a thoroughly material affair. Landscapes are constellations of entangled matter and meaning, always in the process of (recon)figuration. Landscapes are compostings of human and nonhuman agencies. Design, in this context, is always designing-with; the work of design is the work of messy mediations, translations, becomings.

The designer’s gestures are always unfinished and in dialogue, tied up in relaying. What I want to gesture toward, in this thesis, is an ecological urbanism grounded by a low theory of landscape. This would be a projective ecology cutting across divisions between art and science, word and world,

poetics and aesthetics and technics. This would also be an engagement with the everyday aesthetics of urban landscapes, bringing art down to earth within the realm of daily perambulations and peregrinations. In this thesis I will sketch out this project in place, focusing in particular on the materialities and mobilities which compose landscapes.

Materialities and Mobilities

Materiality and mobility are inextricable because matter is always in motion. Implicated in a call for close attention to materiality is a demand to attend to “relations and durations of movement, speed and slowness” (Latham & McCormack, 2005, p. 705). Reciprocally, the diagram of the body in motion already complicates any simple, concrete, static conceptions of materiality and identity. As Brian Massumi notes: “[w]hen a body is in motion, it does not coincide with itself…In motion, a body is in an immediate, unfolding relation to its own nonpresent potential to vary” (Massumi, 2002, p. 4).

Materialities

A multitude of different working theorizations of materiality have sprung up in recent decades like mushrooms after a rain, particularly in the domains of human geographies and anthropologies, and at times these different materialities have mingled and cross-pollinated productively (Latham &

McCormack, 2004). For this reason, I discuss many materialities which compose the urban landscape.

What can be said of all materialities is that materiality pertains to what matter does. Rather than what matter is, or what properties it has, questions of materiality call attention to the middle ground between being and having: behaving (Mróz, 2020b). In an agential realist approach, “matter is substance in its intra-active becoming–not a thing but a doing, a congealing of agency… Materiality and discursivity are mutually implicated in the dynamics of intra-activity” (Barad, 2008, p. 336).

Mobilities

Discussions of mobility call attention to the materiality of movement (Merriman et al., 2013). The concept of mobilities offers a transversal axis which cuts across scales; it permeates the barriers between human and nonhuman, and it pertains to issues of meaning and ethics just as much as it does to things which are more readily counted and mapped (Merriman et al., 2013). Mobility is a fact of matter, and attending to mobilities offers opportunities for radically empirical and conceptualizations of matter which account for materiality more thoroughly than its heuristic conceptions in dominant “objective” paradigms (Bremner, 2021; Merriman et al., 2013; Coole & Frost, 2010; Massumi, 2002). Work at the interstices of Mobility Studies and Disability Studies has challenged normative notions of the body, calling

attention to the ways in which the continual materialization of bodies occurs in varying machinic assemblages (Peers & Eales, 2017).

Modern sensibilities favor models and heuristics of transport in which a given object is transposed from one coordinate to another within a vacuous, uniform, container-like space, arriving at its destination more or less unchanged (Latour, 1998). This movement is imagined within a Newtonian clockwork universe where nature and time are governed by rational laws, and therefore able to be controlled through the practice of rational models. By contrast, social theory in recent decades has challenged the naturalization of linear modern time and absolute space, examining the ways in which time and space are produced (Barad, 2008; Smith, 1984).

Urban Mobilities and Materialities

Materialities and mobilities comprising urban landscape are active forces shaping the production of subjects and territories (Latham & McCormack, 2004). Bremner (2021), for instance, develops an account of “the materiality of sediment as an ontological analytic of politics” (p. 26). Sediment, for Bremner, forms the basis of a radically material conception of territory which playfully critiques the ubiquitous and frequently obscurant trope of a global political economy constituted entirely of “flows.” In a similar vein, Krzywoszynska & Marchesi, develop a relational materiality of soils toward

the objective of “a practical, political, and ethical project of re-embedding societies in soils and lands” (2020, p. 1).

Materiality has played an important role in creative, relational approaches to understanding the ways in which infrastructures shape urban life, not only at a molar and superstructural level, but at a molecular level. In his discussion of the “Politics and Poetics of Infrastructure,” Brian Larkin (2013) discusses concrete as an example of a material which shapes the ambiances of urban life through its very tactility. He cites David Harvey’s dramatic example from a road construction project in rural Peru, in which encountering concrete, a substance which is poured as a liquid but hardens as it cures, disrupted indigenous Andean cosmological understandings of dryness, hardness and vitality rooted in traditional practices of mummification of the body.

In the contemporary city, the materiality of concrete shapes a plethora of mobilities and aesthetic experiences, from sidewalks to skyscrapers. The impermeability, smoothness, and hardness of concrete are well-suited to the modern infrastructural imperatives of speed, circulation, regularity, and separation. The freedom of movement which automobility afforded to some people was a key factor driving the morphogenesis of the contemporary city (Latham & McCormack, 2004). Sprawl is perhaps the most obvious large-scale consequence of the car-centric city in North America.

Chapter 3: The Falls

> *"The streams were called Falles or Falls by Governor Smith of Virginia, who first explored the Chesapeake Bay, probably because the waters fell over rocks or precipices until they met the tide, where they become and are called Rivers" (Griffith, 1824, p. 288).*

Sherry H. Olson's (1980, p. 1) "Baltimore, the Building of an American City" opens with Thomas Waters Griffith's (1824) description of the regional vocabulary for the Chesapeake Bay tributaries which developed during the early colonial period. The "Governor Smith" mentioned is John Smith, the man responsible for the first documentation of the Jones Falls in any Western Literature. The river appears, unnamed, on Smith's famous 1624 "Map of Virginia," near the word "bolus," which refers to an extensive a ridge of red clays. In the following centuries, many of these clays would be cut, shoveled onto pallets, and carted to brickyards where they would be worked into an even consistency before being molded and fired in kilns to producing the iconic red bricks of Baltimore (Rockman, p. 22). At the time Smith witnessed it, the mouth of the Jones Falls was a thriving tidal salt marsh ecosystem where dolphins would come to feed (Roylance, 1991).

8,000 BCE-1600CE

At the time that Smith first charted the Chesapeake, there were no permanent settlements in the vicinity of what would become downtown Baltimore. This area was overlapped by the traditional territory of the

Piscataway people and that of the Susquehannock people, and the latter were known to leave their villages during warmer months to hunt and fish in the rich matrix of forest and wetland habitats of present-day Baltimore (Shen, 2019). Archeological evidence demonstrates that indigenous people lived in and around this area for thousands of years: some artifacts are dated as early 8000 BCE (Shen, 2019).

Baltimore is often reported to be ceded territory, but the treaty in which the land was ceded to European settlers by the Susquehannock was violated in short order by violent attacks launched against the tribe. The Susquehannock's numbers also dwindled as as a result of disease, and Bacon's Rebellion proved to be a turning point. After the 1763 Paxton Boys massacre, the tribe was considered to be virtually extinct. There is another issue complicating the territorial history of Baltimore: the land was the ancestral territory of the Piscataway people, who never ceded it. Baltimore did not cease to be a home to native people after the advent of colonization; rather, there is a long (if often buried) history of native populations in the formally-established city of Baltimore, particularly members of the Cherokee and Lumbee.

1600-1700 CE

Shrewd and entrepreneurial, John Smith sold the image of an untrammeled, edenic wilderness laying empty, waiting to be cultivated

through the wisdom and industry of ambitious European colonists. In his (1624) *The Generall History of Virginia, New-England and the Summer Islands* Smith painted an alluring portrait of the Chesapeake Bay region, describing:

> *"…a country that may have the prerogative over the most pleasant place ever knowne, for large and pleasant navigable Rivers. Heaven and earth never agreed better to frame a place for man's habitation, were it fully manured and inhabited by industrious people. Here are mountains, hills, plaines, valleyes, rivers, and brookes, all running into a faire Bay, compassed but for the mouth, with fruitful and delightsome land."*

Smith's exuberant propaganda campaign would prove persuasive to some enterprising Englishmen. His marketing savvy was instrumental in setting the colonial project in motion, promising adventure and fortune to enterprising men with sufficient start-up capital. Tobacco, a plant which had long been cultivated by native peoples in North America, was the perfect cash crop, requiring relatively low initial investment and serving a skyrocketing market in Europe. The early colonial economy of Maryland was dominated by tobacco, and for this reason early European settlement around the Chesapeake Bay consisted almost entirely of plantation manors, concentrated in Southern Maryland near navigable waterways. Communication between these manors was limited, carried out primarily through use of the waterways, while "rolling roads" facilitated the conveyance of this cash crop in hogshead barrels, which were rolled from the estates

further inland to the nearest landing, driven by teams of oxen with a simple wooden axle driven through the barrel (Hall, 1912, p. 10). The official political unit in the region was the county, not the town, and on the plantation the lord of the manor retained the power to try and punish tenants for many offenses (Hall, 1912, p. 9). Towns primarily developed slowly during the Colonial period in Maryland, and Baltimore was no exception.

The first European to settle in what is now the city of Baltimore is thought to be a David Jones, who purchased 380 acres in the newly established Baltimore County in 1661 to establish a tobacco plantation. Today, Jones is the namesake of the Jones Falls, as well as Baltimore's Jonestown neighborhood, located just south of where he built his house. Jones' house was built near the East Bank of the Falls, along an old road (likely a Native American trading route), which crossed the falls near the head of its tidewaters (Colman, p. 65). Today, this site is located near the intersection of present-day Hillen and Front streets.

Information about David Jones and the tenants who worked his land is difficult to find, though it is well documented that, in general, the lifelong enslavement of Black laborers had been established by 1640 in the colony Maryland. In the eighteenth century, this intersection of road and river would become the site of the city's first inn, as well as the city's first mill which was constructed by Jonathan Hanson in 1711. Hanson's mill, located near the northwest corner of present-day Holliday street and Orleans Street, would

stand in its location next to the falls until the early nineteenth century (Colman, 1824, p. 65). A 1726 survey of Cole's Harbor, the estate which had belonged to Jones, recorded (in addition to Hanson's Mill) two dwellings, tobacco houses, and orchards, estimating that one-half of the land was cleared and describing this land as "middling in quality" (Colman, 1824, p. 8).

1700-1800 CE

Unlike New York, Philadelphia and Boston, Baltimore never became a center of trade and urbanity during the colonial era (Olson, 1980, p. 1-5). Primarily a small tobacco port, Baltimore was laid out as a town of sixty acres in 1730. Expansion of the small settlement was restricted by the basin (the waters of the modern-day Inner Harbor) to the south, the Jones Falls and its marshlands to the east and northeast, and by hills and watercourses in every other direction. The early years of Baltimore are described as an ongoing battle between the colonists and the frogs and mosquitoes of the surrounding wetlands (Latrobe, 1832, p. 23).

In 1732, another town of only ten acres would be laid out to the north of Baltimore Town, to the east of the Jones Falls near where David Jones had established his homestead, taking the name Jonestown (Olson, 1980, p. 6). Around this time, a bridge was built crossing the Jones Falls at present-day Gay Street. Jonestown merged with Baltimore in 1745. One of the first acts of the new town was to erect a wooden fence around Jonestown in 1746,

constructed from white oak and locust wood. This initiative has been attributed to anxiety about the possibility of Native American raids, but was likely motivated by the need to control the movements of livestock, particularly pigs (Hall, 1912, p. 17).

Six years later, in 1752, Baltimore town was still a village of twenty-five houses (Olson, 1980, p. 1). By that same year, the fence built around Jonestown had been so thoroughly picked apart by settlers seeking firewood that it was declared useless and the remaining wood was sold off (Hall, 1912, p. 17). In William Strickland's famous 1817 engraving showing Baltimore in 1753, tobacco grows on the crest of a hill which slopes steeply down toward the mouth of the falls, where soil seems to be collecting, forming mud flats.

The sedimentation of the harbor, particularly from the alluvium of the Jones Falls, was already a concern by the mid-eighteenth century (Griffith, p. 33). Shoals and small islands formed regularly at the mouth of the Jones Falls where it emptied into the basin. As colonial land clearing advanced upland and into the Piedmont region, slowly at first and later rapidly, the issue of erosion would be exacerbated. In 1753, the colonial legislature prohibited the dumping of soil in the Patapsco and its tributaries, and ordered ironstone mining operations to institute erosion control methods (Olson, 1980, p. 6).

The erosion of soils and sediments in Baltimore was likely first set in motion when David Jones began to clear forested land in order to grow tobacco. With the exception of some low-lying marshland, most of the land

which would become present-day Baltimore was forested prior to European settlement. The sedimentation of the harbor would pose an ongoing challenge throughout Baltimore's development.

In 1767, Baltimore Town became the new county seat, and a jail and courthouse were constructed at the head of Calvert Street, atop a cliff overlooking the Jones Falls (Latrobe, 1832, p. 27). The two-story brick courthouse, with its prominent cupola, stood in the way of any northward expansion of Calvert Street until 1785, when it was tunneled under and underpinned, with an arch carrying Calvert Street north over the newly lowered bluff. While peculiar, the building and its distinctive pedestal was unmistakably intended to inspire reverence, with instruments of corporal punishment on display in front of its picturesque arch. The author John P. Kennedy described the entire scene in vivid detail:

> *"That was a famous building which to my first cognizance suggested the idea of a house perched upon a great stool. It was a large dingy, square structure of brick, elevated upon a massive basement of stone, which was perforated by a broad arch. The buttresses on either side of this arch supplied space for a stairway that led to the Hall of Justice above, and straddled over a pillory, whipping-post and stocks which were sheltered under the arch , as symbols of the power that was at work upstairs…This magisterial edifice stood precisely where the Battle Monument now stands on Calvert Street. It has a notable history, that old Court House. When it was first built it overlooked the town from the summit of a hill some fifty feet or more above the level of the present street and stood upon a cliff which, northward, was washed at the base by Jones Falls, –in that primitive day a pretty rural stream that meandered*

through meadows garnished with shrubbery and filled with browsing cattle, making a pleasant landscape from the Court House windows" (quoted in Hall, 1912, p. 59).

By the time that the project of extending Calvert Street past the courthouse was underway, Baltimore was already transforming from a quiet tobacco port into an Early Republic boom town. The erection of Baltimore as a town had practically coincided with the descent of European tobacco markets into a long, deep depression in 1732 (Olson, 1980, p. 6). Baltimore's rapid growth in the latter half of the eighteenth century was made possible by an earlier rise in demand for wheat in Europe and the West Indies. The first wheat exports were made in 1758 (Hall, 1912, p. 71). The new cash crop grew well in the upland Piedmont soils, and the rivers and streams of the Fall line were harnessed as an energy source for the dozens of gristmills which were built in and around Baltimore over the following decades. By the outset of the nineteenth century there were a dozen mills along the fourteen-mile course of the Jones Falls alone, foreshadowing the valley's future as an epicenter of early industry (Olson, 1980, p. 48).

The rise of Baltimore as an early industrial town, driven in no small part by the flow of the Jones Falls, set in motion a great many bodies: among them, infinitesimal grains of sediment stripped from the hillsides of the river valley, which collected in the basin along with human waste and other discarded material, forming flats at the mouth of the Jones Falls. This presented a problem for the city's burgeoning shipping industry, which by

1795 would account for 95 percent of Maryland's overseas trade (Rockman, 2009, p. 22).

A decade before Baltimore ever inaugurated a mayor, a board of Port Wardens was appointed and tasked with producing a survey of the basin and seeing to its maintenance (Hall, 1912, p. 42). In 1783, the same year that the board of port wardens were first convened, two brothers known as John and Andrew Ellicott deployed a dredge prototype which would take on the common name of a "mud-machine:" a novel assemblage of human, animal and machine power set afloat on a small barge (Rockman, 2009, p. 81). The Ellicotts had already made a name for themselves (and a substantial profit) in the milling business, having established Ellicott's Mills on the Patapsco River.

In 1790, the city began paying for the deployment of mud machines, to dredge bucket after bucket of foul-smelling mud from the harbor. The mud would then be loaded into scows, before ultimately being unloaded wherever a landfilling project was currently in progress (Rockman, 2009, p. 23). Urban construction outstripped land clearing as the dominant source of soil erosion in Baltimore by the end of the eighteenth century (Olson, 1980, p. 6) and as development in Baltimore took on a furious pace through the nineteenth century, the mud machine would continue to be an essential link in the new urbanizing apparatus, collecting the dark, viscous, pungent matter which collected in the basin and funneling it into a terraforming project of impressive proportions (Rockman, 2009 p. 22-23).

The work of ‘reclaiming’ land was already underway by the time that the mud machines appeared on the scene. In 1784, a market was established on reclaimed land, on what had once been a salt marsh at the mouth of the Jones Falls. This land had been surveyed into lots in 1747, but it would take decades before many of these lots would be filled. The market, located at the head of Long Dock, was given the official name of Center Market, but would commonly be referred to as Marsh Market. For many years, Marsh Market bustled with activity as the city’s largest retail site.

The growth of the grain industry fostered a number of other enterprises in Baltimore. The waters of the Jones Falls, routed through mill races and over the water wheels of gristmills, powered a much larger machine sustaining the sugarcane plantation economy of the West Indies through each shipment of flour exported. There, enslaved African laborers cut sugarcane which was processed into sugar, rum, and molasses to be borne in hogshead barrels over the Gulf Stream back toward the port of Baltimore, completing the circuit and bolstering Baltimore’s sugar refining industry (Hall, 1912, p. 251; Rockman, 2009, p. 19). The forests which once covered the land, which would become Baltimore from the basin northward, were logged to build infrastructure of transatlantic trade: docks, barrels, and ships (Rockman, pp. 19-22). One of the icons of this economy were the clipper ships of Baltimore, noted for the speed and agility which allowed them to avoid interception by British vessels in the leadup to the war of 1812. Some gristmills along the

Jones Falls began to be converted into cotton duck (sail cloth) factories. Meanwhile, a number of highly mobile sailors from heterogeneous backgrounds began returning with increasing regularity to Baltimore (Rockman, p. 22).

1800-1900 CE

By the opening of the nineteenth century, Baltimore was quickly becoming a boom town, having barely any existing precedent set by colonial governance. The uneven growth of its public institutions and infrastructure was shaped very transparently by the city's ascendant industrialist class, many of whom adopted a strong program of nation building, expressing itself in edifices and monuments (Olson, 1980, pp. 7-18). Baltimore also gained a reputation for "jollity," (Colman, p. 46) with a permissive attitude toward the arts which facilitated the flourishing of a theater scene far earlier and more vibrant than other cities. Jollity and fortune are only part of the story, however. The city was built by a labor force of variegated circumstances who largely shared the experience of a precarious existence with limited control over the conditions of their work. To a great degree, these conditions of precarity were manufactured and sustained through the direct efforts of those with wealth and influence (Rockman, pp. 1-17).

Fires, floods, and epidemics were ongoing causes of death and disruption throughout Baltimore's frenetic industrial development, and the

hydrology of the Jones Falls was a central concern in all of these matters. A destructive “freshet” flood in 1786 may have been the impetus for a project carried out in 1789 which straightened the deep bend the Jones Falls formed north of the old Courthouse by digging a channel, filling in the surrounding land in the process. The Falls would continue to return to the site of its old bed (and what had been the surrounding meadow), flooding the low lying land near Harrison Street, for decades during heavy flood events.

By the beginning of the nineteenth century, the Jones Falls Valley had already become an epicenter of early industry, with a dozen mills located along the fourteen-mile course of the small river (Olson, 1980, p. 48). An 1804 fire was the impetus for the formation of a water company, which ultimately chose the Jones Falls as the city’s first formal water source. Mill owners were closely involved with the water company, not only as stakeholders, but as consultants offering practical hydrological engineering experience.

In the early years of the water company, the provision of a public water supply was somewhat of an afterthought (Olson, 1980, p. 49). Many households continued to get water from several hundred shallow wells, which were often subject to contamination from surface drainage and from the seepage of privies (Olson, 1980, p. 49). The city’s streets, which also served as its drainage system, were often laid out haphazardly, and by the end of the

eighteenth century, urban construction had outstripped land clearing as the primary driver of rampant soil erosion.

Disease outbreaks occurred frequently during the first half of the nineteenth century. Many of these ailments, such as measles, whooping cough, tuberculosis, and infant cholera, were major sources of mortality among the poorest residents of the city, especially those concentrated in land with the poorest drainage. Theories of disease varied considerably in Baltimore at the time, often influenced by the dominant moral and theological concerns of the day. The dominant theory posited putrefaction as the cause of illness, and while swampy land was broadly considered a reservoir of illness, physicians debated the efficacy of landfilling as a solution.

Because the most popular theories of disease posited that foul odors played a direct role as vectors, the stench of the Jones Falls and Basin were cause for concern amid the intermittent epidemics of the nineteenth century. In the mid-19th century, twenty thousand privies were draining illegally into the Jones Falls watershed (Olson, 1980, p. 132). Foul-smelling mud continued to form in shoals at the mouth of the Falls, as well as in the shallower parts of the Basin.

The water system was bifurcated along class lines, with a private company supplying water to the wealthy while intestinal diseases rose among the poor. Storm drainage was also poor; the city put off a full topographic

survey for the better part of a century (Olson, 1980, p. 253), and grading of streets was customarily worked out piecemeal as they were extended.

In comparison to its reluctant provision of a public water supply, the Water Company was an energetic and influential driver of both Baltimore's economic growth and the form of the city's public realm. The company poached John Davis, architect of the Philadelphia waterworks, who was offered a handsome ten percent fee consulting on nearly all of the city's hydraulic projects. Davis's work included everything from designing new bridges across the Jones Falls, to siting several new mills on the Jones and Gwynns falls. Perhaps the most civic legacy of Davis's career was his role in transforming several springs into ornate fountains surrounded by public squares.

"Cool springs" had been important centers of social life since the eighteenth century. The nineteenth century movement to more-or-less literally enshrine these natural features, often collecting several smaller rivulets and sheltering them under shade trees and ornate cupolas, seems to have been an effort to preserve both their cultural significance and their viability as water sources (Olson, 1980, p. 49; Latrobe, 1832, p. 74). The first of these, known as "City Spring" or "Northern Fountain," was built near the present-day intersection of Calvert and Saratoga streets after the 1810 grading of Calvert Street (Latrobe, p. 73). The crown jewel of these springs, Center Fountain, was constructed outside of Center Market, (more commonly known as Marsh

Market) and featured twin jets of water emitting from the mouths of two stone dolphins (Latrobe, 1832, p. 75). Today, unfortunately, these springs are all largely lost to history.

Another Philadelphia architect, Robert Mills, who designed Baltimore's Washington Monument, was brought on to the water company as a consultant, later becoming superintendent. Mills worked on a number of prominent projects in Baltimore including the layout of North Street, the layout and design of numerous residential projects near Baltimore's Mount Vernon neighborhood, and the installation of new warm air furnaces for large estates and parishes.

However, one of Mill's most historically noteworthy legacies is an unbuilt project which he proposed after the violent flood of 1817. On August 9th, 1817, the waters of the Jones Falls rose a reported twenty feet, washing out all of the mill dams and wooden bridges along its course. In the wake of the catastrophe, Mills devised a bold vision for the area around the Jones Falls. This scheme proposed straightening, scouring and walling in the stream, creating a deep channel which would permit navigation all the way to Madison Street. A proposed public promenade ran along either side of the channel, with low wharves providing additional floodable space between the channel and promenade. As entrepreneurial as he was ambitious, Mills overtly pitched the proposal to the city council as a catalyst for development which would capitalize upon "the romantic scenery and waterfalls, which

present themselves as you proceed up, and running North and South, giving every advantage of air and shade, all contribute to make this spot preferable to any other" (Olson, 1980, p. 50).

An alternate plan, produced by Benjamin C. Latrobe, made the even grander proposition to divert the entire Jones Falls into Herring Run by way of a tunnel passing under Gallows Hill (Olson, 1980, p. 50). Ultimately, the city declined to carry out either plan, and all that materialized was an ordinance requiring property owners to build stone walls along the falls. A council committee suggested rerouting the Falls west into Chatsworth run after an 1831 freshet, to no avail. In 1837, the Jones Falls flooded again, claiming the lives of 19 people, along with dozens of livestock, and wiping out all but one bridge. Ultimately, the walling and straightening proposed by Mills' plan would be more or less carried out after the great flood of 1868, but the public promenade would never materialize.

Prior to the Civil War, the energy which the city devoted to infrastructural development was focused primarily on rail and canal building, tasks which would require planners to pay closer attention to topography. Complementing this development was the acceleration of construction in the city and the growth of industry. Thomas Poppleton's 1822 plan indicates not only the scope of this development, but a far-reaching ambition which would make the plan a reference for many decades. The plan also indicates the

variety of industrial land uses springing up near the Jones Falls; among them are a brewery, a distillery, and a woolen factory, and lumber yards.

An 1826 drought drew attention to the inadequacy of Baltimore's water supply. In the decades that followed, the city water commissioners would discuss a number of schemes for improving the quality and quantity of water available to the city. Water sources other than the Jones Falls were considered; the Gunpowder, for instance, was less prone to the periods of flood and drought which the Falls were. Eventually, a project approved in 1856 and finished in 1862 would construct Lake Roland and the Hampden Reservoir (which would take the name of Mount Royal from the old Mount Royal Reservoir located on Charles Street). By the completion of these projects, it became evident that they would be insufficient to meet demand, and work began in 1864 on a new Reservoir, which would become Druid Lake. The city finally decided to turn to the Gunpowder River as a water source in 1873.

By the latter half of the nineteenth century, steam power and the rise of new chemical industrial processes catalyzed the appearance of a wide variety of manufacturing enterprises near the Jones Falls. An 1851 map displays a distillery, a tannery, and a cotton factory along the banks of the Jones Falls, all south of present-day North Avenue. Other nearby industry included a shot tower and multiple railroad depots.

An 1856 map shows quarrying on the banks of the Jones Falls, near present-day Remington, several foundries and breweries, a flour mill, Sachse Co's 1865 Bird's Eye view of Baltimore shows lumber yards, a bakery, a boilermaker, a soap and candle factory, a sugar refinery, a tannery, a gasworks, a steam marble cutting shop, a depot and coal yard, a brewery, a grain mill, and a florist on the banks of the Jones Falls, all south of North Avenue.

By the end of the 19th century, the Jones Falls Valley would be thick with railroad tracks, dotted with railyards and coalyards, with quarries and cotton mills to the north, and a hodgepodge of industrial, commercial and residential buildings to the south. Rarely represented on maps was a large economy of cottage industry, often run out of private residences, producing a wide variety of goods (Rockman, 2009). Throughout the entire nineteenth century, interspersed with these industrial uses, there remained theaters, taverns, markets and hotels.

