Adaptive toolkit projects the impact of green infrastructure provisions on stormwater runoff and pollutant load

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The implementation of green infrastructure in retrofit projects to reduce flooding and pollution is a significant challenge in space-constrained and overly-developed communities which also have complex underground utility systems.

To overcome this challenge, researchers have developed an adaptive green infrastructure toolkit that can be tailored by both on-ground spatial size and underground depth of obstruction.

The work titled "An Adaptive Toolkit for Projecting the Impact of Green Infrastructure Provisions on Stormwater Runoff and Pollutant Load—A Case Study on the City of Galena Park, Texas, U.S." was published in the journal of *Landscape Architecture Frontiers*.

This study aims to assess the effectiveness of this toolkit in mitigating flooding and non-point source pollutants by demonstrating the case of the city of Galena Park, Texas, U.S., which has suffered from severe flooding as well as on-ground and underground space constraint issues.

The researchers first applied the toolkit to create a master plan for Galena Park and evaluated the effect of the plan by using the Delft3D-FM (Flexible Mesh) flood model alongside the Long-Term Hydrologic Impact Assessment (L-THIA) model.

The results demonstrate progressive reductions in stormwater runoff and NPS pollutants across different phases. These findings highlight the toolkit's effectiveness in improving water management and pollution control, providing valuable empirical evidence for similar communities facing similar challenges.

More information: Rui ZHU et al, An Adaptive Toolkit for Projecting the Impact of Green Infrastructure Provisions on Stormwater Runoff and Pollutant Load—A Case Study on the City of Galena Park,

Texas, USA, *Landscape Architecture Frontiers* (2023). DOI: 10.15302/J-LAF-1-040031

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