GEOLOGY 229
BUSHKILL TOWNSHIP PROJECT
FALL 2009

For the second part of the Bushkill project, you and your group will work on solving two planning problems that the supervisors of Bushkill Township would like assistance with. The project ideas are listed below. Each project is fairly open-ended, and will involve collecting, and analyzing data to make recommendations for the township. You will likely be using raster and vector data, as well as building your own data sets.

To assist the township, we will be providing multiple solutions to their requests. Each project listed below will be studied by two groups. This will allow the Board of Supervisors the opportunity to see two potential solutions to their requests.

The final deliverable materials will consist of the following:
-Geodatabase(s) of data sets used in your map creation
-Short tutorials for basic steps used in your processes (TBD for each project)
-Final Poster (36x48 inches) where your group will display your results for the two projects. These will be due in PDF format to Professor Wilson by Thursday December 17, at 12:00 noon.
-Presentation of your data at a poster session. Groups will talk with other groups about their projects and solutions. This will take place during the final exam period, Friday December 18, 9-11 am.

1. **Create a proposal for farmland preservation:**

There are large amounts of preserved open space in the northern portions of the township. However, there are few preserved farms in the southern portion of the township. The supervisors wish for you to make recommendations for preserving farmland elsewhere in the township. Please develop criteria to preserve additional farmland that has the potential to be tied into existing "Greenways" in the township.

2. **Green Energy Development:**

The township supervisors have the begin thinking about Green development in the township, as green technologies will need to be zoned and regulated. Please identify the solar and wind potential in the township, and create recommendations for how these technologies could be zoned, or regulated in the township.

3. **Cultural and Historic Features:**

Collect data and create maps of the cultural and historic features of the township. These items can include historic districts, historic buildings, items on the National Register of Historic Places, places of worship, and other cultural features. Recommendations for modified historic districts, or other cultural districts will be explored.

4. **Water Quality:**

Collect data and create maps of NDPES and TRI data within the township. Please identify these locations, as well as identify the surface water areas that are potentially affected by these releases. Use this data to recommend regions of continuous water quality monitoring locations. Also if possible, identify regions of the township, where residents are most likely to be impacted.

5. **Ground Water Resources**

Create a map of ground water resources for the Township. Using well data, build maps of ground water levels, and regions of potential groundwater discharge and recharge. Create recommendations on the safeguarding of ground water supplies.

6. **Emergency Management, FIRE:**

Identify the locations of existing fire hydrants, and water bodies that can serve as sources of water for fighting a fire. Create a Distance to Bodies map to help the fire department locate where the nearest water sources are to an area. Also recommend regions of extension/improvement of existing water systems.

7. **Land Preservation, ZONING:**

Identify preserved land in the township, and existing conservation easements. Using this data, and criteria that you develop, make recommendations for additional conservation easements within the township.

8. **Emergency Management / Road Maintenance:**

Using the data of accidents from township police records, please identify the locations of accidents, and their causes. Use this data, along with the road sign inventory to analyze road conditions and street warnings, to make recommendations to the roads crew.

9. **Runoff and Storm water modeling:**

Identify the locations of Highway outfalls, and identify the drainage areas to each of these locations. In addition identify the locations of storm water detention basins, and make recommendations to the roads crew about where new detention ponds need to be relative to highway outfalls.