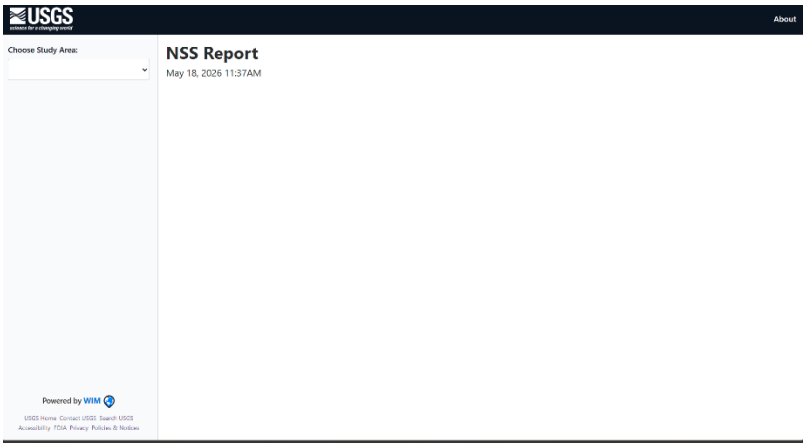
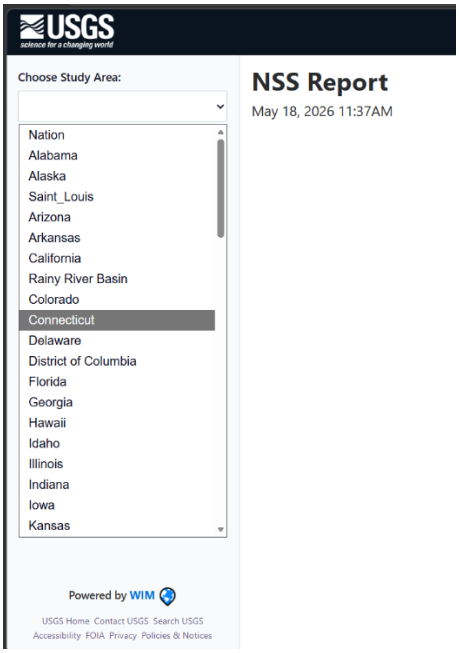
Instructions for Calculating Flow Statistics using the USGS National Streamflow Statistics (NSS) website and USGS StreamStats application

Use these instructions to calculate release flows in accordance with the United States Geological Survey Scientific Investigations report 2010-5052 entitled "Regional Regression Equations to Estimate Flow-duration Statistics at ungagged stream sites in Connecticut". You will use two different sites to calculate the values. You will start in NSS to determine the variables necessary to calculate flow statistics, go to StreamStats to get basin characteristic values, then go back to NSS to compute release values. Please attach copies of the reports NSS and StreamStats generate and summarize the applicable release volumes in your plan.

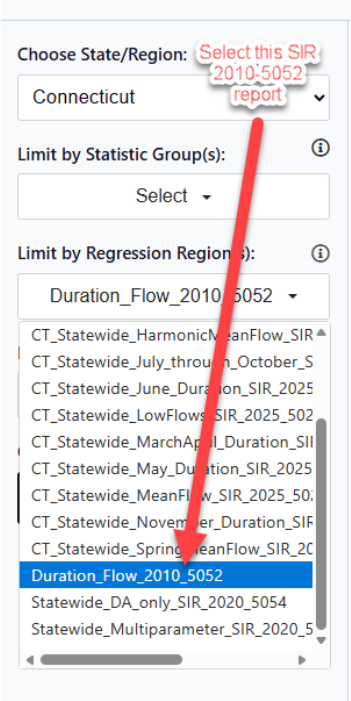
1. Open the NSS Site here: [NSS | National Streamflow Statistics]



