

Di Lê

M.S. Architecture & Urban Design
Columbia University GSAPP
Graduate Portfolio 2022-2023

Cảm ơn gia đình.
Thank you instructors and friends.

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Summer 2022

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01

Fluctuating Thresholds

A Toolkit Study of Canarsie

Urban Design Studio I - The New York Studio Sites, Systems, Spaces, Stories

Faculty: Nans Voron, Sagi Golan, Austin Sakong, Sean Gallagher, Miriam Peterson, Senjukta Sen, Galen Pardee, Yasmine Katkhuda

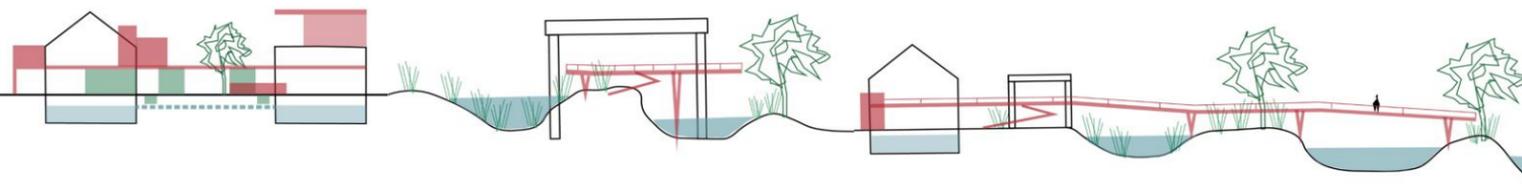
Place: Canarsie, Brooklyn, NY

Partners: Oréoluwa Adegbola, Hanfei Fu, Yan Huo

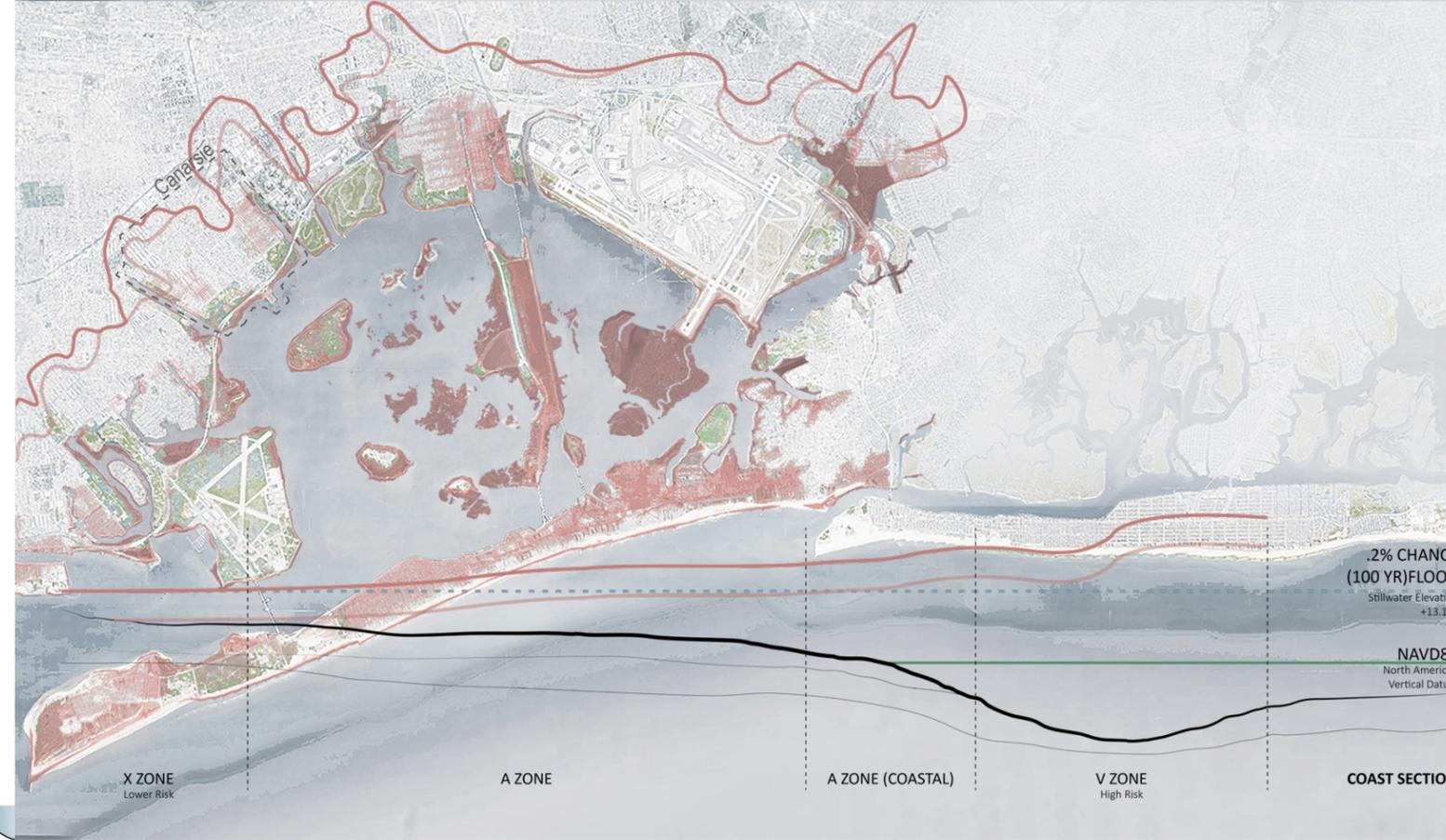
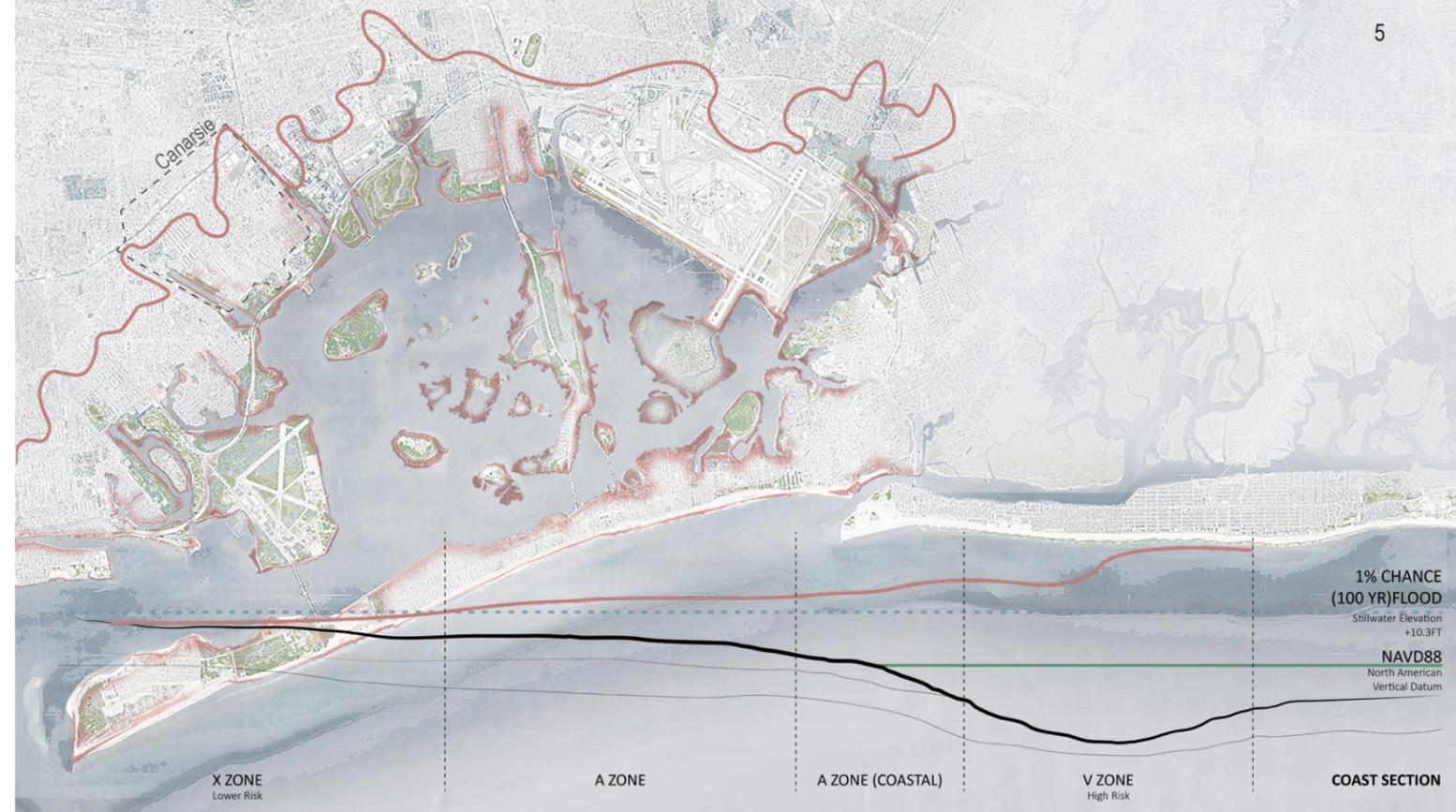
Canarsie is a community that exists at the intersection of multiple fluctuating systems. The water occupies the highest stratum. When water rises the urban systems collapse, infrastructure is destroyed and a community is in decline. This perpetual cycle of mishaps, anticipated but poorly mitigated, induces a state of paralysis over the social, economic and urban development. Canarsie is similar to its neighboring frontline communities at Jamaica Bay. We can learn from Canarsie as a case study.

Our project proposes a tool kit of systems and policies positioned to be deployed as the Bay expands over the next 100 years. Varying in severity in response to the fluctuating forecasts of sea level rise and storm surges, we can utilize Canarsie’s most extensive urban system, its sidewalks.

Our tool kit identifies four critical scales of intervention: the sidewalk scale, the building scale, the belt parkway and Jamaica bay. By harnessing the natural porosity of the ground in green urban areas, and underlying porous sidewalks with a network of hydro channels which will primarily serve to capture water as it approaches. The interventions we propose are intended to transform canarsie into a fluctuating threshold between Jamaica Bay and its neighboring in-land communities, by allowing water to travel across the community.



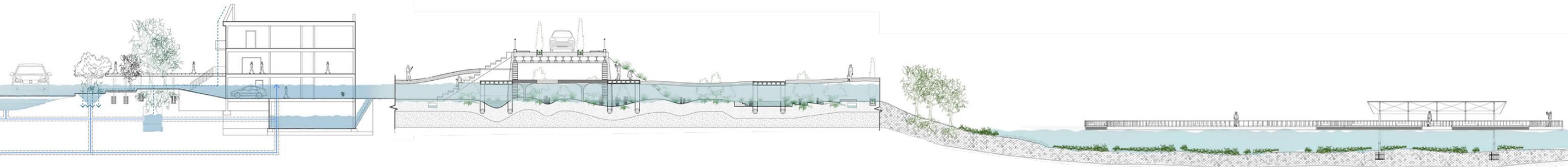
Fluctating ground diagram connecting at various scales



Inundation from 1% chance [above] to 0.2% chance [below].