The flood of 1868, which took place on July 24, 1868, was a significant inflection in the history of Baltimore and the Jones Falls. The tragedy catalyzed a new round of proposals, but before any actions were taken, a severe 1872 drought struck, followed by a financial recession. Ultimately, the walls along the Jones Falls were raised, the lower Jones Falls were dredged, and little else was done. The city began receiving water from the Gunpowder in 1881 (Hendricks, p. 481).

Public investment in infrastructure rose dramatically from the end of the Civil War through the beginning of the twentieth century. This included a newfound energy for the infrastructural development of streets, which rekindled the desire for detailed topographical information. Sewer construction began in 1862, but this was a relatively shortsighted effort, continuing to rely on topographical information which was worked out piecemeal. Separate sanitary and storm sewers would not be formally suggested until an 1880 proposal, and would not be implemented until the twentieth century.

The Annex of 1888 was another important event in the history of Baltimore's development. The move to expand the city was conceived as a new source of revenue. The expansion of Baltimore's territory would, in turn, call for a new, unprecedented planning vision, and this vision would be produced by the Olmsted office in the beginning of the twentieth century.

1900CE-Present

The Great Fire of 1904 was another turning point in Baltimore's history. The actual cause of the blaze is the subject of continued debate, but what is known is that, when it was over, 1,545 buildings had burned, including the entire original 60 acres of Baltimore town laid out in 1730. The area destroyed was largely industrial, so while the damage was immense, there were no deaths reported (Olson, 1980, p. 247).

The city set about rebuilding with the same passion for infrastructure which had permeated the years of Ferdinand C. Latrobe's mayoral career. A year after the fire, in 1905, a sewerage commission was convened and Calvin W. Hendrick, engineer for the Rapid Transit Company of New York, was brought on as chief engineer (Hendrick, 425). The same year, the Jones Falls was formally abandoned as a water source. At the time, Baltimore had been without a modern sewer system, and untreated sewage emptied directly into the Jones Falls and the Harbor, along with industrial wastes. Rebuilding efforts in the burned area of the city and beyond continued the sophisticated, "three dimensional" approach initiated prior to the turn of the century. Streams that had been hastily covered streams were encased in arched tunnels, and existing utilities were reorganized to accommodate the new dual sewer system.

The centerpiece of Hendrick's work was the Fallsway. An urban boulevard with traffic flowing on its surface and the Jones Falls running below through a parallel triple-barrel conduit, the Fallsway was, at the time, the picture of modernity. Prior to completion, a glowing writeup in the engineering record forecasted that "[t]he proposed boulevard on top of the covered conduit will become an important link between the waterfront and the Union railroad station (today's Pennsylvania Station) in Baltimore. It is expected that this improvement work will enhance land values along the stream sufficiently to pay for the cost of construction" ("Enclosing a Sewage-Laden Stream in a

Triple-Barrel Conduit," 1912, p. 285). By the time construction began on the Fallsway, the burnt district had already been largely rebuilt, so construction had to be carried out within the confines of the right-of-way. Concrete was poured from hoppers fixed atop scaffolding. In 1915, at the dedication of the new Fallsway, Master of Ceremonies Henry Barto Jacobs borrowed a line from Shakespeare, announcing, "I have come to bury the Jones Falls, not praise it" (quoted in Roylance, 1991). The inauguration of the new system was preceded by a dinner held in the cavernous junction chamber.

The same year as the fire of 1904, the Olmsted Office released the "Report Upon the Development of Public Grounds for Greater Baltimore," a sophisticated plan for the future development of Baltimore. The plan envisioned an extensive network of heterogeneous green spaces, linked by parkways. The preservation of stream valleys, including the portion of the Jones Falls north of the Fallsway, was a major focus. The Olmsted Plan, as it is often called, was commissioned by the city's Municipal Art Society.

The next major era of infrastructure development in Baltimore was catalyzed by the creation of the National Highway System. JFX was largely routed over the Pennsylvania Railroad, which at the time was used to provided commuter rail service. Despite citizen protests, the railroad was permitted to discontinue service, and ground was broken on the highway project by Mayor Thomas J. D'alesandro Jr. on October 2nd, 1956. While there was some discussion of creating parkland and public transit in parallel

with the highway, nothing materialized at the time (Kelly, 2009). The highway ran directly through the eastern edge of Baltimore's picturesque Druid Hill Park, cutting it off from the rest of the Jones Falls Valley, a decision which was met with little opposition at the time, but has been seen by many as a mistake in retrospect (Mohl, 2004). A ribbon cutting ceremony on November 2nd, 1962 inaugurated the highway, connecting Biddle Street to the beltway. Only eight sentences, buried in the middle of the newspaper, were dedicated to the event (Kelly Jacques.)

The Southern, largely elevated portion of I-83 which connects to President Street, would not be opened until the mid-1970s. By this time, opposition had mounted in response to a number of other highway projects in the city, joining a number of "freeway revolts" around the country. Perhaps the most infamous legacy of Baltimore's freeway-building era is the Franklin-Mulberry Expressway, more commonly known as the "Highway to Nowhere." Long before the southern spur of I-83 was completed, it was already facing significant criticism.

Since the 1970's, a number of proposals have been made to alter the condition of either the Jones Falls Expressway, the Jones Falls itself, or both, along some or all of the 1-mile long, southernmost elevated portion which terminates at Fayette Street. These include a masterplan for a large portion of Baltimore completed by Mark Szarkowski and two ASLA-award-winning student projects. Walter Sondheim, often referred to as one of Baltimore's

“civic fathers,” advocated for the removal of the freeway for years, leading a mayoral commission which produced a detailed guide for shaping development in the city over the following decades, with downtown freeway removal figuring prominently among the recommendations. In 2010, when a planning study was commissioned to assess the viability of replacing the southern spur with an at-grade boulevard, leading some observers to express optimistic outlooks, but today, more than ten years later, the freeway remains.

Meanwhile, the condition of the expressway’s namesake, the Jones Falls River, has improved somewhat, largely due to reductions in fecal coliform bacteria accomplished through the construction of underground tanks to hold sewage during combined sewage overflow (CSO) events, a project catalyzed by a federal consent decree (Condon, 2021). However, the river still regularly experiences fecal coliform counts which exceed limits for fishable and swimmable waterways, as well as significant loads of other pollutants, including nitrogen, phosphorus and sediment.

Chapter 4: The Lower Jones Falls Valley Plan

Prologue

The infrastructural components of urban space are not just inert physical backdrops, nor do they only function as straightforward, top-down apparatuses of governmentality. Rather, they are media which actively shape the way that individuals encounter one another—constellations of meaning and matter which shape many embodied experiences (Larkin, 2013) (Latour, 2005). Latour (2004) observes that the presentation of technocratic “matters of fact” always obscures underlying “matters of concern:” the relations of care and entanglement which are inseparable from technical problems. The richly relational and agential nature of infrastructure can be easily overlooked when infrastructure networks are reduced to so many individual reified objects. This can preclude many possibilities for practices of “thinking otherwise” (Butler, 2001) to propose novel material configurations of urban space, and, reciprocally, for reimagined infrastructural landscapes to support new ways of thinking and relating. The ongoing dialogue between individual subjectivities and the technical assemblages which mediate social interaction is central to Guattari’s ecosophic problematic (Tinnell, 2012) and thus to the critical project of ecological urbanism. As Guattari once remarked: “desire is a part of the infrastructure” (Guattari & Genosko, 1996, p. 129).

Foucault observed how the formation of the modern city proceeded through a series of “canalizations” (2001, p. 354)—architectural orderings of the urban territory performed through the construction of physical features: bridges, channels, and other structures regulating the mobility of people and various materials. Water was one of the most important of these flows (Usher, 2014), and Baltimore is certainly no exception in this regard, as demonstrated by the Jones Falls’ history as both an engine of industry and a pervasive threat throughout the city’s development. Many canalizations have transformed the landscape of the Jones Falls Valley, from initial efforts at straightening the river undertaken near the end of the eighteenth century to culverting undertaken during the construction of the Jones Falls expressway in the mid-twentieth century, opening the center of the city to the unimpeded flow of automobiles.

The infrastructural landscape of the lower Jones Falls Valley today presents many forms of canalization (Figure 5 highlights a few of the materialities and mobilities composing the armored open channel of the Jones Falls north of Penn Station). Perhaps most striking is the condition of the river itself, confined to thousands of feet of concrete conduit. I propose that the impervious, monofunctional, auto-oriented infrastructure of this landscape is a physical embodiment of reification, or what Alfred North Whitehead referred to as the fallacy of misplaced concreteness. I propose that a design intervention introducing a more porous character to this asphalt-

laden landscape of “misplaced concreteness” might offer a way of engaging with ecological urbanism both on the level of design practice and the level of critical inquiry responsive to Felix Guattari’s ecosophic problematic. In the spirit of “making things public” for which Latour (2005) advocates, this project reimagines the infrastructural landscape of the lower Jones Falls Valley, asking how this corridor might become more public, convivial, and porous: open to many more movements than those of motor vehicles. Through the reconfiguration of some of this landscape’s many materialities and mobilities, this design project proposes that this landscape might cultivate new, regenerative configurations of infrastructure and ecology. Central to this vision is the Jones Falls itself. How might this storied urban waterway be broken loose from the confines of its concrete conduit and harnessed once again as an engine of landscape transformation—this time, at the heart of a landscape of salubrious mobilities, blue and green space, and urban infrastructure?

Design Narrative

The lower Jones Falls Valley is a landscape thick with histories of many mobilities. Present-day Falls Road traces the route of a Native American trail which existed prior to European colonization (Pousson, 2015). It would later become the site of one of Baltimore’s first turnpikes. The rapid transformation of this landscape which began with a program of large-scale

deforestation catalyzed by the colonial tobacco economy accelerated as the Jones Falls was harnessed as an engine of industry, turning the wheels of gristmills at the heart of a quickly growing port town. Later, some of these mills would be retooled to produce sailcloth, making the Jones Falls a critical infrastructural component in the mobilization of a growing global economy.

As central as this river was to Baltimore's rise as an industrial boom town, the city's relationship with the Jones Falls was always complicated. The materialities and mobilities of this stream proved to be difficult to govern, especially the large floods which would occasionally sweep through its valley. Ongoing construction and deforestation dislodged a steady stream of sediment which collected near the river's mouth, producing foul-smelling mud flats, and by the turn of the century, the river which had once been the city's first formalized source of drinking water had been transformed into an open sewer. It was the city's department of sewerage which oversaw the construction of a concrete conduit containing the river beneath the Fallsway in the 1920's. Over one hundred years later, the same conduit is in use today.

The next major change to the river and its valley was catalyzed by the construction of the Jones Falls Expressway, which carried I-83 into the city, mostly routed over land which had been occupied by rail infrastructure. (Figure 4 offers an illustration of the profound impact this highway has on the landscape of the valley.) The expressway was designed to optimize the ease with which occupants of the growing suburbs could get downtown: Kelly

Jacques (2009) describes it as a project boosted by “civic progressives…anxious to get to their homes in Baltimore County more quickly.” Roughly another mile of the Jones Falls was culverted in the process of this project.

Today, the landscape of the lower Jones Falls Valley continues to reflect the prioritization of car movement. This is particularly apparent to south of Madison Street, where the river travels through a 100-year old culvert beneath the Fallsway through a landscape of parking lots and roads, with the elevated expressway looming overhead.

The Jones Fall’s course through a mile-and-a-half-long sequence of concrete conduits represents one of the most destructive conditions which a stream ecosystem can be subjected to, cut off from many of the exchanges and flows which support rich webs of ecological interactions (Pinkman, 2000). This physical condition is a diagram of misplaced concreteness: the river configured as a thing removed from relation, cut off from all of the other flows with which it once shared co-constitutive relations, closed off from new courses of becoming by impervious, concrete boundaries. While this grey-infrastructure solution reflects a mentality of moving water as quickly as possible, the conduit is actually undersized, increasing flooding risk near the Fallsway (Federal Emergency Management Agency, 2021). Meanwhile, the sprawling, monofunctional auto-oriented landscape forecloses or discourages

many other convivial and imaginative uses of public space which might otherwise be possible.

While the Jones Falls Valley has not been an epicenter of industry for decades, there are still many forms of movement and production occurring: cars produce exhaust particles as they move down the expressway and disperse over nearby surface streets, making the center of the city the region of Baltimore most affected by auto pollution (Burkhart, 2017). The open, asphalt-coated landscape of the downtown expressway corridor (see **Error! Reference source not found.** for an inventory of existing sidewalks and parking lots) also magnifies urban heat island effect, and the center of the city is one of the areas most impacted by this phenomenon. This assemblage of morbid materialities and outmoded infrastructures form an ecology of bad relations which is ripe for a re-routing.

Study Approach

This design proposal will focus on a portion of the Lower Jones Falls Valley which is just over two and a half miles long, stretching from the Southern terminus of I-83 and the Fallsway at Fayette Street to the Wyman Park Avenue Bridge. The story told by this design proposal will focus on a handful of central characters. One of these is the Jones Falls itself. Another is the Jones Falls Trail, which forms a portion of the 3000-mile-long East Coast Greenway as it traverses Baltimore. I-83, carried into the heart of Baltimore

as the Jones Falls expressway, is another central figure. Other roads running adjacent to the expressway will also be an important consideration, especially those which carry the Jones Falls trail alignment through the study corridor: the Fallsway, Guilford Avenue, East Mount Royal Avenue, East Lanvale Street and Falls Road.

I will first present a set of principles guiding this study, followed by an outline of the major interventions which I will propose for the study area. This overview of the proposal will be followed by a more detailed presentation of observations which inform conceptual design responses at specific points along the study corridor.

For the purposes of this analysis and design, I will divide this area into three character zones, each reflecting a different set of conditions in the relationships between the river, the expressway, the trail, adjacent streets, patterns of land use and development, and the numerous relations of movement connecting these components. I will first present an overview of each character zone, highlighting the major challenges and opportunities it presents before outlining a set of recommended responses to these conditions. Following this overview, I will subdivide the character zone into two study segments in order to discuss some of the finer-grained details which vary within the zone.

Analysis of each character zone will be followed by a design proposal, in which I will identify sites which offer opportunities to create more

salutogenic and invigorating spaces of interaction between the movements of humans, nonhumans, and the watershed which they share. In the next section, I will outline the general principles guiding the design proposal, followed by an overview of the major components of this proposal.

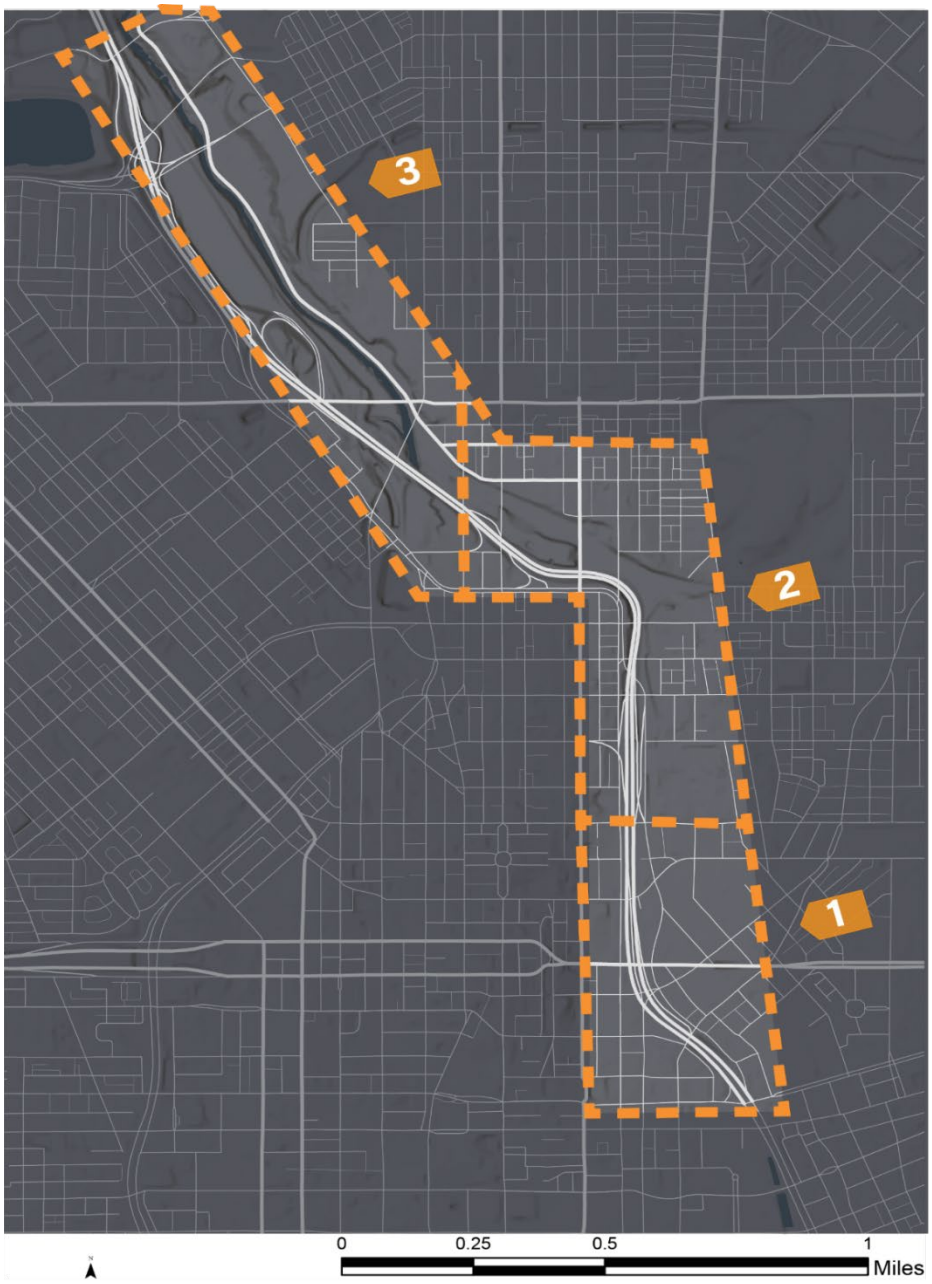


Figure 1 Overview of study corridor and character zones

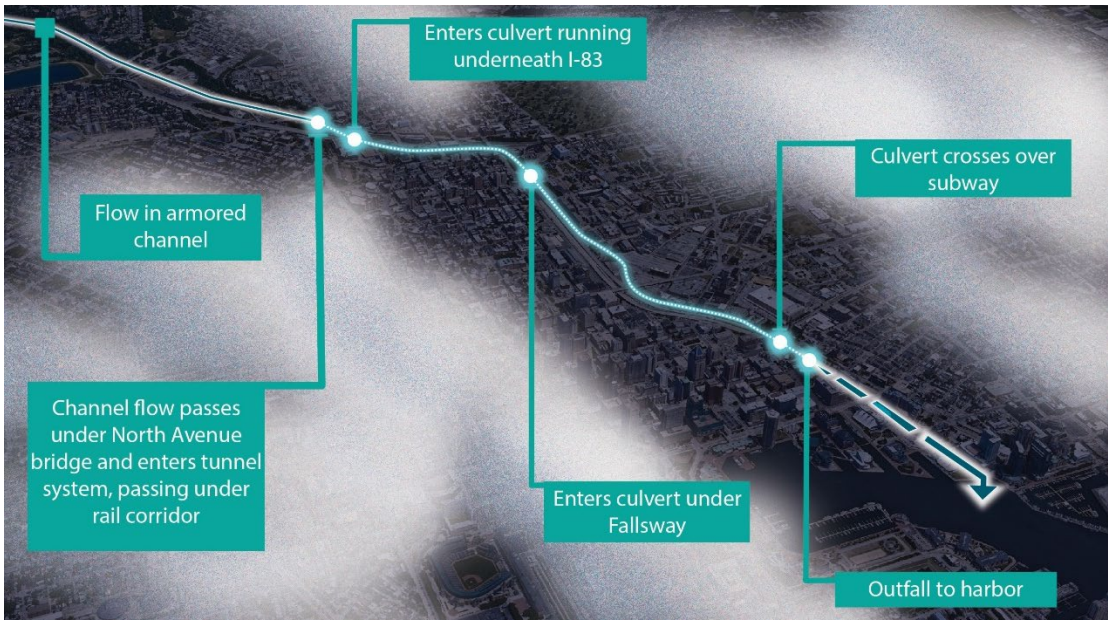


Figure 2 Existing Jones Falls flow conditions

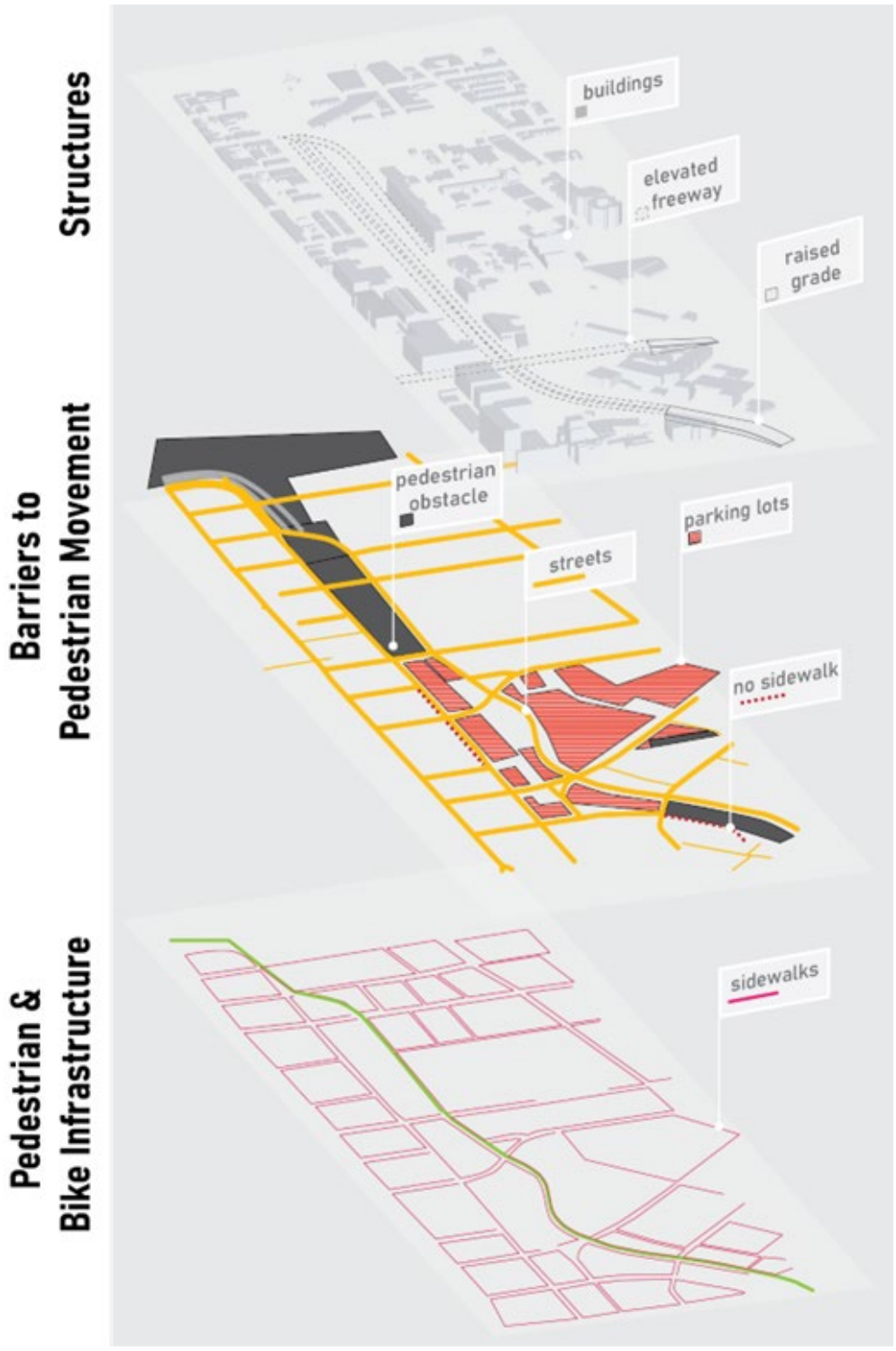


Figure 3 Pedestrian mobility analysis for corridor and adjacent area south of Penn Station

Design Vision: a Green-Blue Urban Mobility Corridor

This design proposal will propose a vision for reimagining the lower Jones Falls Valley as 21st-century urban mobility corridor of critical public infrastructures addressing a host of challenges, from a deficit of public space and green space to flooding vulnerability. This proposal ultimately rests upon a bold vision for the future of Baltimore: namely, that the city can reverse a decades-long trend of population loss and can become the type of "dense, green city" which Ellis (2019) describes as a necessary future condition for a livable earth. The vision proposed for the Jones Falls Valley is similarly ambitious: that this corridor can be transformed from a health hazard surrounded by empty lots to a vibrant twenty-first century mobility corridor connecting a major transit hub (Penn Station) to a dense, walkable city center offering a high quality of living to a diverse constituency sustainably and affordably.

Principle One: Integrate Urban Ecological Infrastructure Into the Fabric of the City

The term urban ecological infrastructure proposed by Li et al. (2017) refers to "the organic integration of blue (water-based), green (vegetated), and grey (non-living) landscapes…at an ecosystem scale" in order to provide "ecosystem services that urban residents require" (p. S13). In the present design proposal, my focus is on a single corridor, but this linear landscape presents many challenges and many opportunities for beneficial interfaces

between infrastructure and ecology. This project will incorporate urban ecological infrastructure solutions to address challenges including urban heat island effect, flooding risk, and water quality while offering essential pockets of habitat supporting urban biota.

Principle Two: Make Infrastructure Public

This design proposal engages with Latour's call for "making things public" by reconfiguring the infrastructural landscape of an urban mobility corridor as a walkable, vibrant public realm. This public character will be promoted through the prioritization of pedestrian, cyclist, and public transit user mobility through this area.

