

Prioritizing Agricultural Lands for Riparian Buffer Placement in the Raritan Basin: A Geographic Information System (GIS) Model



Project Partners:

North Jersey RC&D

NJIT

NJ Water Supply Authority

USDA - NRCS

Background

- ❑ 30% of historic riparian areas within the Raritan Basin have been converted to urban and agricultural uses
- ❑ Farm yard runoff and erosion can carry excess fertilizer, manure, suspended solids (soil), and leaves to stream
- ❑ Riparian buffers can help absorb runoff and keep these pollutants out of our water



Concentrated Flow

- ❑ Certain land features create areas where water from a larger portion of land is diverted to a smaller area of flow, considered **concentrated flow**.
- ❑ A typical forest or grass riparian buffer may not have the greatest impact on concentrated flow.
- ❑ Specific design measures and practices can be applied to these areas for optimum affect



Purpose

- Evaluate and prioritize agricultural land in riparian areas for buffer placement. Priorities are based on four components.

Components

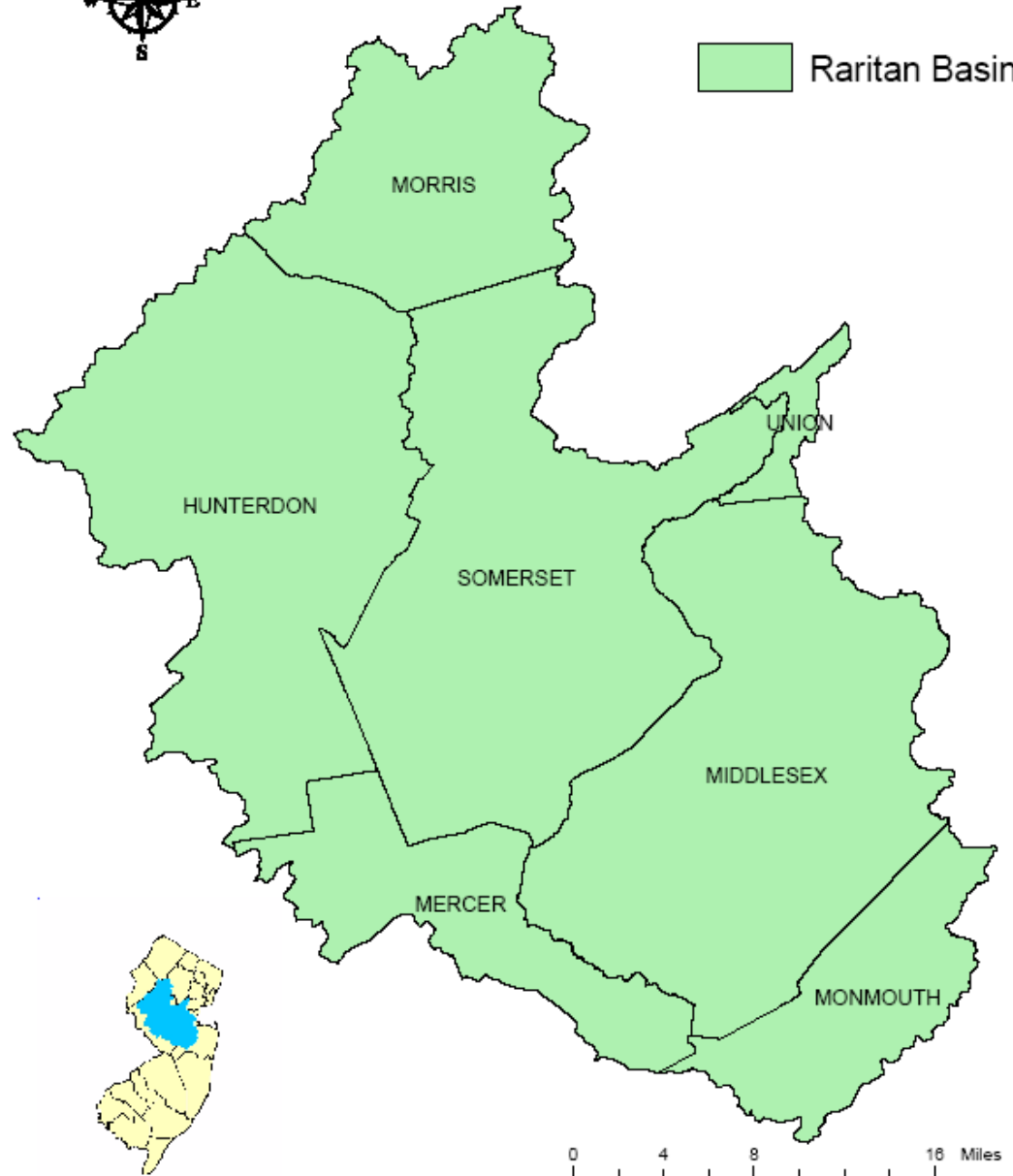
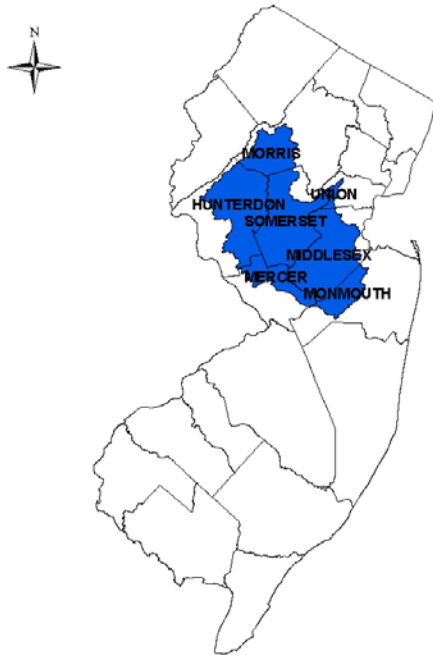
1. Soil Erodability
2. Runoff Potential
3. Wildlife Habitat
4. Impervious Surface