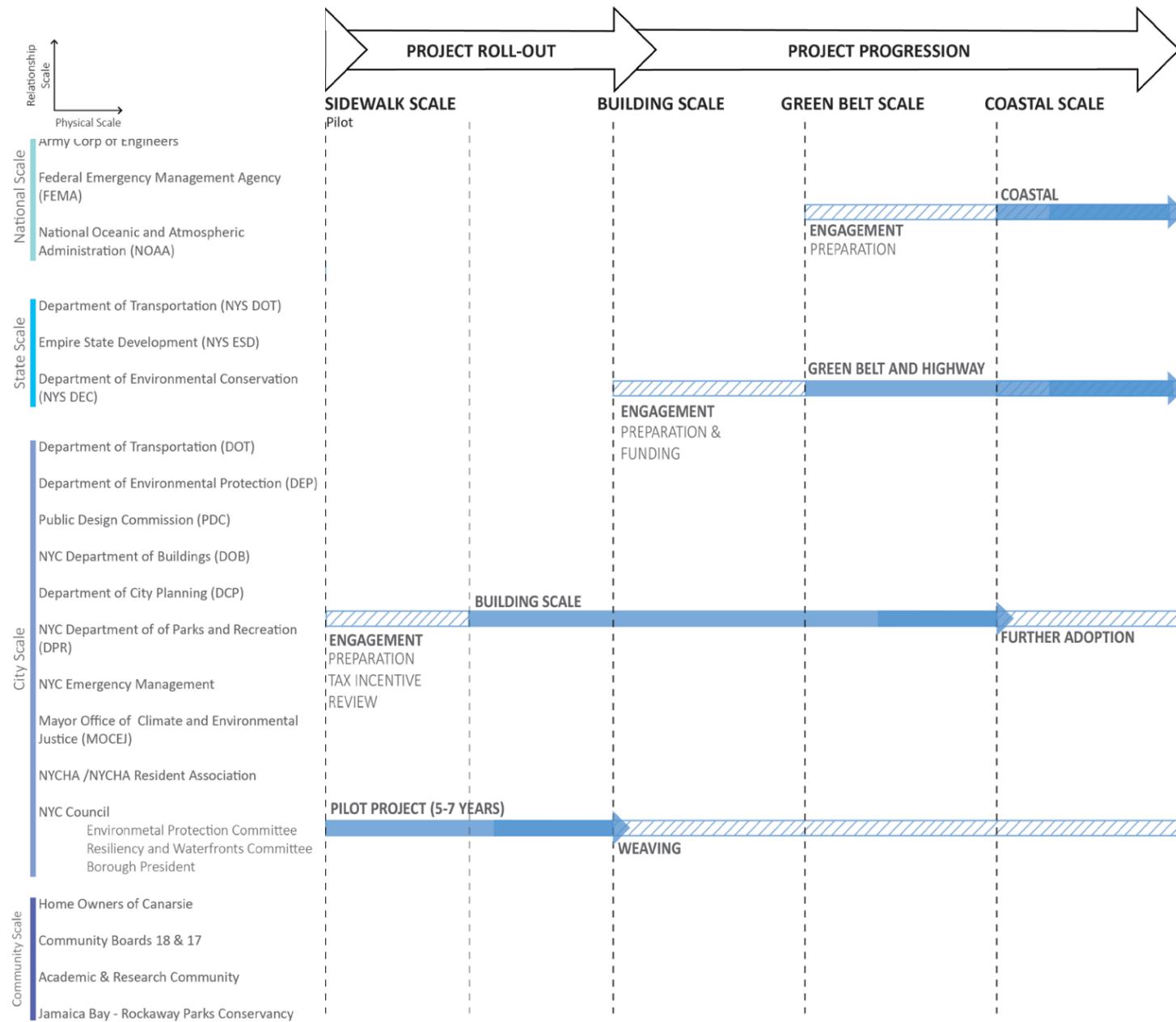


Multiple systems are able to interact with water at various scales.

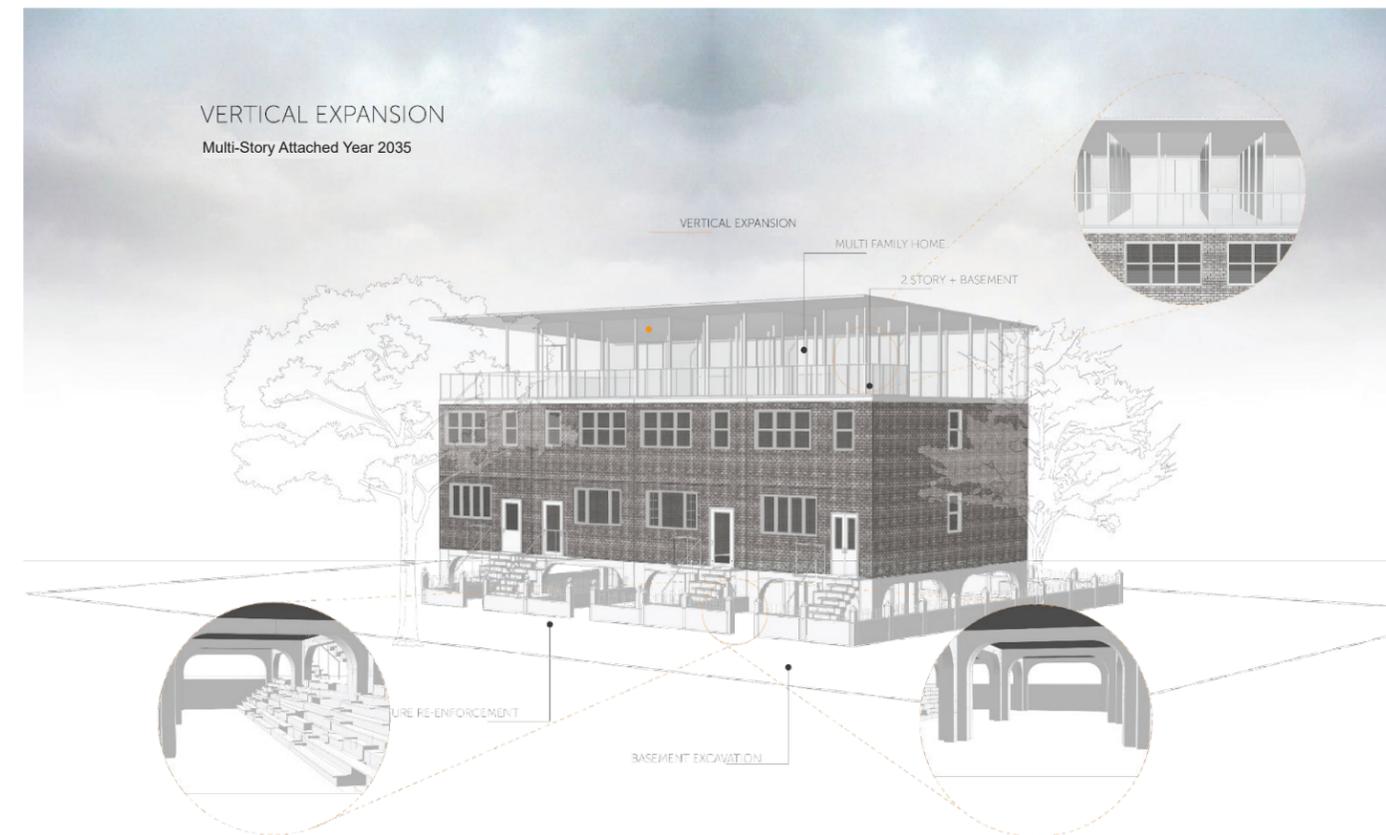


Sidewalks and buildings act as water holders.

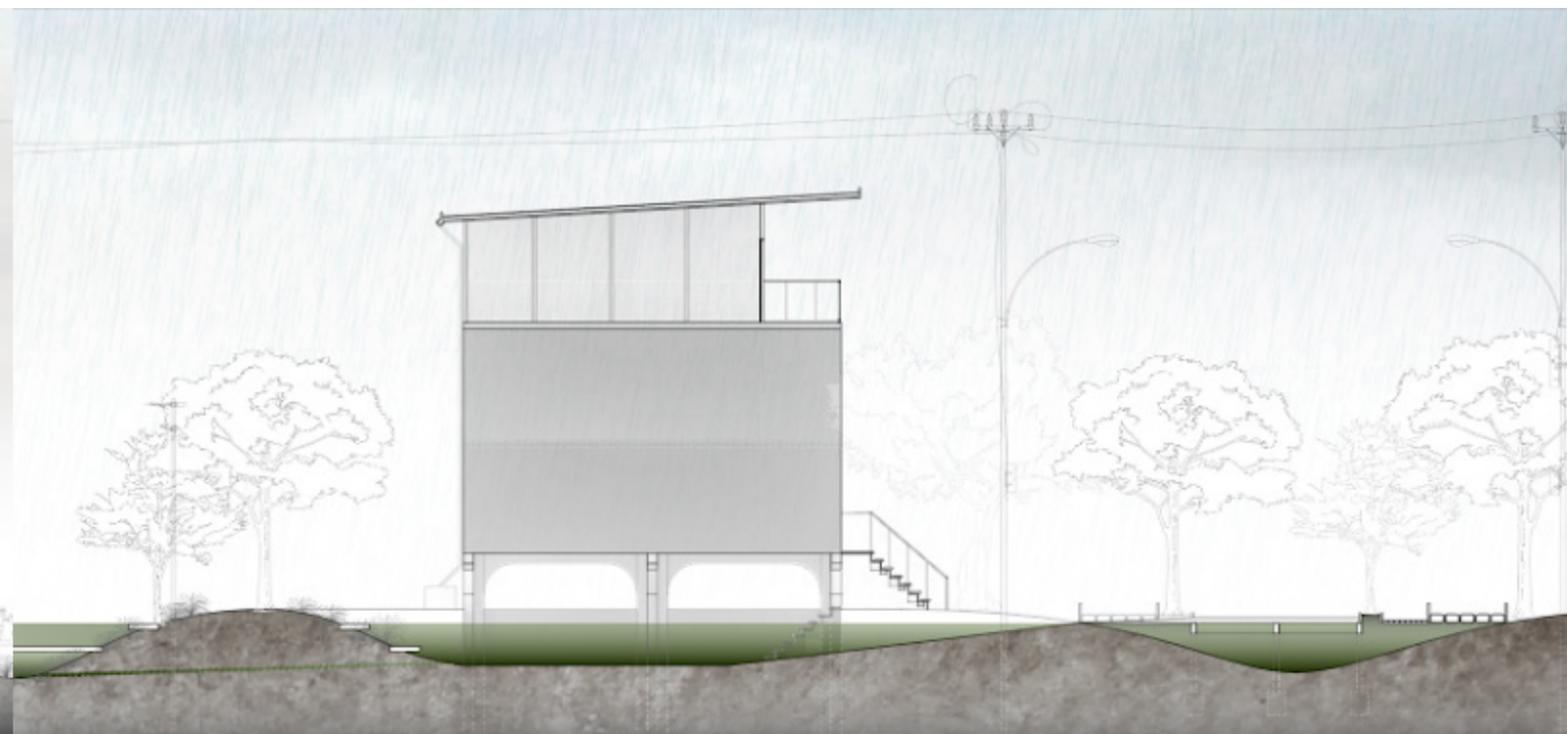
The Belt Parkway links with green spaces and wetlands to slow down water.



