

Sponge Zoning / The Gowanus RoofScape

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Brooklyn's Gowanus Watershed is a case-study in the water management problems of the global de-industrializing city that is witnessing unprecedented increases in density straining its existing infrastructure for handling water. The introduction of the Gowanus Canal onto the National Priority list for the EPA and its designation as a Superfund site in 2010 has raised the public consciousness of the toxicity of the waterway and focused needed attention on ecological relief of this post-industrial watershed's runoff and storm-water infiltration. New York, like many industrializing cities, developed an infrastructure of the Combined Sewer, a system that drains Waste-Water in the same system as surface run-off and storm-water, resulting in a health risk during times of storm overflow. Recently, much focus has been given to the water infiltration and remediation surface strategies within the neighborhood's streetscape and open space network, but relatively little attention has been paid to the other major contributor to storm-water runoff, the surrounding building roofs.

The research of this seminar investigated the inter-relationship between urban density within existing sewer-sheds through a rigorous examination of mass, volume and zoning within the Gowanus Canal Neighborhood of Brooklyn. Beginning with a documentation, classification and categorization of the building types by their respective Combined Sewer Outfall, the research determined which formal building types and zones were in the greatest danger of contamination during flood, and which building types and conditions were the greatest contributors. Following this, the research examined, buildings within their district by their formal type and drainage methodology as far as which buildings contributed to the sewer directly versus the streetscape, identifying opportunities afforded by the surface area retention capacity and site morphological strategy.

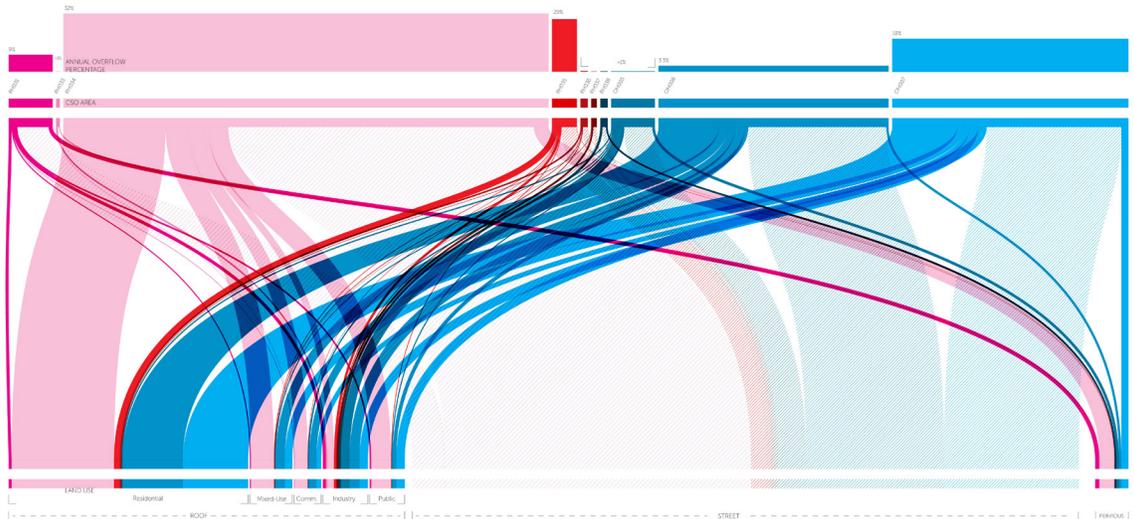
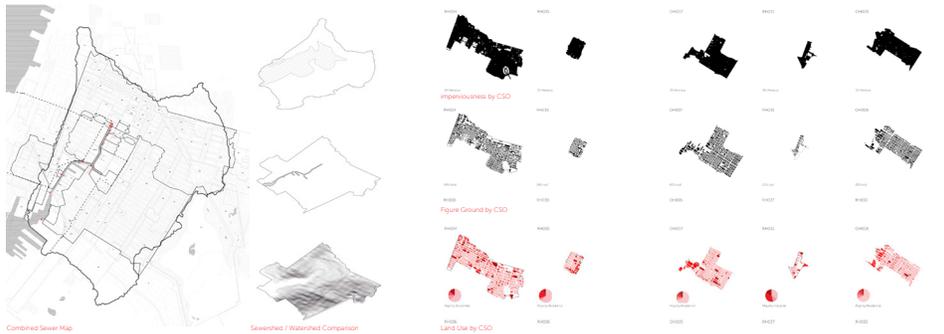
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being pursued at the ground-level, the seminar team pursued a public-private partnership methodology for proposing a series of changes for the existing urban Sewershed. Through a documentation of the current zoning envelope in relationship to its built mass on a study zone, the team uncovered latent opportunities within the existing condition for the implementation of future absorption and diversion retrofitting strategies, such as new roof geometry guide-lines, green roofs and other planting strategies, that could be applied throughout the watershed to increase infiltration alleviating the over-saturated infrastructure.

Going further, the group examined how new construction by individual owners, could re-mediate the existing roof conditions by creating a series of new sponge building typologies on the existing roof-scape. The team took the next steps to create a series of urban design guidelines through potential up-zoning revisions that would allow for developers to work across several roof-scapes parcels towards the creation of both new market-rate housing and public social benefits such as roof parks and recreational programming. The final product of this seminar will be made available to NY state and NYC Planning agencies, as well as the local non profit, The Gowanus Canal Conservancy who served as an local expert guide the project along throughout the semester.

SPONGE ZONING / THE GOWANUS ROOFSCAPE

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Sloped Complex
Perimeter Drainage

Flat Simple
Internal or One-Sided

Flat Complex
Internal / Central

Flat Small
One Sided Drainage

Flat Tall
Internal / Central

Surface Typology

Zoning Typology

Funnel

Umbrella

Wedge

Housing