Raritan Basin

Raritan Basin



 Raritan Basin

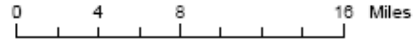
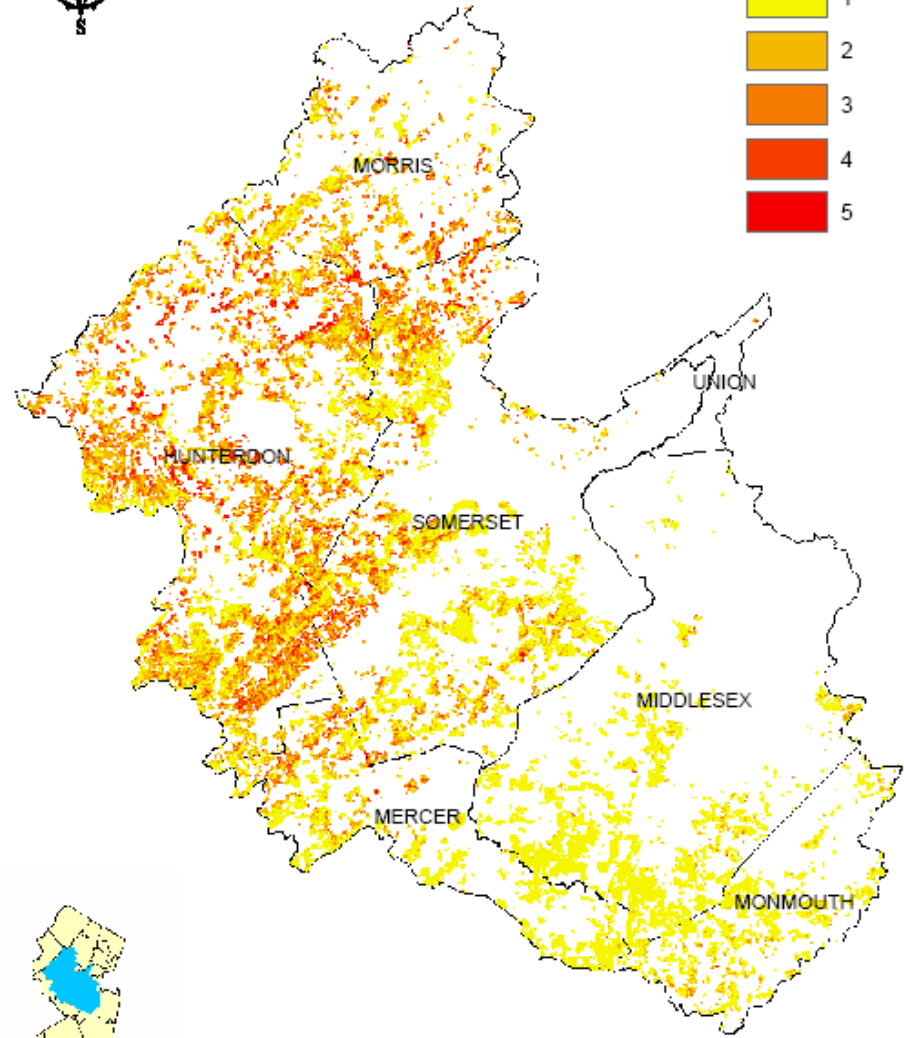