The project anticipates engagement at various scales at different times.



Toolkit at the single-story detached housing typology.



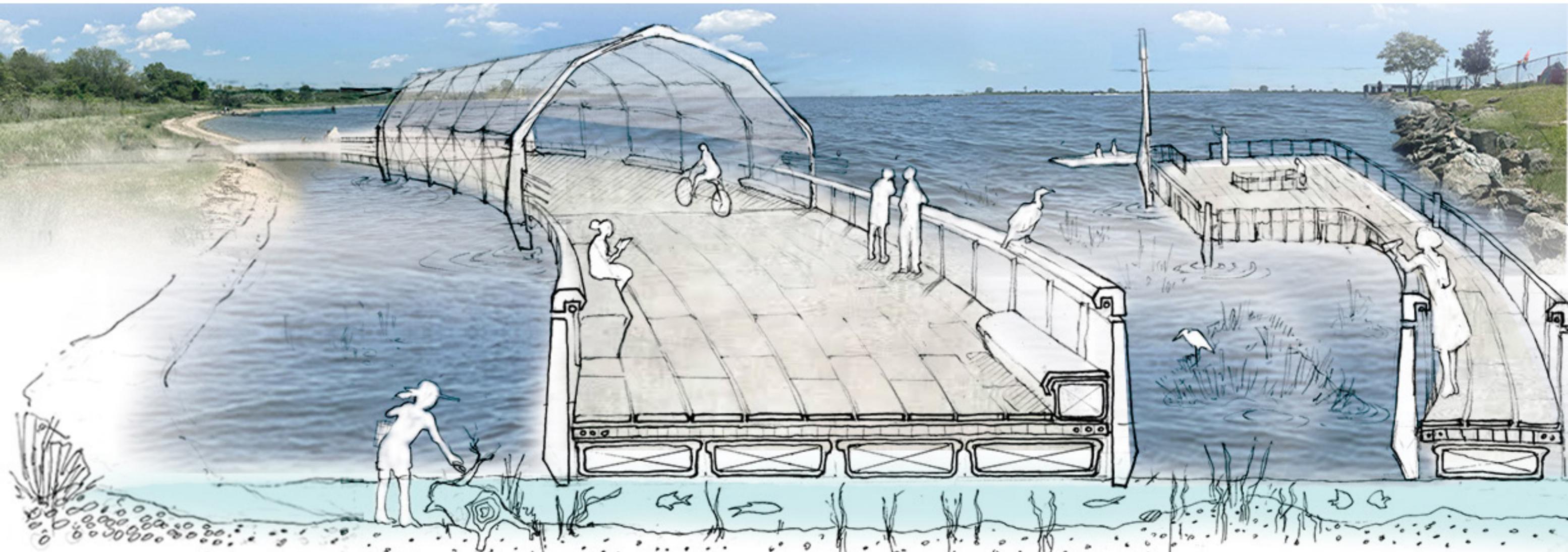
Toolkit at the multi-family attached housing typology.



Transformation of ground and buildings to anticipate inundation.



A porous Belt Parkway for water and people.



As Canarsie gives space for water to enter, Jamaica Bay is envisioned to give public space back to the community.

The water's edge is activated and people can once again connect to New York's intertidal ecosystems.

Sweetwater Wetlands Park & Water Scarcity in Arid Regions

Urban Theory and Design

Faculty: Noah Chasin & Joseph Huennekens

Sweetwater Wetlands Park is a constructed wetland in the American Sonoran Desert. Built in 1996 by the city of Tucson Arizona, it is a water repository for Agua Nueva Water Reclamation Facility, riparian habitat, and public green space (Tucson Water 6). Sweetwater reveals evolving narratives about the tense relationship between people and water in this region. This multi-faceted intervention highlights water as an important and fragile resource in an arid landscape.



Figure 1 [left]: Aerial Photograph of Sweetwater Wetland Park. Source: About Sweetwater Wetlands and Access.

Figure 2 [center]: Wastewater Treatment and interaction with Sweetwater Wetland. Source: Sweetwater Wetlands: Water, Wildlife, and People.

Figure 3 [right]: One of Sweetwater's sheltered vista points looking at the wetland. Source: visittucson.org

The aerial view of Sweetwater in Fig.1 conveys a mitochondrial design contained by soft edges. The organelle-like interiors hold recycled water and wetland biodiversity. Sweetwater's biomorphic scheme is linked to its hydrological and biological behaviors. As gravity directs recycled water through the ponds, solids and toxins are captured by riparian vegetation and filtered by microbial processes (Tucson Water 6). Fig.2 reveals that Sweetwater is a node within Tucson's intricate water system. After the filtration process, water goes to schools, parks, and golf courses, and is put back into the dormant Santa Cruz River (Left of Fig.1) for recharge (Tucson Water 6). Sweetwater's architectural plan is woven by winding pathways and made accessible to people. The project uses the spatial qualities of a riparian environment to enhance the human experience. A person can be immersed under native tree canopies, meandered along paths with educational signs, or enjoyed tranquil moments sitting next to the water. An example of a sheltered space is shown in Fig. 3 where people can rest and observe wetland wildlife. Sweetwater is a rare space in Arizona with a considerate design of water, yet there are few texts about the project. To unearth the significance of the project, a zoomed-out context is needed.

Water is a scarce resource in Arizona and its sister arid regions. Tucson depends primarily on its aquifers, or groundwater, which has been heavily depleted over the years. Meanwhile, Tucson water is projected to serve more than one million people by 2050 (Tucson Water 5-6). Groundwater deficit combined with growing water demand signaled city action. One of these actions is the Arizona 1980 Groundwater Management Act, which regulates groundwater usage and management to "emphasize long-term reductions in water use" (City of Tucson Water Department 12). Placing restrictions on groundwater forced the city to expand its water source. This led to the construction of the Central Arizona Project (CAP) in 1993 - a \$4 billion federally funded water infrastructure - for Arizona to leech into the Colorado River. Roughly 30 million people drink from the Colorado River. Additional to the six Colorado Basin States, CAP added populous cities like L.A., Vegas, and Tucson to this water stock (Akhter 48-52). The Colorado River, having to meet high interstate dependency, is also vulnerable to seasonal flux and climate change. This is a problem for Arizona because it agreed to junior rights to compete in times of declared shortages (Akhter 58). A billion-dollar investment seems unstable because this water source is already overworked and Tucson is at high risk of water shutoff during major droughts.

An existential water issue requires not only physical intervention but a philosophical one. Additional tactics to address water scarcity in Tucson involve people, money, and education. This includes a monetary strategy to charge more for potable water and less for reclaimed water (Akhter 54). Conservation campaigns like Beat the Peak ask Tucsonans to voluntarily reduce their water usage at high noon. The city also carries out public service announcements, public info sessions, and lectures (City of Tucson Water Department 12). Monetary restraint, usage moderation, and education are sweat equity to deal with the collective water problem. Despite the city's many efforts, there are shortcomings in its action to acknowledge wetland ecology. Destruction of riparian habitats is directly linked to ground-water pumping. Historic overconsumption of aquifers gutted the water table linked to riparian streams. The disconnection of groundwater from streams starves wetlands and their native trees like Cotton Wood and Mesquite (Webb 308-9). Loss of riparian habitats have major consequences because "60-75% of Arizona's wildlife are dependent on riparian habitats for survival" (Tucson Water 11). While the city is investing in transporting water across state lines, the ecology within its city is at risk. Although many large-scale policies and tactics were employed, the city needs a protective and management approach (Webb 320). Ecology must be integrated into the city's physical and philosophical strategies.

Sweetwater Wetlands Park, positioned in its geographical and historical contexts, addresses many of the city's efforts in dealing with the city's water crisis. The project's functionality reacts to the city's need to recycle and reuse water while restoring groundwater. This is crucial because recycling water is a "major plank in Tucson's resilience strategy" (Akhter 56). Unlike large infrastructure like the CAP project, it is a softer and multi-layered infrastructure that invites nature and people. Water restoration and recycling at Sweetwater becomes spatial, which welcomes people and exposes them to the water processes. The project incorporates ecology and land restoration into its design. Placing back effluent water into the land already shows promise as we see "new riparian area downstream from the locations of the historical ones and north of Tucson" (Webb 318). This multi-use project actively participates in the city's sustainable water system while building back habitats that were lost due to overconsumption.

The complex water crisis in arid regions requires broader and more collective multi-scalar transdisciplinary actions. Sweetwater Wetland Park is a small project in the larger scheme. The success of Sweetwater Wetland is in its design dealing with the entanglement of water system, ecology, and history at the city scale. Dealing with the scarcity of water and habitat loss in this region, the design is biological and hydrological sensitive. Sweetwater is a conscientious intervention well integrated into the land and the water system.

Works Cited

- 2012 Update Water Plan: 2000–2050 City of Tucson Water Department. City of Tucson Water Department, Dec. 2013, https://www.tucsonaz.gov/files/water/docs/2012_Update_Water_Plan_2000-2050.pdf.
- About Sweetwater Wetlands and Access. 27 May 2014, <https://www.tucsonaz.gov/water/about-sweetwater-wetlands-and-access>.
- Akhter, Majed, et al. "Lost in Translation: Resilience, Social Agency, and Water Planning in Tucson, Arizona." *Critical Planning*, Summer 2010.
- Sweetwater Wetlands Park. <https://www.visittucson.org/listing/sweetwater-wetlands-park/25919/>. Accessed 12 Aug. 2022.
- Sweetwater Wetlands: Water, Wildlife, and People. Tucson Water, 2017, https://www.tucsonaz.gov/files/water/docs/Sweetwater_Adult_Web.pdf.
- Webb, Robert H., and Stanley A. Leake. "Ground-Water Surface-Water Interactions and Long-Term Change in Riverine Riparian Vegetation in the Southwestern United States." *Journal of Hydrology*, vol. 320, no. 3–4, Apr. 2006, pp. 302–23. DOI.org (Crossref), <https://doi.org/10.1016/j.jhydrol.2005.07.022>.

03

Living Networks

Urban Design Studio II - Atlanta After Property Volume 2

Faculty: Emanuel Admassu, Nina Cooke John, Chat Travieso, A.L Hu, Regina Teng, Jelisa Blumberg, Galina Novikova

Place: Techwood Homes - Atlanta, Georgia

Partners: Jade Durand, Deepa Gopalakrishnan, John Max Grunewald

Property is the catalyst of a racialized system of perpetual displacement, prioritizing security, power, and capital. It is an alienating framework of private ownership privileging the nuclear family as opposed to collective belonging.