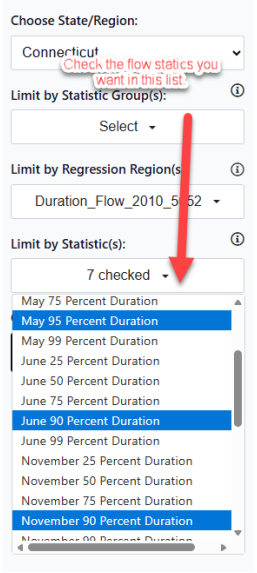
2. Select "Connecticut" in the Study Area dropdown menu on the lefthand side



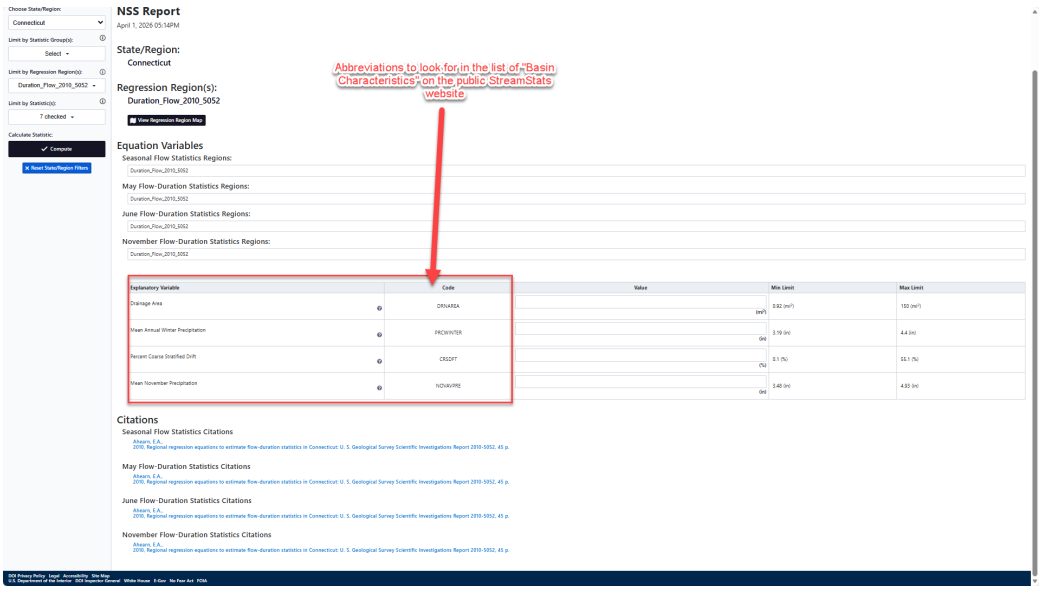
3. Go to the Limit by Regression Region dropdown menu on the lefthand side of the screen (third dropdown menu) and select "Duration_Flow_2010_5052"



4. Go to the Limit by Statistic dropdown menu (fourth dropdown menu). If your dam is required to release the Rearing and Growth Q80 all year, select '80 Percent Duration July to October'. If your dam is required to make a multi-level release (releases change throughout the year), select the following statistics:
    a. May 95 Percent Duration = "*Clupeid Spawning (May) Q95*"
    b. June 90 Percent Duration = "*Resident Spawning (June) Q90*"
    c. November 90 Percent Duration = *"Salmonid Spawning (Nov) Q90*"
    d. 99 Percent Duration December to February = "*Overwinter (Dec-Feb) Q99*"
    e. 99 Percent Duration March to April = *"Habitat Forming (Mar-Apr) Q99"*
    f. 50 Percent Duration July to October = "Rearing & Growth (July-Oct) Q50"
    g. 80 Percent Duration July to October = *"Rearing & Growth (July-Oct) Q80"*



5. Values needed to calculate flow statistics will show up under “Explanatory Variables” on the main screen of the webpage – these values can be found in StreamStats