Soil Erodability

- ❑ Demonstrates the relationship between rainfall, runoff intensity, susceptibility of the soil to water erosion (soil K-factor), and the combined effects of slope length and steepness.
- ❑ Scored 1 - 5



Soil Erodability Index Raritan Basin



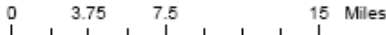
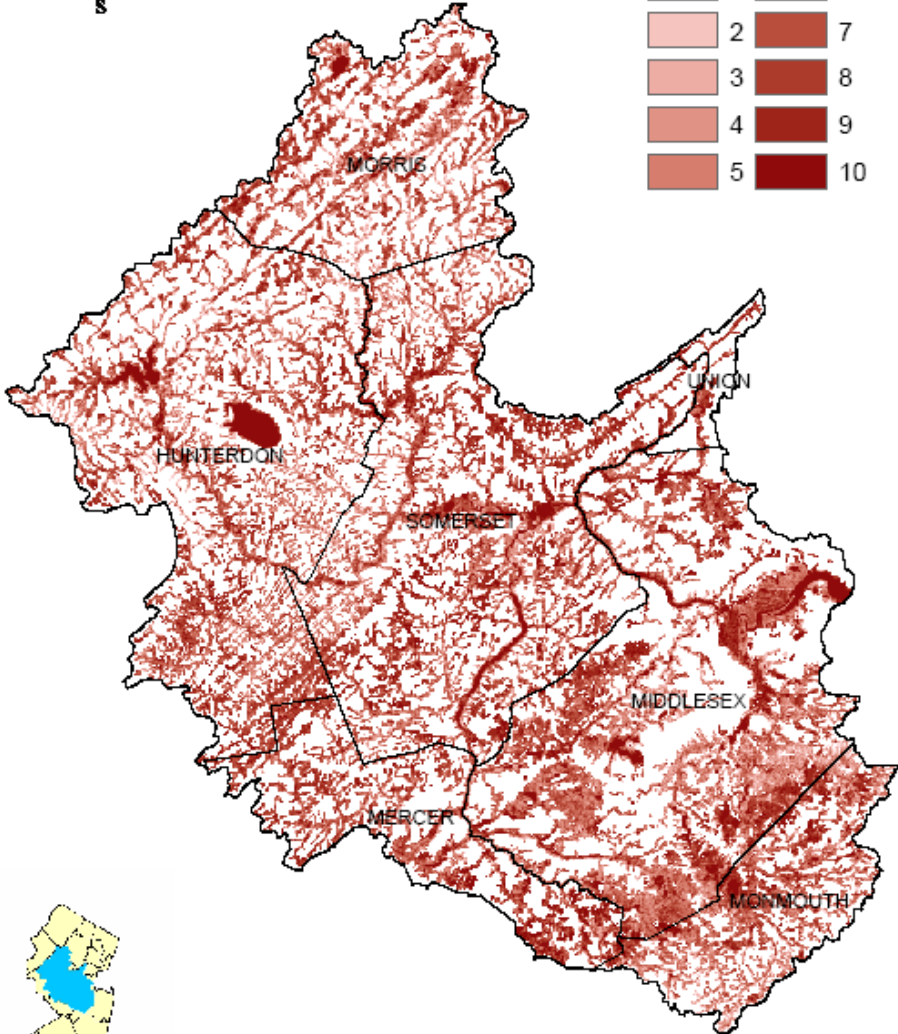
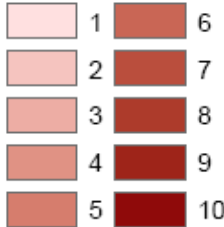
Runoff Potential

- ❑ This measures the potential for generating runoff. Consists of upslope contributing area, surface slope, soil depth, and saturated hydraulic conductivity.
- ❑ Scored 1 - 10