Techwood Homes is the country's first public housing development and subsequently the first formalized segregation policy. Years of neglect required tenant-led organizing to ensure security, community support, and empowerment. The current luxury townhouse typology - individualized for the single "family" - moved even further away from the dense typology which supports social encounter and culture.

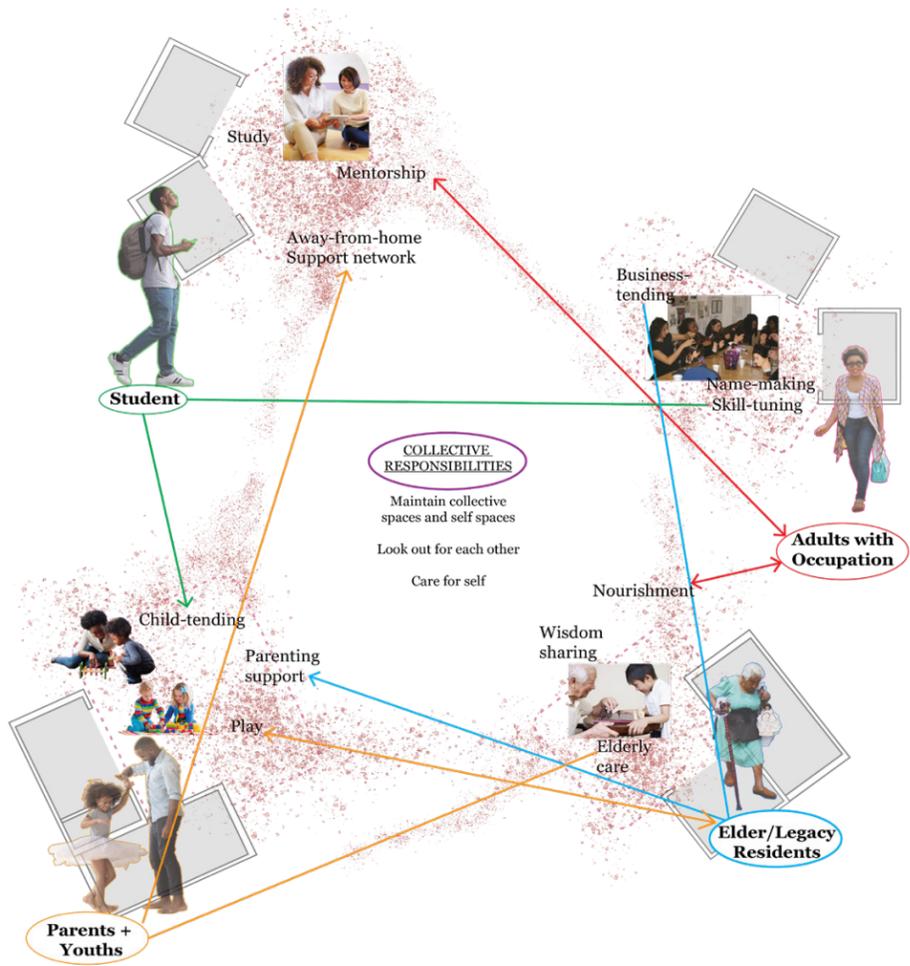
Living Network, imagines a world after property where home is not subject to a monetary obligations, but rather on a network of relationships and responsibilities - a model of collective stewardship that ensures security in place. It is a system of communal mutual aid to ensure embeddedness.



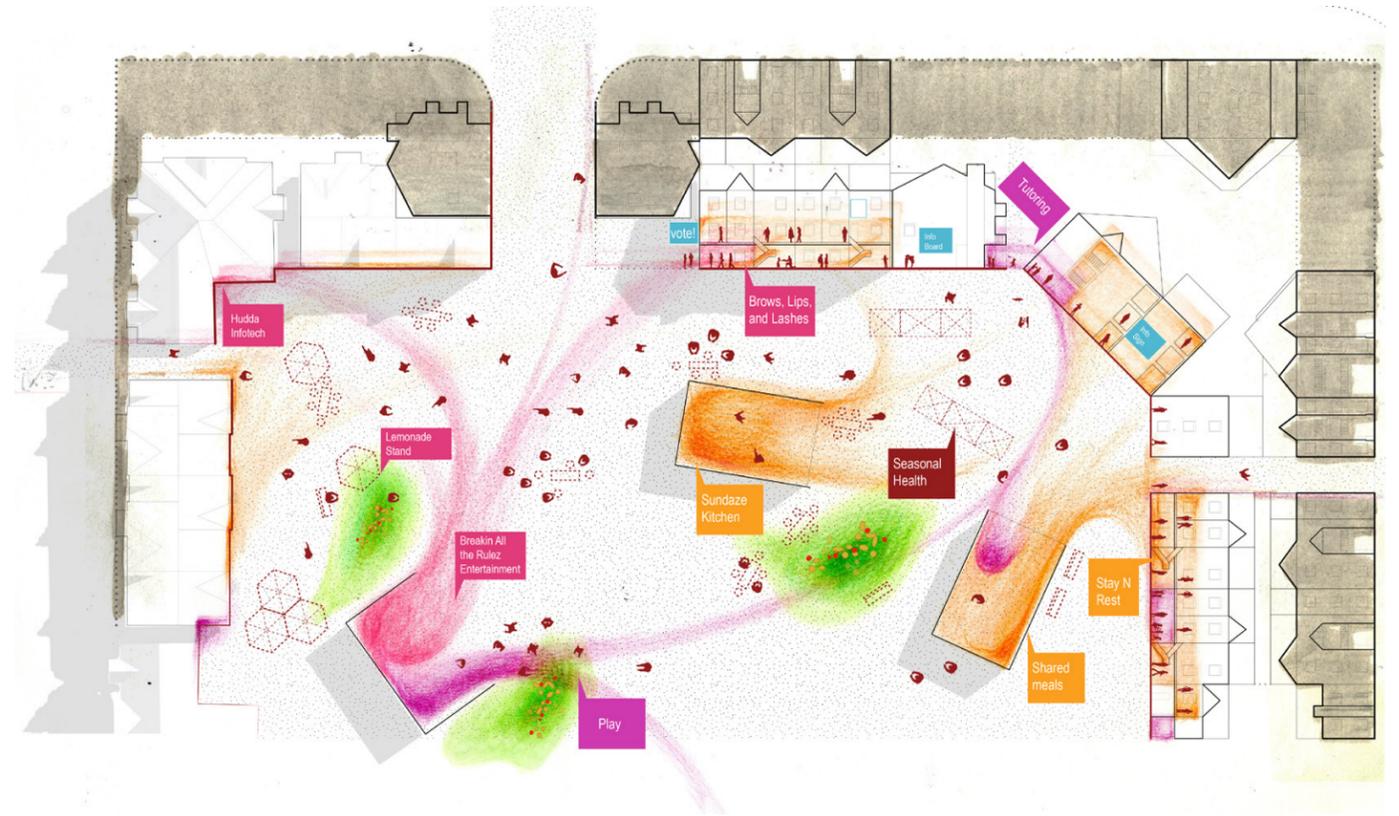
Collages explore relationships expanding beyond the traditional nuclear family - community transcending the limiting familial tropes.



By refusing the single units, walls that divide are surgically removed for sharing. Traditionally prescribed spaces become a mixture of programs.



Relationships can manifest in spaces of childcare and elderly care for kids, students, and the elderly as in-between spaces that could expand.



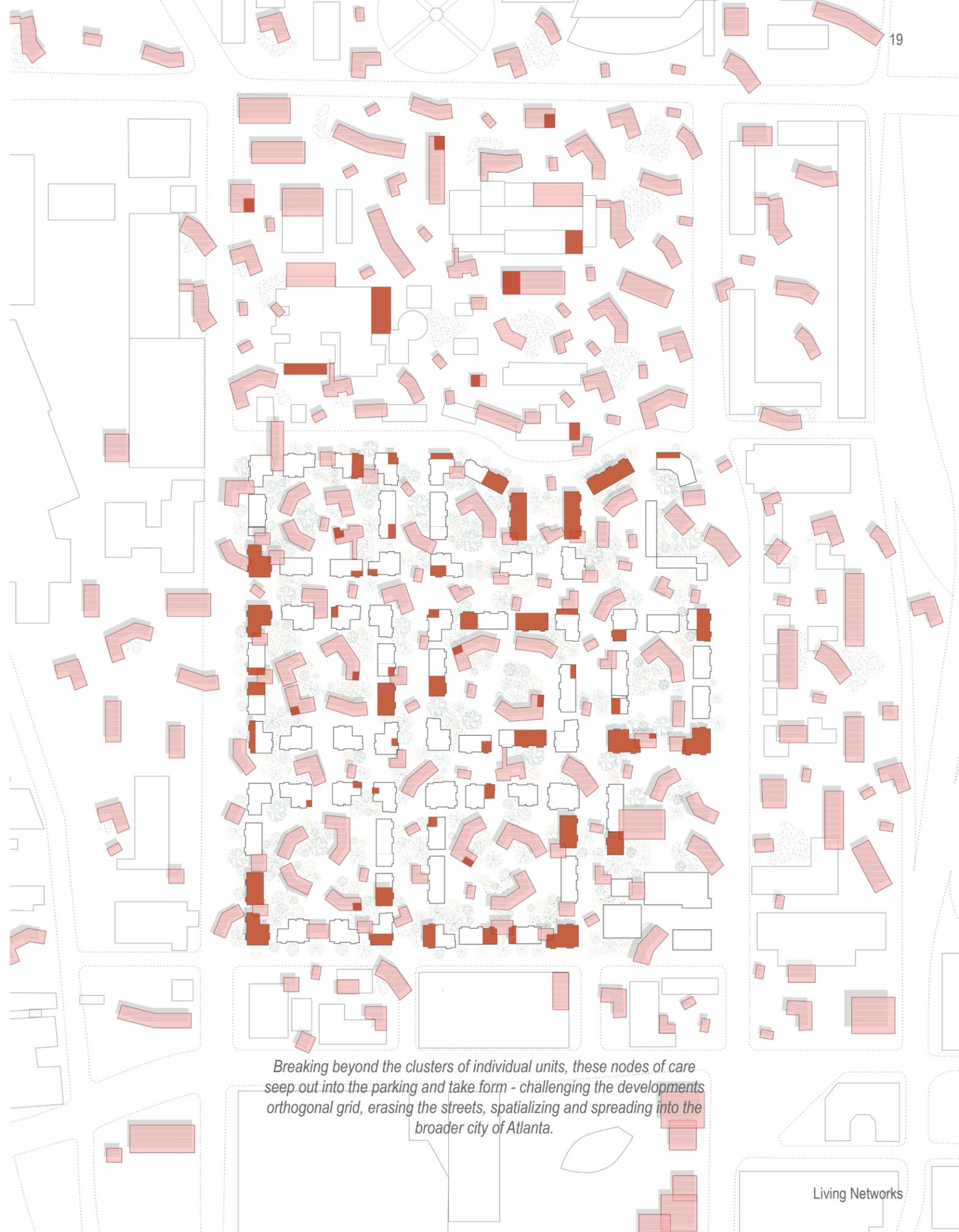
By grounding local businesses, stewards can live and work on site to ensure rootedness in the community.



