Remedial Priority System

Human Health Layers
Private Supply Wells

March 2012

Private Wells Layer

Private Wells Layer ➜ derived Layer (a layer created by DEP) based on population and exposure duration

- **Mode of Exposure:** People drinking (Ingestion / Dermal) contaminated ground water from private wells

- **Background:** Private potable wells serve a dwelling unit and are located on the same real property as the dwelling unit

- Source Layers:
  - Water Purveyor Layer
    - Basis for layer: used to identify areas serviced by public water
  - Land Use Layer
    - Basis for layer: identifies residential properties and the type of usage

Private Wells Layer

- Cell Values:
  - Population served:
    - cell values for each Land Use type are assigned based on estimated populations derived from with the 2000 census data
    - Cells values are calculated based on the land use, but cells serviced by public water are set to 0

  - Exposure Period:
    - A 20 year exposure period is used to account for a theoretical time between sampling of a private domestic well
      - ❖ The value assigned by the land use layer is multiplied by an exposure period of 20 years

Private Wells Layer

- Cells values
  - Values based on an estimated population served and exposure duration

Land Use Type	Cell Value
Agricultural wetland, croplands, pastures, orchards, vineyards, horticulture, plantations, general agriculture	1
Residential, rural, single units	4
Residential, single units, low density	10
Mixed residential	25
Residential, single units, medium density	32
Residential, high density, multiple dwellings	62
Mixed urban or built up land	80

- Calculation Method:
  - All cells that are within the ground water Extent Area are summed
    - Cell Values are summed because they are based on a the population density

Private Wells Layer

- The following is the method used to create the Private "Domestic" Wells Layer GIS layer