**This component was weighted due to its importance and contribution to watershed concerns. **



Runoff Potential Raritan Basin



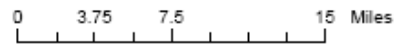
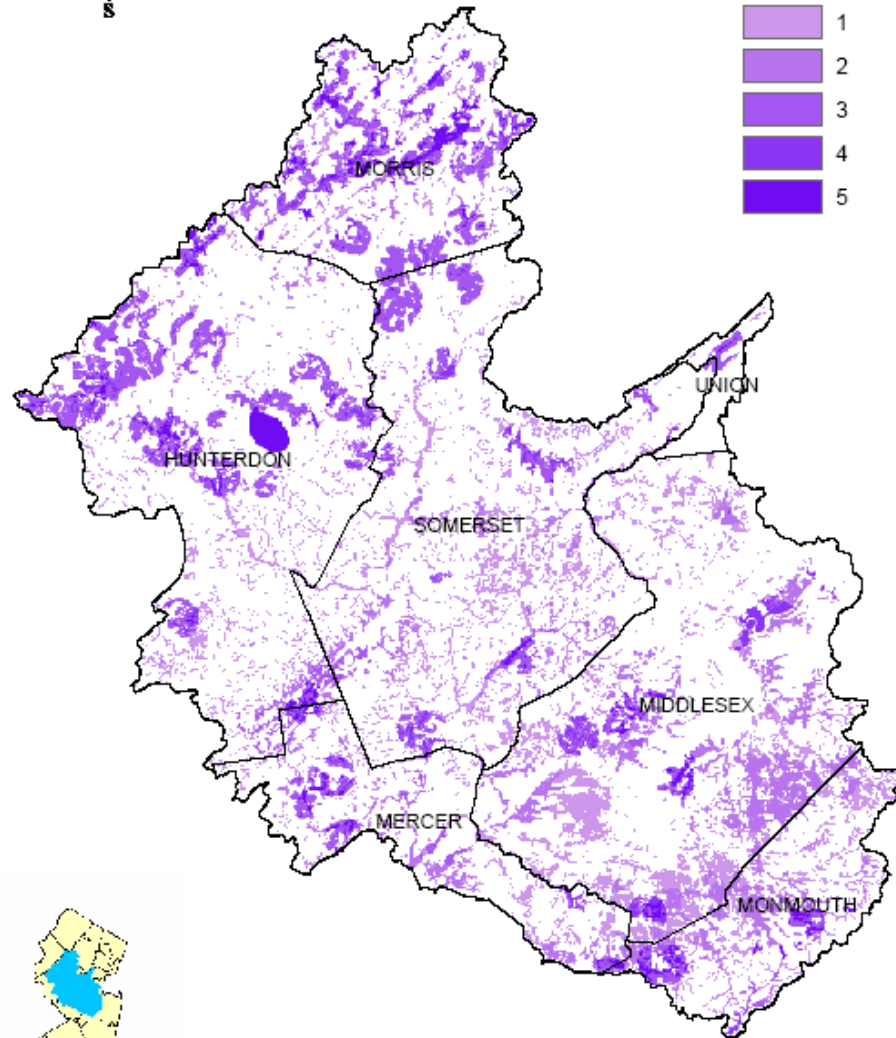
Wildlife Habitat

- ❑ This layer uses NJDEP Nongame and Endangered Species Program's Landscape Project. The scoring for this layer allows for areas with more than one endangered or threatened species and areas which meet the habitat-specific suitability requirements. Five general habitat types are classified in the Landscape Project:
 - Wood Turtle Habitat
 - Forested Wetland
 - Emergent Wetland
 - Bald Eagle Foraging Habitat

