Lab Exercise for 1.963 GIS Applications in Environmental Engineering Dated 09/13/2004

Data:

mrd104a1.shp : road network
1_213914.sid : Image
1_217914.sid : Image
elev   : DEM
nwi104p1.shp: wetlands

Aim : To identify the wetlands.

1. Look for wetlands by seing only the image layer.

   Hint : An image is like a snapshot of the area as seen from a certain altitude

2. Verify your choices by seing the dem or the elevation layer

   Hint : A DEM (Digital Elevation Model) is composed of two colors (white and black) and is a representation of the elevation of the terrain. Color towards the darker shade represents depressed areas whereas the colors towards the brighter shade represents the elevated ones. A wetland would exist in a lowland like a valley only!

3. Verify your choices by activating the contour layer . But, is there a contour layer? Try making one since you have the elevation information from the DEM. Follow:
    Tools ->Customize->Spatial Analyst. Select the "elev" layer , then follow:
   Spatial Analyst->surface analysis->contour. Change the contour interval to 3 units. Click OK

   Hint : Contours are imaginary lines representing areas of same elevation. The successive contours are separated by a certain elevation called as a "contour interval". If they are too close to one another, it implies that the elevation of that area is fast decreasing (like a hill or a valley). If they are far away from one another it means that the area is a relatively planar one. Now, would a wetland possibly exist on a hill??? I guess no !

4. Activate the roads layer and see if you mistakenly interpreted a road as a wetland ?

5. Finally, activate the wetland layer and see all the real wetlands.
   To distinguish between different categories of wetlands classify them with a unique color value.
   To do so right click on the wetland layer->properties ->Symbology->Categories->Unique Values
   Change the "Value Field" to "Attribute". Click on "Add All Value".

6. Make the wetland layer transparent by 20 %. To do so again go to the properties and then to the Display tab. Under the heading Transparency type 20%.

7. Selection from the attribute table: Rightclick on the Contour Layer. Go to "Open Attribute Table". Sort the "Contour" column values by ascending order. Select 201 mt contours.

8. Select by attribute :
    Problem: "Select the palustrine forested broad leaved deciduous seasonally flooded " wetlands.
    First look for the classification .
    Look in related resources for the materials for
                    WETLANDS AND DEEPWATER HABITATS CLASSIFICATION
    Try to figure out the code for "palustrine ,forested ,broad leaved deciduous ,seasonally flooded".
    It is PFO1E.
    Go to Selection ->Select by Attributes
    Select layer as the wetland layer (nwi104p1) then make a spatial query :
    "ATTRIBUTE" = 'PFO1E'
    Click Apply and close

    Notice that selection by attributes is so easier this way !

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