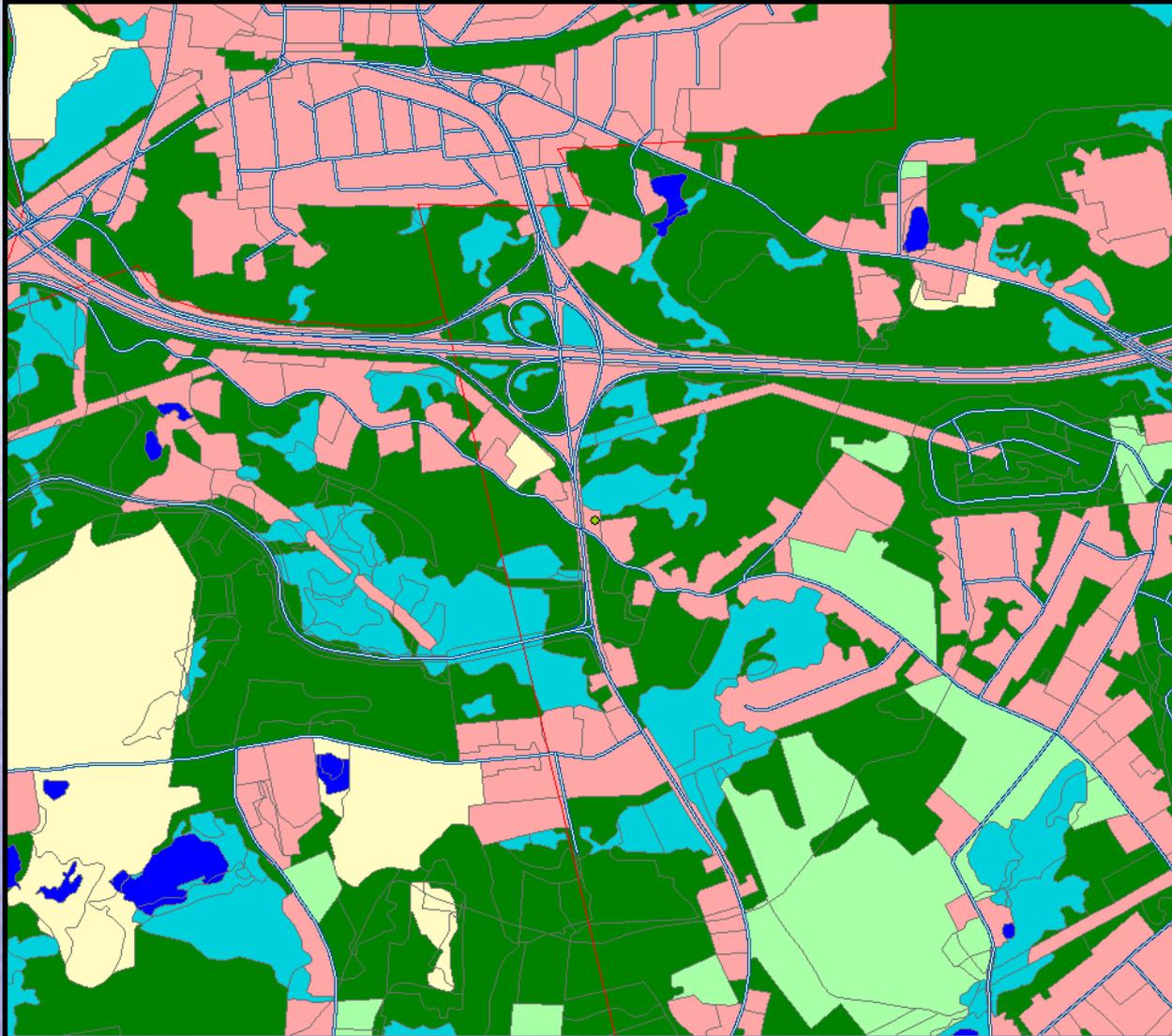# **Private Wells Layer**

Creating the Private Wells Layer

Site

Private Wells Layer

Creating the Private Wells Layer

Start with Land Use layer

– The following table is the basis for assigning cell values:

–Agricultural	1
–rural, single units	4
–One unit, low density	10
–Mixed residential	25
–One unit, med density	32
–high density, multiple	62
–Mixed urban	80