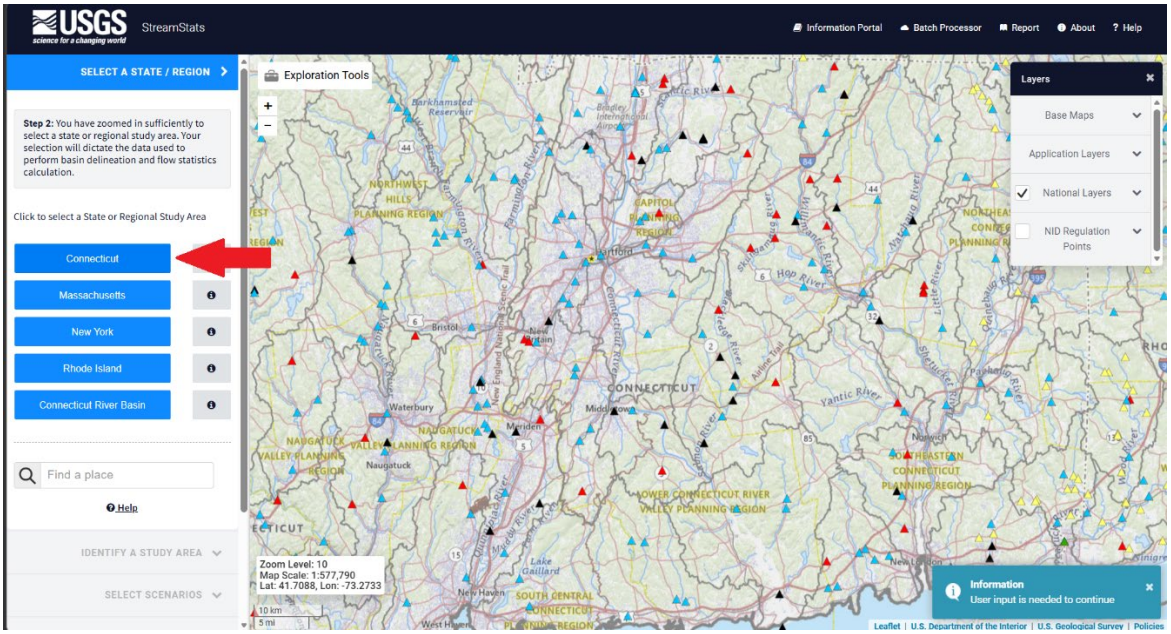
Explanatory Variable	Code
Drainage Area	DRNAREA
Mean Annual Winter Precipitation	PRCWINTER
Percent Coarse Stratified Drift	CRSDFT
Mean November Precipitation	NOVAVPRE

6. In NSS, you can see you need these four basin characteristics from StreamStats for the seven low flow equations you are interested in:
    a. DRNAREA – drainage area
    b. PRCWINTER – mean annual winter precipitation
    c. CRSDFT – percent coarse stratified drift
    d. NOVAPRE – mean November precipitation

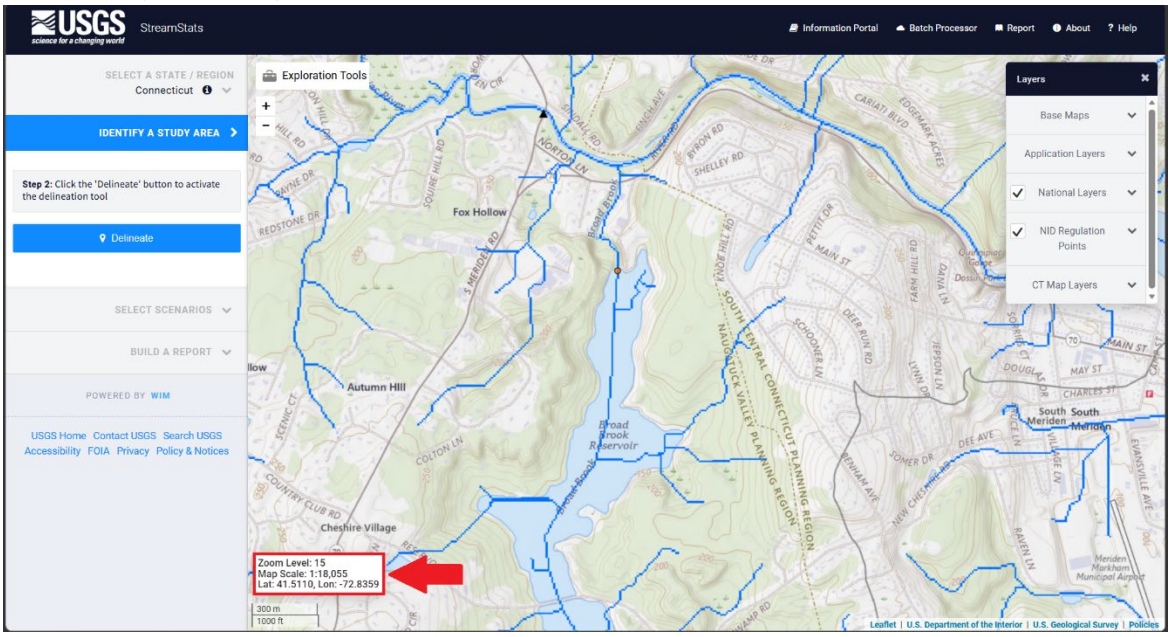
7. Open the StreamStats application in a new tab. StreamStats can be accessed here: StreamStats