Principle Three: Assemble Rich Urban Ecologies of Experience and Interaction

This project seeks to nurture a generative landscape of interactions, possibilities and experiences where ecology and infrastructure, past and present, function and aesthetic experience, and humans and nonhumans are brought together through the restoration of an urban waterway. In this project, I intend to think with the medium of this particular landscape by paying close attention to the materiality of movement and meaning-making in this landscape

Summary of Proposed Design Interventions

These principles will be carried through a set of design interventions proposed for the study area, summarized below:

1. Removal of 1 mile of the Jones Falls Expressway, relocating the southern terminus of I-83 to the middle of the city near Penn Station.
2. A divided, multi-modal boulevard which will prioritize pedestrian and cyclist modalities while facilitating north-south traffic through the corridor south of Penn Station. This intervention will improve air quality in the center of the city and reduce impervious surface in the floodplain while freeing up space for a more diverse and convivial set of uses.
3. Improvements to the existing greenway alignment of the Jones Falls Trail with a sequence of linear parks introducing green space, floodable space, and space for gathering into an infrastructural corridor at the center of the city.
4. An urban green infrastructure strategy which employs floodable space, and street-level green infrastructure to mitigate flooding risk and improve water quality.
5. Improvements to the greenway alignment north of Penn Station along Falls Road, introducing ecologically beneficial plantings and improving visual connection between the trail and the river.
6. Mitigation of flooding risk along Falls Road by repurposing land currently occupied by light industrial land uses as a floodable park. This will be facilitated through a partial diversion of the Jones Falls' flow and the daylighting of a culverted portion of Stony Run creek.

In this section, I have outlined principles informing my design approach, and I have outlined the major interventions which I will propose for the landscape of the lower Jones Falls Valley. In the next section, I will elaborate on my proposal for each character zone, starting with character zone 1.

Figure 4 View of I-83, looking Southeast over the Jones Falls Valley from Druid Hill Park toward a tangle of elevated interchange ramps adjacent to the study corridor.

Figure 5 Some of the numerous materialities and mobilities of an urban waterway: the semi-permeable barrier of the trash catcher (left), outfalls in a stone wall, with English Ivy creeping down (center), and a steep, heavily armored portion of the bank with what appear to be discarded pieces of cut stone occupying the foreground (right).

Character Zone 1

Out of the three character zones, Zone 1 presents the portion of the Jones Falls valley with the shallowest profile. The primary issues in this area include flooding vulnerability and a car-centric urban environment which presents unwelcoming conditions to cyclists and pedestrians. Air quality is also a concern: the large volume of fossil-fuel burning vehicles which travel through this corridor and its adjacent streets every day make the center of the

city one of the areas most affected by car-generated air pollution in the city (Burkhart, 2017).

The elevated expressway has been cited as an obstacle to pedestrians and a detriment to the public realm (Gunts, 2009; Rosen, 2005), and the large amounts of space occupied by parking lots (which are often mostly empty) in this area contribute to a sense of desolation (see Figure 10). The dense aggregation of impervious asphalt surfaces devoted to the movement (see Figure 7) and storage (see Figure 4) of vehicles in the center of the city also exacerbates urban heat island effect and accelerates the rate of runoff in this area. Flood risk in the low-lying valley east of Downtown is exacerbated by a host of factors: the lack of stormwater management uphill, the undersized Jones Falls Culvert (Federal Emergency Management Agency, 2021), the lack of pervious land cover and the lack of space intentionally designed to flood all exacerbate the risk posed by flooding. This is particularly concerning because so many buildings in this strategic zone are within the 100-year floodplain (see Figure 6). The corridor's location within the floodplain also presents a serious constraint for stormwater management in the immediate area, since stormwater BMP's are typically only constructed outside of the floodplain.

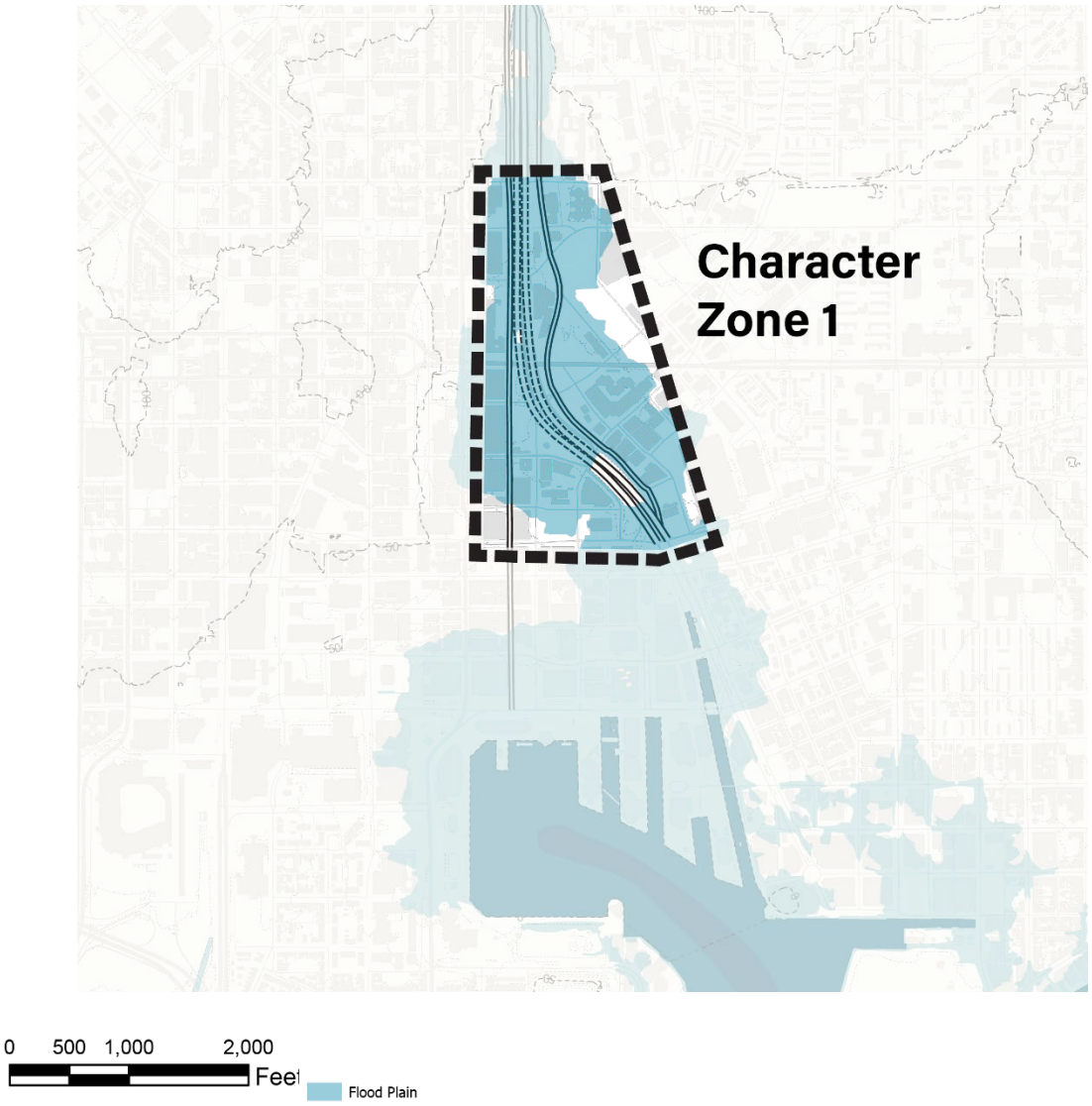


Figure 6 Character zone 1: floodplain, buildings, and roads

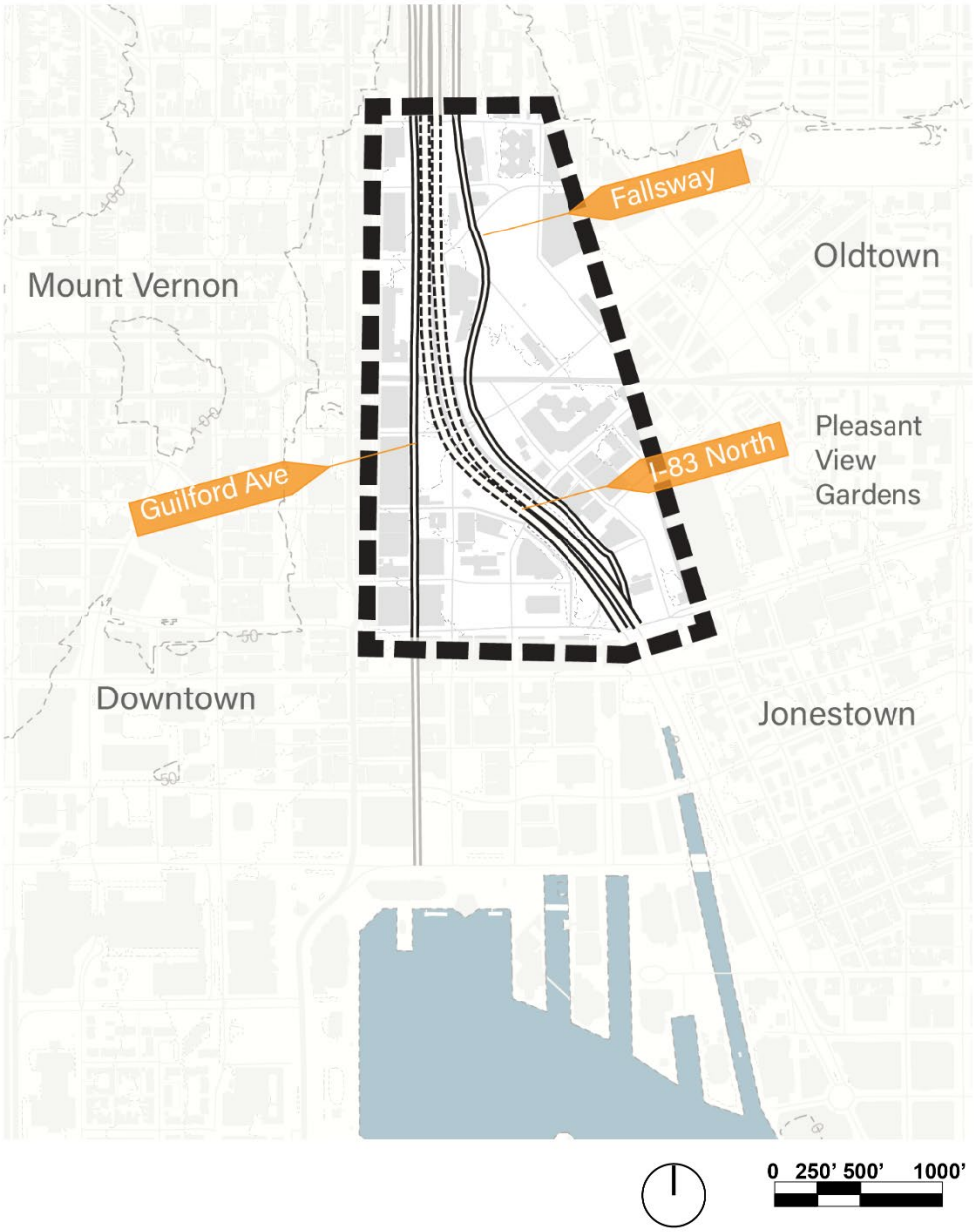


Figure 7 Character zone 1: focal roadway alignments

Segment 1.1

The first study segment is roughly a quarter of a mile long, reaching from Fayette Street to Hillen Street. Fayette street marks the southern

terminus of both the Fallsway and the Jones Falls Expressway (JFX), though this might be more accurately called the beginning of the Fallsway, as today it meets this intersection as a one-way northbound street, becoming one-way again above Monument Street. Along this segment, the Fallsway and Expressway shift from running north-south to northeast-southeast, tracing the sinuous path which the lower Jones Falls has followed since its original, bow-shaped bend was straightened in the late 18th century. Today, the river follows this path in the triple-barrel conduit running beneath the Fallsway, continuing underground until the culvert gives way to a surface channel at Water Street (so named because it once ran along the harbor's original waterline).

Prior to the eighteenth century, this segment of the Jones Falls ran through a wet meadow into a salt marsh. Today, it would likely be impractical to get a tidal pulse this far north (unless sea levels rise significantly higher than the projected two feet by 2050) because the conduit runs over the subway line at the Shot Tower Station.

This strategic area is situated just north of the Inner Harbor, and in plan view, at a glance, seems reasonably pedestrian-oriented, with trees, frontage and sidewalks along the Fallsway and Saratoga Street. On the ground, however, Saratoga street feels canyonlike, penned in for an entire block between the retaining wall of I-83 and the blank façade of a parking garage (see Figure 8)

Figure 8 views of Saratoga Street facing South (left) and North (right)

Figure 9 View South down Fallsway toward shot tower and St. Vincent de Paul.

The design of this study segment should aim to create a “gateway” to the series of linear parks which will be located to the north. Park design must be able to stand next to both the towers of Baltimore’s downtown and the historic buildings of Jonestown, like St. Vincent De Paul, located on the

Fallsway. The underutilized park north of East Saratoga Street and the parking lot next to it, currently owned by Mercy Medical Center (see figure Figure 10), offer space which could be used for infill or enhancements to the public realm. This parking lot, along with the parking lot under the JFX to its east, is currently the site of Baltimore's Farmer's Market (see Figure 11), and future plans for public space should actively seek to make space for this use.

Figure 10 View from one city-owned parking lot south toward a parking lot owned by Mercy Medical Center. Downtown rises in the background, with the curve of the elevated expressway clipping into the top-right corner of the view.

Figure 11 View of a Sunday Farmer's market underneath the Fallsway. During the rest of the week, this is a parking lot plastered with signs prohibiting loitering.

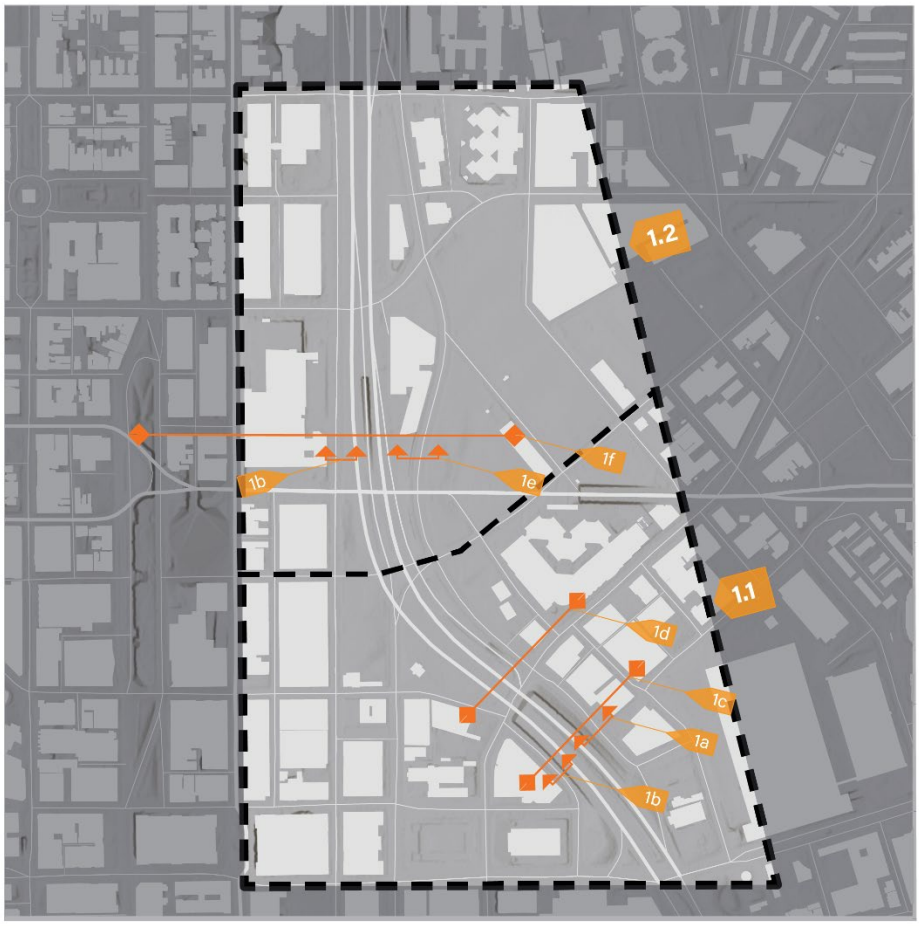


Figure 12 Segments and section cutlines, character zone 1

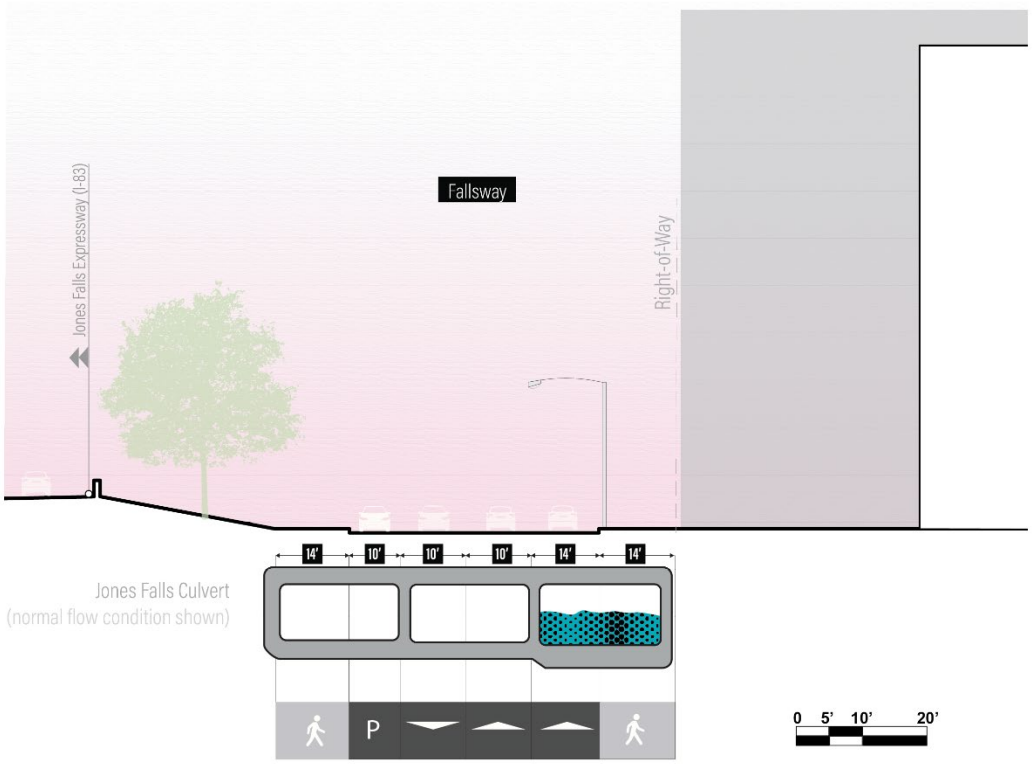


Figure 13 Section 1a

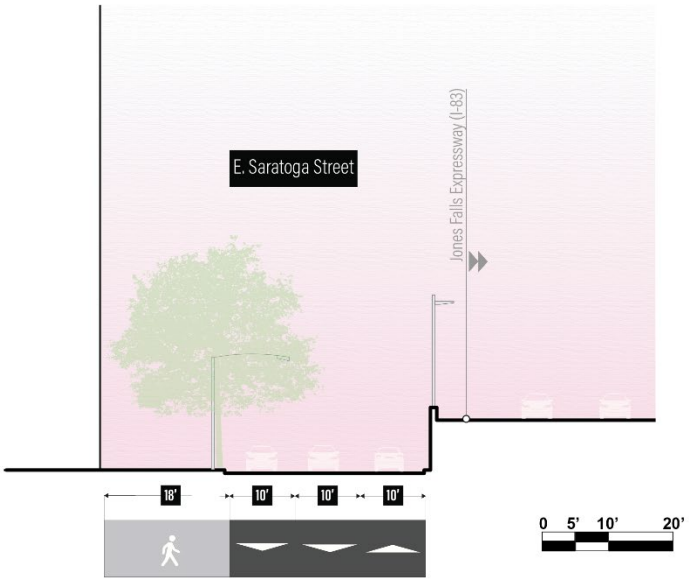


Figure 14 Section 1b

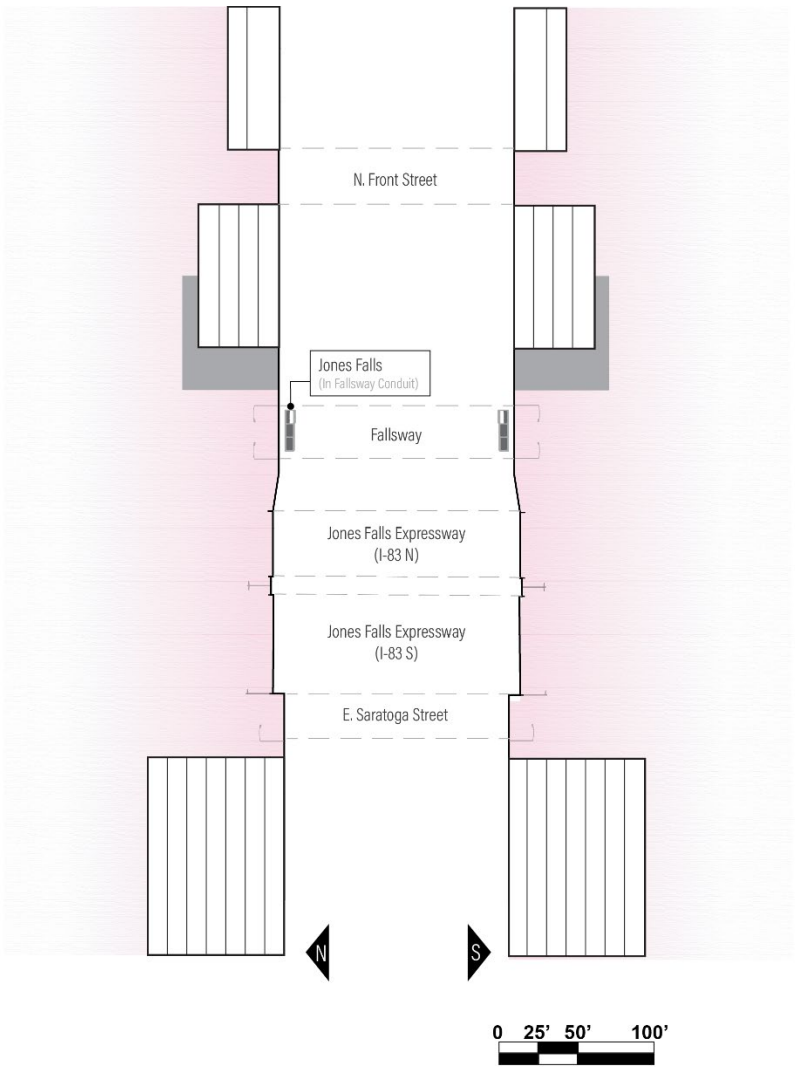


Figure 15 Section 1c

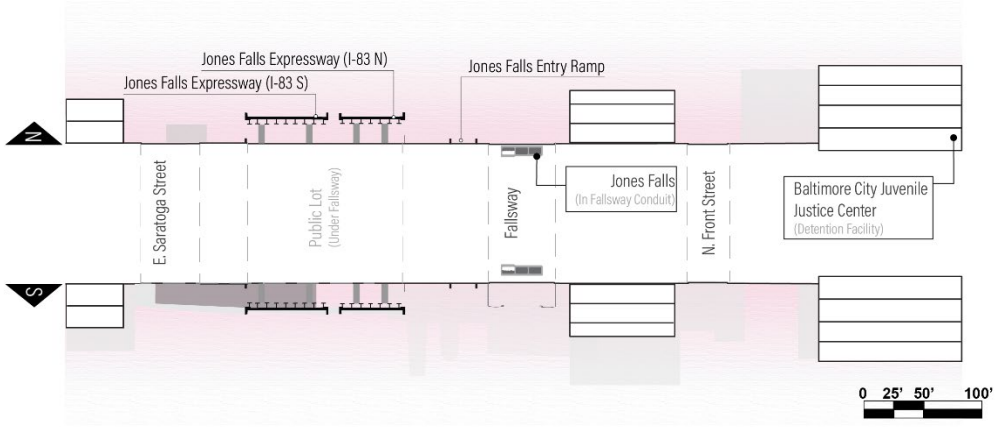


Figure 16 Section 1d

Segment 1.2

Segment 1.2 is roughly 1800 feet long, running from Hillen Street to Madison Street. Along this segment, the elevated expressway straightens to run north-south in between Guilford Avenue and the Fallsway, while the Fallsway makes a reverse S-curve. All three run underneath the impressive Orleans Street/US-40 viaduct. The Fallsway then passes a low, windowless city-owned vehicle maintenance facility and a sprawling, fenced parking lot Figure 21). Beyond the parking lot is a BGE substation protected by high floodwalls. The overall effect is not that of a welcoming environment. This segment of the Jones Falls trail has no bike infrastructure other than some

faded sharrow markings (see Figure 21 and Figure 19) until it passes Centre Street. The Guilford Avenue side is not much more accomodating; while it has a partially protected bike lane sharing a curb with a bus lane (see Figure 22) the windowless Merritt Clubs building looks onto no sidewalk (see Figure 18) large loading area of the former Sun Papers Building face onto virtually no sidewalk (see Figure 17).

The profile of the broader Jones Falls Valley becomes more pronounced along this segment than 2.1 (see Figure 23), with cross-streets making a steep climb to the west as they enter the Mount Vernon neighborhood.

At the turn of the twentieth century, this area was a dense industrial corridor with a number of foundry facilities and rail yards. Pollution may be an issue in this area, so soil and groundwater should be tested early on to determine whether remediation strategies will be needed.

Figure 17 View of former Sun Papers Building from sidewalk under Expressway, looking South along Guilford Avenue

Figure 18 View of expressway and parking lots looking south along Guilford Avenue, along the face of the Merritt club building

Figure 19 South-facing view down Fallsway from E. Centre Street Intersection, with a broad expanse of asphalt parking space behind a tall fence. Partly hidden by trees is a historic rail depot building, which today is a Public Storage facility.

Figure 20 The same former rail depot building viewed through a tall gate in the fence. Signs like these are common in this parking lot-dominated landscape, adding to the impression that this is not a public space where people should feel welcome lingering

In contrast to Mount Vernon to its east and Johns Hopkins to its west, Baltimore's Old Town, one of the most historic parts of the city, has a surprisingly high number of vacant properties, particularly near the Old Town Mall area. At least one developer with property in the area has expressed that the JFX is the main obstacle slowing construction in the area (Rosen, 2005).