Legend

- AGRICULTURE
- BARREN LAND
- FOREST
- URBAN
- WATER
- WETLANDS

Private Wells Layer

Creating the Private Wells Layer
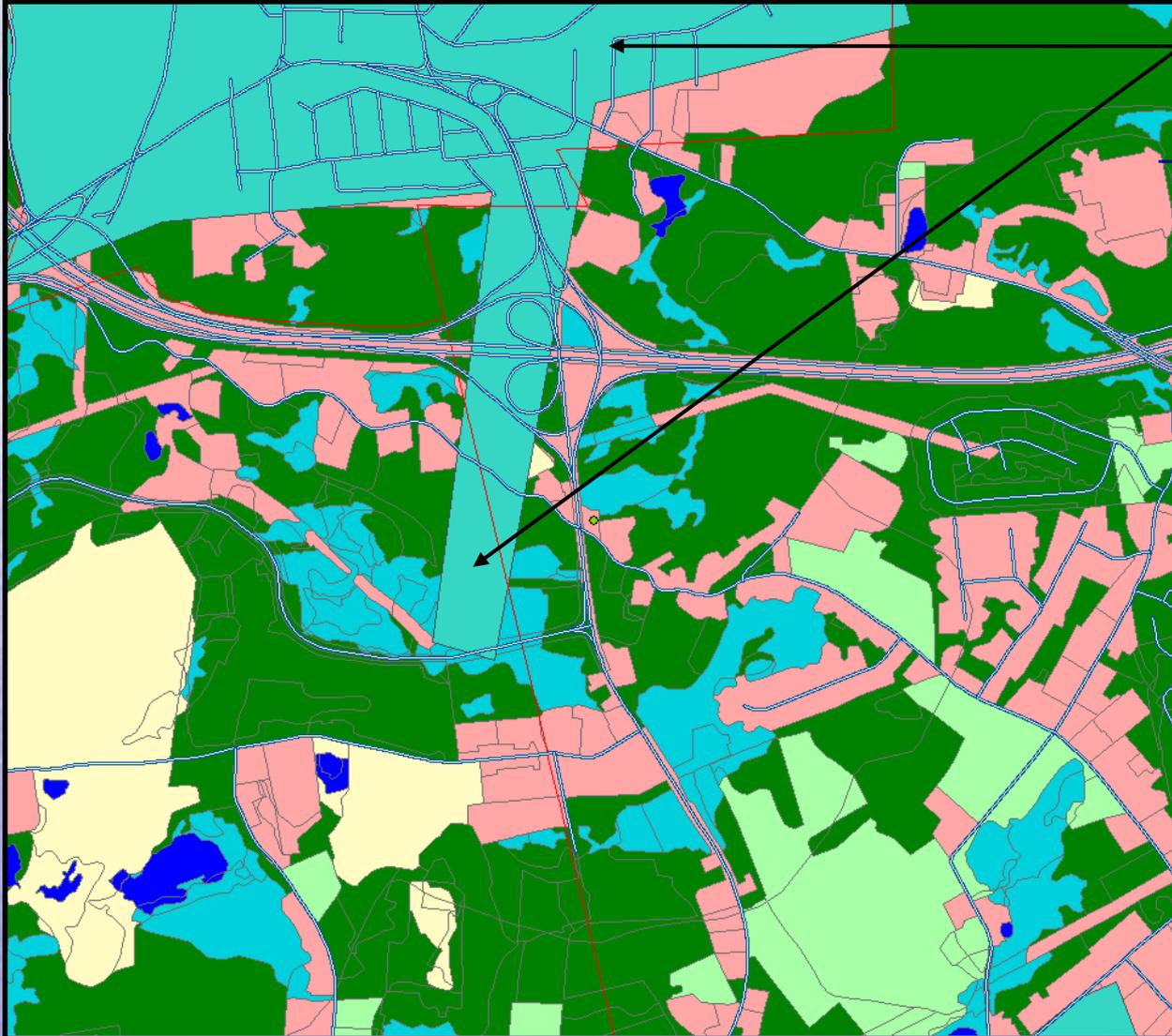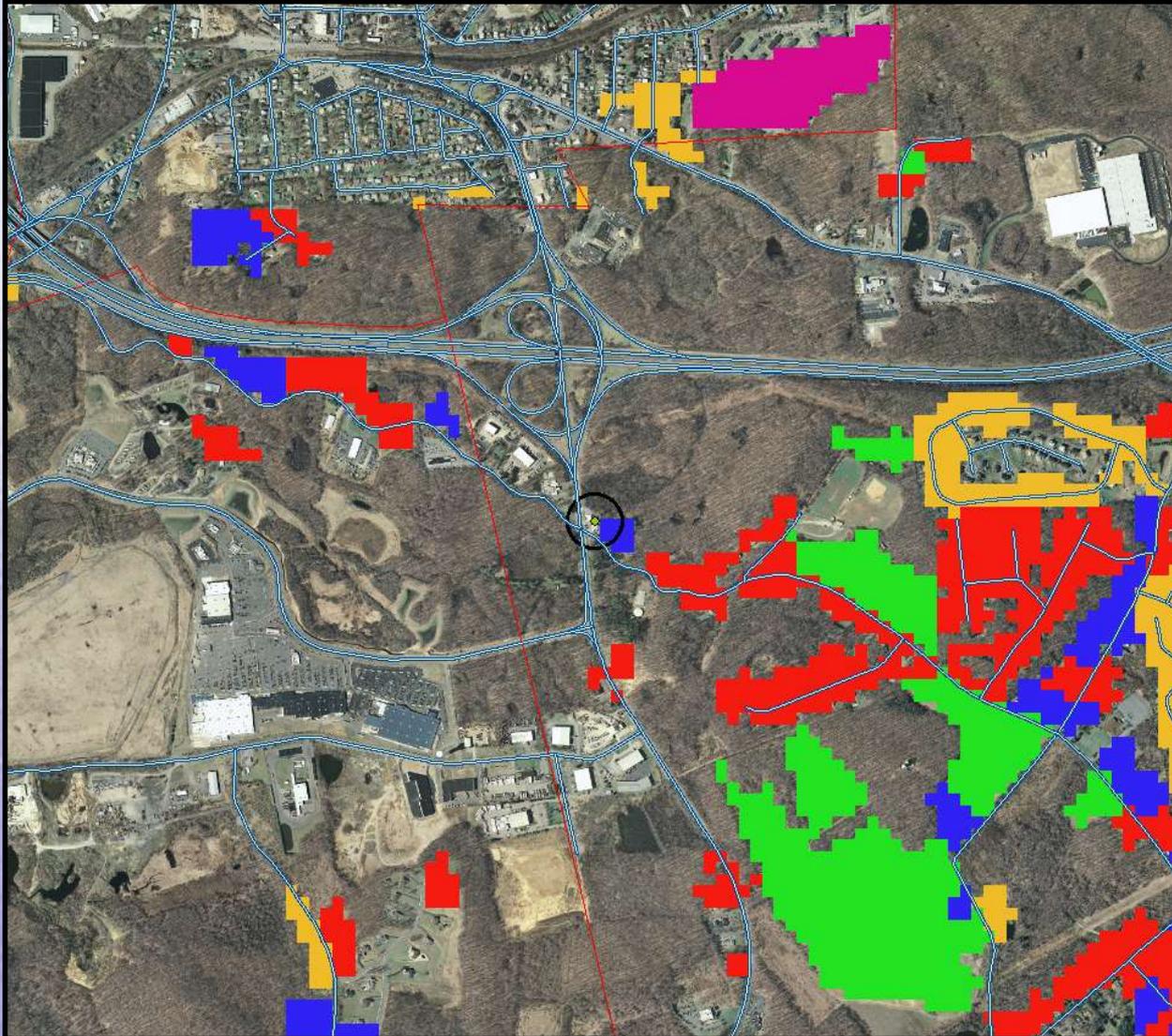