- ❑ Scored 1 - 5



Wildlife Habitat Raritan Basin



Impervious Surface

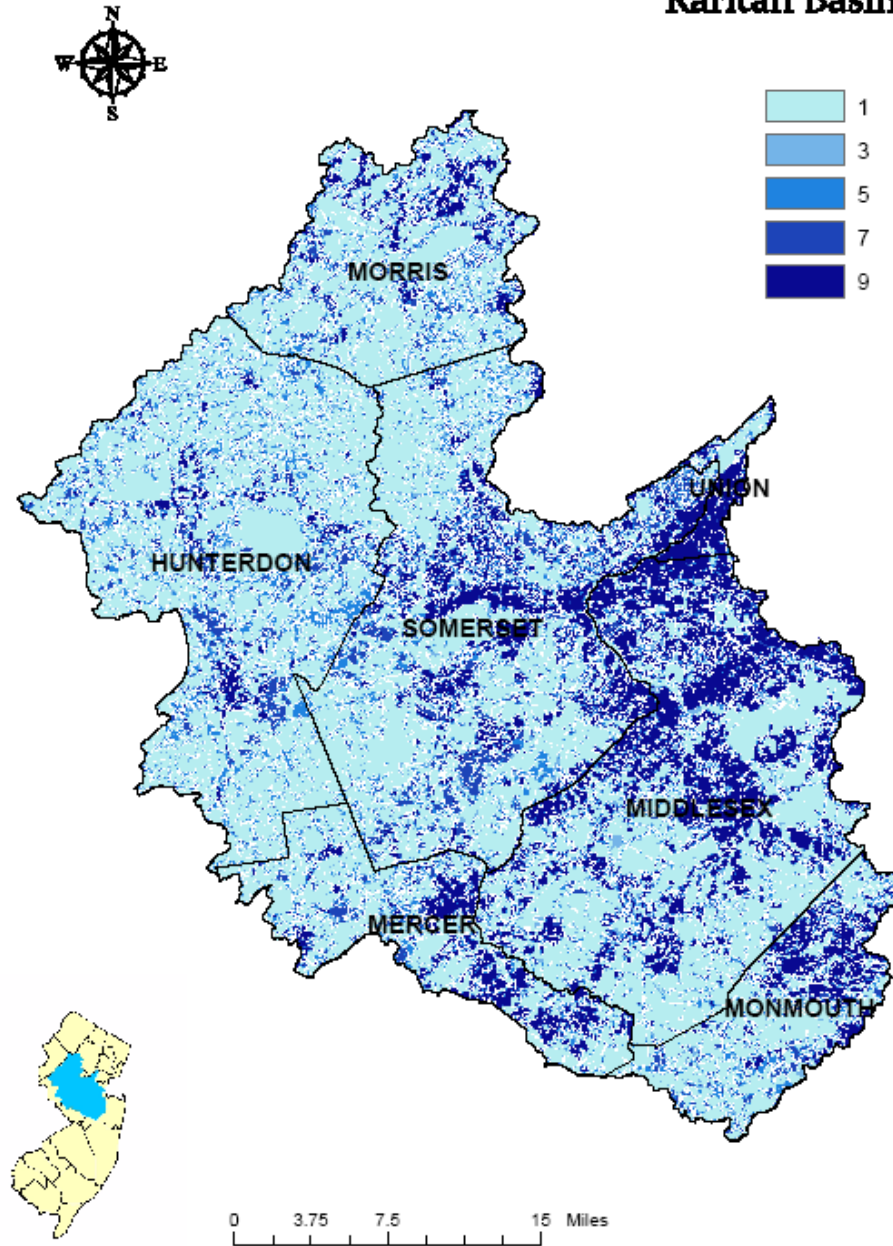
- ▣ Displays the percent impervious cover within the labeled area. This was broken down into five classes based on percentage. Research indicates severe degradation beyond 25% impervious cover.