The large parking lots east of the Fallsway's 400-500 block (see Figure 20) offer an excellent opportunity to add sustainably-constructed housing which could give people of various ages and income levels access to a walkable, transit-oriented urban environment. The 2010 Oldtown neighborhood plan proposed removing the parking lots currently owned by Fallsway Properties and the city-owned auto maintenance facility located on the west side of the Fallsway on this same block. This plan proposed replacing the Fallsway parking lots with a mixed-use development largely devoted to human-scale housing, and the space between the Fallsway and Guilford Avenue was devoted to a community park (Urban Design Associates, 2010).

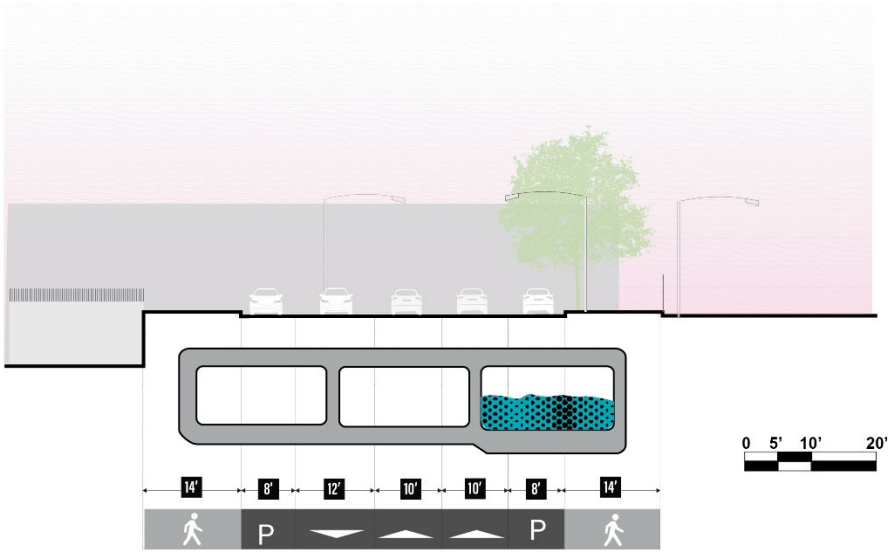


Figure 21 Section 1e

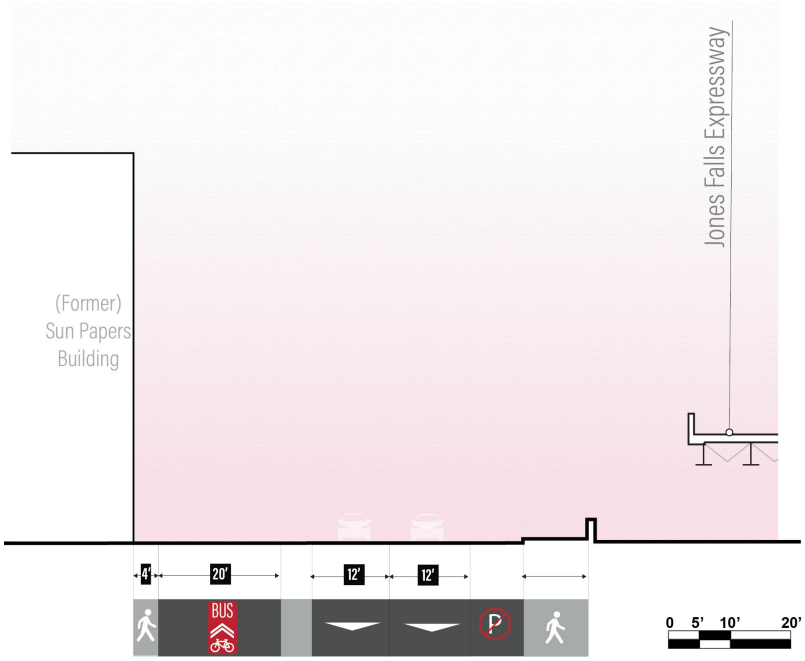


Figure 22 Section 1f

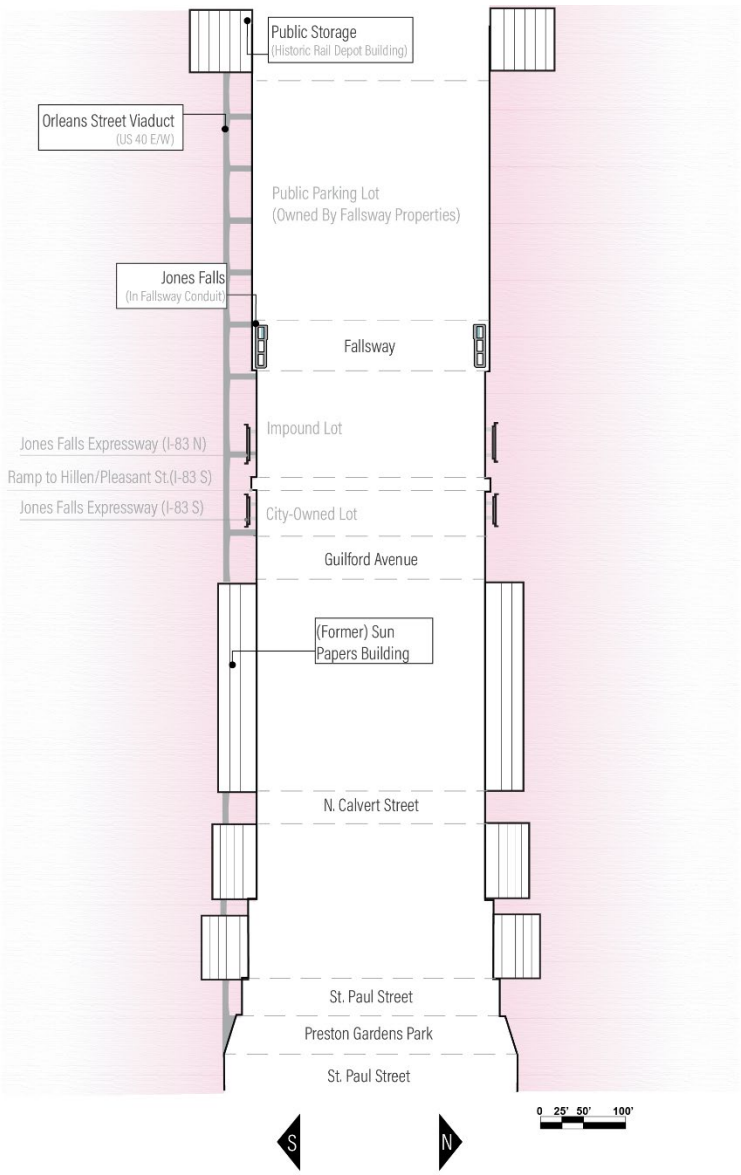


Figure 23 Section 1g

Design Proposal: Character Zone 1

Removal of I-83 in this zone could create space for a series of linear parks which would revitalize this area's public realm, creating space for

gathering, recreation, relaxation, and diverse programming. The proposed parks would be located in between a divided multi-modal boulevard.

The proposed multi-modal boulevard would improve the experience of moving through this landscape with design interventions focused on improving the comfort of pedestrian and cyclist movement, as well as public transit use. These mobility upgrades would include the addition of a protected cycle track and bus lanes, while retaining a comfortable sidewalk width of at least fourteen feet (Figure 24). Improvements to the public realm would introduce an ecology of more beneficial materialities and mobilities (see Figure 26). A more comfortable and hospitable public realm could be supported with the provision of physical furnishings including benches and bus stop shelters.

Redesign of this zone could also introduce a suite of regenerative mobilities of water into the public realm (Figure 25). Runoff from the street would be re-routed through filter box planters, which would slow the water down, catching sediments and other pollutants which would otherwise be swept downstream. An increased urban canopy would also slow runoff by catching falling precipitation. A series of linear parks would replace large extents of impervious surface with floodable space conveying rainwater through open swales. The re-routing of the Jones Falls from a concrete conduit to a surface channel would restore vitality to the ecosystem of a vanished urban river.

The next section will present conceptual designs for linear parks in character zone 1, presenting each of the six individual sites individually.

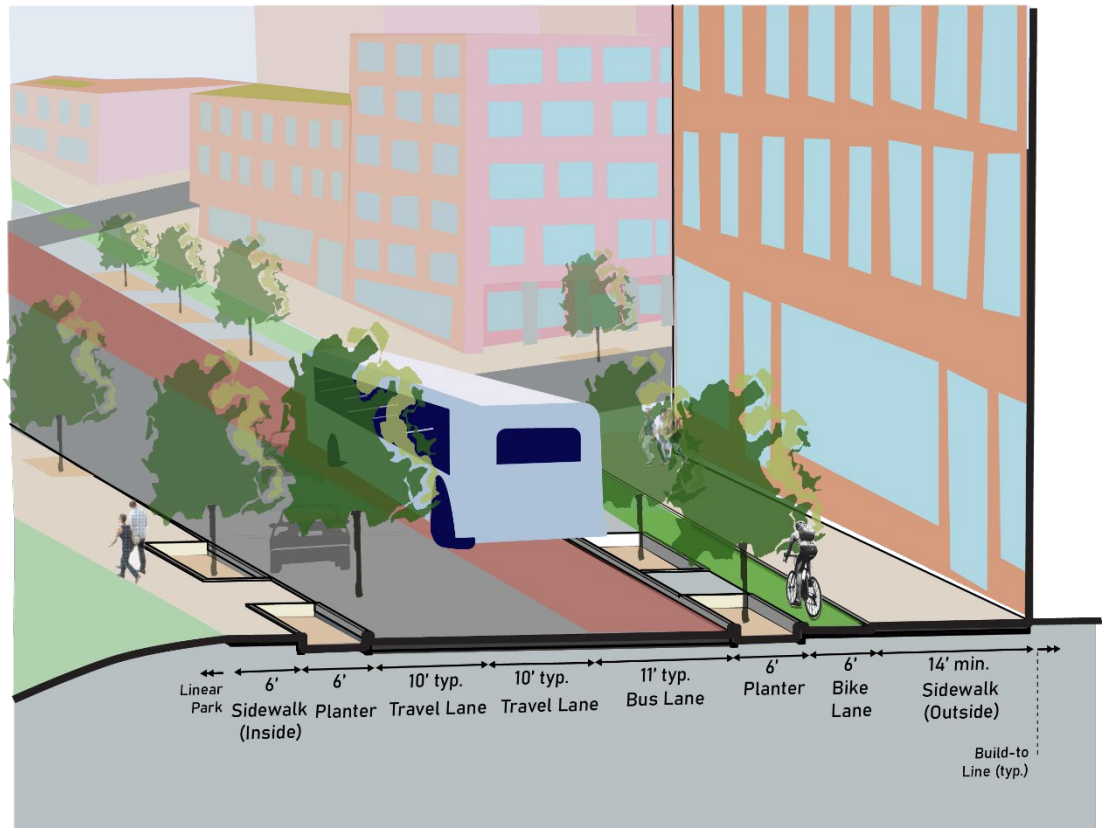


Figure 24 Proposed at-grade boulevard condition (typical street conditions)

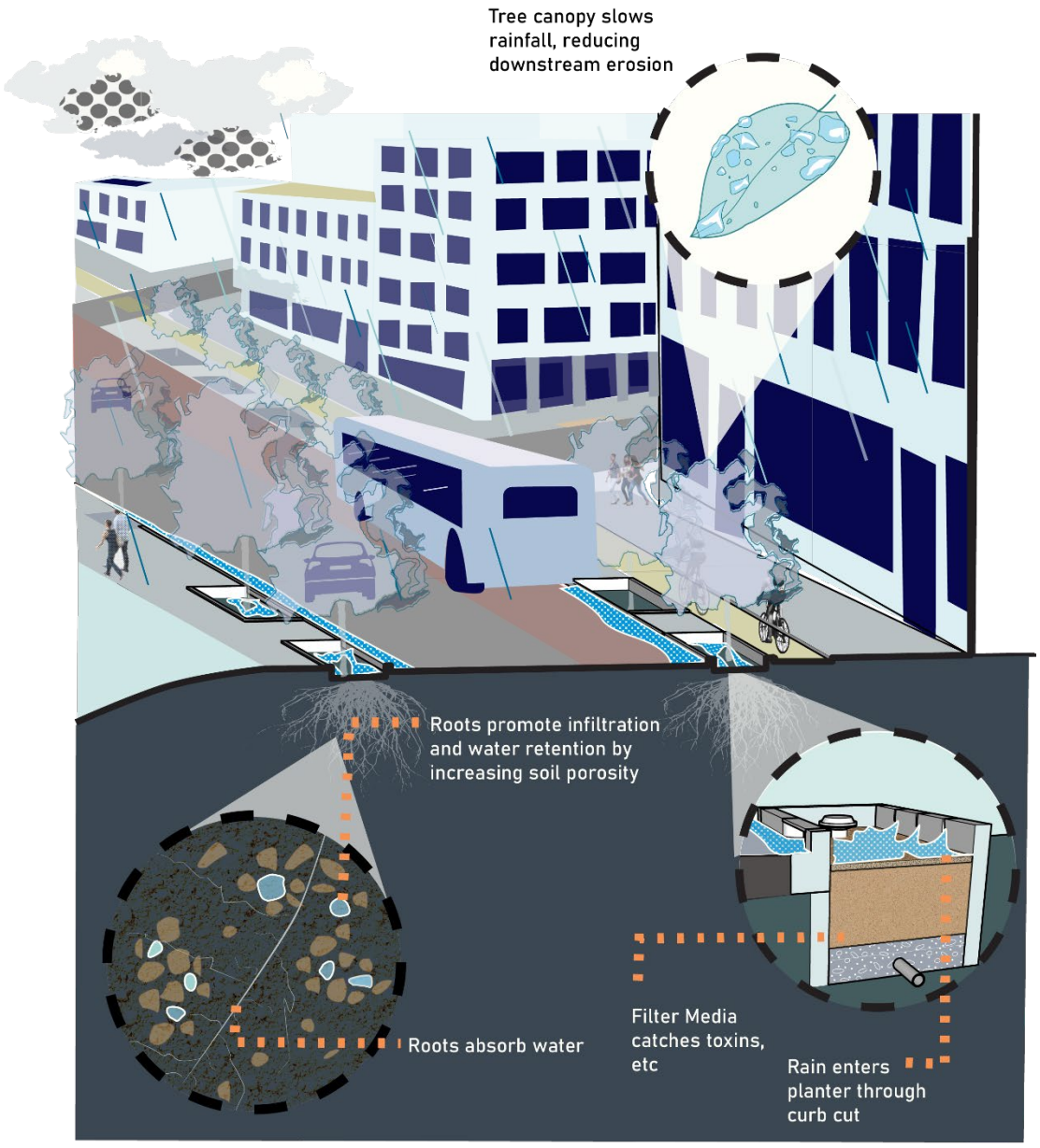


Figure 25 Mobilities and materialities of stormwater shown in typical proposed street conditions for at-grade boulevard

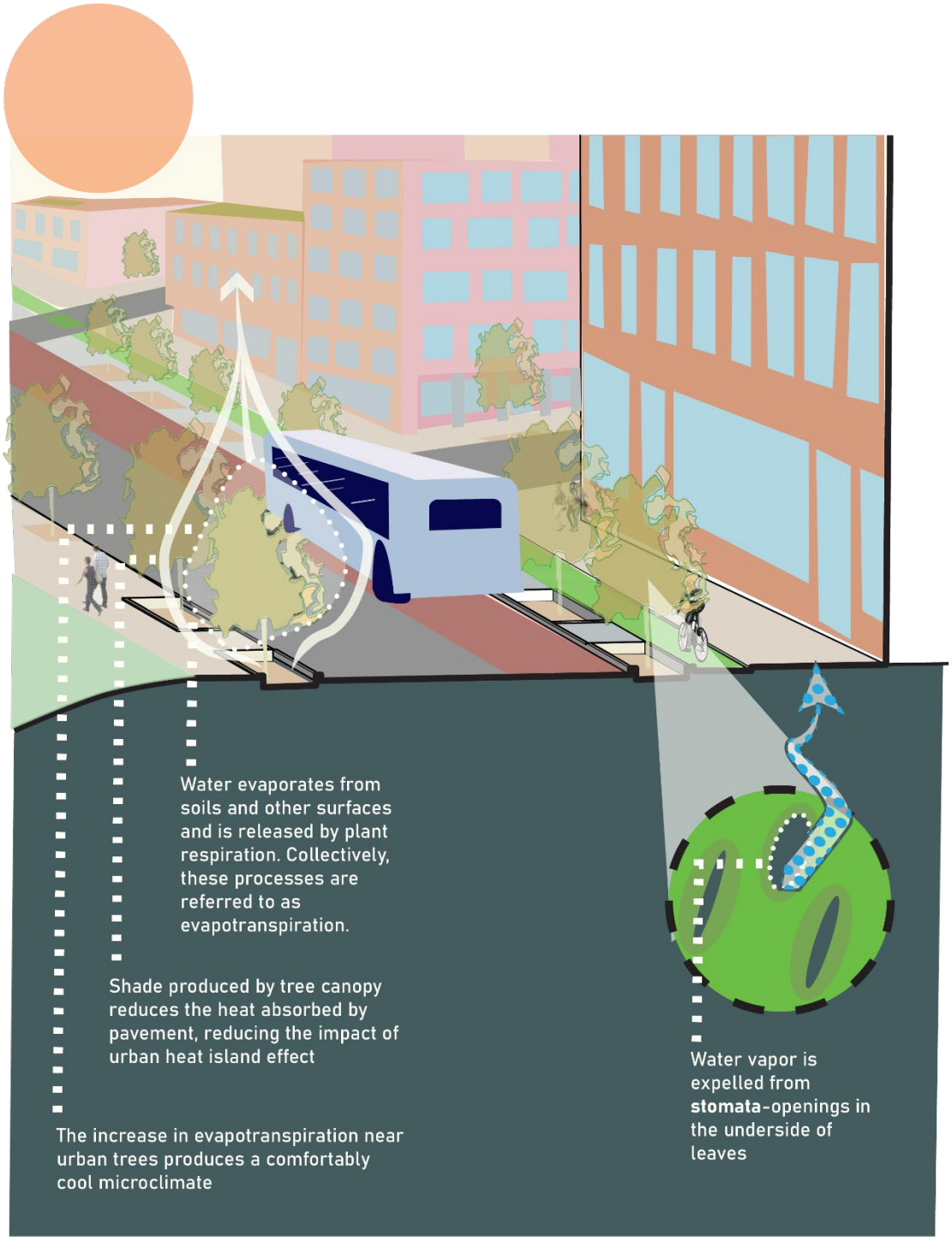


Figure 26 Mobilities and materialities of urban micro-climate, shown in typical proposed street conditions for at-grade boulevard

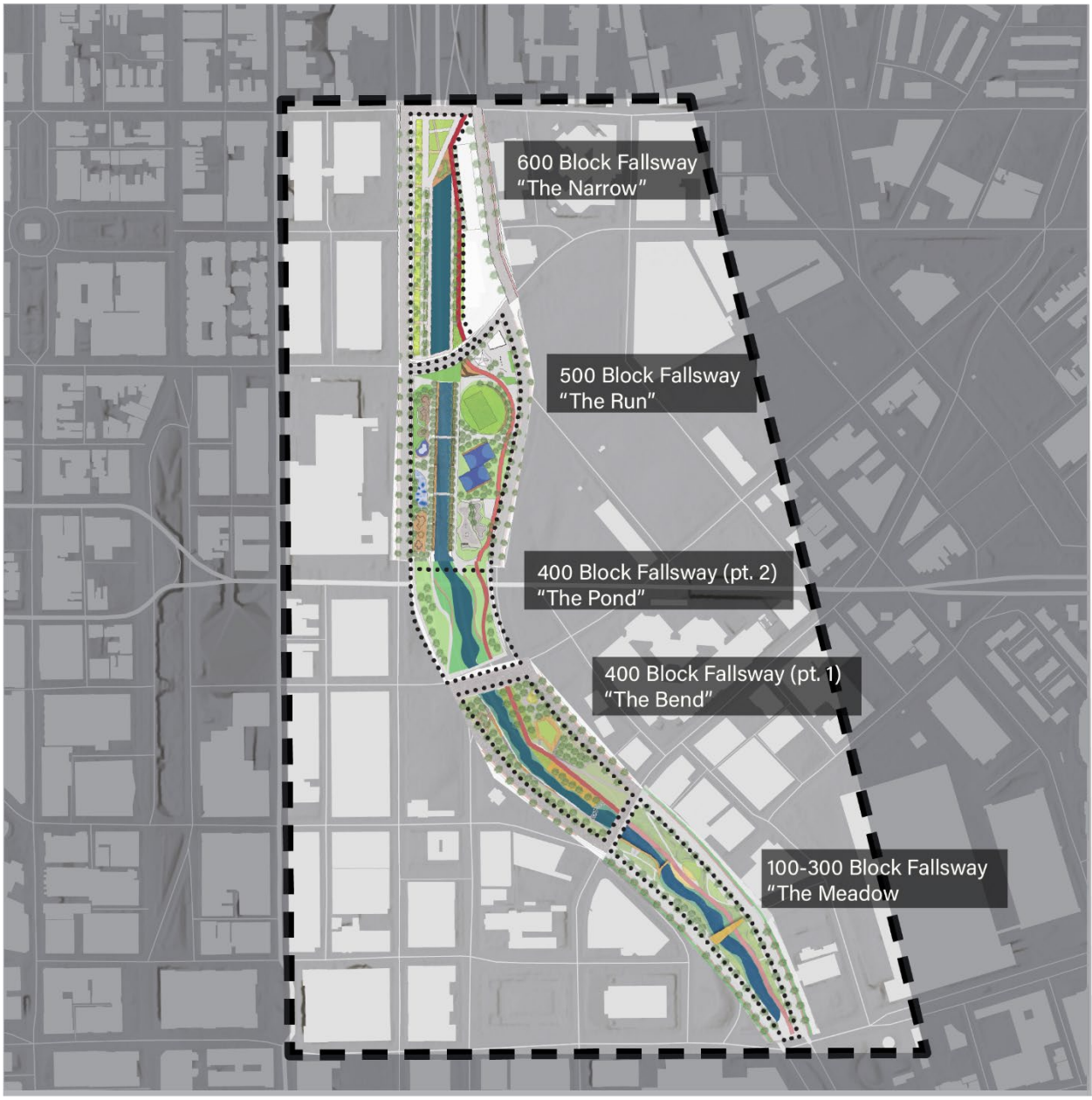


Figure 27 Zone 1 Plan

Site 1: 100-300 Block Fallsway ("The Meander")

The first design site is a narrow, curved tract located between the existing Fallsway and the proposed lower extent of the Jones Falls Boulevard.

The narrow end of this site abutting Fayette Street will serve as the southern gateway to the entire corridor (see Figure 28 for a site plan). Focal programmatic features of this site include a “gateway” pavilion feature, an amphitheater (see Figure 29), a pedestrian footbridge with an integrated overlook area located at the block’s halfway point.

The design inspiration for this site comes from the materiality of processes driven by the interaction of water with other materials. Gabions and rip-rap forms swoop out of this folded surface, making shapes reminiscent of the channel bars which develop in meandering streams. In plan view, these check-shapes also evoke the wing patterns of the checkerspot butterfly, Maryland’s state butterfly.

Other details evoke the materialities of Baltimore’s maritime past: the board-formed concrete walls of the amphitheater form textured, curving surfaces reminiscent of ships’ hulls while continuing the theme of dense, solid materials affecting behaviors of fluidity through a dialogue with water.

The vegetated valley slopes are sculpted in exuberant parabolic forms supported by the interlacing of coir matting and root networks, with additional reinforcement provided by rubble gabions. This intervention turns a relatively steep drop between street level and the new valley bottom into a network of gently-sloped swales designed to slow water down, transforming flows from an erosive force and a vector of pollution into a regenerative material. This “folding” of the ground plane creates reciprocal rippling diffraction patterns in

the composition of the sown meadow—patterns of difference enacted through the differential re-routing of rainwater, with ecotonal gradients of moisture producing variegated drifts of colorful flowers. The swales are punctuated by rip rap “darts”—“cuts” in the undulating fabric of this landscape where coarse stones punctuate the soft swales, helping to slow down water.

Figure 28 100-300 block Fallsway plan (site 1- “The Meander”)

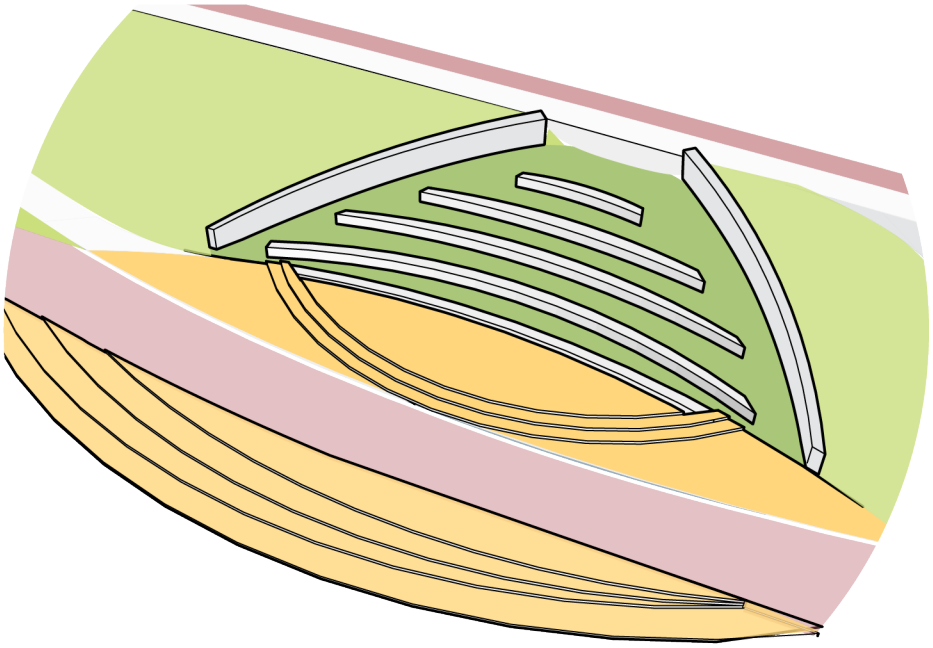


Figure 29 amphitheater diagram

Site 2: 400 Block Fallsway Part 1 (“The Run”)

The next site forms a complementary curve to the prior one, though it is significantly shorter. This site is located in between the existing Fallsway alignment and the second block of the proposed Southbound boulevard – connecting to Guilford Avenue one block north. The existing site is strange: Saratoga and the Fallsway “fan out” in perpendicular directions on either side

of the elevated expressway, with parking lots and a nominal park occupied by an abandoned diner in between.

