The subject of your map and caption will be the USGS National Elevation Dataset and its utility for understanding the terrain in the context of a decision-making scenario that you define. You will make two versions of a terrain -analysis map. One version has contours and shaded relief. Another, contours with a muted, colorized aerial photo. See samples: map with OrthoPhoto, *and* with shaded relief. *Both maps can have the same caption. Or if you want to be really cool, you could use the shaded relief + contours map to discuss broader-scale terrain patterns in the neighborhood, and the aerial photo + contours to talk about your more detailed hypothetical decision making situation.*

_____ Describe a hypothetical decision-making situation that involves creation, removal or modification of some thing or condition. Your map will be framed to describe the specific change in a specific place. Use the draw tool to create a polygon or lines indicating the extent and direction of a spatial mechanism where elevation and/or slope is a mediating condition. For example, will people have to walk uphill or downhill to get to your new facility? Perhaps storm-water run-off or recharge are concerns, or maybe a matter of inter-visibility.

_____ The extent of your map should be chosen to provide a detailed view of the situation you are describing and the immediate context. Your map should use a three-level graphical hierarchy as discussed in Elements of Cartographic Style. Your reference framework **must include all streets,** hydrography, open space, town boundaries from MassGIS data that you have downloaded.. Label important roads and other features and points of interest for your area of interest that you have already created.

_____ Download a clip of the National Elevation Dataset in the Third ArcSecond scale that covers your study area. Follow the steps given in Digital Elevation Models to create a contour map. Use a contour interval that is not so fine that the contours bunch together, but fine enough to provide an impression of the higher, lower, steeper and flatter parts of your area of interest. Use a second index contour layer to label every fifth contour. Suggestion: align your contour labels with the contours. Lift the label off the lines by using a halo that has a color similar to your shaded relief background – as described in the tutorial and demonstrated in the examples, above.

_____ For your aerial photo map, I recommend putting your towns (with a yellow tint), open space, and hydrography: wetlands, open water and streams, into a group layer, and making it transparent above your orthophoto to colorize and mute the brightness and excess detail of the photo. Do not try to put shaded relief on your aerial photo map.

_____ Create a shaded relief layer, and adjust its Stretch and transparency as described in the tutorial. You will need to play with the order of your contours and shaded relief so that everything is legible.

_____ Discuss the precision of the NED 1/3 Arc Second Terrain Raster with regard to its cell size and the sorts of terrain features that would and would not be represented in this dataset with a particular focus on the specific places that you discuss in your caption. See discussion and diagrams in the Elevation Models Tutorial. Use the foreground of your map to label the places and elevations of the features that you discuss.

_____ This map should include all of the essential elements of a map as discussed in Elements of Cartographic Style, with the technical aspects of Titles, Captions, scale-bars, source citations and declare your projection case, as discussed in the check-list for the third exercise.

_____ Make sure to state your contour interval underneath your scale bar.

_____ Design your layout for legible reading at letter size, landscape format. Make two versions of your contour map: One with just shaded relief, and another with an aerial photo. Export them at 300dpi and combine as **yourname_contours.pdf**. Upload a single PDF with two pages to the appropriate slot in the course web site.