8. Enter the coordinates of your dam in the 'Find a place' search bar. Alternatively, you can zoom in to Connecticut on the map to locate your dam.

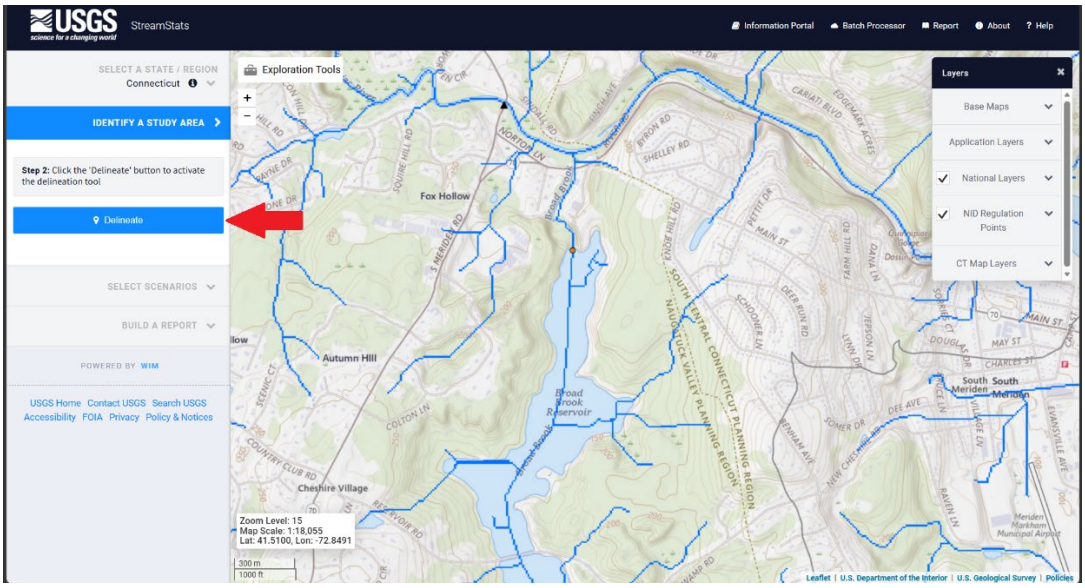
9. Click to select Connecticut under "Click to select a State or Regional Study Area"