The proposed park is a link located where the northern edge of Downtown and Jonestown give way to the Mount Vernon and Oldtown/Penn-Fallsway neighborhoods, respectively. The approach to program on this block aims to create a calmer space than the previous block (see Figure 30 for a site plan). The primary gathering space proposed for this block is a flexible lawn area designed to be a platform for a variety of small-to medium-sized events (see Figure 31).

The design of this site takes inspiration from the materiality of processes of weaving. This inspiration recalls the Jones Falls Valley's history as a major center of sailcloth production. It also aims to represent the work of tying together communities across an old fault line—the boundary created by a Freeway and, historically, by a river.

Diagonal bands of willow spiling wrap the outside of this bend in the river, imbricated over one another and interwoven with exposed gabion and rip-rap. This repetitive jutting recalls the rock formation of stream valleys along the fall line. Temporality is allowed a large amount of agency in determining the appearance of this intervention: the neatly-woven willow spiling will gradually become a verdant bank bursting with native willow species. This interwoven shoreline can be periodically managed with coppicing to prevent the bank from becoming too overgrown.

Materialities selected for this area are intended to bring together humans and nonhumans. An open strand of oaks near the street's edge is underplanted with an aster-dominant palette, creating an environment which is attractive to butterflies as well as humans. This planting palette is loaded with "keystone plants". Large, flat rocks punctuating the floor of this "glade" provide a place for butterflies to warm themselves on cooler days (see Figure 32).

Porosity is closely related to the materialities of weaving. This design is conceived as a porous public space which invites encounters between humans & nonhumans. A performance of porosity is provided a constructed seep: a retaining wall of large stone blocks which form gaps and crevices at their interstices. Water infiltrates the ground above and is siphoned by a manifold toward the fine crevices between the stacked stones of this retaining wall. It seeps slowly through these crevices, dripping down over the wall's craggy face to subtly darken the pavement below. This porous structure will support a variety of moisture-loving mosses and ferns.

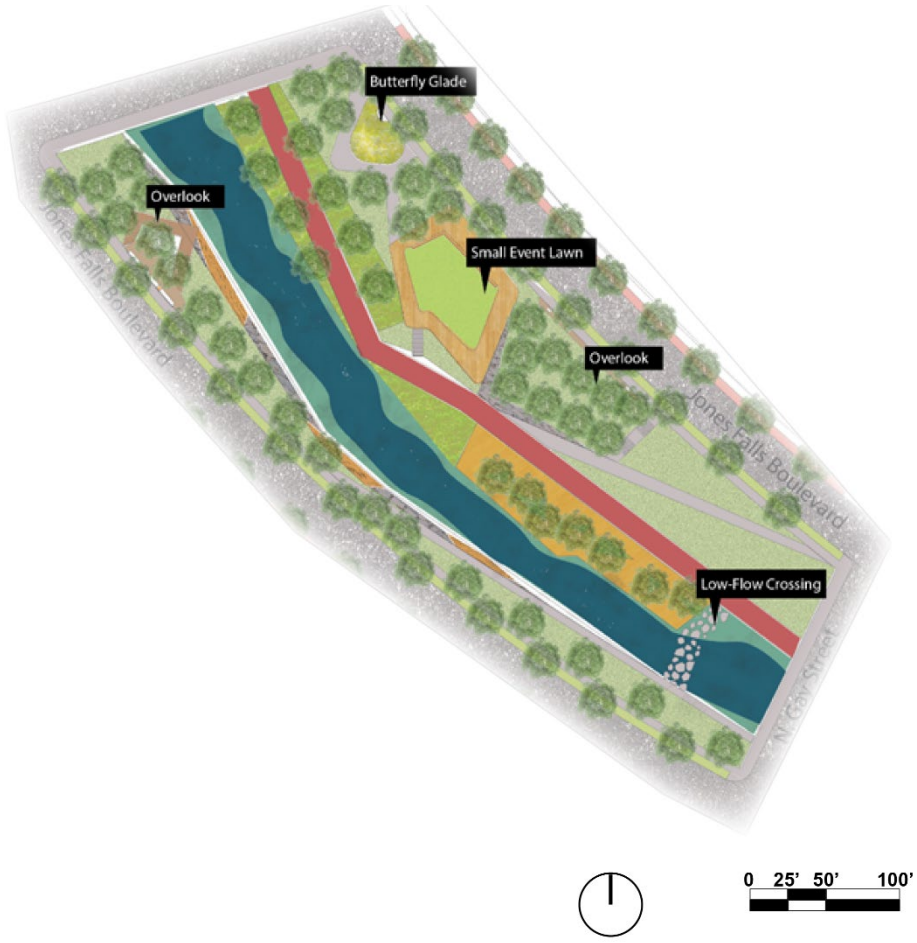


Figure 30 400-block Fallsway plan

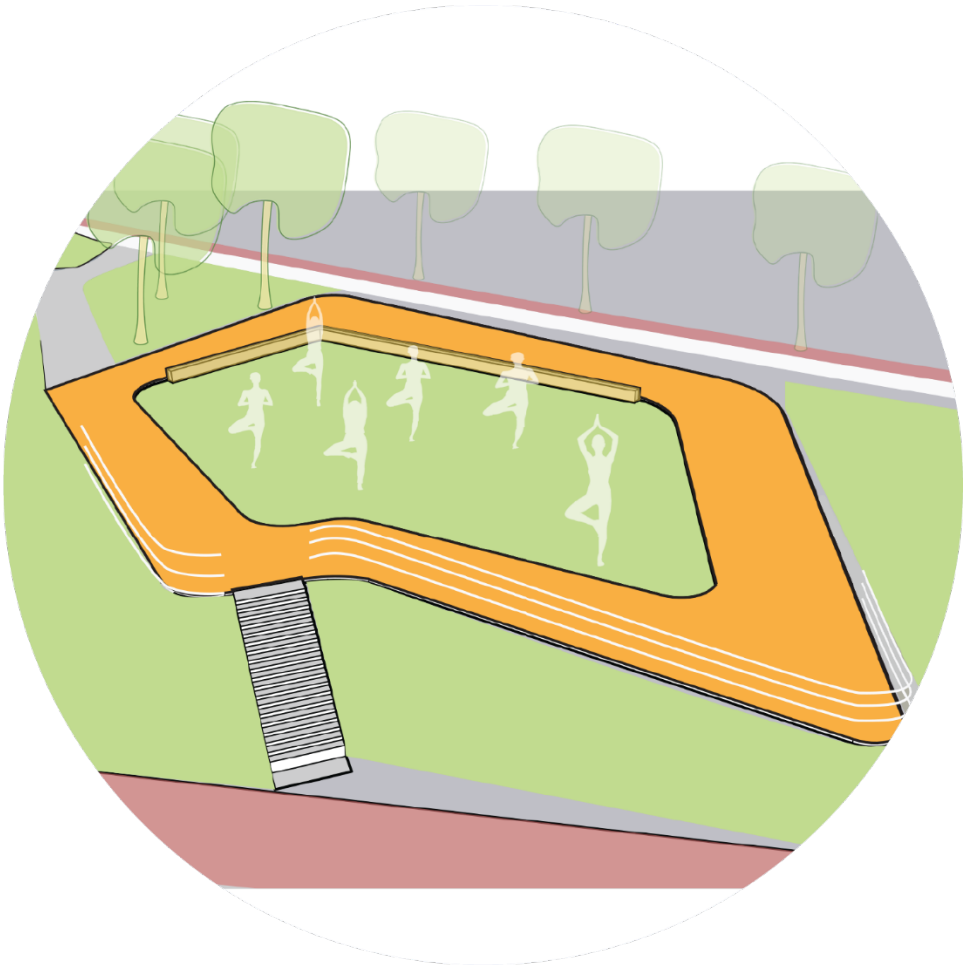


Figure 31 programmable lawn diagram

Figure 32 Butterfly glade perspective with asters and Deschampsia growing underneath Pin Oaks amid large, flat rocks

Sites 3 and 4: 400-500 Block Fallsway (“The Pond” and “The Run”)

The largest continuous site in character zone 1 extends from East Pleasant street to East Centre Street in between the Fallsway and Guilford Avenue. The viaduct carrying Route 40 passes overhead in the middle of this block. As mentioned previously, my design approach to this block partly follows the precedent of the 2010 Oldtown Neighborhood Plan, which envisioned the removal of the city-owned auto maintenance building located on this site in order to transform all of the space between the Fallsway and Guilford Avenue into a public park. That same plan also envisioned the parking lots to the East transformed into housing, and my design proposal for

this block responds to such an anticipated future condition by advancing a densely program-focused design.

The proposed design for the Southern of the block forms a pond-like basin. The surrounding lawn can serve as a venue for larger events as readily as everyday trips to the park. The flexible approach to programming on this end of the block contrasts with the approach on the northern side of the US-40 viaduct.

South of the US-40 viaduct, the park's simple design is oriented toward flexibility. This basin-shaped landscape is designed to absorb the rapid influx of water during periods of flooding, and the large, open lawn is intended to accommodate programmed events of various sizes.

The assembly of many materialities and many park users north of the US-40 viaduct potentiates the production of many embodied experiences, from incidental friendships to new sensorimotor skills. Divided by the Jones Falls, the arrangement of this block loosely recalls the form of the factory in form: a long volume divided into a sequence of spaces that each have their own tempos and rhythms, corresponding to different functions. Figure 33 presents an overview of programmed areas on this block. The infrastructural substrate of this production process is a dynamic mosaic of materialities: the rugged textures of the nature play area; the bubbling, viscous rubber-coated surface of a sculptural play area for younger users; the parabolic, webbed surfaces of tensile climbing equipment suspended over a ground plane

spread with woodchips. Each of these assemblages supports different ways of moving and learning.

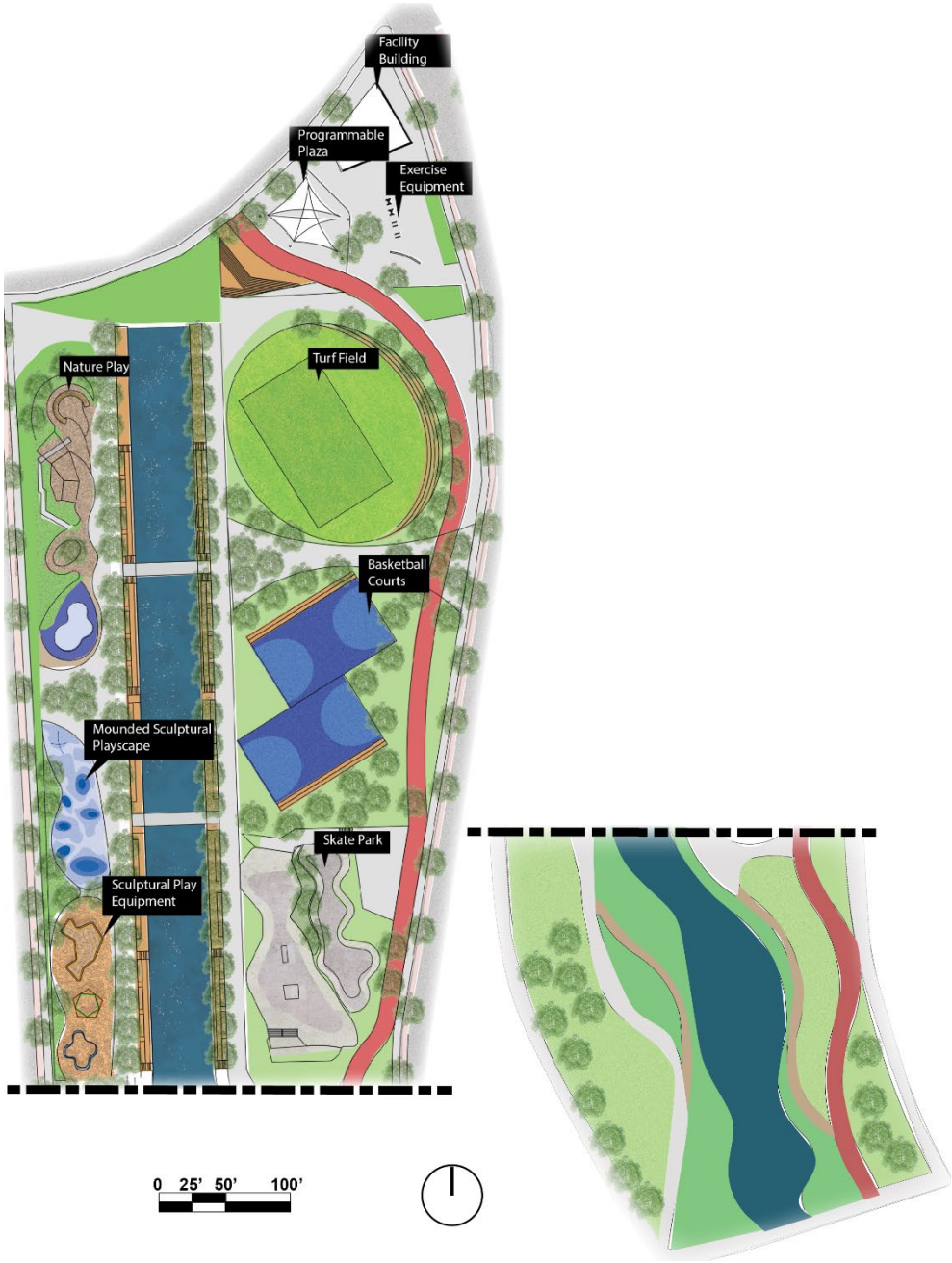


Figure 33 400-500 Block Fallsway Plans

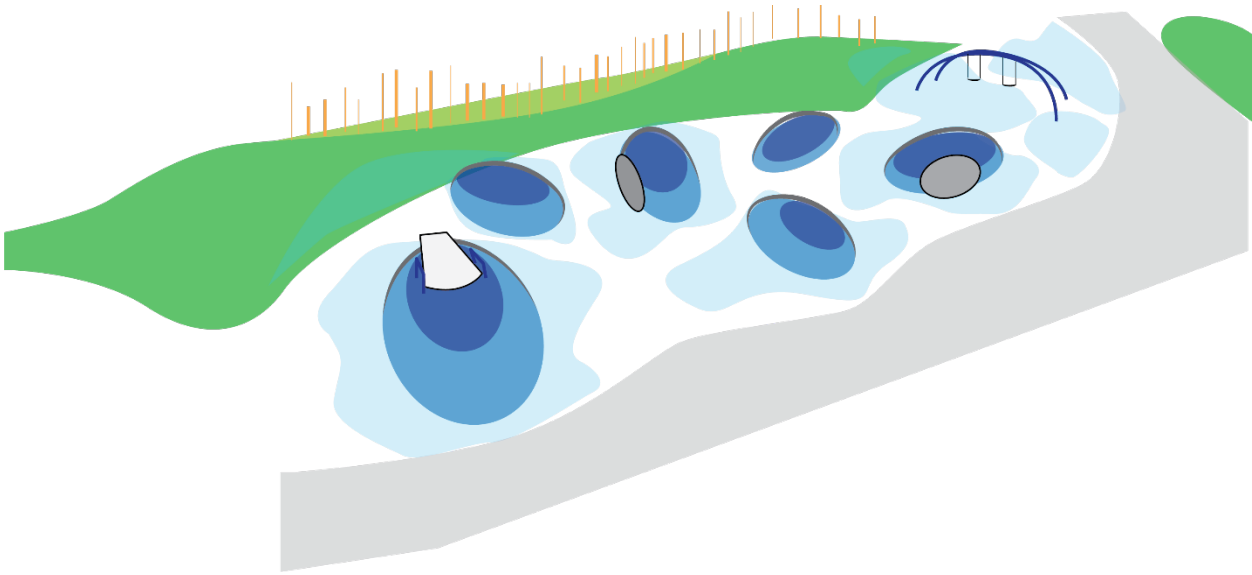


Figure 34 Diagram of mounded play area

Site 5: 600 Block Fallsway (“The Narrow”)

The final design site in character zone 1 is adjacent to the 600-Block of the Fallsway. There is currently one building on this site—the Weinberg Housing and Resource Center, facing onto the Fallsway. I propose that this building should be retained, so I also recommend keeping the character of this block consistent with infill immediately to the north of this building.

The design of this site plays off the linearity of this narrow tract while also trying to create a sense of spaciousness in a more confined circumstance. Its orderly layout is reminiscent of the 400-500 block, but this similarity accentuates the differences between the two spaces. Where the ordered, linear layout of the previous block was just a scaffold for a bumptious

mosaic of activity, the 600 block uses a similar structure to create space for relaxation and reflection.

Programmatically, the design of this block is much simpler and more open than the previous one. Dual promenades parallel either side of the falls, with seating outside of them. Figure 35 presents a site plan for this block.

This block's design overlays rectilinear forms in various patterns to create a variegated mesh of porosities. Water from the street is directed to planted areas which act as filters, connected by underdrains to the planted terraces closer to the river. The hardest-working of these planted areas are the rain gardens along Guilford, which are designed to absorb water running downhill from Mount Vernon.

Overlaid atop the orderly grid of the park are material traces of another, former grid: concrete pillars which once carried the Jones Falls Expressway overhead. These form colonade-like rows on either side of the

park, interspersed between extensive planted areas.

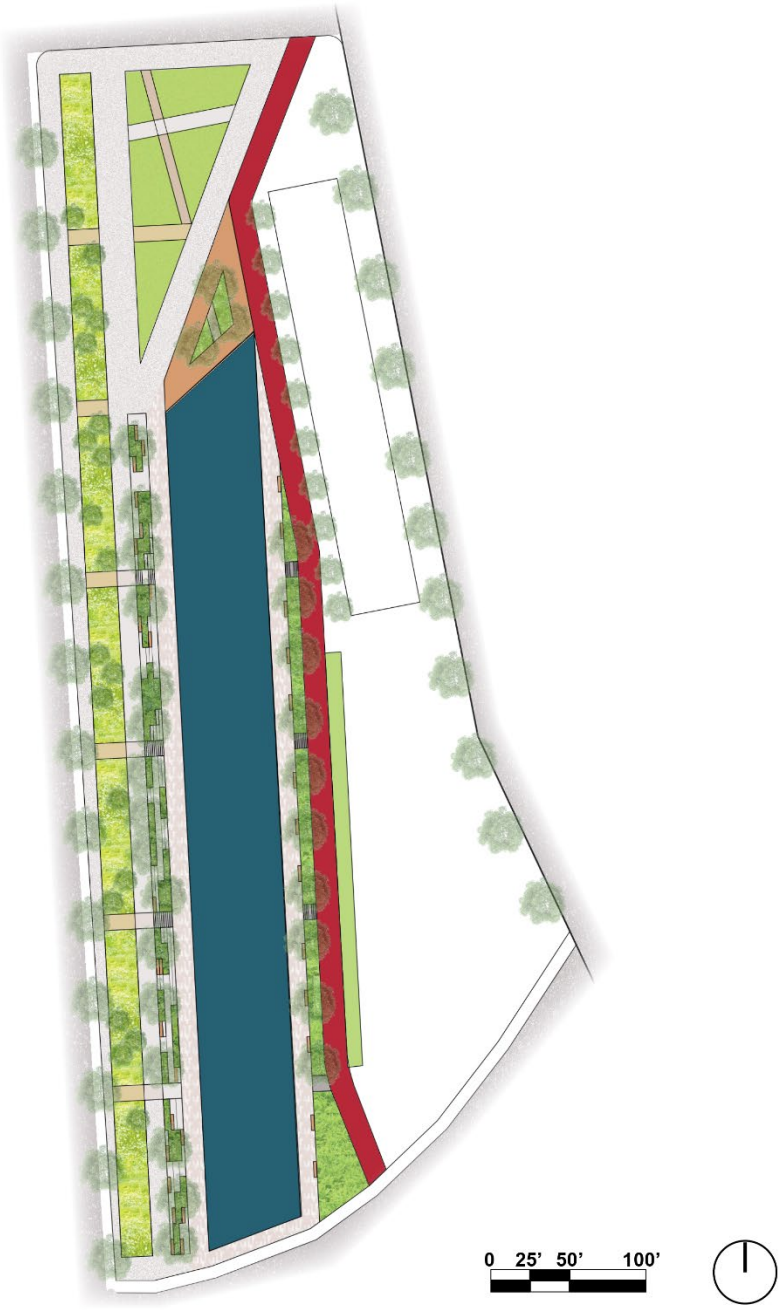


Figure 35

Character Zone 2: Existing Conditions

Character zone 2 is immediately distinct from Character Zone 1 because of the influence which the Jones Falls valley has on movements through the urban terrain in this area. Between Madison and Eager streets, the JFX transitions from its elevated downtown alignment to an alignment routed along the bottom of the historic valley, with the surrounding street grid extended overhead by a series of bridges. The quality of the Jones Falls Trails' bike infrastructure also changes immediately, with a roomy protected bike lane beginning at the foot of the Fallsway's elevated portion (see Figure 37). This protection ends, however, at the 90-degree bend in Guilford Avenue. This turn is matched by the expressway, and by its namesake, which runs below in a culvert system constructed contemporaneously with the expressway.

Character Area 2 is located adjacent to many areas of interest. The University of Baltimore (UB) campus buildings are concentrated along Mount Royal Avenue in Midtown Belvedere, and the Maryland Institute College of Art's (MICA's) facilities are located along this same road just beyond the character zone's western boundary at Maryland Avenue. The Station North arts district is located immediately to the north, home to venues like the independent Charles Theater, housed in a former streetcar shed. Immediately adjacent is Penn Station, the city's major central transit hub. Neighborhoods adjacent to this zone include Mount Vernon and Midtown Belvedere to West,

The conditions of the Jones Falls trail and (surrounding streets in general) are more accommodating to pedestrians and cyclists overall in this area, with many healthy street trees and protected bike lanes along the Fallway, northbound Guilford Avenue and Maryland Avenue. At the same time, green space is scarce in many of the blocks adjacent to the valley in this zone, with a study conducted by the Chesapeake Conservancy identifying a “very high need” for green space for a number of blocks (2015).

The public realm in this Character zone presents a number of constraints to improvement: both the elevated Fallway and the one-way portion of Guilford Avenue (hemmed in by a retaining wall with I-83 below to the east) would be difficult to widen. Much of the surrounding area is developed, and development projects are slated for a number of the parcels which are currently vacant. The rail corridor presents another pressure, making the addition of public amenities which would utilize the valley or disturb the existing forest buffer (on its ridge) less attractive.

Due to these factors, my recommendations in this area focus on adding a linear green space in the area which would be reclaimed by freeway removal along segment 2.1 of the valley. This would create the opportunity for daylighting the Jones Falls in a naturalistic stream channel south of the 90-degree bend in the existing freeway. This would also create an opportunity for reforestation through the rest of the valley and the creation of a linear trail parallel to the river, connected to surface streets by a series of bridges, paths

and stairs. This wooded promenade would also be lined with a series of seating areas where nearby residents could bask in the ambiance of some much-needed, high-quality green space.

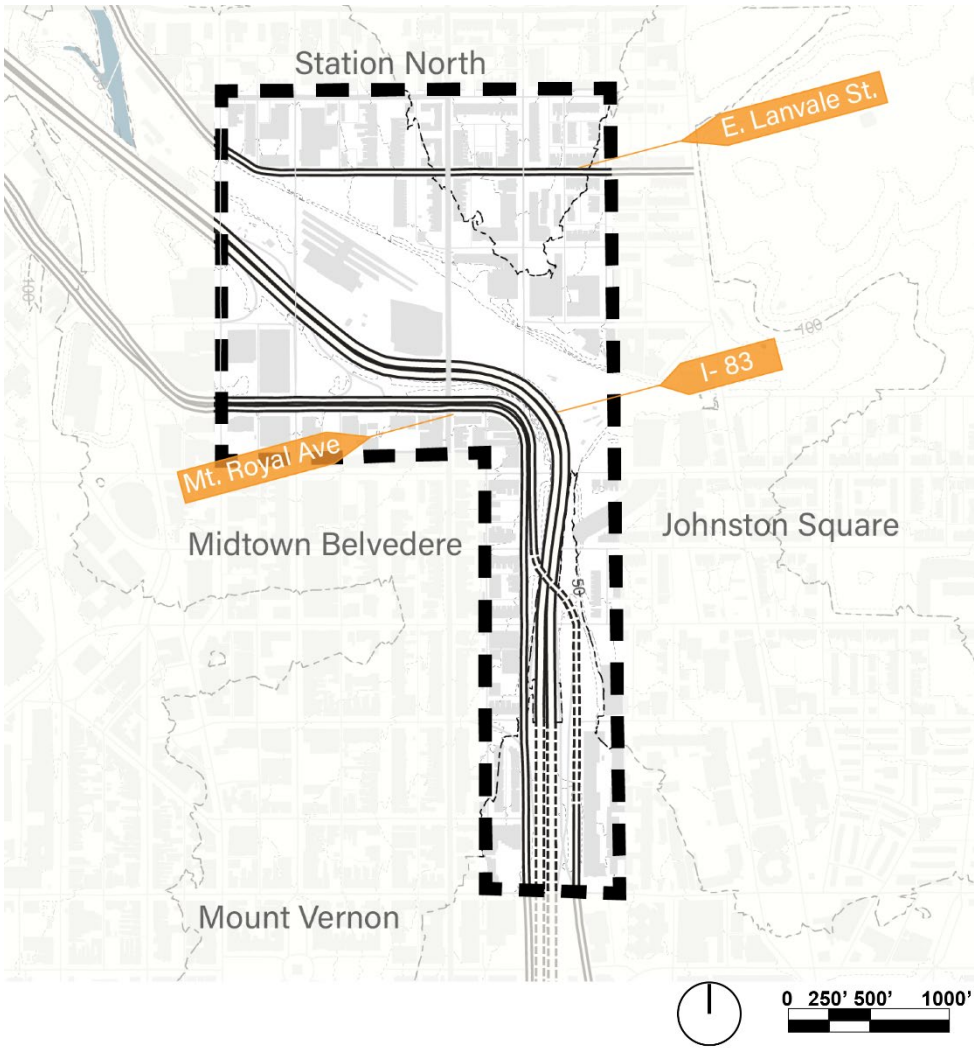


Figure 36 Character Zone 2 Overview Map

Segment 2.1

Segment 2.1 stretches from Madison Street to the Guilford Avenue Bridge. Starting at Madison Street, Guilford Avenue climbs steeply at grade

along the Western ridge of the Jones Falls valley. The expressway runs at grade along the bottom of the valley, and the Fallsway becomes an elevated viaduct, climbing parallel to Guilford with the massive Central Booking to its right (see Figure 40 Figure 39), before arcing across the valley to meet Guilford at Biddle Street. Figure 42 presents a cross-section of the valley

Study segment 2.1 is bordered to the east by the Mount Vernon and Midtown Belvedere neighborhoods and to the west by the Johnston Square neighborhood and Baltimore's prison district. Johnston square, like many other Baltimore neighborhoods, has seen a large number of demolitions in recent years, and a large redevelopment program for this neighborhood is projected to be completed within the next several years (McGee, 2020). Demolition has also been underway at the Central Booking complex, with seventeen buildings slated for removal, leaving intact the large building facing the Fallsway and several others. Governor Larry Hogan has expressed that the complex will be replaced with a "therapeutic detention center" for addiction treatment, but currently, no details have been elaborated or funds disbursed for any project other than the demolitions (Wood, 2021).

