Locally Unwanted Land Use Site Selection:
Wind Farm

The objective of this study was to develop a GIS based approach for land use suitability assessment to show the portions of land in the Kings & Annapolis County area which can best tolerate a Turbine Farms. This kind of analysis is important to identify factors that could inhibit the placement of a Turbine Farm. A suitability overlay was created using ArcGIS 10.1 and data for both counties were utilized for the calculation and assessment of the study area. The suitability process was done through a series of steps using Geoprocessing and Data management tools. By joining look up tables (LUT), deleting non- essential fields and creating a union from the output data derived from the processing. This assignment was based on facts designed by our Instructor Ed Simmons relating to the Municipality of the County of Kings. The local councillors were faced with the challenge of siting many controversial land uses within the county. They want to find locations that are environmentally and socially suitable for a number of Wind Farms that could be located within our study area.

The datasets that were used in the making of this final product are as follows. Property datasets from both Annapolis County and Kings County; AK_Line2 was used for making the roads buffer for both the Annapolis side of our study area and also the Kings side of our study area. AnnaKing_Watersheds was used for the making of the flood prone areas within our study area. AK_poly1 was used in the making of our wetlands buffer. Vt80_nad83_polyc was retrieved from the data server at COGS and it was then transformed and clipped to our study area. We created a hill shade to show the slope of our study area. The final dataset used for this assignment was the results derived from editing the data. The final product was Suit_WindFarm_loc.

The process of making this product that you see to the left goes a little something like this. All the work was done inside a Model; this allows for a type of record keeping when processing a number of different datasets. The first step was to figure out what datasets we needed for this project, as described above. The next step was to select the appropriate attributes to define the buffers. For example, the buffer used around the property data, was set to make a buffer 500 meters around the residential property that we had selected out in the first step. Another buffer used was for the roads, this buffer was set to 250 metres, keeping in mind we needed to set this buffer to allow for easy access to the Turbine farms. Once all all the buffers were made, a filed was added to each output from the buffer; the name of the field all depended on the dataset that we were working on at that time, for example Flood_Score is the name of new field that we added to the Flood Prone areas. The same naming convention was used for all the datasets (_Score). The Calculate field tool was added to the model for each output feature class, this tool calculates the values of a field for a feature class. The following step was to union all the final outputs from the calculate field tool to make one final feature class. The final steps included adding a field to the final feature class output and populating it with calculation based on all the results we derived from the processing taken place throughout this assignment. We named that new field WindSuit_score, just to keep the same naming convention.

Situations to consider when deciding how large or small a buffer needs to be (Creates buffer polygons around input features to a specified distance). The wind resource is the most obvious factor to concentrate on when choosing a wind turbine location. NS offers excellent conditions for wind farm development with a number of locations with suitable wind conditions. When determining the best site for a wind turbine farm, some of the situations needed to be considered were; wind speed and direction, access to roads for movement of large vehicles including trucks and cranes and community attitudes; the level of acceptance form residential landholders and the community.

The results of the final product that you see to the left, the most ideal places to build wind farms in this study area would be in the upper right hand corner, which would be East Margaretsville area. This makes sense it is far enough away from residential property and close enough to roads so you don't have to build any new ones.

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