- ▣ Scored 1 - 9

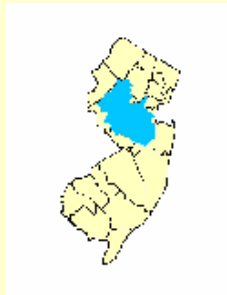
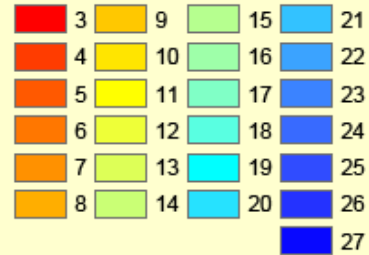
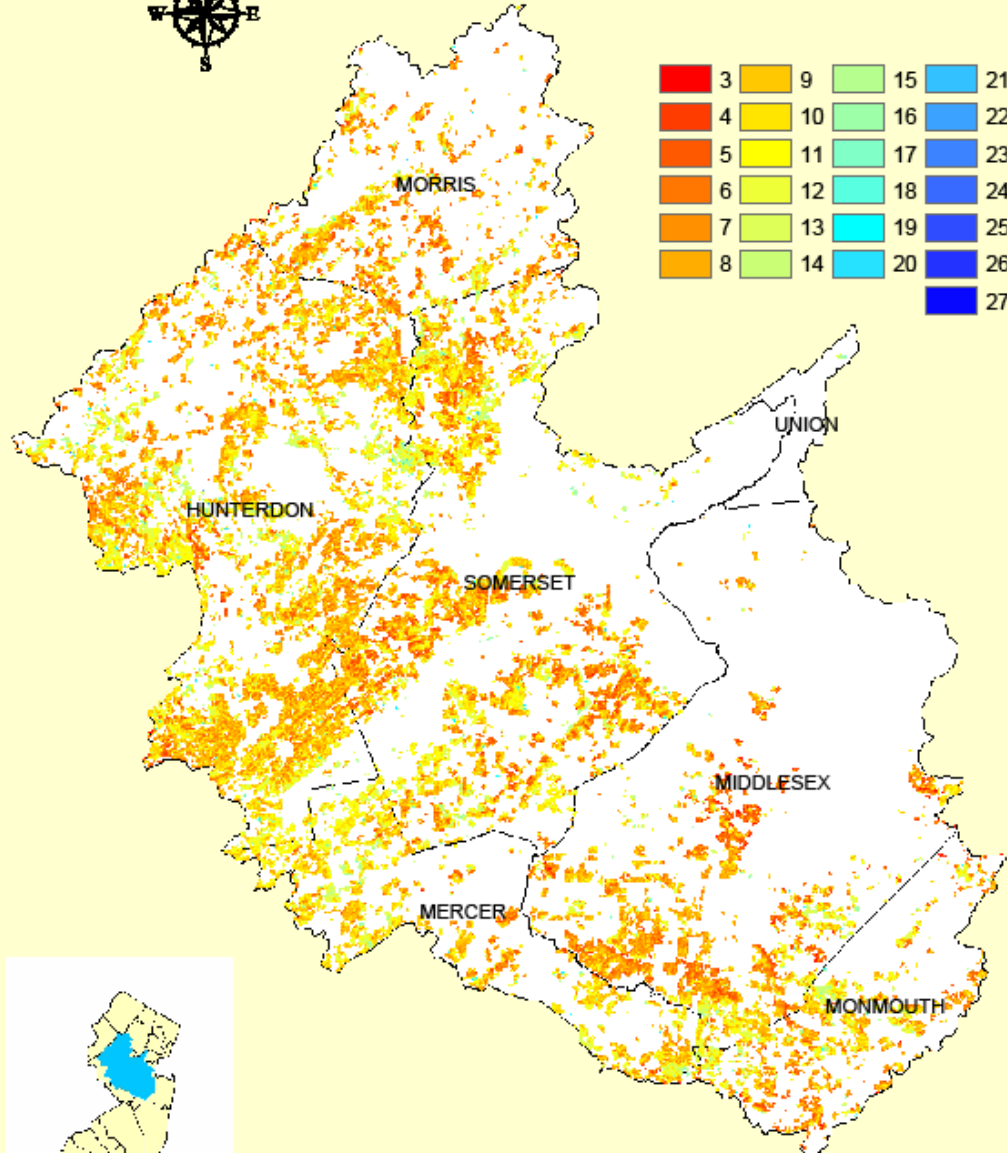
**This component was weighted due to its importance and contribution to watershed concerns. **



