LAB 7: GREEN INFRASTRUCTURE

OBJECTIVE

Study the effect of green infrastructure in urban and sub-urban setting using EPA’s National Stormwater Calculator

BACKGROUND

Green infrastructure such as permeable pavements, green roofs etc can be used increase the storm water infiltration and decrease the amount of runoff. This helps in reducing the flooding and improves the groundwater recharge through infiltration. Environmental Protection Agency’s (EPA) National Stormwater Calculator estimates the amount of runoff and infiltration in a specific region by using the historical rainfall and soil classification information. In this exercise, we will use the software to estimate the runoff and infiltration for two different sites. We will create a base case scenario using the current conditions and study the improvement in infiltration after installation of green infrastructure.

INSTRUCTIONS

1. Download the EPA’s National Stormwater Calculator at https://www.epa.gov/water-research/national-stormwater-calculator
2. Consider two locations for investigation
   a. Pick urban area with over 90% impervious land area
   b. A sub-urban or rural location with a maximum of 75% impervious land area
3. Create a base-case scenario by running the simulation for current conditions
4. Install green infrastructure in both locations (between 2-5% of the total area)
5. What is the percentage change in infiltration?

DELIVERABLES

1. Letter of Transmittal – A brief description of what was done and the results you obtained
2. Objective – State the objective of your experiment
3. Methods and Materials
   a. Explain the locations you picked and justify
   b. Screenshots of the two locations picked for analysis
   c. Explain the parameters for each location (soil type, rainfall, evaporation etc)
4. Results and discussion –
   a. Create a separate section for each scenario
   b. For each scenario explain the results such as the infiltration and runoff conditions for the base case scenario
   c. What type of green infrastructure did you use in each scenario and the percentage of the total area for each GI structure?
   d. What is the percentage change in infiltration in both cases?
   e. How much area should be covered in GI to get an increase of 1 in of infiltration?
5. Conclusions – Discuss which scenario has higher percentage of change and why?