In the future, this area might present even more opportunities for creating spaces of community. I think that one of the most significant might come about through the transformation of the city's "prison district." The transformation of these spaces of incarceration might seem far-fetched, but I would argue that it is reasonable to expect that more of the facilities from the

surrounding, multi-block prison district may become surplus in coming years. Maryland's crime rates have been declining since 1978, the state's rate of imprisonment fell 19 percent between 2008 and 2018 (Austin, 2021), Baltimore's prison population dropped 45 percent between 2005 and 2015 (Wallace-Lee et al., 2019) and facilities are increasingly shifting toward rural areas (Hinds et al., 2018; Wallace-Lee et al., 2019). Considering the great potential this area has for becoming the site of dense, high-quality housing close to a major transit hub, I think that demand for green space will only increase in coming years. My design proposal for Zone 2 presents one possible way of innovatively meeting this demand in the near future.

Figure 37 sidewalk and protected bike lane along Guilford Avenue (left) and Fallsway (right)

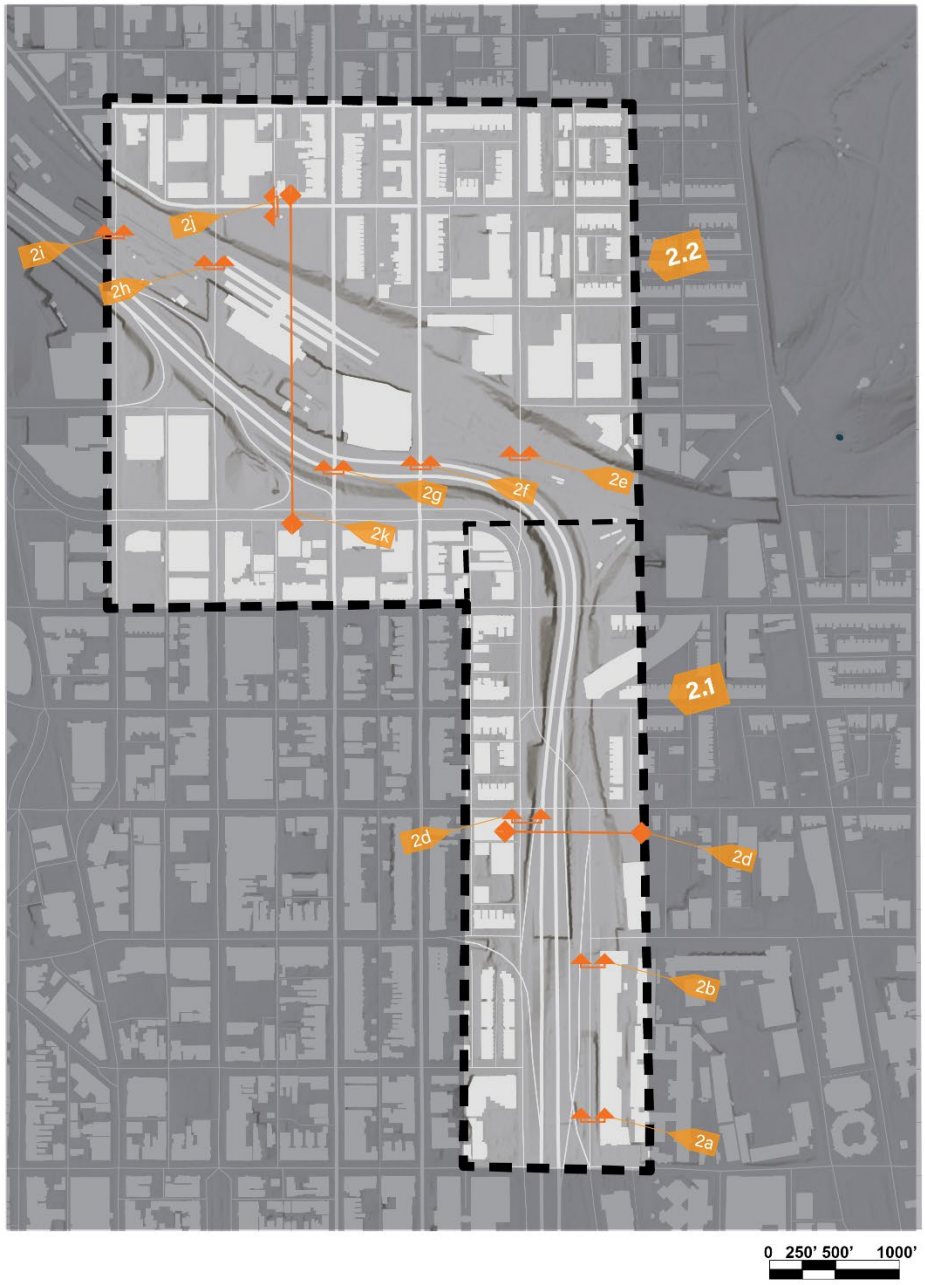


Figure 38 Study segments and section cutlines, character zone 2

Figure 39 Section 2a

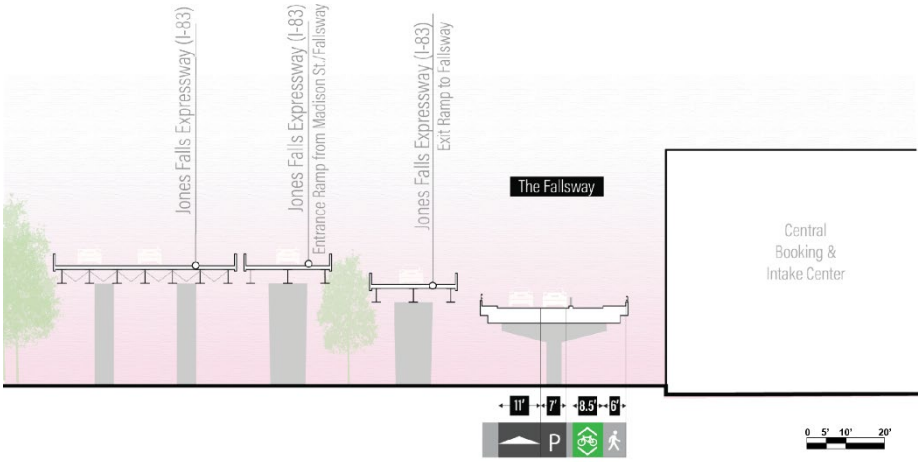


Figure 40 Section 2b

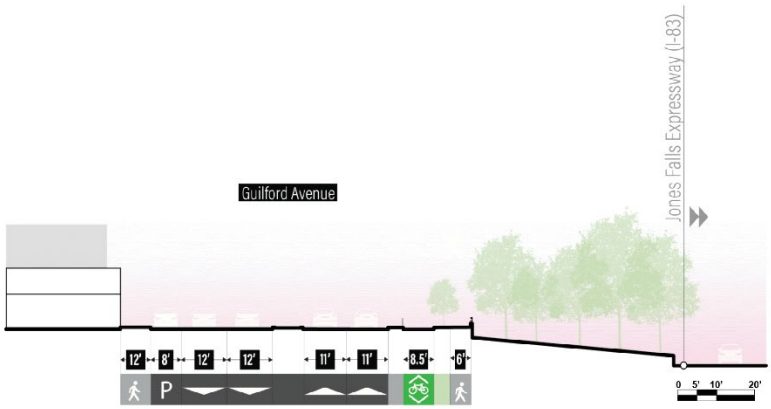


Figure 41 Section 2c

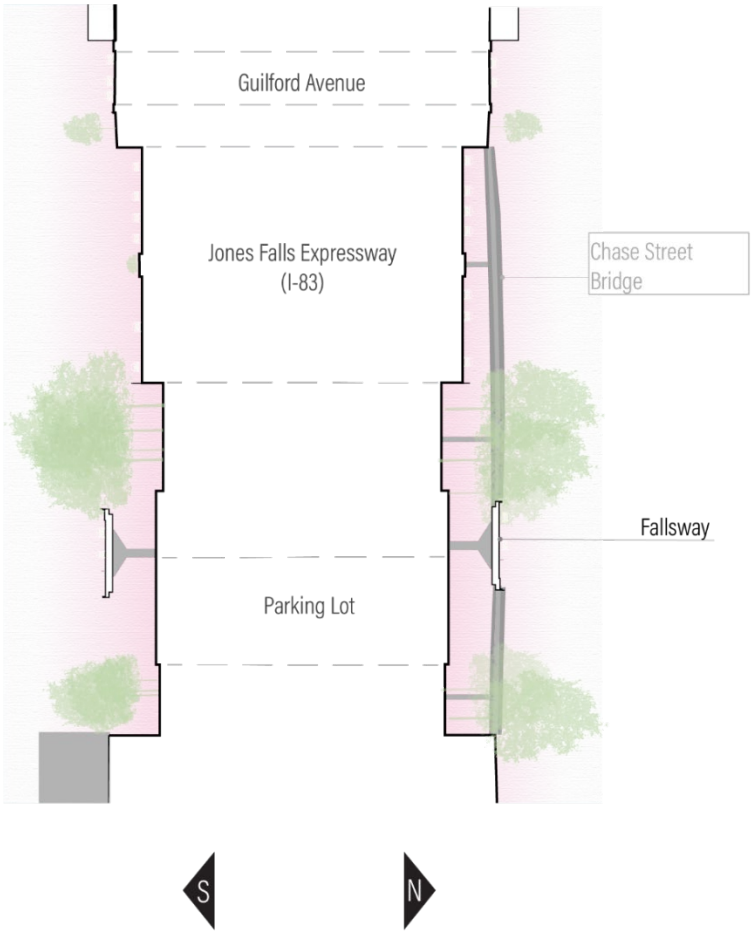
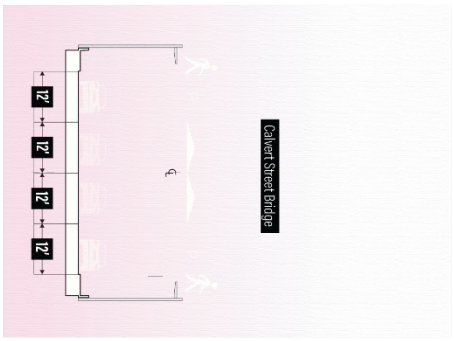


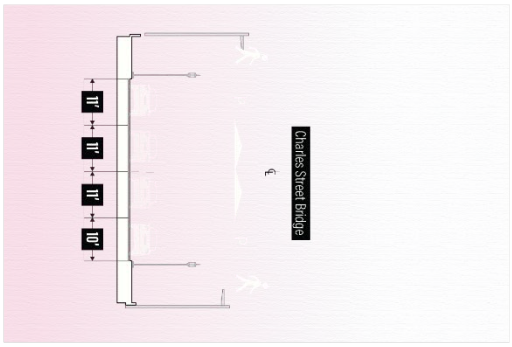
Figure 42 Section 2d

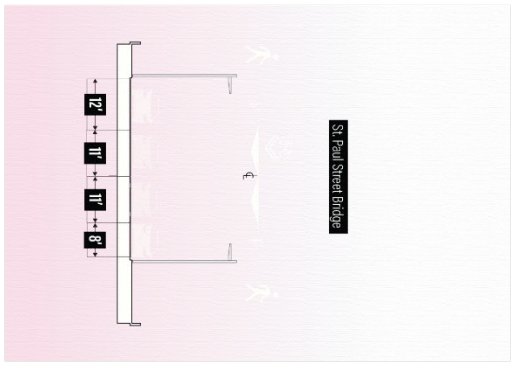
Segment 2.2

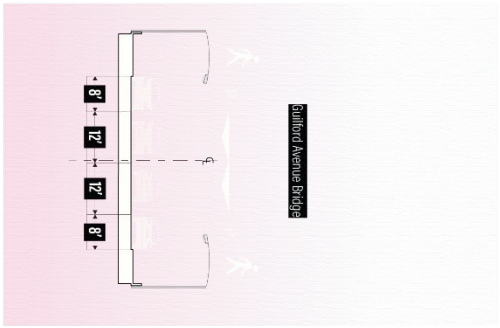
Segment 2.2 spans the Jones Falls Valley North of Mount Royal Avenue, where the Jones Falls once ran past garden terraces in its original bed at the foot of Penn Station (then known as Union Station) until it was culverted during the construction of the expressway (Olson, 1980). In 2015, this same area was identified as having a “very high need” for green space in an analysis conducted by the Chesapeake Conservancy (2015)

This strategic area is also adjacent to the campuses of the University of Baltimore and the Maryland Institute College of Art (MICA), and one entrepreneurial MICA graduate, and current Station North resident, has put forward an ambitious plan to cater to this audience with an art-filled skate park and event venue on an unused plot of land located underneath the JFX (Scharper, 2014). To the North of Penn Station, the real estate market of the Station North Art District has changed rapidly in recent years (Miller, Hallie, 2021). The most recent change slated for the neighborhood is a large, mixed-use, transit-oriented redevelopment of Penn Station as a major transit hub (New Renderings Released of Future Redevelopment, n.d.)









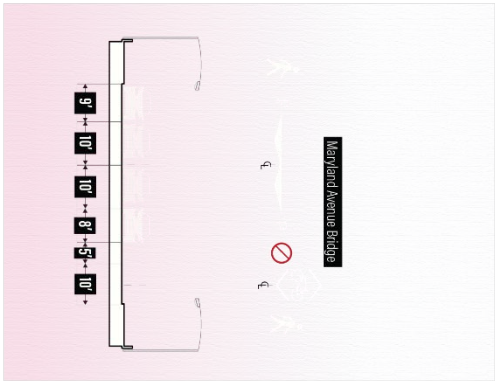


Figure 43 Sections 2e-2i

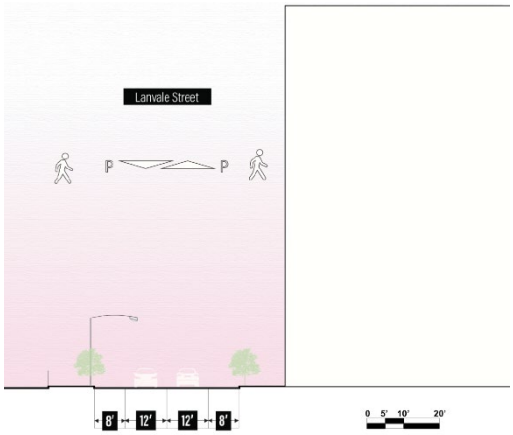


Figure 44 section 2j

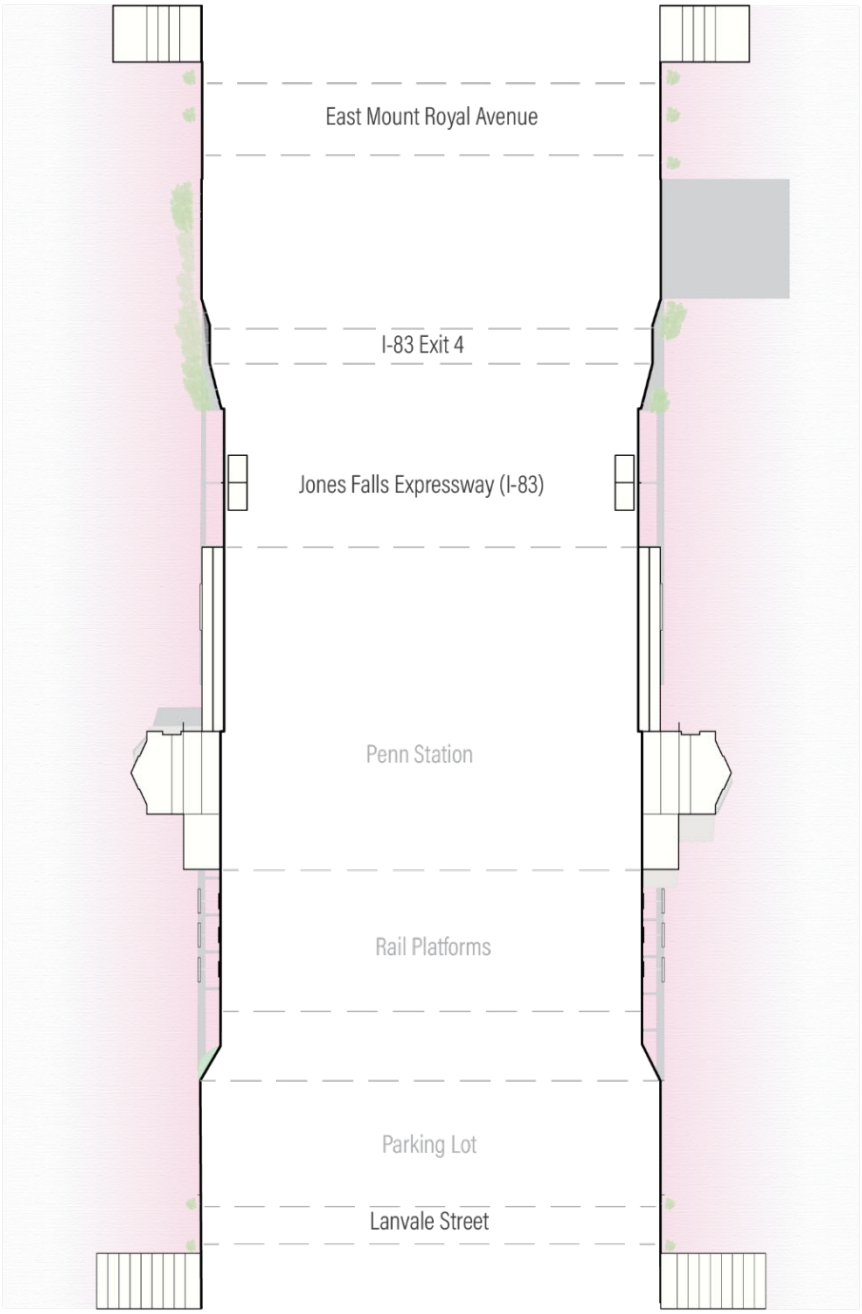


Figure 45 Section 2k across Jones Falls Valley, through the middle of segment 2.2

The focal design intervention proposed for Zone 2 proposes an innovative use for over 2000 linear feet of the Jones Falls Valley reclaimed through the removal of the expressway. Cutting off I-83 north of the 90-degree bend in the Jones Falls Valley and rerouting its flow to surface streets would create the opportunity to redirect the Jones Falls' flow to a naturalistic surface channel. Such an intervention would free the river from one of the most destructive conditions which riparian ecosystems can undergo (Pinkman, 2000) by reconnecting its waters with sunlight, organic materials and a host of other inputs which undisturbed stream ecosystems benefit from.

Freeway removal would be followed by regrading of the corridor, creating a naturalistic river channel, along with other modifications to landform including a gentler slope between Guilford avenue and a linear north-south pathway along the river. This would be followed by the installation of features: a paved trail furnished with lighting and comfortable seating areas, connected to surface streets by pathways, stairs and bridges (see Figure 46). The park design balances legibility with intrigue by pairing a simple, linear design with the forest's potpourri of scents, variegated light and shade, and the sounds of the river (see figure Figure 47).

The proposed intervention would daylight over 2000 linear feet of the Jones Falls which currently flows through a culvert underneath I-83. In place

of the river's existing concrete culvert, this stream channel would assemble a rich array of mobilities.

While the design of this park is intended to create a sun-dappled retreat for humans, the plant materials should be chosen with nonhumans in mind. The proposed mainstays of this planting strategy form a palette of "keystone plant species" – trees, shrubs, forbs and grasses selected for the exceptionally high numbers of native insects, birds, and other animals which they provide food and shelter to. The native riparian forest ecosystems of the Fall Line provide the design inspiration for this plant palette.

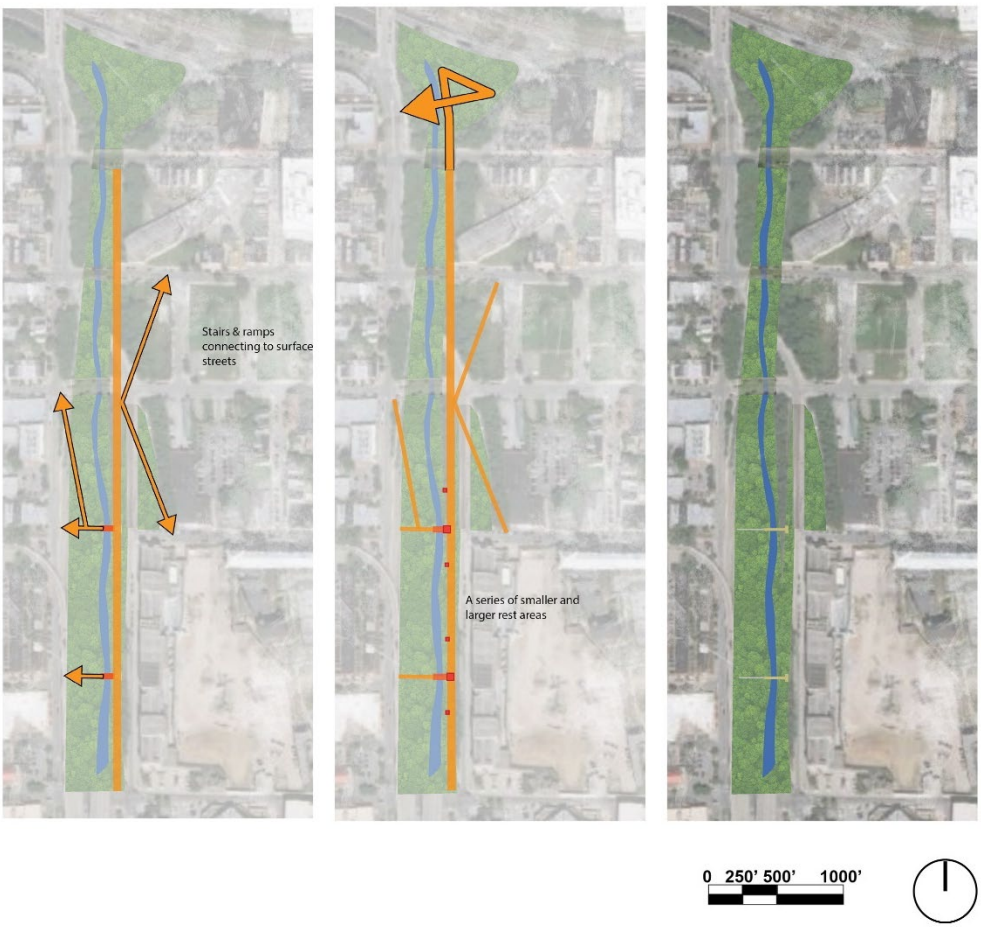


Figure 46 Understory Park Diagram: creating an urban forest park corridor and connecting it to surrounding streets

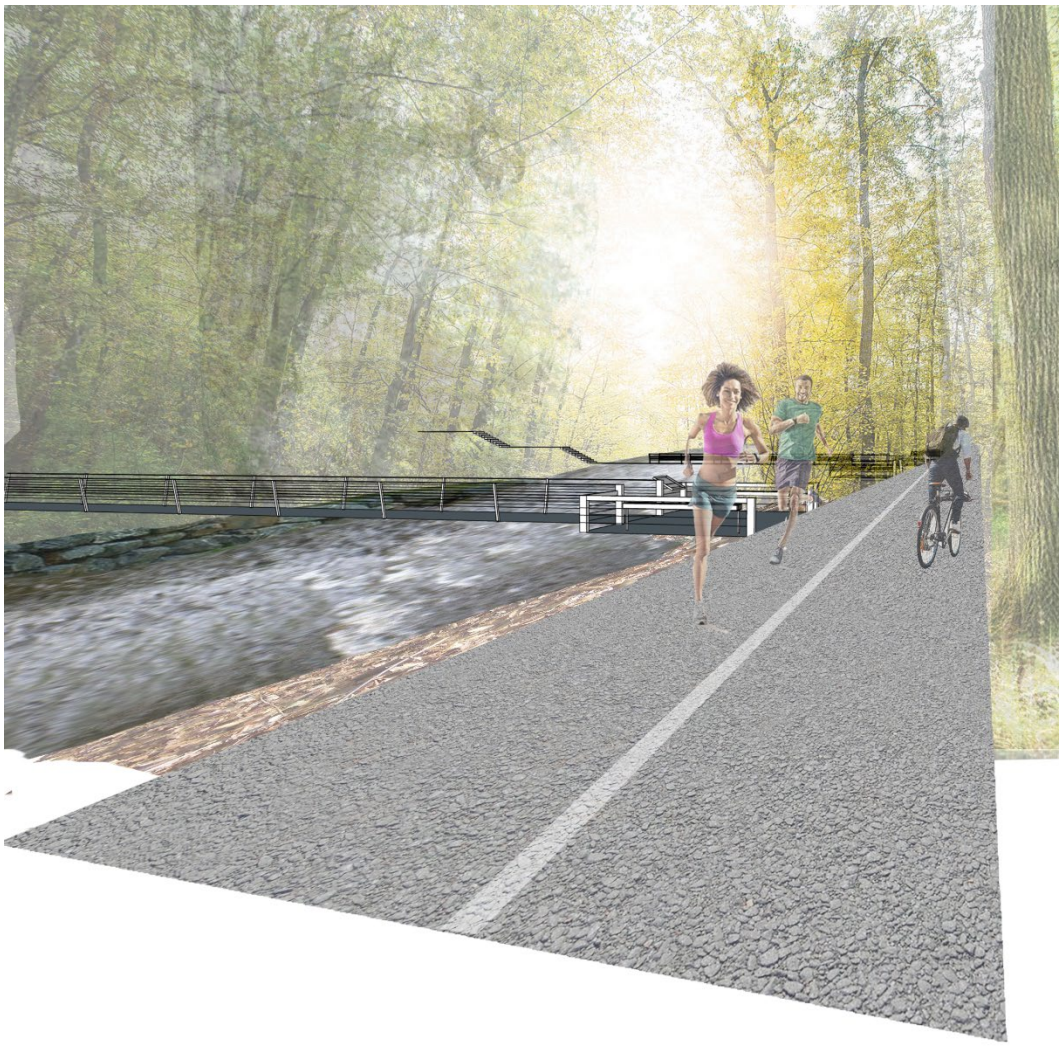


Figure 47 Understory Park Perspective

Character Zone 3: Existing Conditions

Character Zone 3 follows Falls Road into the Jones Falls Valley. The Character Zone starts from the Southern end of Falls Road, where it intersects with Maryland Avenue. Throughout most of this area, the river flows in a channel with armored sides, with a rail corridor running parallel on the opposite side of the channel. Toward the northern end of the character zone, the river cascades over a semi-circular mill dam known as Round Falls (Figure 49). This area of the Jones Falls Trail is distinguished from the other zones by its relative inaccessibility from the streets above the ridgeline: after the southern end of Falls road, the next point of access is a zig-zag path along the Western Edge of Wyman Park. The tracks and buildings of the Baltimore Streetcar Museum are located along this strategic area (see Figure 51 Figure 53), as well as several historic buildings from the era of the Maryland and Pennsylvania (Ma and Pa) Railroad. These features, along with several light-industrial properties located along the route, impart a distinctly industrial character to the area (see Figure 74).