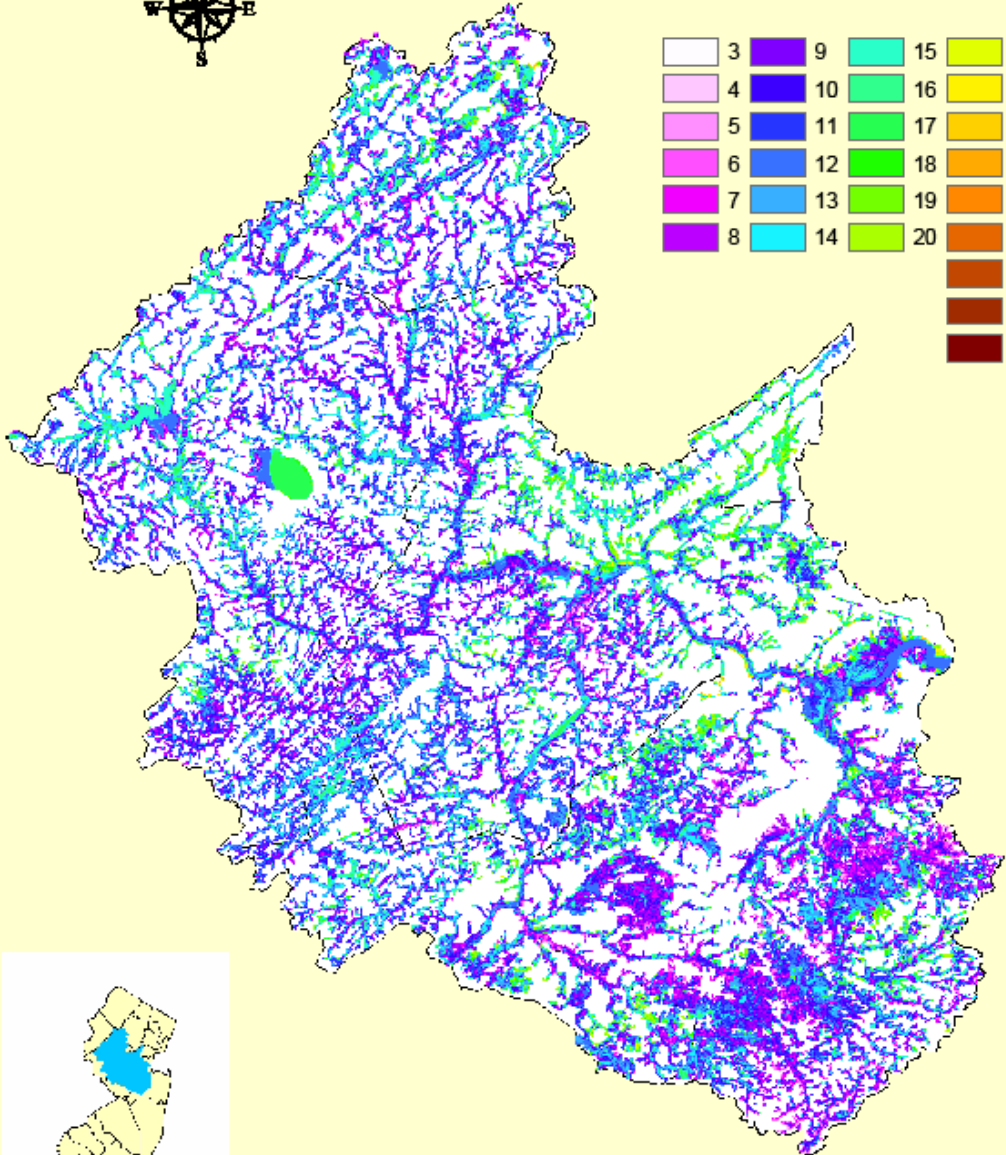
Impervious Surface Raritan Basin



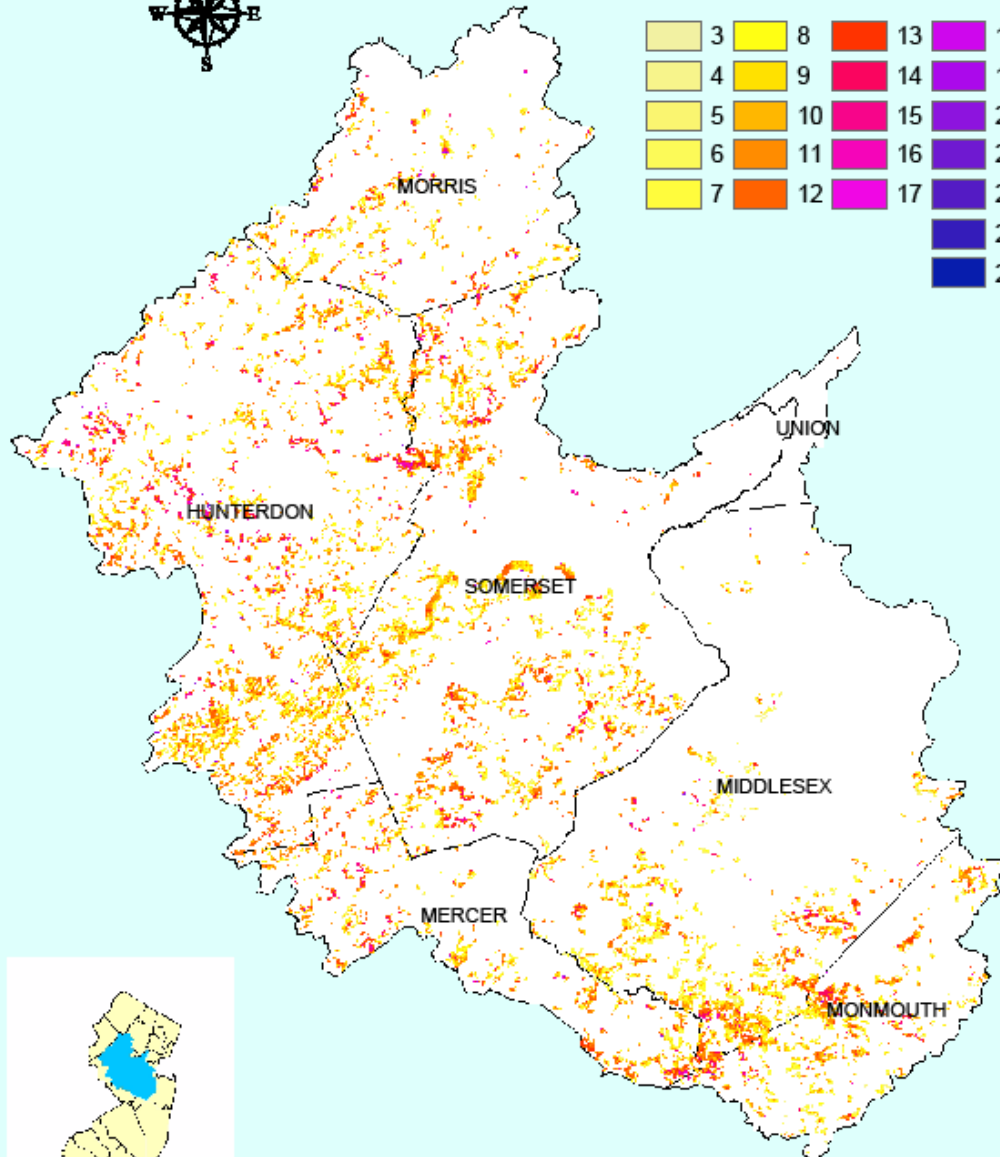
Agricultural Lands - 4 Components Raritan Basin