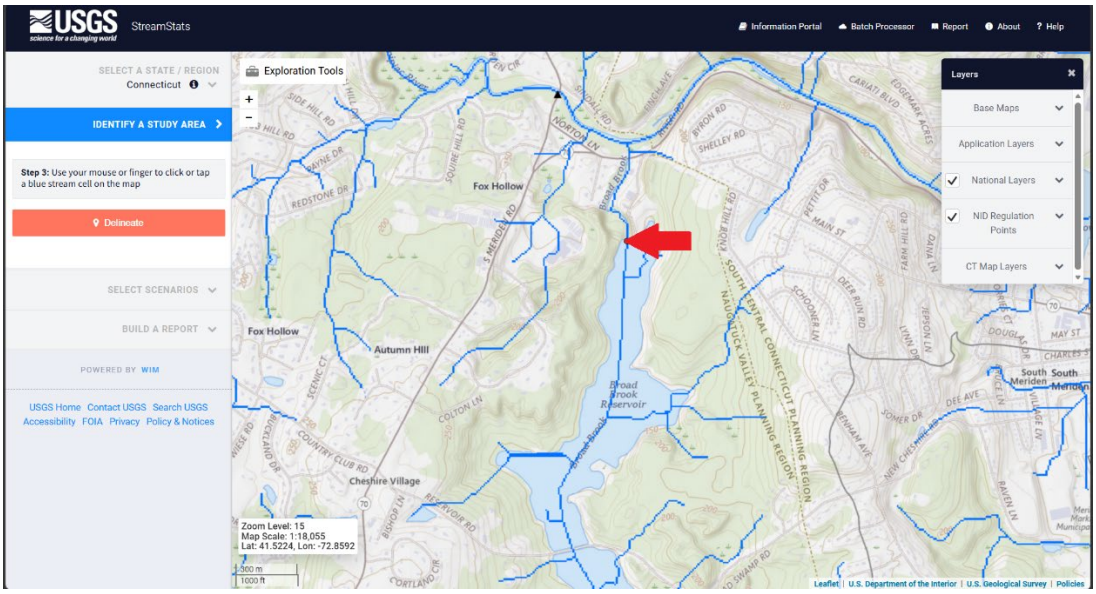
10. Zoom in to your dam, you will need to zoom in to level 15 in order to delineate the basin.



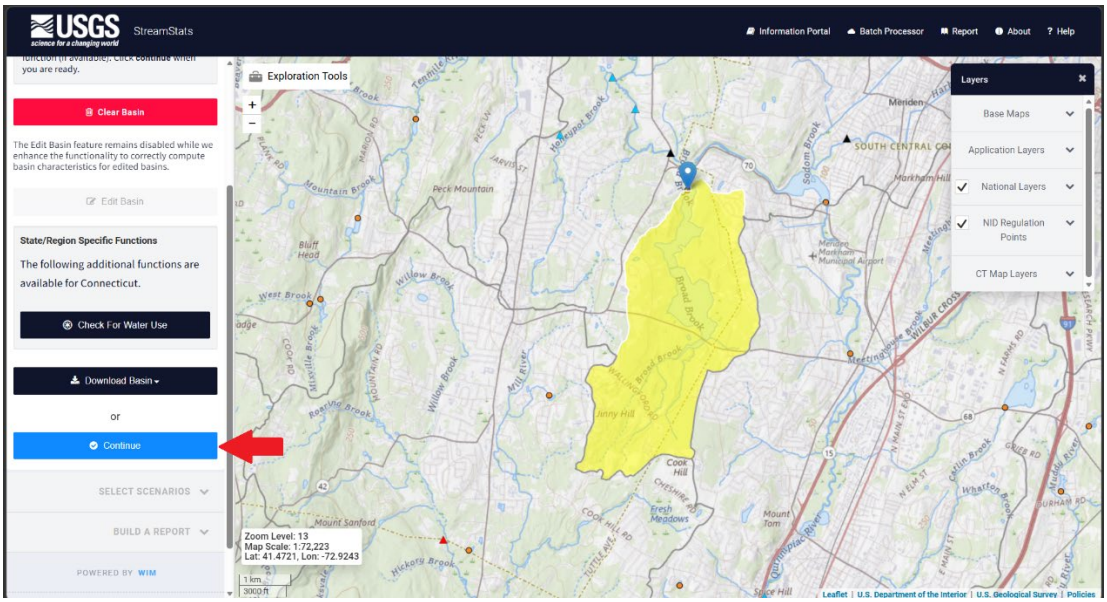
11. Click the “delineate” button on the left side of the screen