Overlay Water Purveyor layer

Areas supplied by public water are given a zero value

Private Wells Layer

Creating the Private Wells Layer

Vectors are converted into a Raster file (100 by 100 grid) and assign the appropriate values to each cell

- Agricultural   1
- rural, single units   4
- One unit, low density   10
- Mixed residential   25
- One unit, med density   32
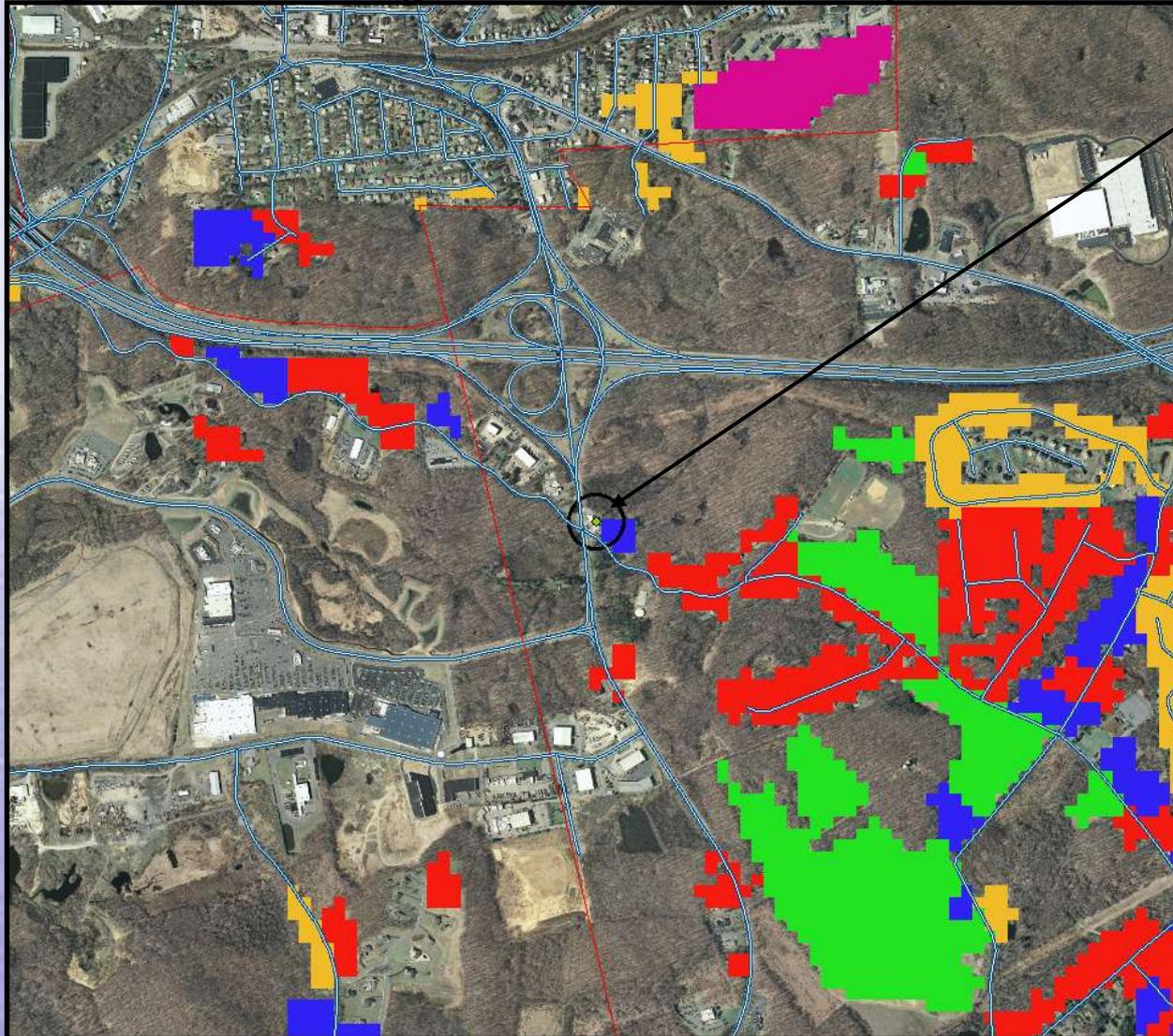- high density, multiple   62
- Mixed urban   80