Figure 48 Character zone 3 overview

Figure 49 Round Falls

Character Zone 3: Analysis

Flooding is a serious concern in character zone 3 (see Figure 50) due to the bottleneck effect of the undersized culvert opening at North Howard Street (Federal Emergency Management Agency, 2021) (see Figure 55). This concern is magnified by the presence of buildings and yards used for the storage of road salt and construction equipment are located at the edge of the floodplain along Segment 3.2.

Several features which contribute to the character of this are in poor condition. Most glaring is the historic Maryland and Pennsylvania (Ma and Pa) Railroad roundhouse, which has a collapsed roof due to years of use for road salt storage (see Figure 52). Additionally, the viewing platform near Round Falls is difficult to access and has missing boards (see Figure 56 and Figure 54).

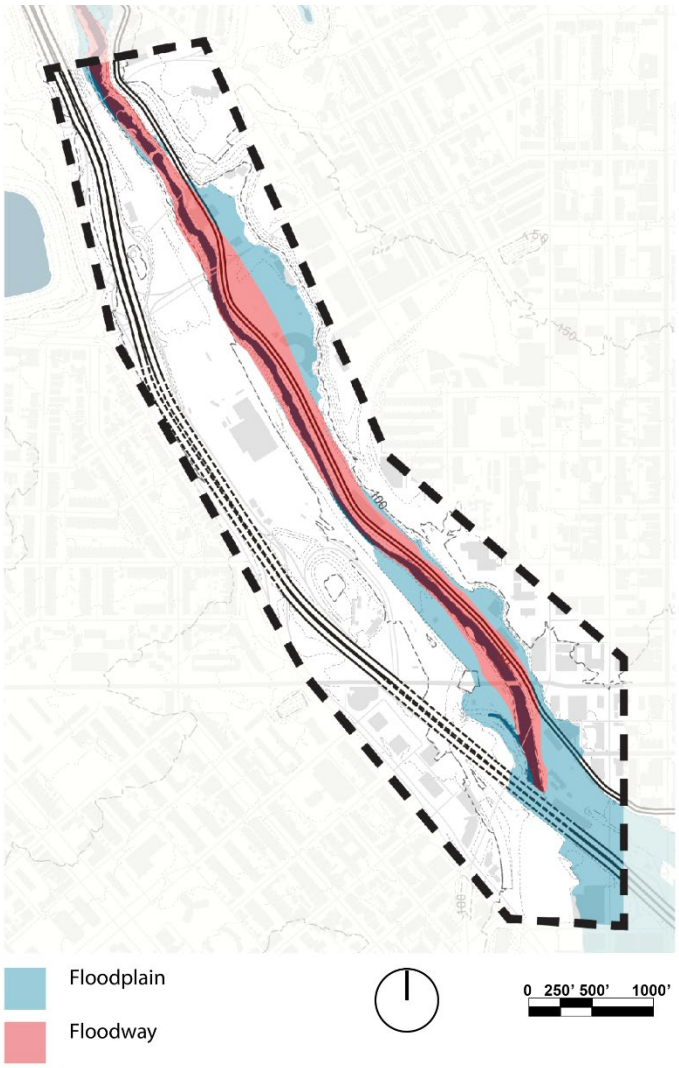


Figure 50 Character Zone 3 Floodplain and Floodway

Figure 51 Antique streetcar on the tracks in front of the Baltimore Streetcar Museum

Figure 52 Historic former Maryland and Pennsylvania ("Ma & Pa") Railroad roundhouse on DPW-owned lot. This picture shows the large collapsed portion of the building's roof.

Figure 53 Views of Baltimore Streetcar Museum tracks along Falls Road. The image on the right shows the rocky faces protruding from the valley side slopes.

While this character zone presently provides the most direct visual access to the Jones Falls of the three, views of the river from the trail are frequently obstructed by the riparian buffer, which is at some points so overgrown (mostly with invasive species) that the plants partially obstruct passage along the trail (see Figure 57,Figure 69, and Figure 68)

This area is already a reasonably well-used urban greenway with some remarkable history on display, so any proposed improvements should support and augment these characteristics. My recommendations assume that the Baltimore Streetcar museum's facilities should be retained or enhanced, with additional improvements as feasible to the aesthetic and interpretive value of other historical assets, such as the Ma and Pa Roundhouse. Improvements to this corridor can provide better visual connection with the Jones Falls while

also providing more habitat for urban biota. Figure 78 illustrates these proposed recommendations.

Figure 54 the round falls viewing deck is only accessible by these treacherous stairs

Figure 55 The Jones Falls passes through culverts underneath the Howard Street bridge (top and middle), briefly reconnecting with daylight before entering another set of conduits (bottom), continuing the infall sequence which will lead to a conduit underneath the Jones Falls Expressway. A FEMA report found these culverts to be undersized, magnifying the risk of flooding upstream in character zone 3.

Figure 56 Viewing Platform at Round Falls

Figure 57

Segment 3.1

Segment 3.1 starts at the southern terminus of Falls Road, where the Jones Falls Trail descends into the Jones Falls Valley (see Figure 58). The trail alignment goes through several rapid changes within this area. Falls Road is closed to entry at its southernmost terminus, with a “do not enter” sign at its intersection with Maryland Avenue. The northbound lane, which seems to be reserved for local traffic, permits the flow of bike traffic and sidewalks are located on both sides of the street. The southwest sidewalk is bordered by a stone wall topped by a tall metal fence screening the rail corridor beyond (see Figure 59, Figure 60, and Figure 61). The southwest

sidewalk ends at the Howard Street Bridge and the trail becomes an asphalt path protected by a guardrail starting at the terminus of the northeast sidewalk after passing under Howard Street. After passing passing a large shed belonging to the Baltimore Streetcar museum (see Figure 64), the trail crosses to the opposite side of Falls Road by a crosswalk. From this point, the Streetcar Museum's tracks run parallel to the trail on the opposite side of Falls Road (see Figure 65). The trail then passes under a rail bridge (see Figure 62). The trail is protected from Falls Road by a guard rail, which is replaced by a curb and grass strip (see Figure 66) as the trail approaches another building belonging to the Baltimore Streetcar Museum, a long, low building remaining from the days of the Ma and Pa Railroad (see Figure 63).

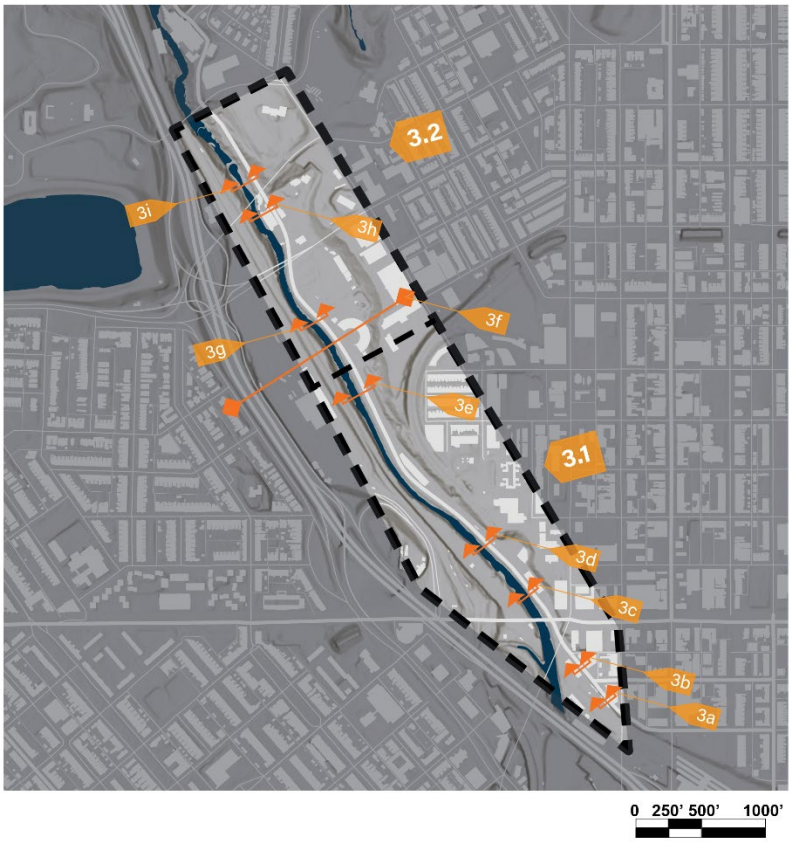


Figure 58 Study segments and section cutlines, character zone 3

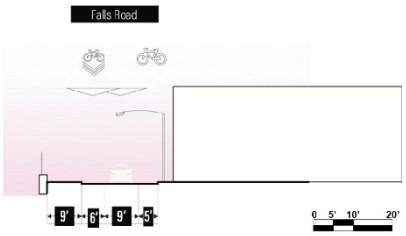


Figure 59 section 3a

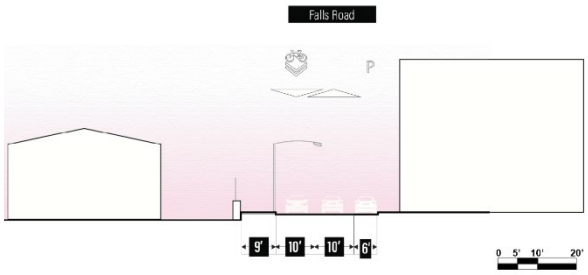


Figure 60 section 3b

Figure 61 North-facing view along the southernmost block of Falls Road. The Howard Street Bridge appears in the background, and a metal screening fence atop a stone wall screens the view of rail tracks to the west.

Figure 62 Character Zone 3 seen from the North Avenue Bridge, looking north along Falls Road. The Baltimore Streetcar Museum's shed is in the center of the image with the Jones Falls trail routed between the shed and Falls Road. The river can be glimpsed to the left through a brocade of vines and bare tree branches, and the rail bridge crosses over the valley in the background.

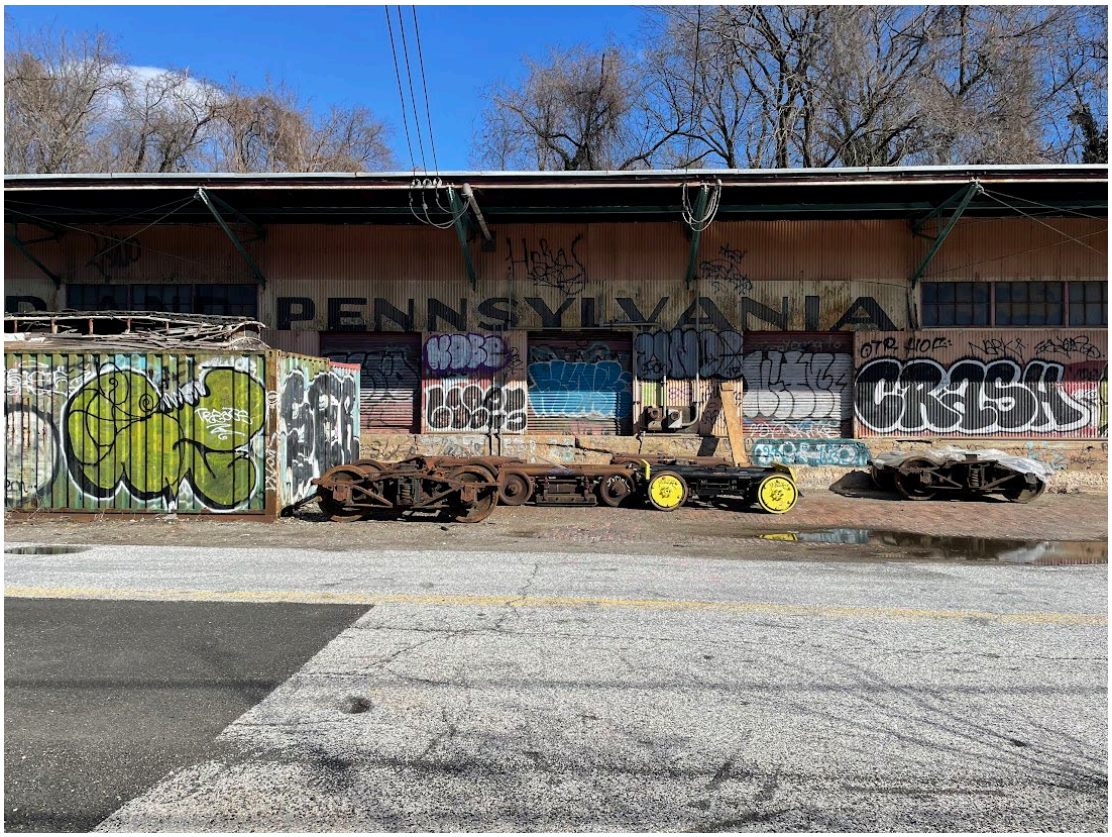


Figure 63 Former Maryland and Pennsylvania Railroad building, used as a maintenance facility by the Baltimore Streetcar Museum today

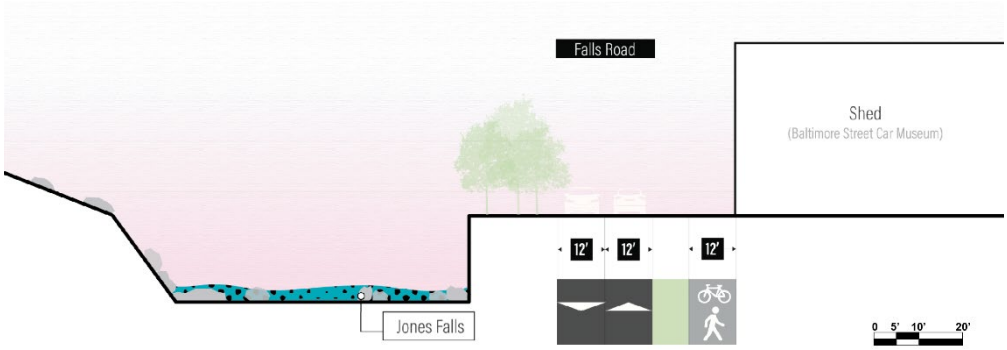


Figure 64 section 3c

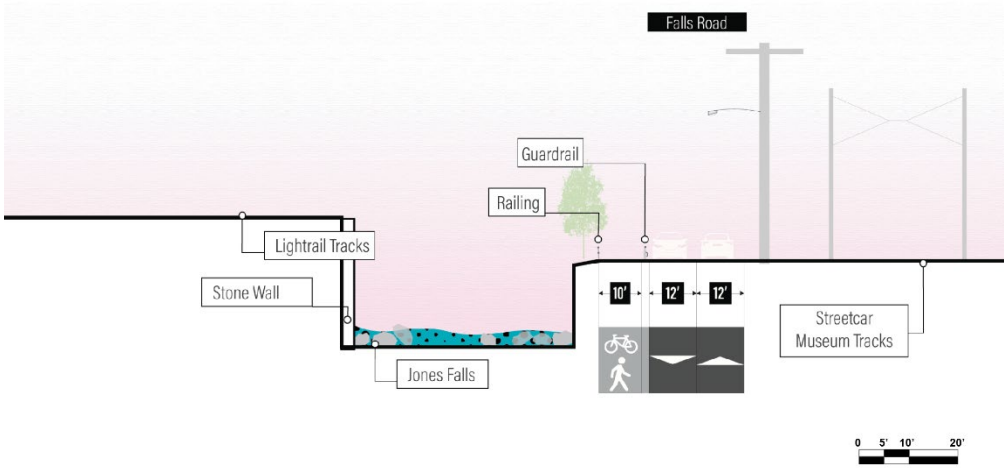


Figure 65 section 3d

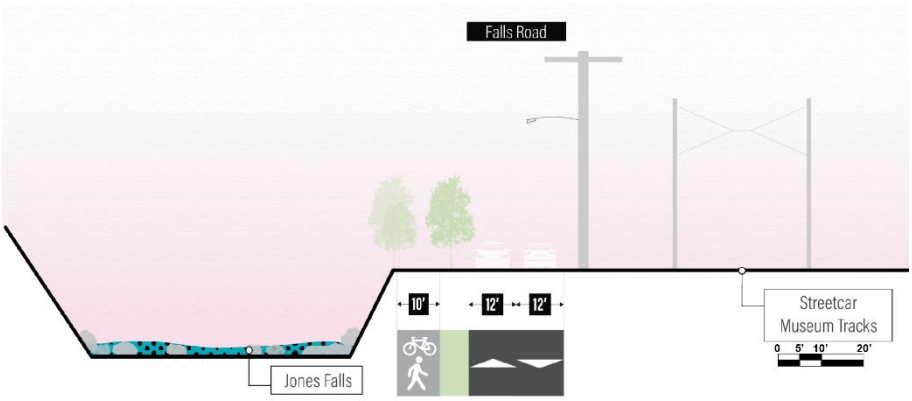


Figure 66 section 3e

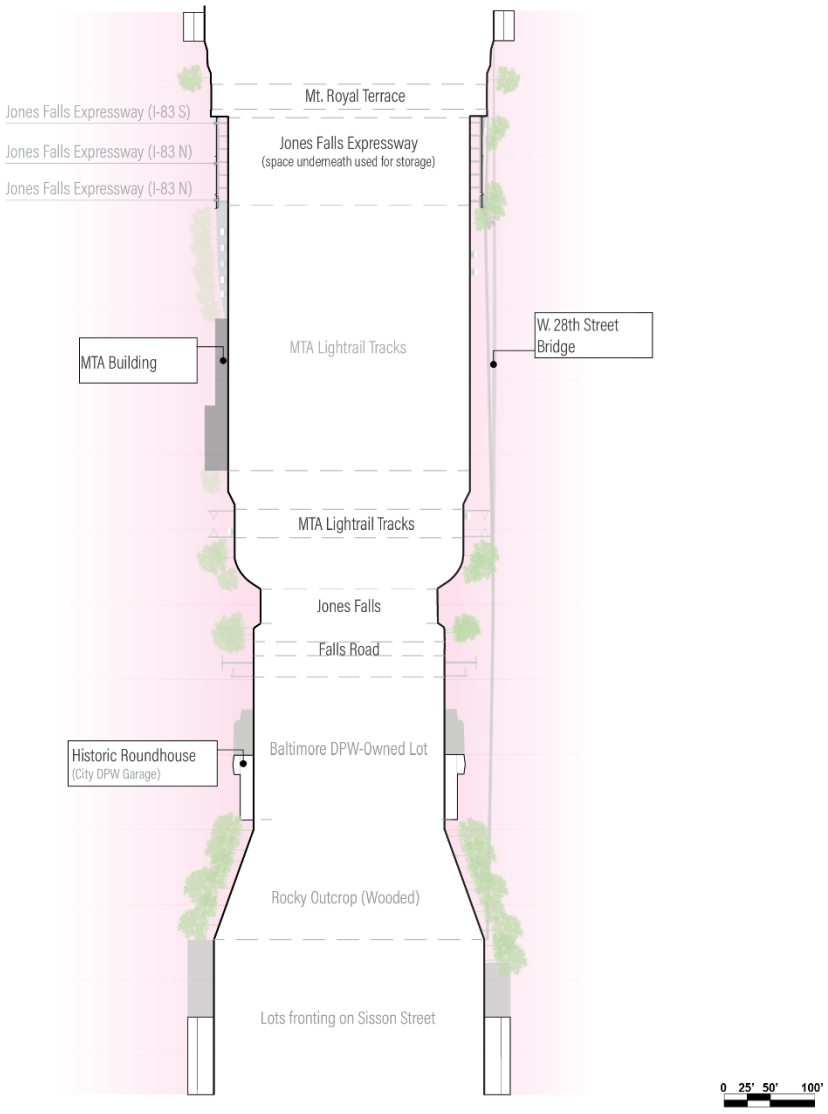


Figure 67 Section 3f across the Jones Falls Valley, near the center of character zone 3

Figure 68 Rail Bridge with the Jones Falls running beneath. A vinescape dominates the riparian buffer and the foreground of the image, obstructing the view of the river.

Figure 69 While admittedly beguiling in this light, this portion of the riparian buffer is overrun with invasive plant species: a Mulberry sapling (Morus spp.) spills into the multi-use trail, with Sweet Autumn Clematis (Clematis terniflora) following suit. The purple panicles behind belong to Butterfly Bush (Buddleia davidii).

Segment 3.2

Segment 3.2 begins parallel to the MTA building across the Jones Falls. The trail passes the city Department of Public Works lot (see Figure 70 where the stone roundhouse is used to store vehicles and road salt. North of the DPW yard is a yard belonging to the construction contractor Potts and Callahan, used to store heavy equipment (see Figure 71 and Figure 72). Both of these light industrial sites are located largely within the 100-year floodplain, and partly within the floodway. After passing these lots, falls road begins to climb steeply, with the steep face of the valley close to the road (Figure 73).

Near the north end of the strategic area, water drops roughly 10 feet over a historic, circular mill dam at what is known as Round Falls (see Figure 75). A viewing platform built long ago for viewing the falls is today in significant disrepair, accessible only by an equally treacherous path (see Figure 54).

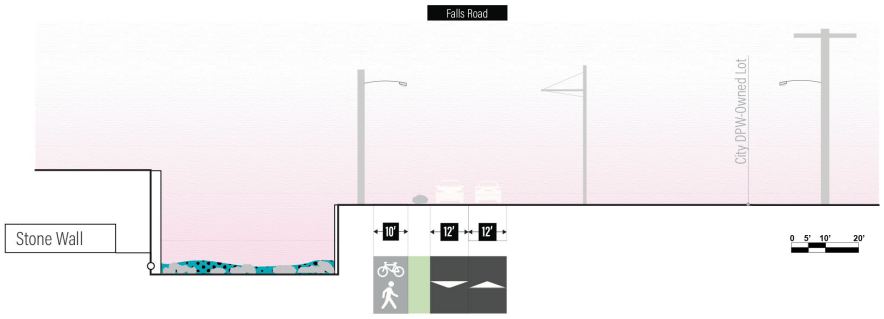


Figure 70 Section 3g Falls Road Section.

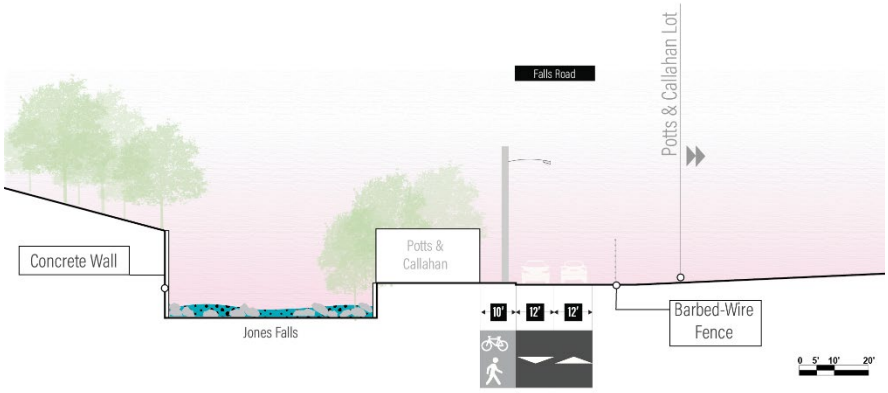


Figure 71 Section 3h Falls Road Section.

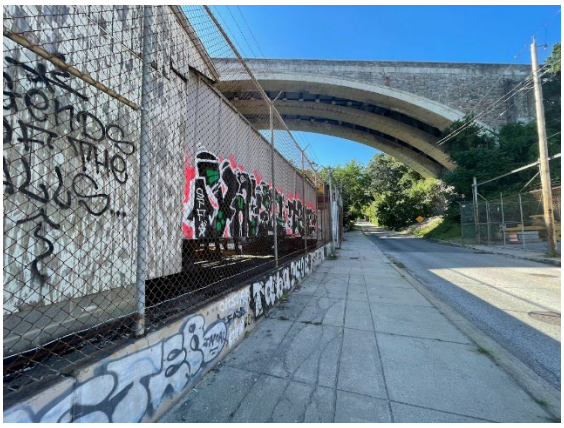


Figure 72 This photo shows Falls Road from roughly the same position as Figure 71. The 29th Street Bridge is seen ahead, with tall barbed wire fences of Potts & Callahan yards on either side. All trail traffic is routed along the sidewalk here.

