Soil Characteristics GUI / Mapping Tool

* Primarily interested in using the tool to group soils into ecological sites and ecological site groups within a Major Land Resource Area or Land Resource Unit.
  + Choose soil characteristics that I want grouped
    - Those characteristics are captured on the spreadsheet and in Jason’s SQL.
  + Identify map unit components that have those soil characteristics
    - Already captured in Jason’s SQL via MUKEY.
  + View the dominant component, dominant condition map units. Be able to set minimum percent of dominant component or condition (ie map units with 100%, at least 70% etc)
    - Can this be a user-entry box in the GUI, allowing user to enter a positive integer between 1-100?
  + Be able to turn on/view (separately) additional map units with minor component having those characteristics. Be able to set minimum percent of minor component (ie >0% of map unit, or at least 25% of map unit)
    - Similar to above it re: dominant component/dominant condition?... Just let the user enter the value they want? The value might ideally be captured as something like, “Percent of component acres in the mapunit is greater than \_\_\_ and less than \_\_\_.” User would enter values in each blank; limited to a value between 1-100.
  + View the data as aggregated by the Normalized Major Component display.
    - All calculations within the “analytical” GUI would be performed on this normalized major component data. Calculations should not be performed on any of the other scripts (those run to extract Dominant Component or All Components).
  + View the map result online (visual check review)
  + Download the result as a geodatabase or shapefile (I like the shapefile idea because it is easier for me to add to the maps that I have created for the work I am doing)
* Ideally, I would be able to create multiple ecological site or ecological site groups at once -ie set up “ecosite units” each with their own soil characteristics, to create the ecological site or site group map for the MLRA or LRU, or even a ranch.
* The dream is to incorporate the scripts+GUIs into web soil survey so everyone can use them. Web soil survey is hooked to EDIT, so the user could potentially get some state and transition information, production ranges, species lists for the ecosite units built.
* Simplify some of the outputs:
  + Within both GUIs (the “non-analytical” and the “analytical”), group the Landforms from SSURGO into CEAP-GL categories: Bottom, Terrace, Depression, Upland.
  + What else can we have the GUI group into categories, for ease of data interpretation and/or mapping concepts?
* Perform the following selections/calculations in the “analytical” GUI, using only the script that contains the Normalized Component Percents:
  + What are the most important drivers of a vegetation and/or ecological site change or concept?
    - Least limiting soil properties:
    - Most limiting soil properties: Profile Depth, Restriction Depth, Chemistry, Slope, Coarse Frag Volume in Profile, AWS, …..
    - Are weighted averages helpful, or do we just need min/max values?
      * Some properties aren’t calculatable. For those, have users select the criteria for each property. Eg, if Profile Depth is a concern, I could select all the “Very Shallow” components.
      * Some properties can be calculated. For those, a weighted average may be helpful, or the Min or Max might be preferred. Eg, If SAR is the concern, I’d select SAR when weighted avg for the profile is greater than {user entry}. Or could select it based on Min value = {user entry}. Or on Max value = {user entry}.
      * Due to processing speed, it might be good to have those weighted averages, mins and maxs pre-calculated for each mapunit component, and when a calculated value is desired, the GUI calls on that pre-calculated table, rather than performing the calc in realtime?
* Add Rainfall Erosivity Values (from the Global Rainfall Erosivity ArcGIS datalayer available thru data request at <https://esdac.jrc.ec.europa.eu/content/global-rainfall-erosivity>) to the map layer, so we can spatially join the R-Factor to each mapunit. The R-factors in NASIS are unreliable, so prefer to use the R-Factors developed in the Global Rainfall Erosivity data layer.
  + R-Factor joined/related to Jason’s tabular SQL output in ArcGIS, and then just displayed as a selection within the GUI. Mike, this would be an extra step for your team to perform. Is this okay?