Closeness and visual connectedness forms communal responsibility.



People are already living in non-traditional household. After-Property imagines a future in which this relationship is embraced.



Breaking beyond the clusters of individual units, these nodes of care seep out into the parking and take form - challenging the developments orthogonal grid, erasing the streets, spatializing and spreading into the broader city of Atlanta.

Blue New Deal - Milwaukee, WI

UD Seminar - Resilient Coastlines

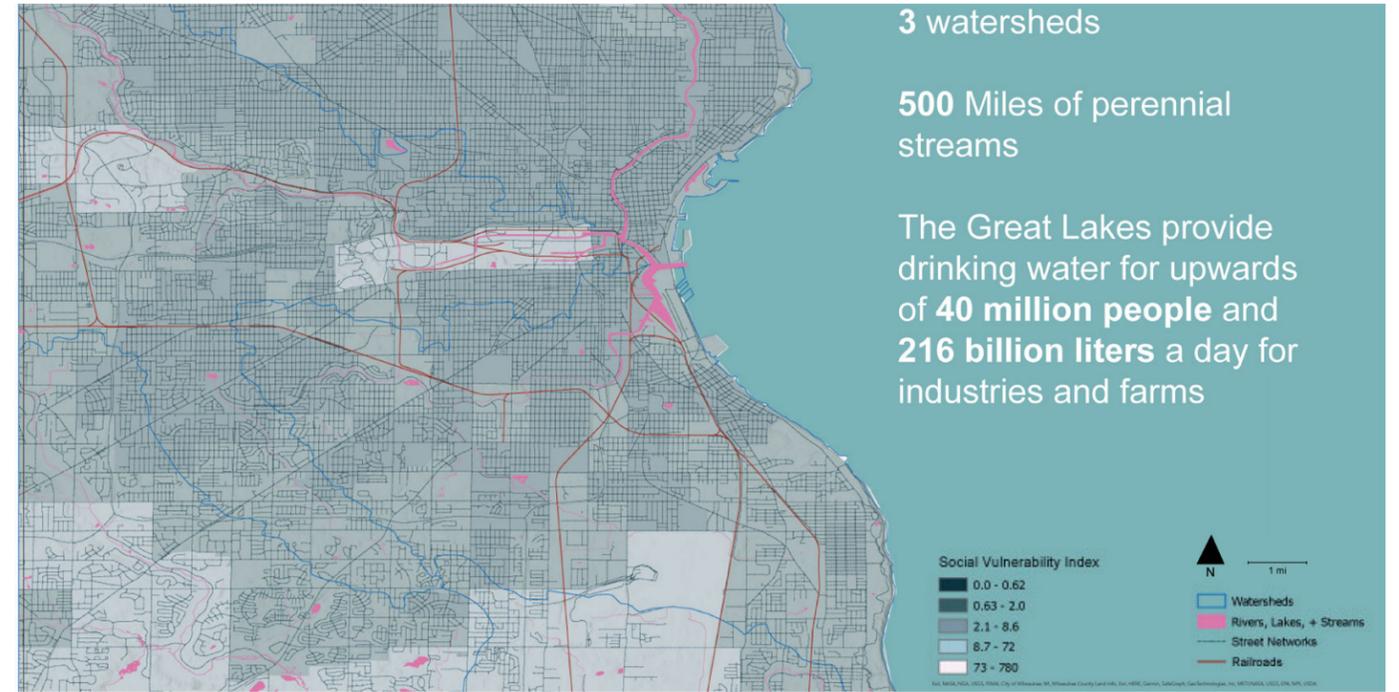
Faculty: Kate Orff

Partners: Maria [Gaby] Gabriela Flores, Caroline Wineburg

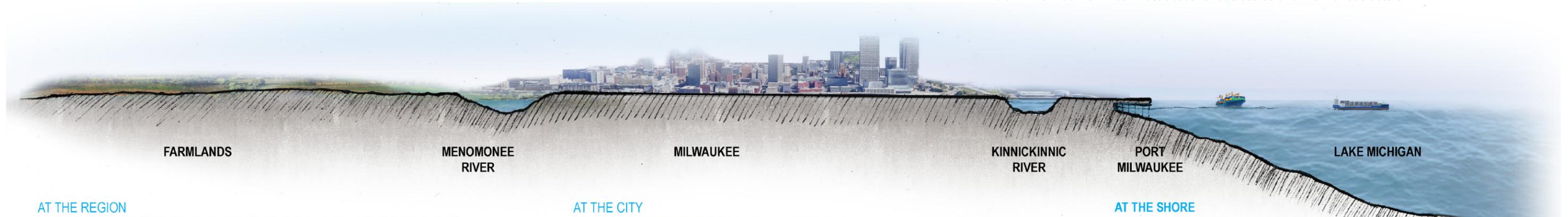
Arcgis Story Map - <https://storymaps.arcgis.com/stories/ad38483f1e1b47c69146261b73cdef47>

Freshwater is essential for Life on Earth. The Great Lakes contain 20% of our planet's accessible freshwater. Pollution to invasive species have affected one of the world's greatest sources of freshwater. Many factors contribute to stress like: residential, commercial, agricultural and industrial development, shipping, and climate change.

The Blue New Deal can be a multi-scalar policy framework for Milwaukee working from the regional while linking to the on the ground work at the local scales. We believe this policy can serve to reduce pollution, protect coastal habitats, halt the spread of invasive species, secure jobs for a working waterfront blue economy, and ensure environmental justice for underserved coastal communities with access to clean water as an inalienable right for generations to come.



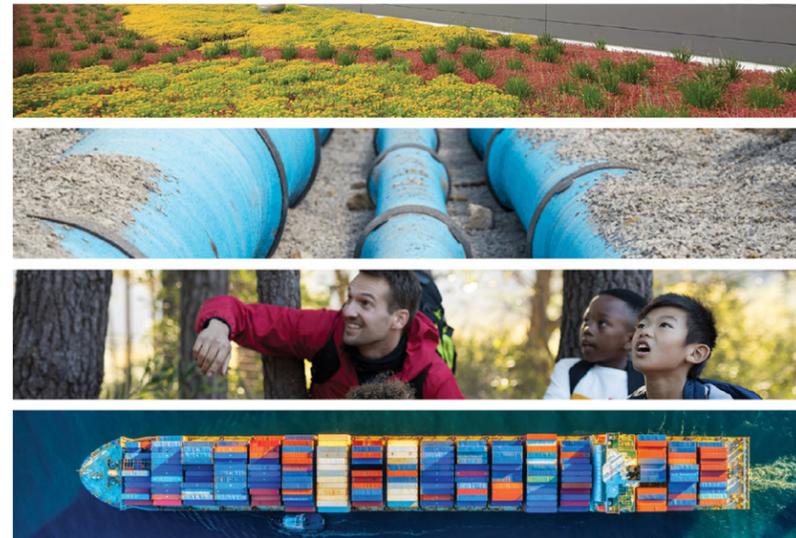
Top: Milwaukee is a coastal city and its water is an interconnected system. Below: The Blue New Deal must act at various scales and with various actors.



AT THE REGION



AT THE CITY



AT THE SHORE



- SAFEGUARDING WATER QUALITY
- PROTECTING AND RESTORING COASTAL ECOSYSTEMS
- SCALING OFFSHORE RENEWABLE ENERGY
- ADAPTING & BUILDING RESILIENT INFRASTRUCTURE
- COMMUNITY RESILIENCE - JOBS & SOCIAL INFRASTRUCTURE

Seed Bombs Float

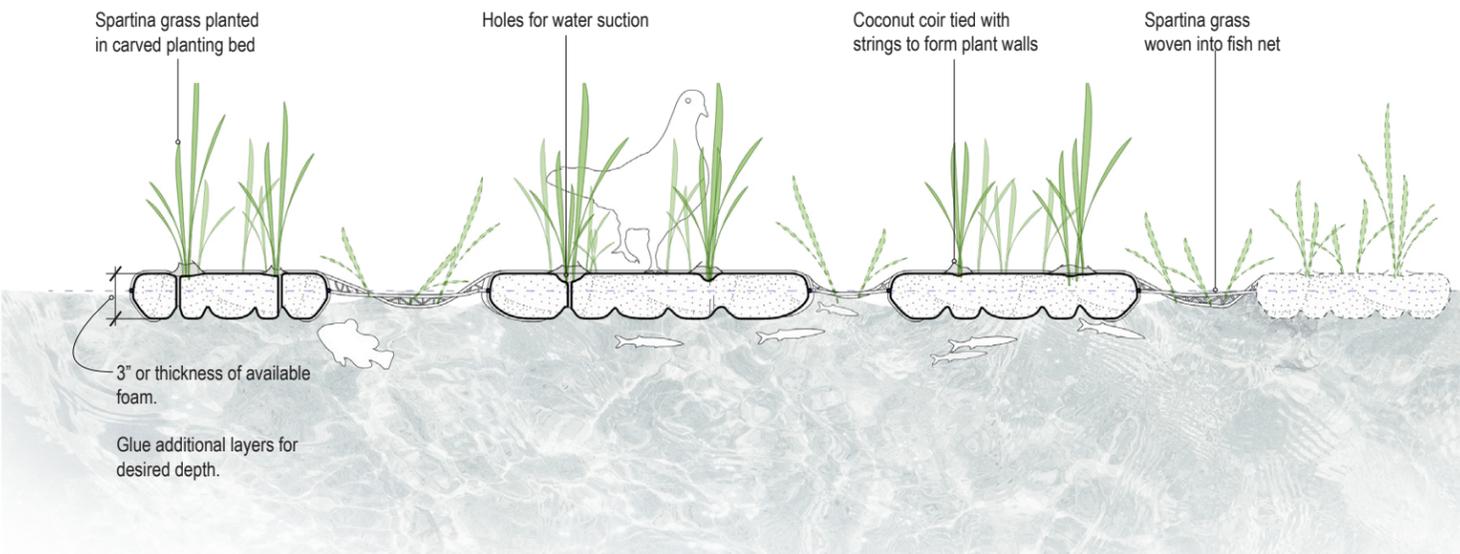
Seed Bombs - Urban Ecologies & Landscape Technologies GSAPP Elective