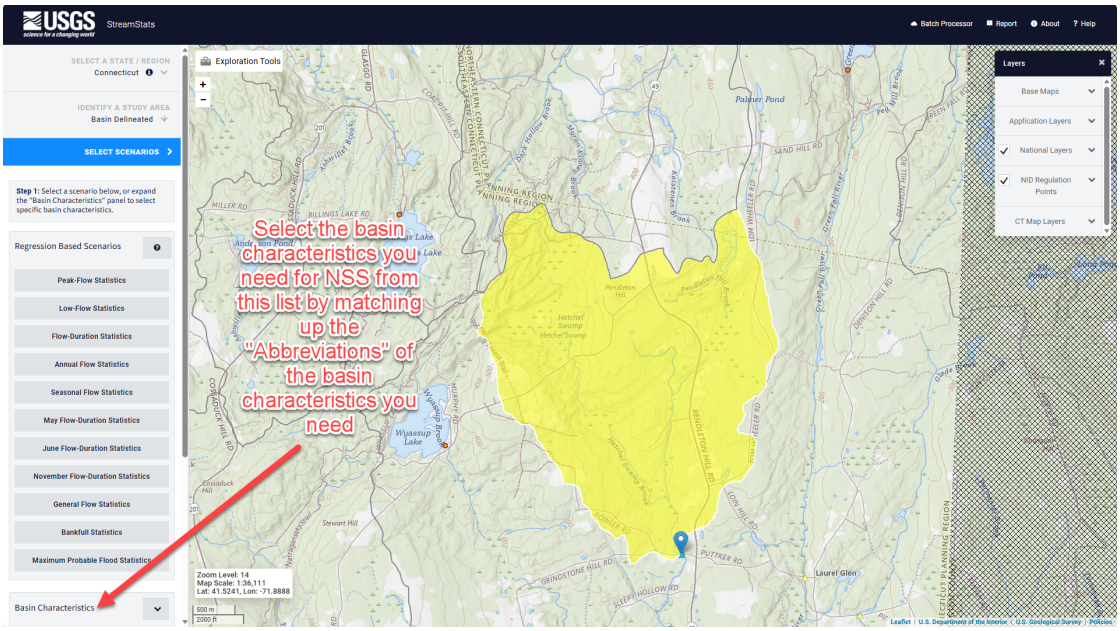
12. Click the blue flow line where the streamflow release point is on the dam



13. Once the basin is delineated, click the “continue” button on the lower left side of the screen

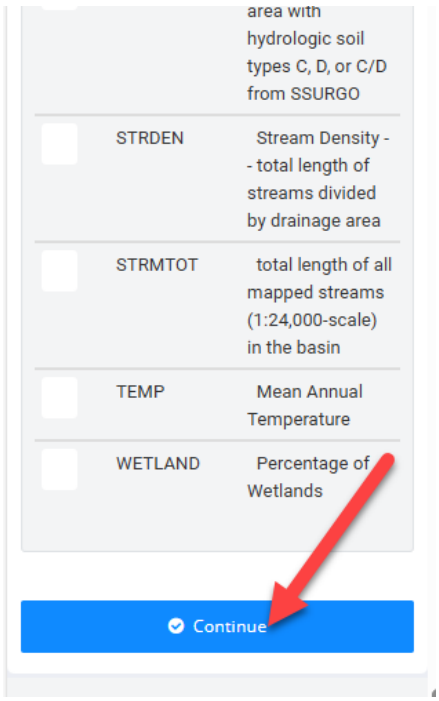


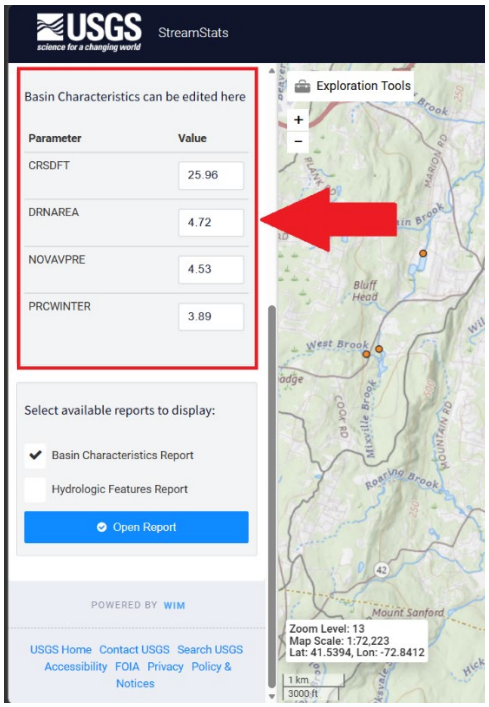
14. Scroll down on the lefthand menu to “basin characteristics” and click the arrow. Select the parameters outlined in the “Equation variables” on the NSS page (For the Rearing and Growth Q80 releases, these parameters are DRNAREA and CRSDFT. For the multi-level releases, these parameters are CRNAREA, PRCWINTER, CRSDFT, and NOVAVPRE).