Legend

- ☐ 0
- 🟩 1
- 🟦 4
- 🟥 10
- ☐ 25
- 🟧 32
- 🟪 62
- 🟩 80

Private Wells Layer

Creating the Private Wells Layer

Site

◯ Ground Water Extent Area

Legend

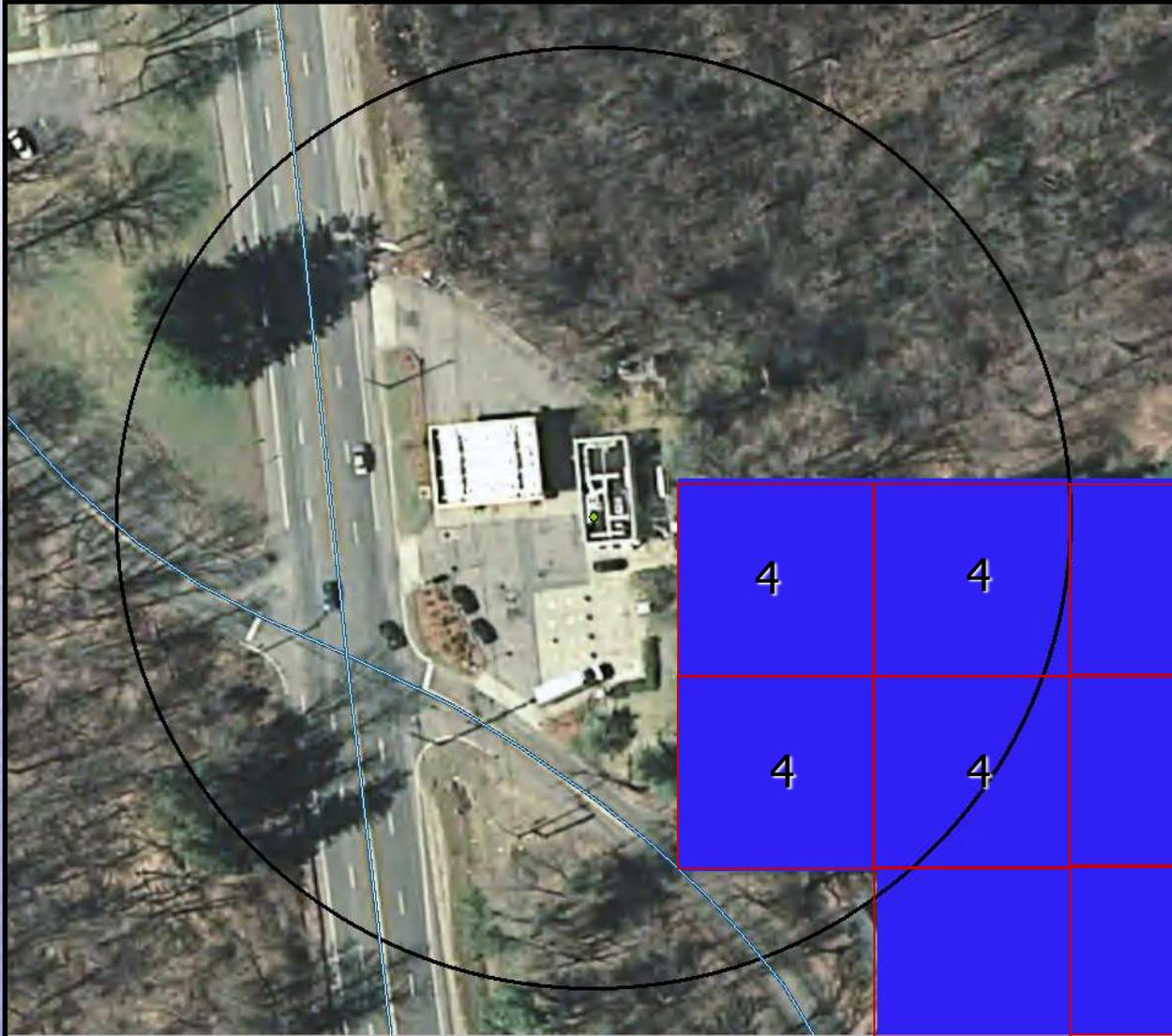|	
☐	0
🟩	1
🟦	4
🟥	10
🟦	25
🟧	32
🟪	62
🟩	80

Private Wells Layer

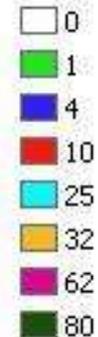Creating the Private Wells Layer

To calculate the Score:

