

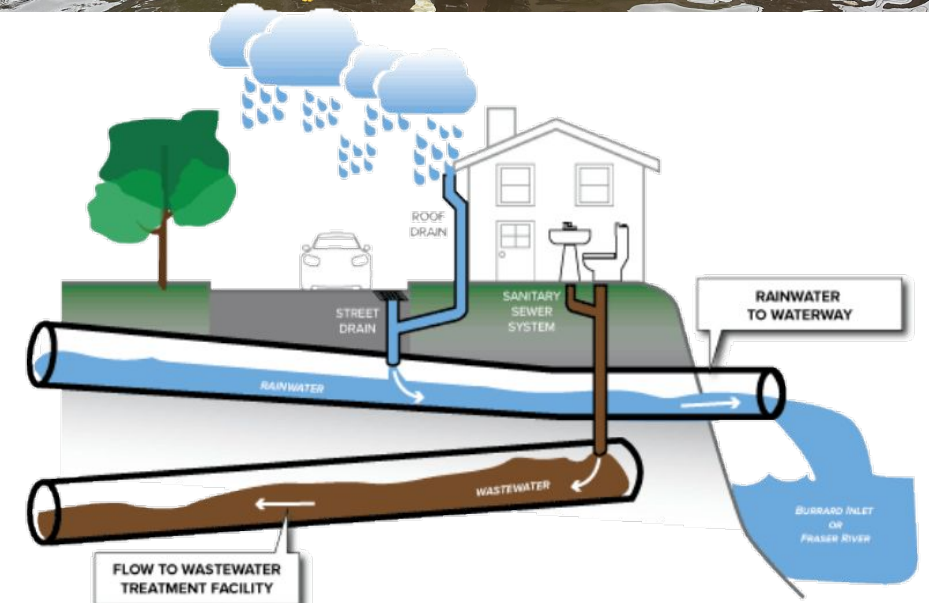
Evaluating design capacity of New York City sewer system through rainfall conditioning of flash flood

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Rationale and Motivation

- Urban areas include large **impervious surfaces**, so almost all rainfall do not infiltrate into the soil.
- As a result, most of the rainfall flows over the land in urban areas, causing **flash floods**.
- To manage the flash flood, **sewer system** are designed and installed in underground
- Sometimes floods occur with rainfall amounts less than the designed drainage capacity.
- However, evaluating whether the designed drainage capacity of the sewer system has been **maintained after installation poses a challenge** due to a lack of gauges.



Objectives

- This study aims to assess the **drainage capacity of the installed sewer system** based on historical storm data and rainfall observation.
- Mentee can experience **solving engineering problems** related to infrastructure design.



What we will do this summer

- The synopsis of this study is organized into the following sections:
- Data collection: **Collecting rainfall and storm data** from National Oceanic and Atmospheric Administration (NOAA).
- Collection Intensity-Duration-Frequency Curve (IDF Curve): **Collecting and Drawing the IDF curve used for design floods** in urban area based on NOAA data.
- Extraction of Flood Events: Drawing rainfall time series and **identifying flood event based on rainfall data**.
- Comparison and Discussion for Design Rainfall of NYC: **Discussing the appropriateness of design rainfall** by comparing flood rainfall and design rainfall.
- Writing a Report: **Writing a report** based on the analysis.