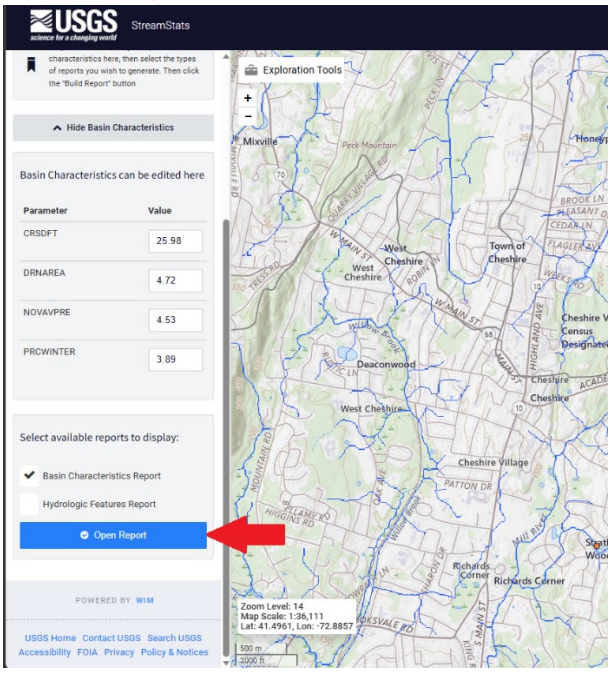
a. The parameters are listed in the table under “Equation variables” on the NSS page
b. The “code” for each variable matches the parameters that should be selected in StreamStats
    i. Make sure the code on the NSS page matches exactly with the parameter you choose in StreamStats