- Zoom in to the Extent Area

- Sum up all cell values that are within the Extent Area

cell value = 4

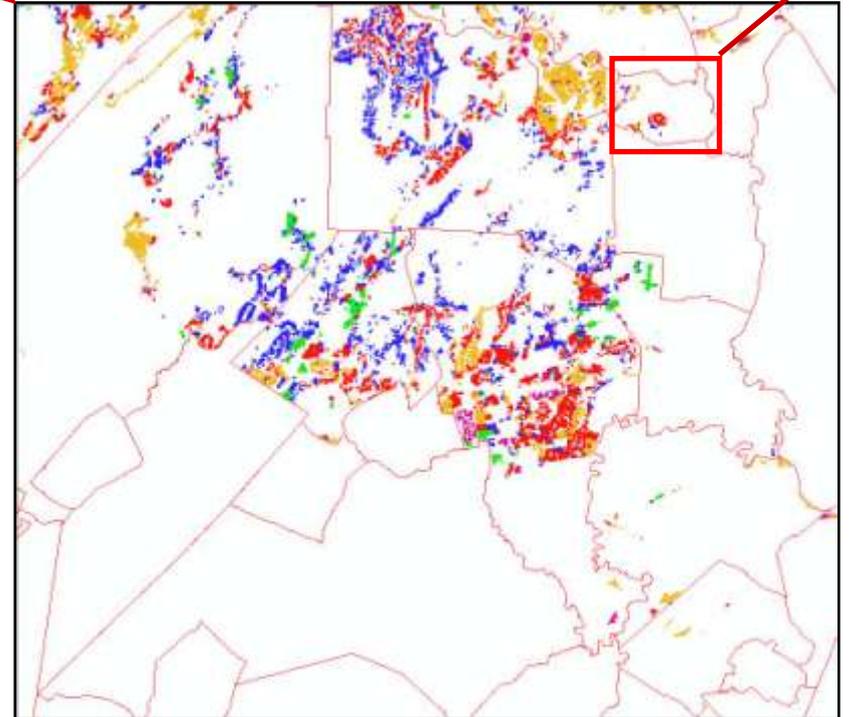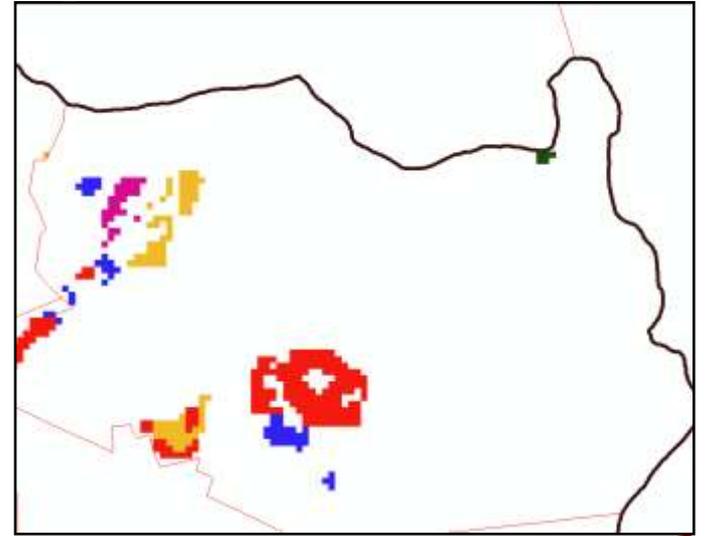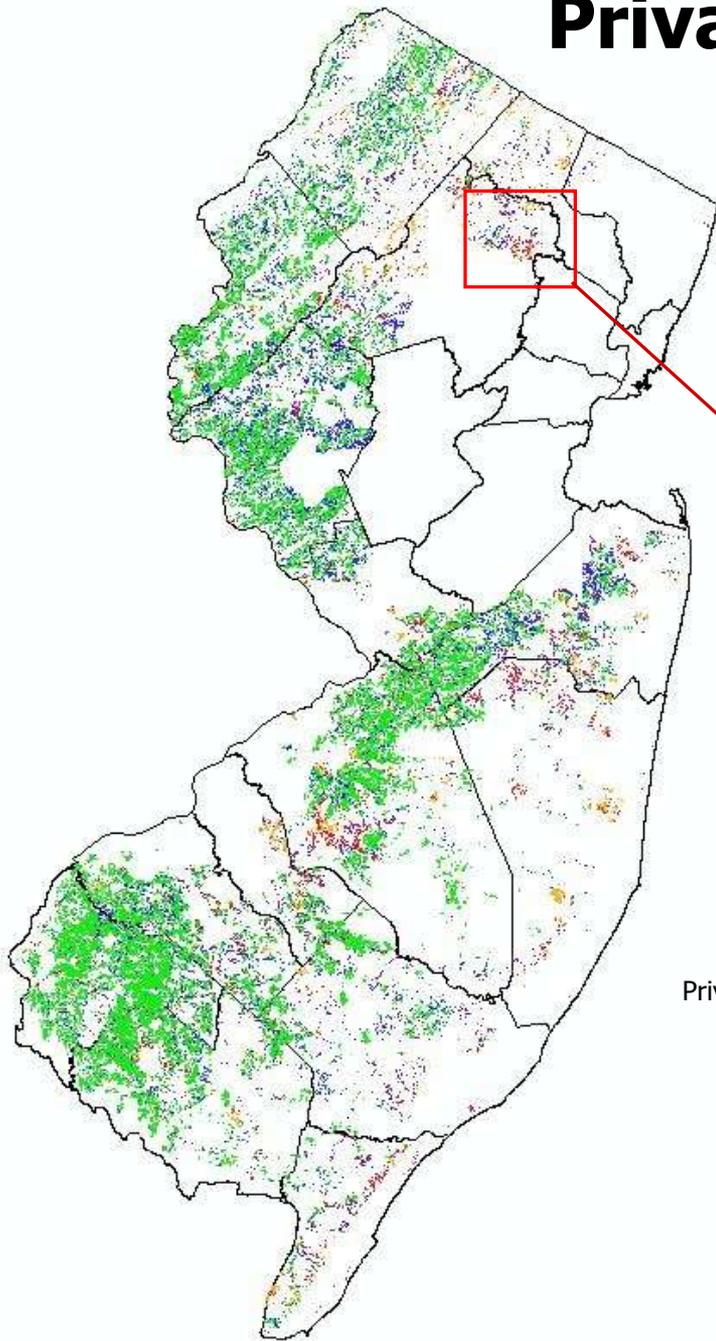Cells within area = 4

Final Layer Score = 16

Legend

- 0
- 1
- 4
- 10
- 25
- 32
- 62
- 80

4   4

4   4

Private Wells Layer

- A Private "Domestic" Wells Layer is created for the entire state

- The following is the layer used to calculate the Private Wells Receptor Layer Score

Private Wells Layer

Legend

Private Wells Score

☐	0
■	1
■	4
■	10
■	25
■	32
■	62
■	80