Faculty: Emily Bauer

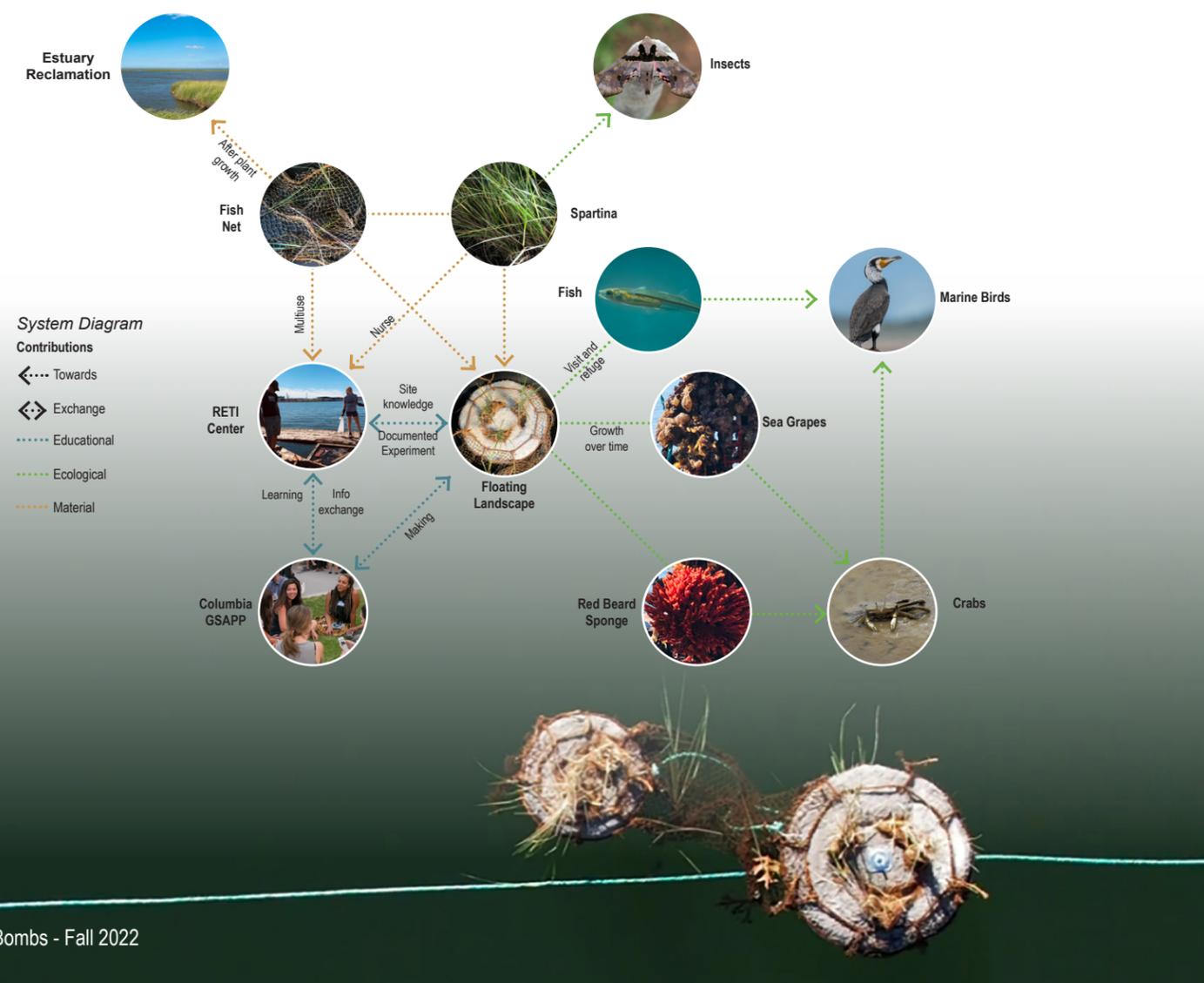
Place: Gowanus Bay in Red Hook, Brooklyn

The project encompassed learning of urban ecology, landscape, and site understanding at RETI (Resilience, Education, Training, Innovation) Center. This exploration will contribute to RETI Center's ongoing efforts to prototype and study floating typologies in the Gowanus Bay, Brooklyn.

This floating landscape took inspiration from intertidal mudflats - a landscape that is native to New York's water's edge. Rhizomatic nature of salt marsh plants led to explorations of interconnectedness through netting and knotting. Submerged and emerged geomorphology of the wetlands inspired sculpting of the float. Multiple hand-carved foam pieces coated with concrete turn into solid lily pads. Coconut rope and fish nets held and linked the pads together. Spartina were planted on top of the floats as well as in between the nets. Lily pads became solid points and the coir become vectors for future spreading along Gowanus Bay - (re)introducing a native landscape to the water.



At the sectional depiction, the float interacts with the ecology above and below through its morphology and materiality.



Above: Zoomed in and out photography documentation of Seed Bombs Float. Left: The float is envisioned as part of the systems on site. Image overlaid below is of float deployed in water.

06

Centering Cartagena's Ciénaga de la Virgen

Healing Biodiversity and Livelihoods in Tourism's Wake

UD Studio III Water Urbanism - Double Displacement at the Water's Edge in Colombia

Faculty: Kate Orff, Dilip Da Cunha, Geeta Mehta, Adriana Chavez, Thad Pawlowski, Maria Palomares Samper, Cesar Delgado

Place: Cartagena, Colombia

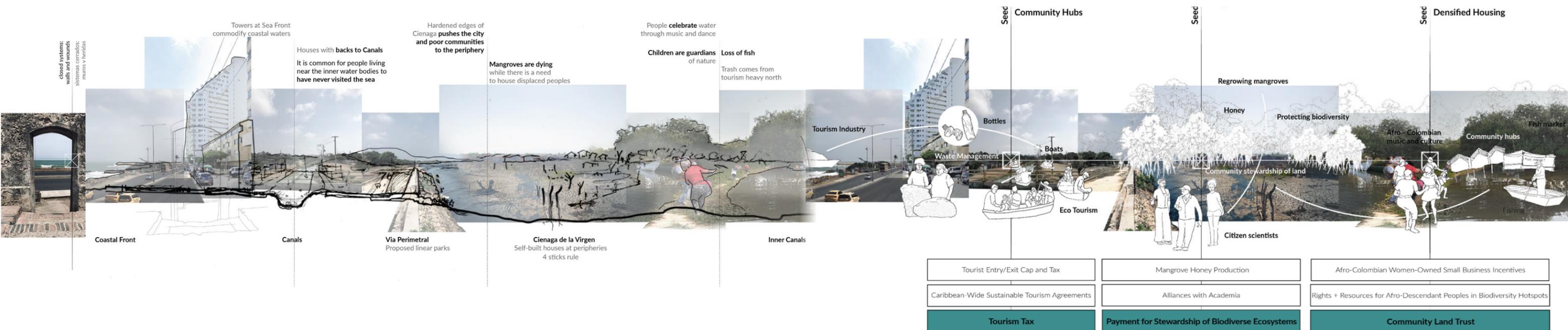
Partners: Jade Durand, Deepa Gopalakrishnan, María [Gaby] Gabriela Flores

Cartagena faces an untenable growth of extractive tourism which leaves negative impacts on the environment and its communities. The Ciénaga de la Virgen - a critical part of the city's watery urban landscape that connects the Caribbean Sea, the Bay of Cartagena, and the canal network - is collapsing from pressures of urban expansion and climate change. Like Cartagena's confluence of coastal tides and inland rains, our design exists at intersections of biodiversity restoration and celebration of intergenerational Afro-Colombian heritage that can support locals and tourists. The project envisions establishing an amphibious housing armature, seeding ecological stewardship, reviving water mobility, and enhancing economic opportunities for locals.

Inspired by the music and culture of Cartagena, our project enhances places of gathering and coming together in order to form pluralistic, restorative spaces of healing that are nested within a larger transformation of the Ciénaga, involving ecosystem services, incentivizing collective land tenure, and taking a supportive stance towards healing from injustices of extractive histories.



An activated Ciénaga

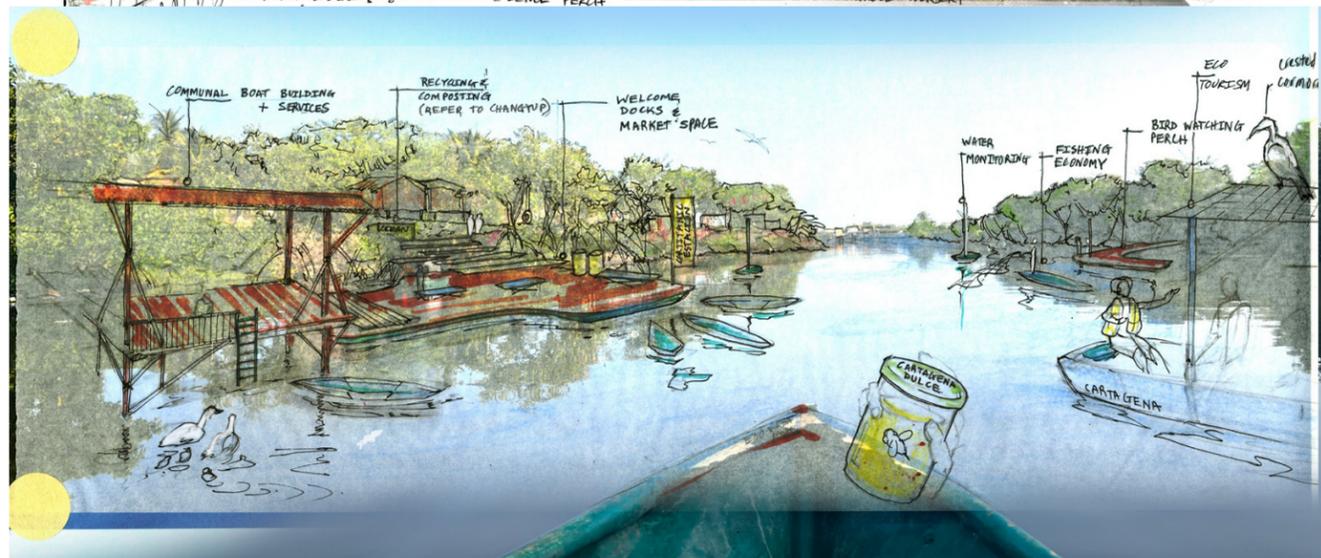
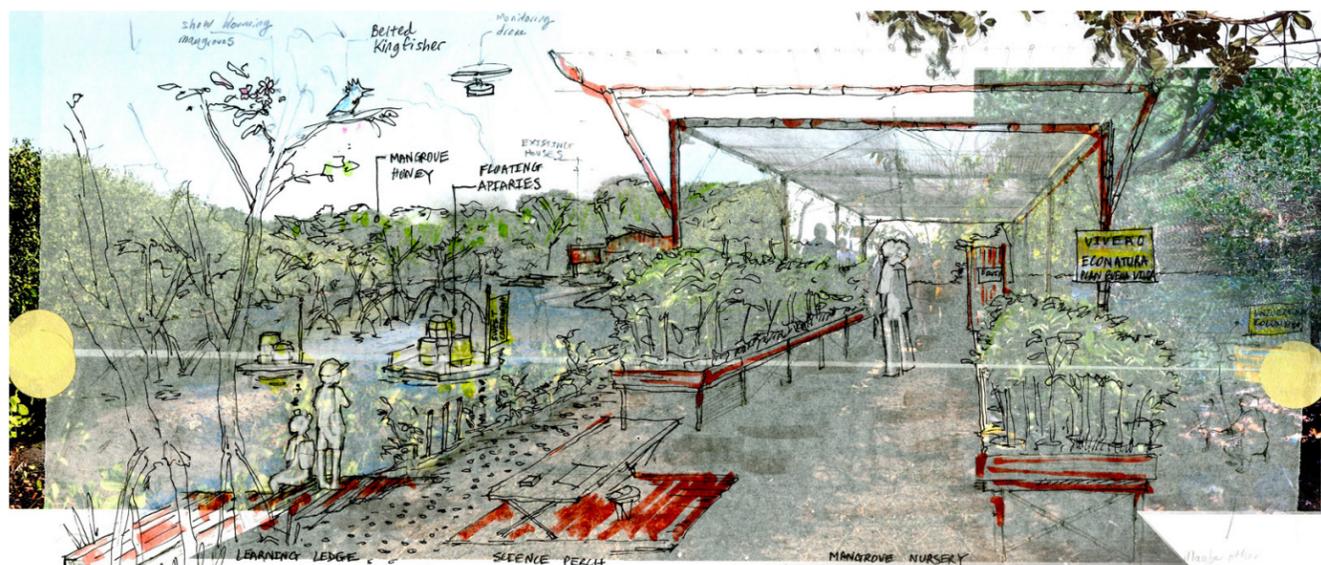


We recognize open systems on the horizon and closed spaces on vertical axes. Emblematic is the city's colonial wall.

