Curve number lab – run off and infiltration

Today we will use a curve number approach to estimate runoff from properties around UVM. We will make run off estimates for various storm return periods and durations. You will need to download from the class website and read: the curve number table, the weather service precipitation summary, and the maps (see below).

Get the 1999 orthophotograph or download from the class lab webpage

<https://geodata.vermont.gov/datasets/54b7bda5916044d6a118b70bd1c901ef>

Get the 2018 color orthophotographs for the area near campus or download from the class lab webpage

<https://maps.vcgi.vermont.gov/opendata/tileselect_opendata.html?IndexLayerName=Index_VTORTHO_0_15M_CLRIR_2018&FolderURL=https://maps.vcgi.vermont.gov/gisdata/vcgi/imagery/VTORTHO/0_15M/CLRIR/2018/COMP/,https://drive.google.com/drive/folders/1uSST7C12pYPi6hmSotuxfTd9ThjGUuIm&cdownload=-1&InputLayerName=IMG_VCGI_CLR2018BuyUp_SP&InputFtype=imagery&DownloadFields=DOWNLOAD_P,DOWNLOAD_G>

Pick a strip of 5 adjacent properties on Buell, Loomis, or Willard Street and map them both in 1999 and 2018. Your map should indicate (with colors) the area of all buildings, parking areas (formal and informal) and sidewalks as well as permeable grass. 100% of each property should be mapped. You can do this mapping digitally or print the images and map using colored pencils. You will need to calculate the area of different map units. You can do this with box counting on graph paper, with a digitizer, or using this tool from the web such as (<https://www.sketchandcalc.com>) or any other tool you can find!

Once you have done your mapping and measured the areas of each map unit, then calculate total runoff for Burlington for three times (1600 CE = all forest, 1999, and 2018). Your run off will be in inches (it’s a percentage of the rainfall which is in inches). Make the calculation for these four storms (so a total of 12 calculations, 3 times 4 storms)

The 2 year return, 1 hour storm

The 100 year return, 1 hour storm

The 2 year return, 24 hour storm

The 100 year return, 24 hour storm

**On your website for this week post:**

1. Your maps for 1999 and 2018.

2. Your curve number calculations (run off volumes). Show your work! Typed or handwritten are both OK.

3. A two paragraph discussion about how landuse and thus infiltration rates and run off have changed (or not changed) on the properties you examined over the past 19 years and compare to the pre-European settlement case (fully forested).

4. A graphic or two comparing how run off volume has changed over time with landuse change.

5. A third paragraph speculating on how landuse change in neighborhoods near UVM might affect water quality in Lake Champlain and why it would affect water quality.