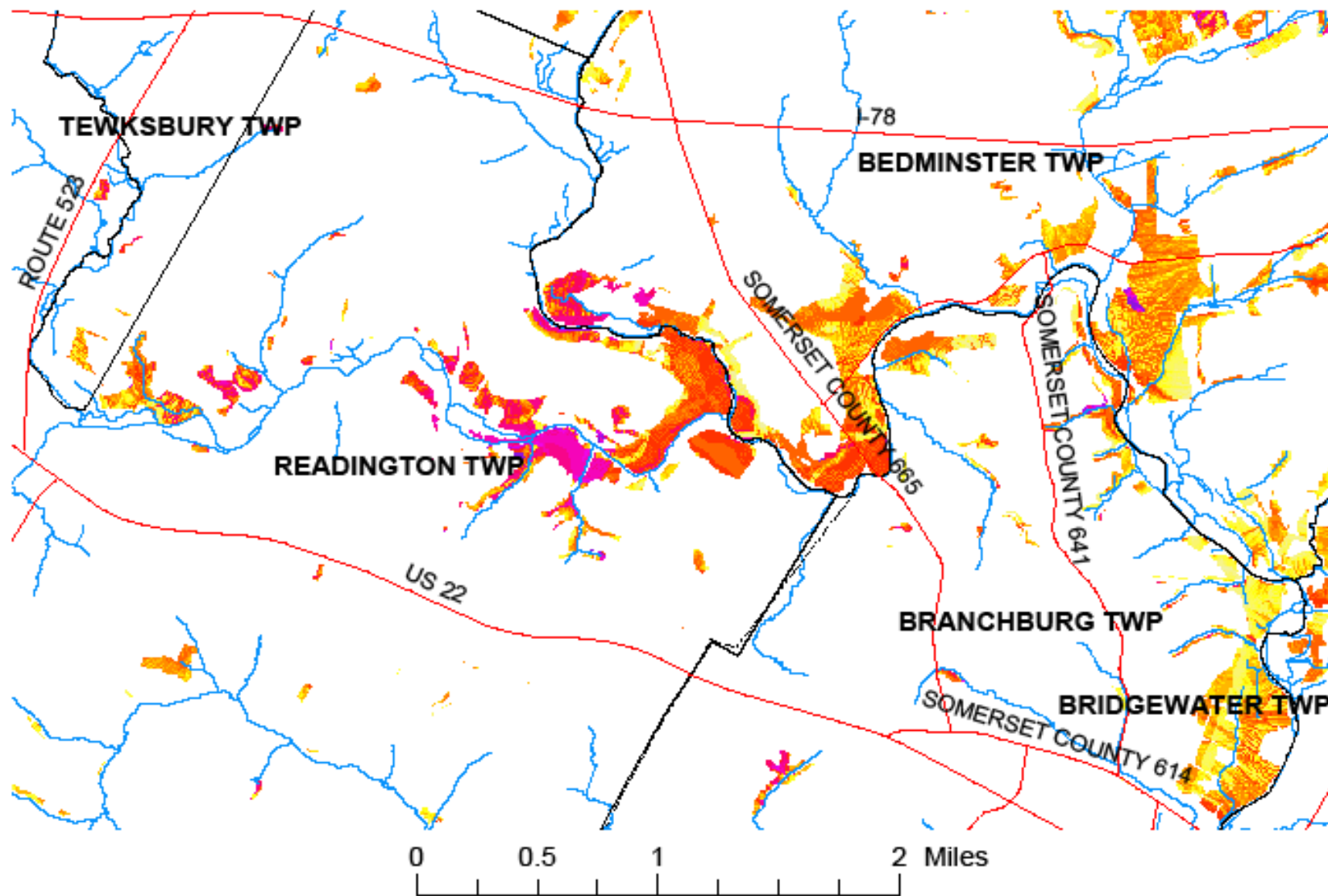
Riparian Areas - 4 Components Raritan Basin



Riparian Agriculture - 4 Components Raritan Basin



Riparian Agriculture - 4 Components Raritan Basin



Next Steps

- ❑ Conducting interviews with agricultural landowners and producers regarding buffer implementation
- ❑ Review and evaluate all buffer funding sources currently available
- ❑ Prepare report summarizing model, interview, and funding sources
- ❑ Make recommendations for programs needed to fill gaps

What do you think?

- We want to know what you think of the model and the project in general
- Any Questions?
- Learn more on the web!
 - <http://ims.njit.edu/riparian/sources.html>
- Contact me for more information:
 - Jen House
 - 908-735-0733 ext. 107
 - jhouse@northjerseyrcd.org