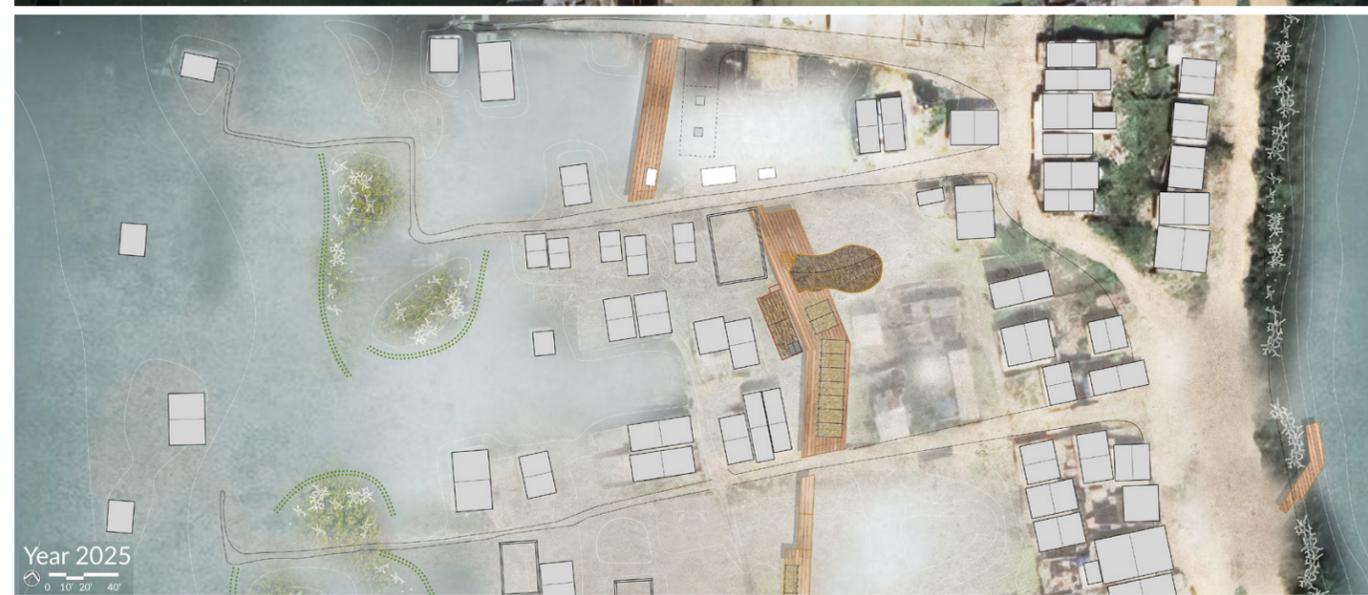
Three policy frameworks to implement seeds of change.



Centering Cartagena means supporting the on-the-ground experiences and actions. This includes expanding mangrove restoration and collaborating with ecology, implement spaces for skills training and learning, while reintegrate living with water.



Hand Rendered Visions in the near 2025 and 2035 future.



Transition away from an encroached and inaccessible ciénaga towards a more adaptable and public edge.



Sleeping Pods for visitors

Community Septic Tank

Community Hub

Amphibious housing

Increase in amphibious Housing

Bouyant Platforms

Open Markets



Self governance area Makers Space Learning rooms Rainwater harvesting Communal Kitchen Inter-generational living Septic Tank Buoy Mangrove Infrastructure Carbon data monitoring hubs Floating Apiaries Eco Tourism Tourist sleeping pods

Floating Community Hub

Amphibious Housing

Mangrove Infrastructure

Carbon data monitoring hubs

Floating Apiaries

Eco Tourism

Tourist sleeping pods

The Ciénaga's amphibious community in 2050.



*View of amphibious housing [left], community hub [center], and public waterfront [right].
The Ciénaga de la Virgen is no longer at the peripheries, but a place of livelihood.*

06 Models of Reparation for Canada's Native Communities

Cartography & Property GSAPP UD Seminar

Faculty: Molly Burhans

Place: Central Canada

Partners: Oréoluwa Adegbola, Marina Guimarães, Aashwita Yadav

Arcgis Story Map - <https://storymaps.arcgis.com/stories/484ee6b269c147a298bd16cb36e620c7>

There is still much collective work in healing the historical violence suffered by First Nation Peoples in Canada. As the church moves towards reconciliation for injustices of boarding schools and repatriation of taken lands, we supplement cartography tools to expand this progress. In order to do this, we mapped properties held by the Jesuits in Canada and analyzed geo-spatial layers from various sources. Legal, ecological, and risk-related data rendered the properties not as isolated points but part of a larger system. We also identified actors and agents that have a direct and indirect impact on these properties and examined potential new models for land reparation.

Based on the analyzed ranking of the properties, certain models of land reconciliation can be applied. For example, zones of high protected biodiversity and indigenous population mean a model that includes indigenous stewardship and payment for ecosystem services while others could mean physical land return. Rankings are to be recommended based on the context and must be made in partnership with Indigenous and Jesuit stakeholders.

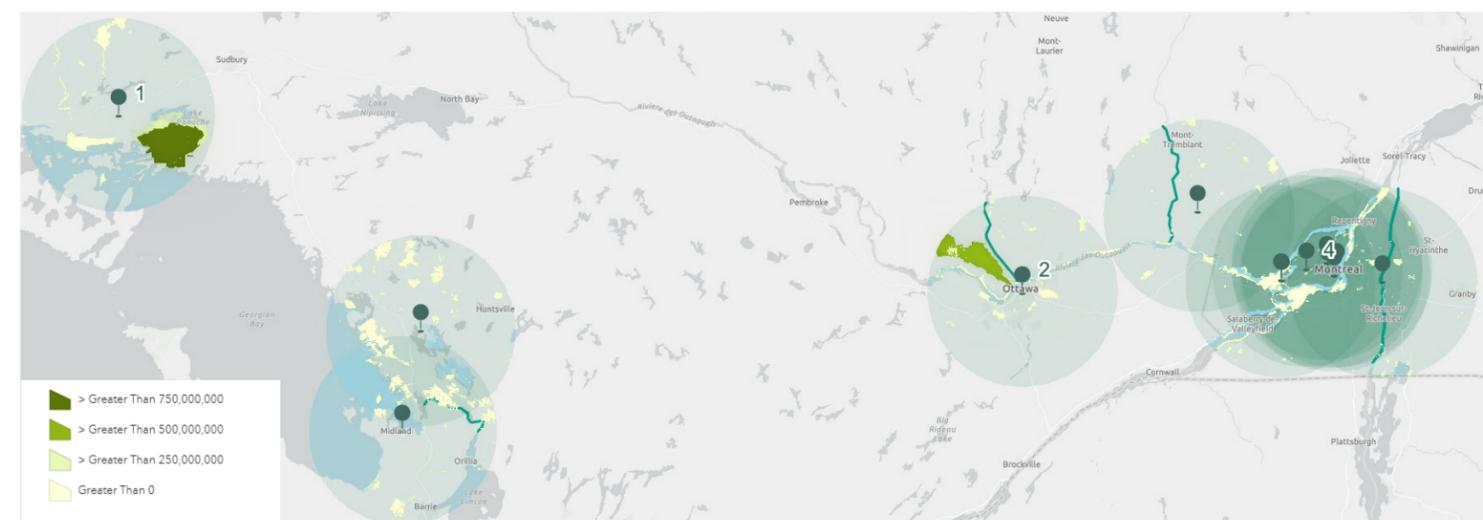


“ For many Aboriginal cultures, land means more than property – it encompasses culture, relationships, ecosystems, social systems, spirituality, and law. For many, land means the earth, the water, the air, and all that live within these ecosystems.”
- Indigenous Foundations - The First Nations Studies Program

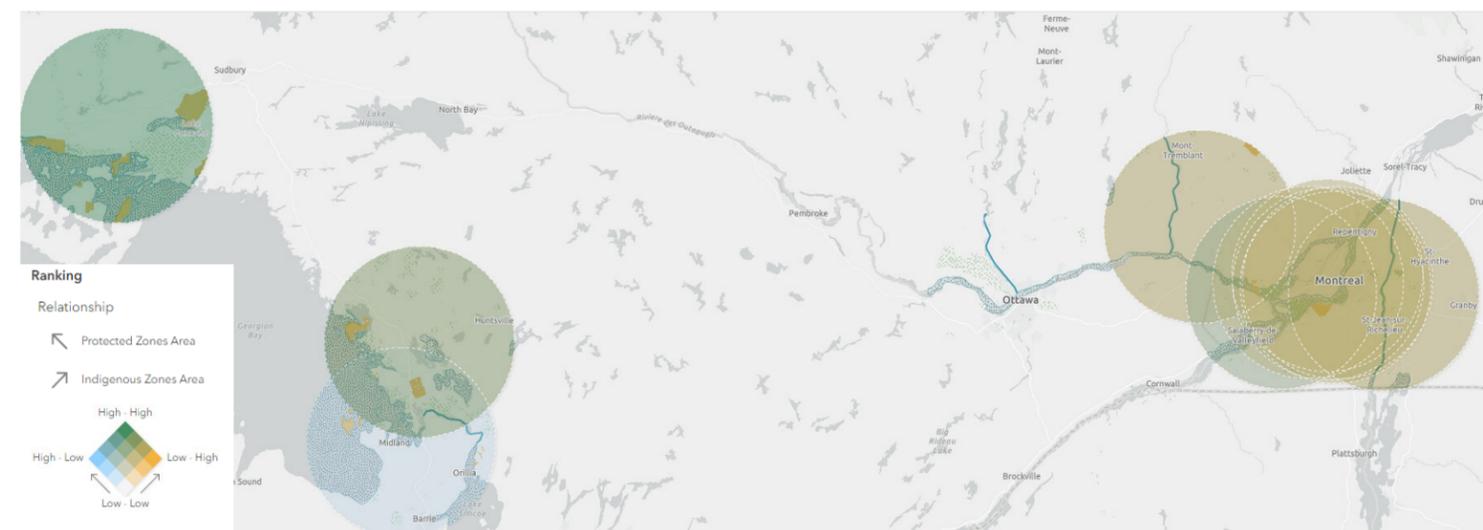
The call for land reparations and reconciliation.