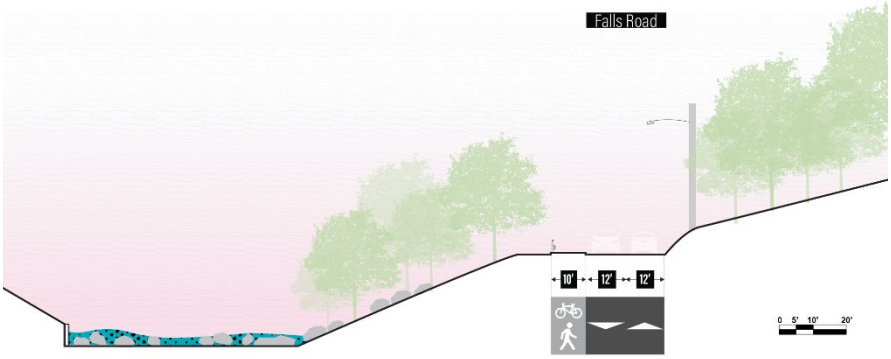


Figure 73 Section 3i Conditions along Falls Road north of the Potts & Callahan yards. The road climbs steeply here.

Figure 74 Baltimore City DPW lots, photographed facing south from the 28th Street Bridge.

Figure 75 Round Falls photographed from the Wyman Park Drive bridge, facing south.

Design Proposal: Character Zone 3

The focal design intervention in Zone 3 aims to reduce flood risk for the Falls Road area while creating quality wildlife habitat and an amenity for trail users and nearby residents. This will involve the diversion of a portion of the Jones Falls' flow by a splitter, which will direct the diverted flow through a culvert underneath Falls Road. Diverted water will undergo a noticeable change as it enters the park: the shallow grade and gentle profile of the channel create a space for water to slow down and spread out, filtering through the fibrous root networks and porous, spongy ground of wetlands.

This Flood Park is not only designed to provide water with a place to slow down—it is also intended to provide a space where people can slow down and appreciate the sites, sounds and scents of nature. Users can access a series of overlooks by a trail encircling the park, as well as other features including a central bridge, and a wetland boardwalk area.

A proposed sculptural mound featuring an overlook provides a prominent use for soil excavated during the creation of this anthropogenic floodplain. Excavated material can also be used to create a berm protecting the historic roundhouse from heavy flooding. An overview of the process of transforming this area is outlined in a series of diagrams presented in Figure 76.

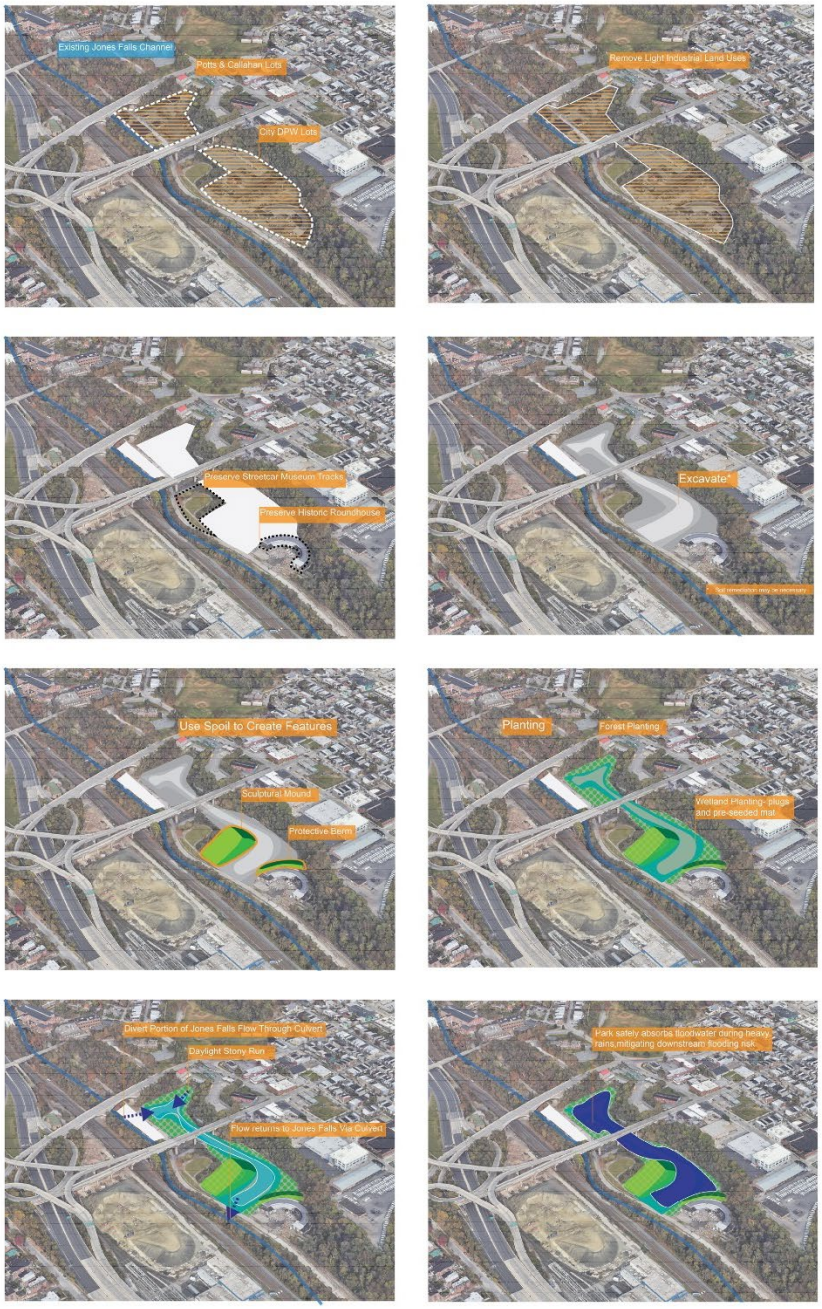


Figure 76 Flood Park Construction

This design presents a simple proposal for transforming a landscape of problematic conditions by transforming the excessive and forceful materialities of flooding from a liability into an event which can be celebrated and aestheticized. The park's overlooks offer safe vantage points where this event can be appreciated. The flood park is a zone of flux, a physical reminder of the dynamic variability which is an unavoidable fact of nature. Water levels ebb and flow, depositing some sediments and seeds, while sweeping others downstream. The park is a diagram of water's mobile dynamism, safely integrated into the urban fabric.

The approach to planting in this park area aims to stabilize soil and cost-effectively support urban biodiversity through the strategic use of tree planting, landscape plugs, and pre-seeded matting.

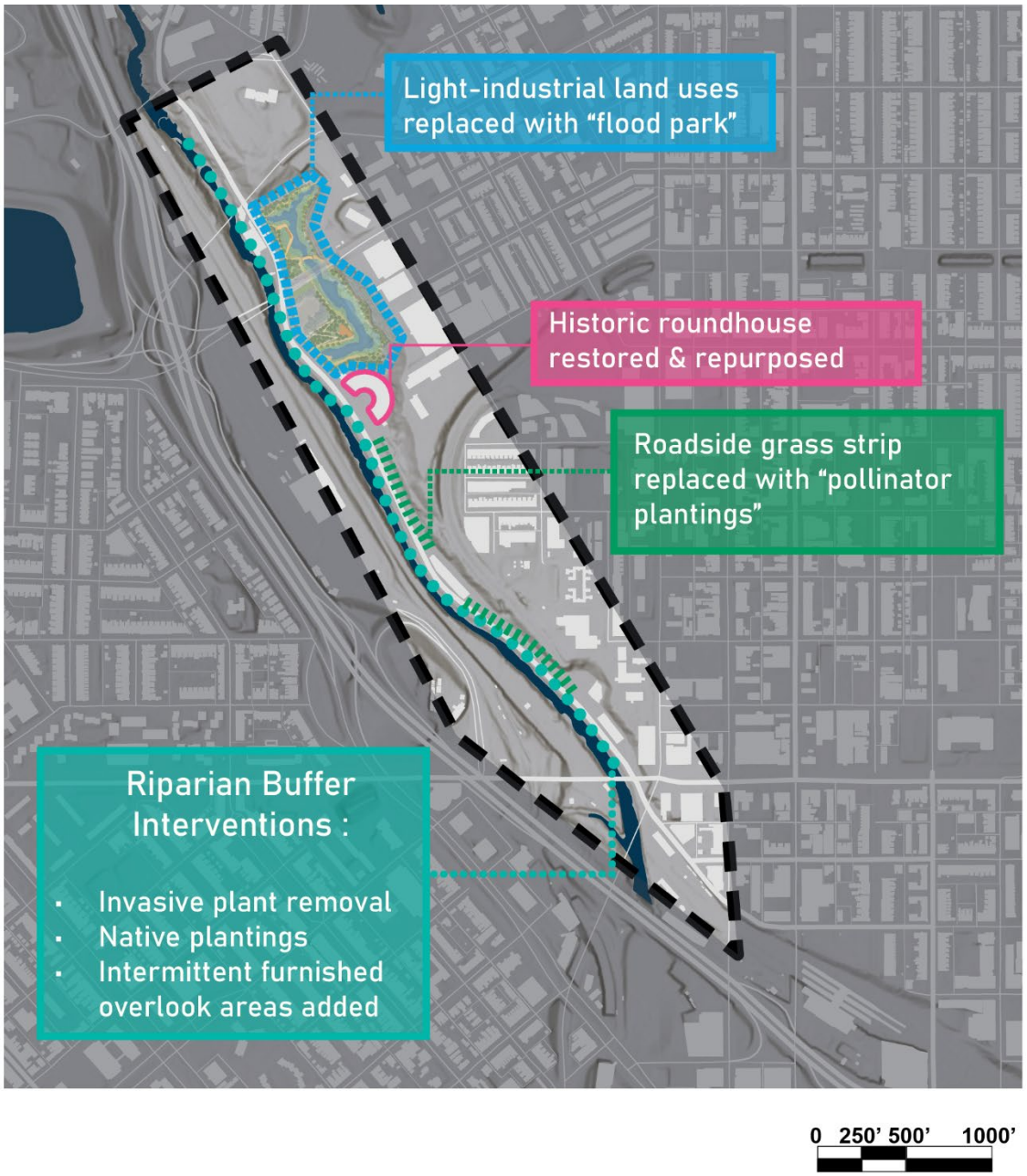


Figure 77 Character zone 3: proposed interventions

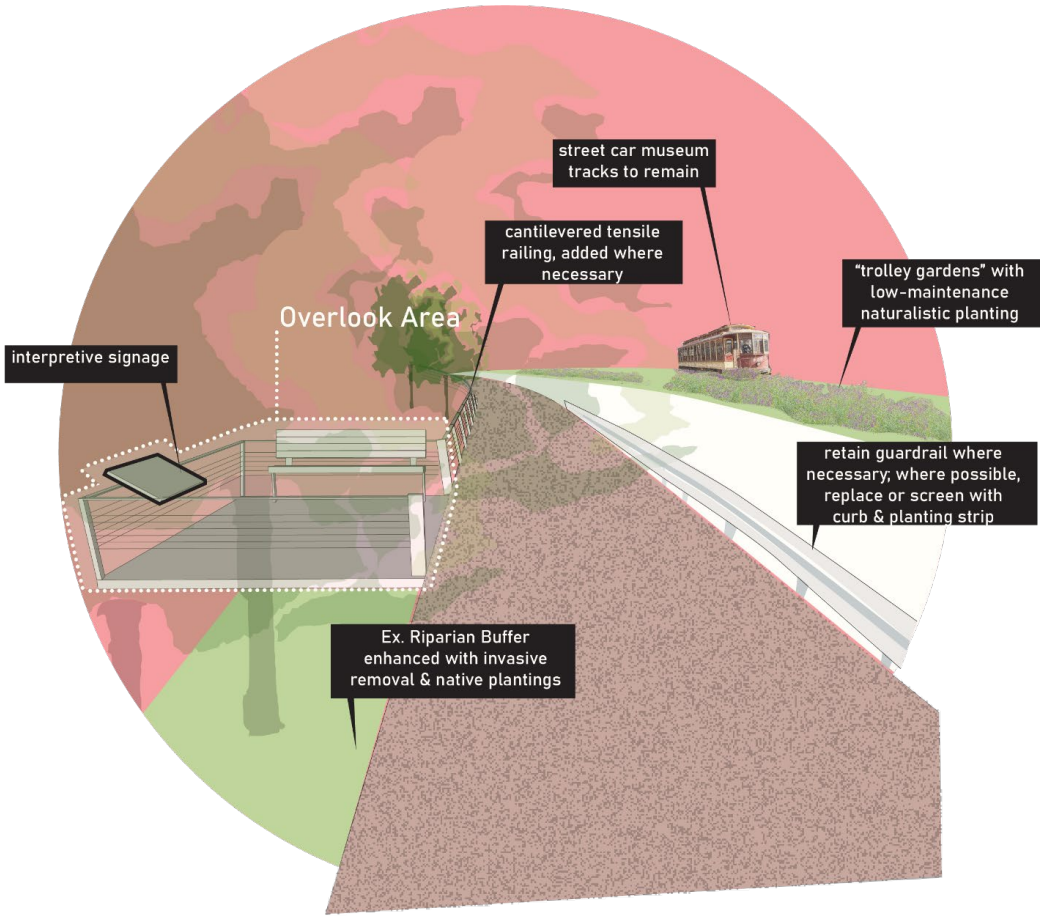


Figure 78 Diagram of recommendations for Zone 3 Greenway Corridor

Figure 79 simple overlook installed north of the study corridor, outside Whitehall Mills. This could serve as a precedent for overlooks along Falls Road in Character Zone 3.

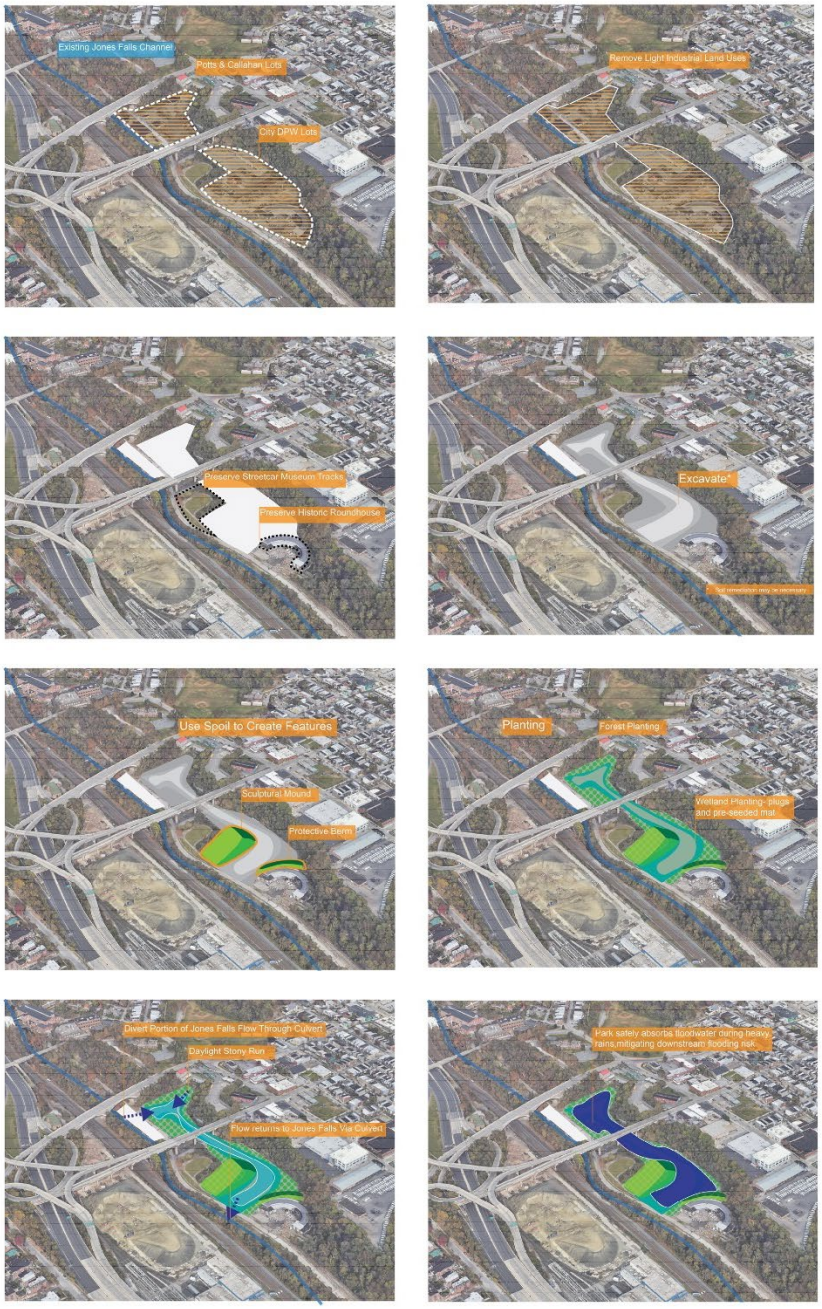


Figure 80 Conversion of light-industrial yards in the floodplain to Flood Park

Figure 81 Flood Park Plan

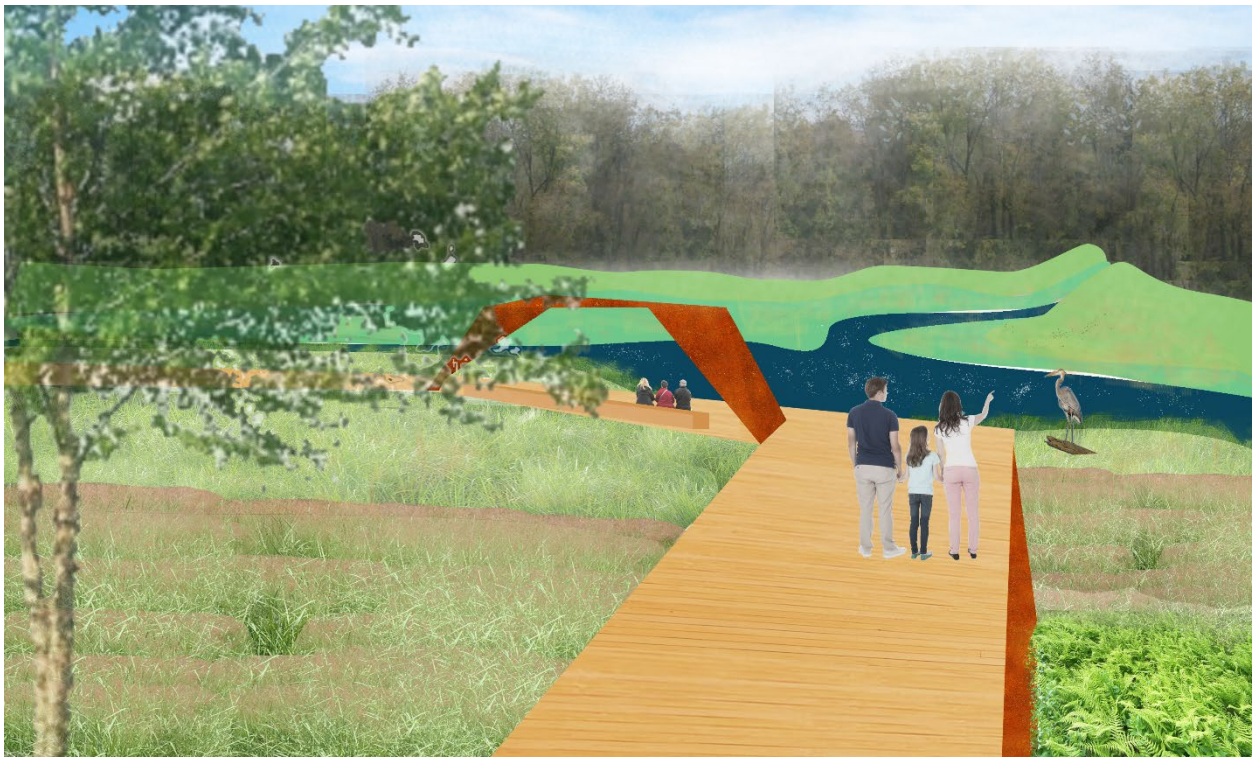


Figure 82 Flood Park Perspective

Reflections on a blue-green mobility corridor

In this design proposal, I have asked how the past and present materialities and mobilities embedded in the landscape of the Jones Falls Valley might inform a new future direction for this urban infrastructural corridor. I have presented a vision for reimagining the Jones Falls Valley as a landscape of regenerative interactions between humans, nonhumans, and the watershed they share. I have sought to pay close attention to the materiality of this landscape and its numerous constitutive relations. Throughout this study, I have focused on some of the channels of mobility central to the character of this corridor: an urban expressway, a greenway trail, the river

which is a namesake to them both, and the numerous adjacent streets and sites which form the public realm adjacent to these features.

At the outset of this chapter, I remarked that this study corridor presents many insalubrious and inhospitable conditions, and that these conditions are deeply implicated in the corridors many materialities and mobilities. I identified flooding, urban heat island effect, air quality, and gaps in pedestrian- and cyclist-oriented infrastructure as high-priority issues in this auto-dominated mobility corridor. I also noted the flood risk exacerbated by this impervious urban environment and the destructive effects of culverting on the riparian corridor which once flourished in this valley.

I have proposed that this infrastructural landscape might become a more hospitable and regenerative landscape, incorporating functions of urban ecological infrastructure, including the provision of green and blue spaces where people can gather with others or explore on their own. One major intervention supporting this strategy is the removal of the southernmost mile-long portion of the Jones Falls Expressway, with car traffic through this corridor directed along an urban boulevard designed to promote walking, cycling, and public transit use. Freeway removal will free up space for a series of urban parks which can offer a suite of functions: invigorating the public realm, creating much-needed floodable space, increasing tree canopy, and incorporating native plantings which can offer support to many nonhuman species. This series of linear parks will also offer an opportunity to daylight

the Jones Falls. These enhancements to the southern portion of the corridor would be complimented by improvements to the northern portion which would enrich the existing urban greenway and add floodable space.

The proposed program for this urban corridor would reconfigure many patterns of movement, potentiating the possibility of many regenerative mobilities and materialities, creating a zone of encounter between humans, nonhumans, and the waters of a recovering urban river. This urban greenway could offer an attractive solution to many of the aforementioned challenges facing this landscape: reducing car emissions, increasing tree canopy, mitigating flooding, and transforming an auto-dominated corridor into a richer public realm. These recommendations responded to three overarching principles: (1) integrating urban ecological infrastructure into the fabric of the city; (2) making infrastructure public; and (3) assembling rich urban ecologies of experience and interaction.

These re-routings might in turn promote an ecology of beneficial re-rootings: opportunities for establishing new ways of relating to one another, to the natural world, to the many complex histories compressed within this landscape. I have further speculated that these transformations might complement other, broader transformations in the landscape of Baltimore: the reversal of a decades-long trend of population loss, the repurposing of land devoted to carceral facilities into community spaces and a broader program of green infrastructure and complete street retrofits throughout the city.

Chapter 5: Conclusion

In this thesis, I have presented ecological urbanism as a project with two major components: (1) a project of heterogeneous design practices sharing a common interest in the multidisciplinary task of applying insights from the science of ecology to design challenges in the urban terrain and (2) a project of critical knowledge production concerned with the same multidisciplinary task of translation, oriented in part by Felix Guattari's ecosophic problematic. These dual enterprises are equally instrumental to the task of composing more beneficial relations among diverse humans and with the numerous non-humans inhabiting this territory. Through a literature review and design proposal, I explored how landscape can function as a medium facilitating the ongoing interdisciplinary work of translation involved in this task.

Diffractively (Haraway, 2018) reading ecological urbanism through and with contemporary social theory, I became interested in the role which media and mediations play in the acts of translation which are so critical to ecological urbanism's ends. I proposed that paying close attention to the materiality of landscape as a medium might support such a rigorously relational program. Landscapes are configurations of many materialities and many relations which cut-across representationalist oppositions of subjectivity and objectivity and meaning and matter. I proposed that a project of

identifying the many materialities of particular landscapes might be advanced by paying attention to the materiality of relations of movement through the concept of mobilities. This would be a diffractive approach: seeking to understand the materiality of particular landscapes by looking to the differences they produce in patterns of movement.

In this thesis, I endeavored to think with the lower Jones Falls Valley, a landscape thick with histories of movement and infrastructure. How might a rigorous study documenting some of the many materialities and mobilities integral to the thick past and present of this landscape open onto the critical goal of thinking-otherwise? What reified objects and ossified subjectivities might be redirected toward new convivial ways of thinking and moving? What things, in Latour's sense of the word "thing" as a gathering, might be made public here? The techniques I employed in drawing together some of this landscape's constitutive mobilities and materialities were informed by my training in the discipline of landscape architecture: I pored over old maps, I drew streetscapes in section and plan view, I created maps showing different conditions and I took photographs during long walks through this landscape.

Then, I asked how this landscape might be reimagined. I proposed that the privileging of one perspective, and one form of mobility—that of the automobile, has foreclosed many other possibilities for this infrastructural corridor to be a convivial, salubrious public space. I observed a landscape of morbid materialities mobilized by the corridor's existing infrastructure: polluted

air, urban heat island effect, the acceleration of runoff and exacerbation of flood risk, and, beneath the street, the ghostly remnant of what was once a vital river ecosystem: the concrete-encased flow of the Jones Falls.

I then put forward a design proposal which envisioned the force of a resurgent Jones Falls driving a new era of changes in this historic valley. The project of freeing the river from over a mile of concrete conduit would be coordinated with many other beneficial transformations: the creation of a vibrant and inclusive public realm, the replacement of outdated infrastructure with resilient floodable space, the promotion of sustainable modalities of movement, and the planting of native plant species supporting thriving urban ecosystems and transforming the microclimates and ambiances which make up the experience of moving through the city.

Beyond a set of proposed technical solutions, this project aims to contribute to an ongoing dialogue about the future of the Jones Falls Valley by articulating a vision of a few of the manifold possibilities lying latent in this landscape. The focal event envisioned by this proposal, the resurrection of an urban river, presents a powerful image of this potential.

Today, the Jones Falls lies entombed beneath the street, but what might tomorrow hold? What ways of moving and living, what shared practices of relating and knowing might grow through the re-routing of a forgotten urban river and the re-imagining of an urban infrastructural corridor? How might the experiences and encounters of such a landscape open onto ways of re-

imagining what infrastructure can be? Questions such as these get to the heart of the critical inquiry driving the project of ecological urbanism and respond to the urgent need for ways of imagining and thinking otherwise amid the troubling terrain of the twenty-first century. *We do not even know what a landscape is capable of!*

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