15. Click “continue” – you will then see values listed for each parameter you selected

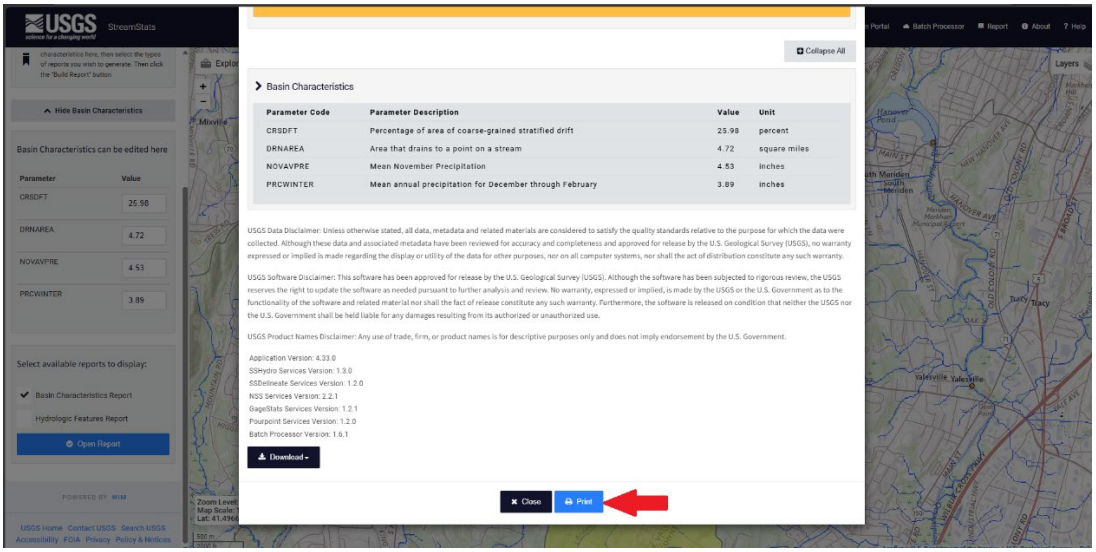




16. Open the report in StreamStats

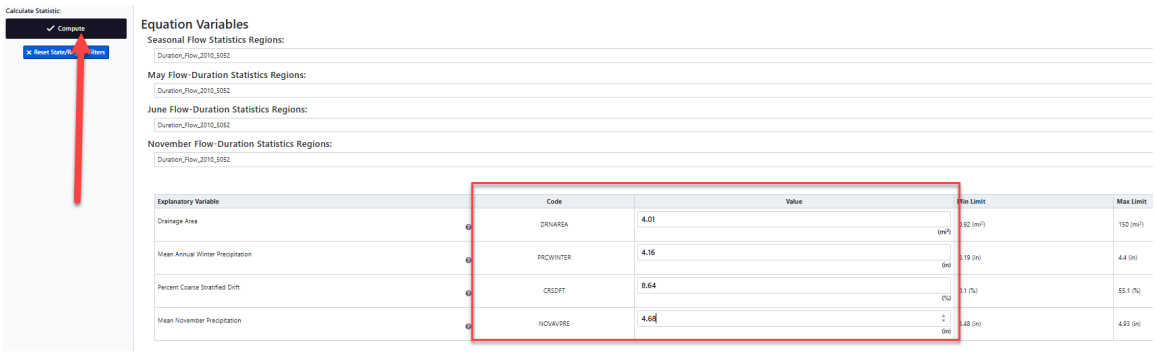


17. Print and save the StreamStats report as a pdf. This report must be submitted to DEEP as part of your Streamflow Release Plan.



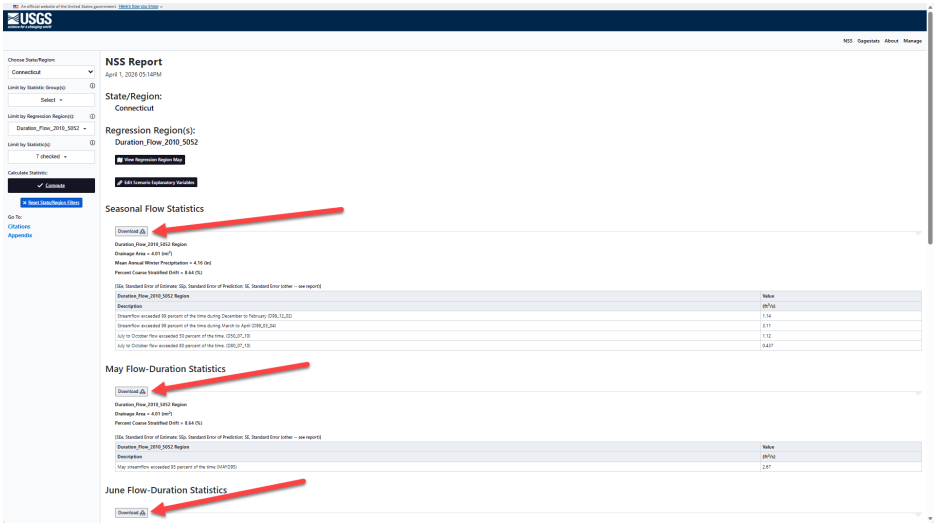
18. Copy and paste the values for each parameter from StreamStats to NSS

19. Click “compute” on the left-hand side of the NSS page under “Calculate Statistic”



20. Seasonal flow statistics will be calculated and appear in tables on the main screen of the webpage

21. Download each of the statistics calculations using the “Download” button on the screen



22. Downloads of the NSS and StreamStats reports must be submitted to DEEP as part of your Streamflow Release Plan

If you need assistance with these instructions, please contact Melissa.Fahnestock@ct.gov