Largest Indigenous areas within 50km buffer of Jesuit Property.



Largest zones of protected biodiversity with same buffer.



Combined Ranking of sites with Indigenous areas, protected wildlife zones, and natural (constructed) disasters.

07

In and Out of Frames

Central Park as A Bird Sanctuary [episode I] & Constructed Fictions [episode II]

Reading *New York Urbansim* & continued in *Opaque Cartographies* GSAPP Elective
Faculty [summer] - Justin Davidson, Jesse Hirakawa, Praditi Singh. Faculty [spring] - Patricia Anahory
Place - Central Park, New York City

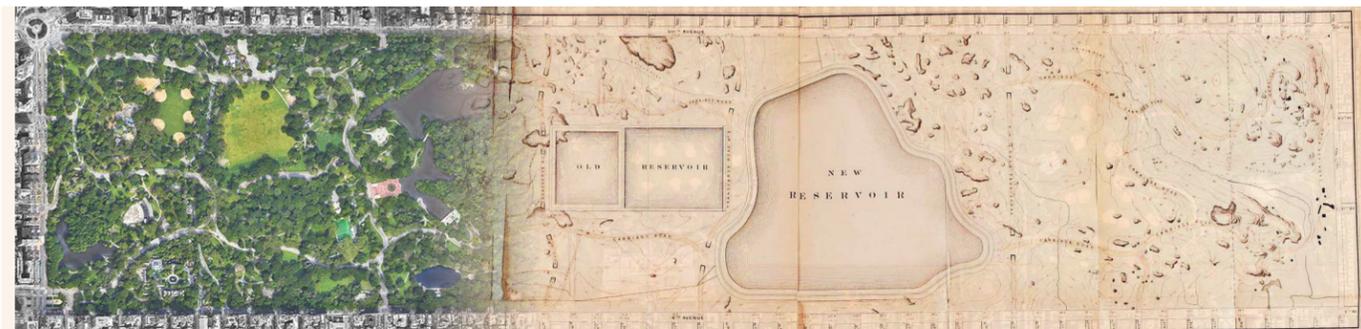
Introduction

I spend a lot of time IN central Park. Now one year in NYC, this park has offered me a place to do one of my most meaningful activities, birdwatching. It became my method of 'deriving' and fully immersing myself in a place. Lenses, both from my binoculars and the camera, allowed me to see at different scales. I have grown as an urban designer to gather connections and recognize complexitie. In the Summer [episode I], Birdwatching revealed to me an ecological system right above us and a community that advocates for birds. In the Spring [episode II], it became my opaque cartography tool for further investigate Central Park's history of displacement and injustice.

Episode I - [In Frames] A Bird Sanctuary in the Concrete Jungle Reflections

To view & explore - <https://storymaps.arcgis.com/stories/484ee6b269c147a298bd16cb36e620c7>

New York is in the middle of a major bird migration route called the Atlantic Flyway and act as a critical rest stop for migratory birds. Spaces like Central Park is crucial to not only humans. Natural systems are inseparable from our urban environment. We have built and coexisted at the intersection of many living systems. The bird system contributes greatly to the balance of our environment and thus our own health. We have an environmental responsibility to keep a healthy planet for our singers and pollinators. We have inherited a world with climate change and mass extinction. Urban designers must be ecologically conscious and champions efforts to mitigate climate risks and restore biodiversity.



Plan of Central Park 1859 and now.



Birds of Central Park through binoculars.



"The park, even being there, is very critical for birds." E.P.



"Let's protect Central Park because it's worth it for everybody." S.C.

Interviewed Birdwatching Experts of Central Park.

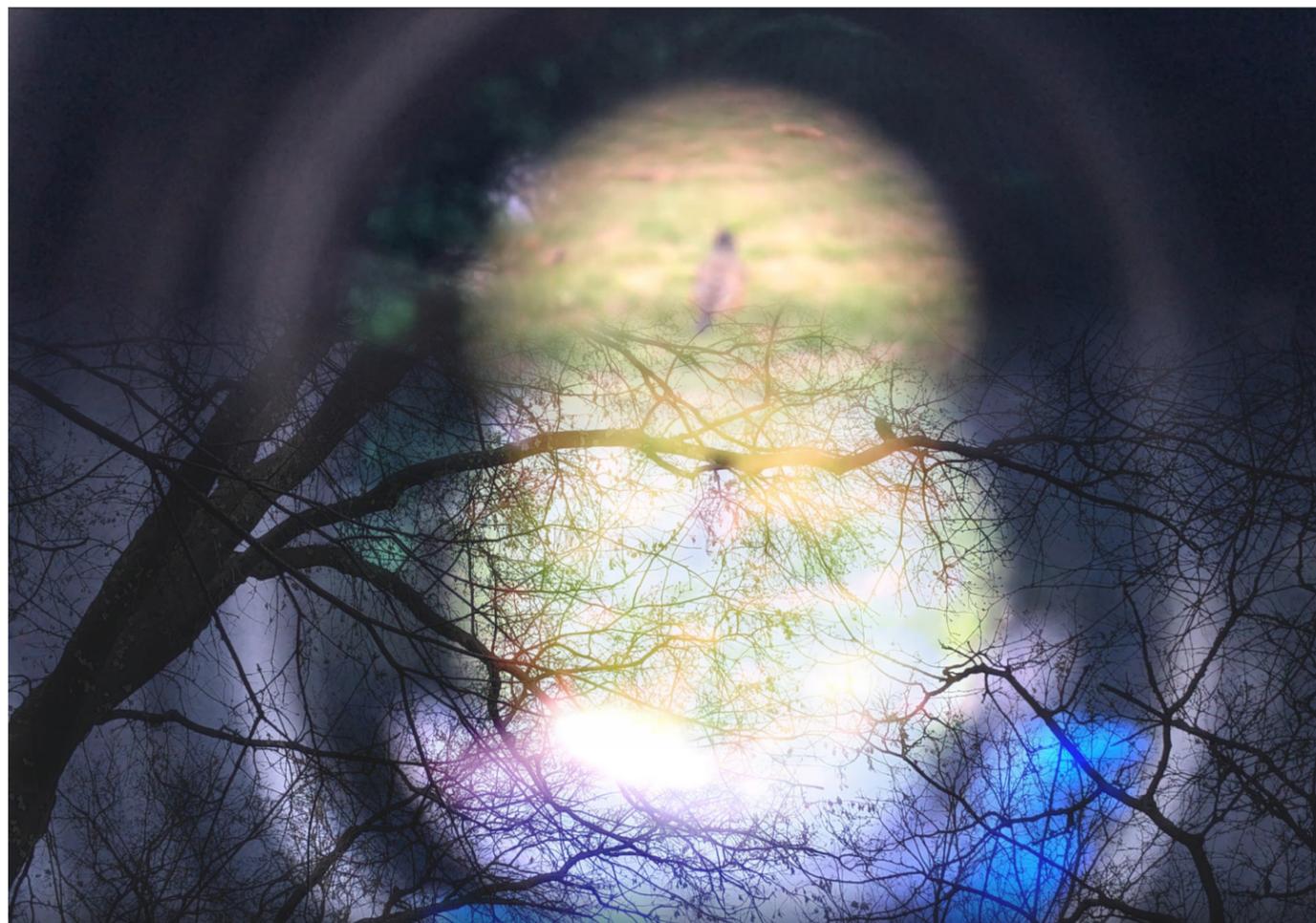
Episode II - [In & Out of Frames] Central Park's Constructed Fiction

To watch - <https://vimeo.com/824479266?share=copy>

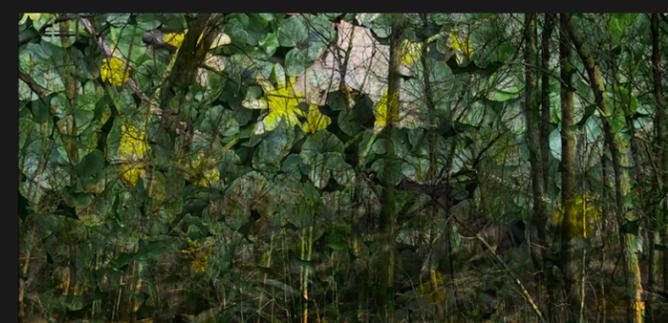
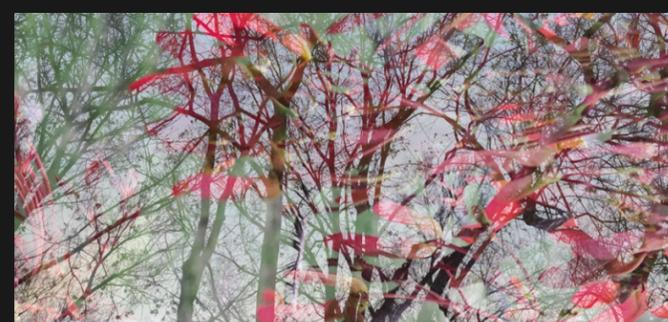
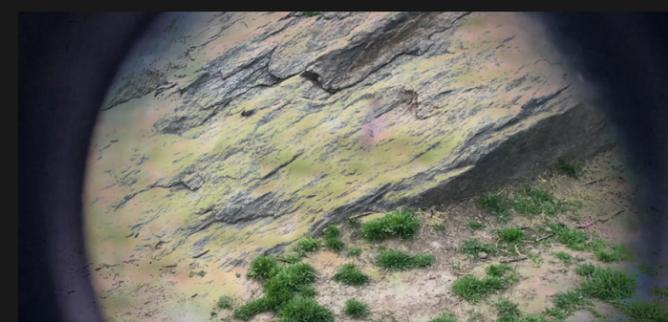
The Central Park Conservancy constructed signs that retell the stories of Seneca Village. But these narratives, I think, should be felt. Manicured lawns used to be the homes of families. They took root here because of violence and racism. A stone foundation that is there now used to be a church, uprooted, a community that was thriving and caring. Did you know people of Seneca Village also gardened? To think that some of the trees here, blooming and fragrant this spring, were nurtured by this community.

Central Park is a fantasy. The "heroes" conquered the land. That hard asphalt you walk on, imagine it once muddy. A once hilly and swampy landscape, is now constructed over and over again. Natural waterways were decapitated. Tanners Spring used to provide fresh drinking water to Seneca residents. The soil was carved and drowned. Yes, drowned to make reservoirs. Rocks are stubborn and hard to build on. Summit Rock still stands.

I see this park, and many others, as a multitude of woven narratives, sounds, and textures. They all exist and they all can be true - collapsed on top of each other. Landscapes are fictional and constructed with these complexities. Shifting in and out of frames can put these layers into conversation.



Jumping out of Frames from birds to constructed fictions.



Stills of collapsed recordings from derive of A Seneca Village Walk.

