



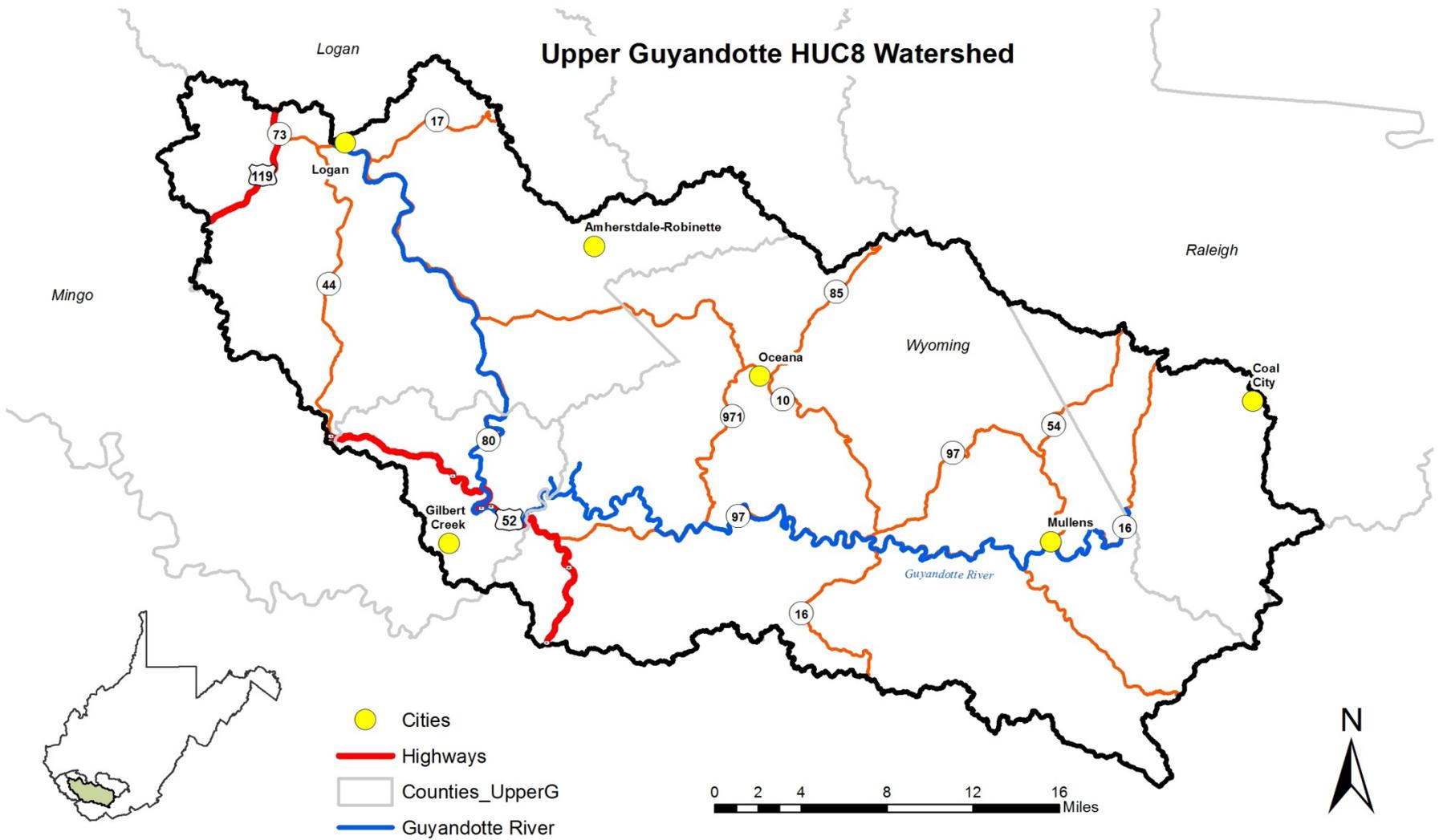
# WEST VIRGINIA WATERSHED ASSESSMENT PILOT PROJECT

Guyandotte River by Stephen Conn

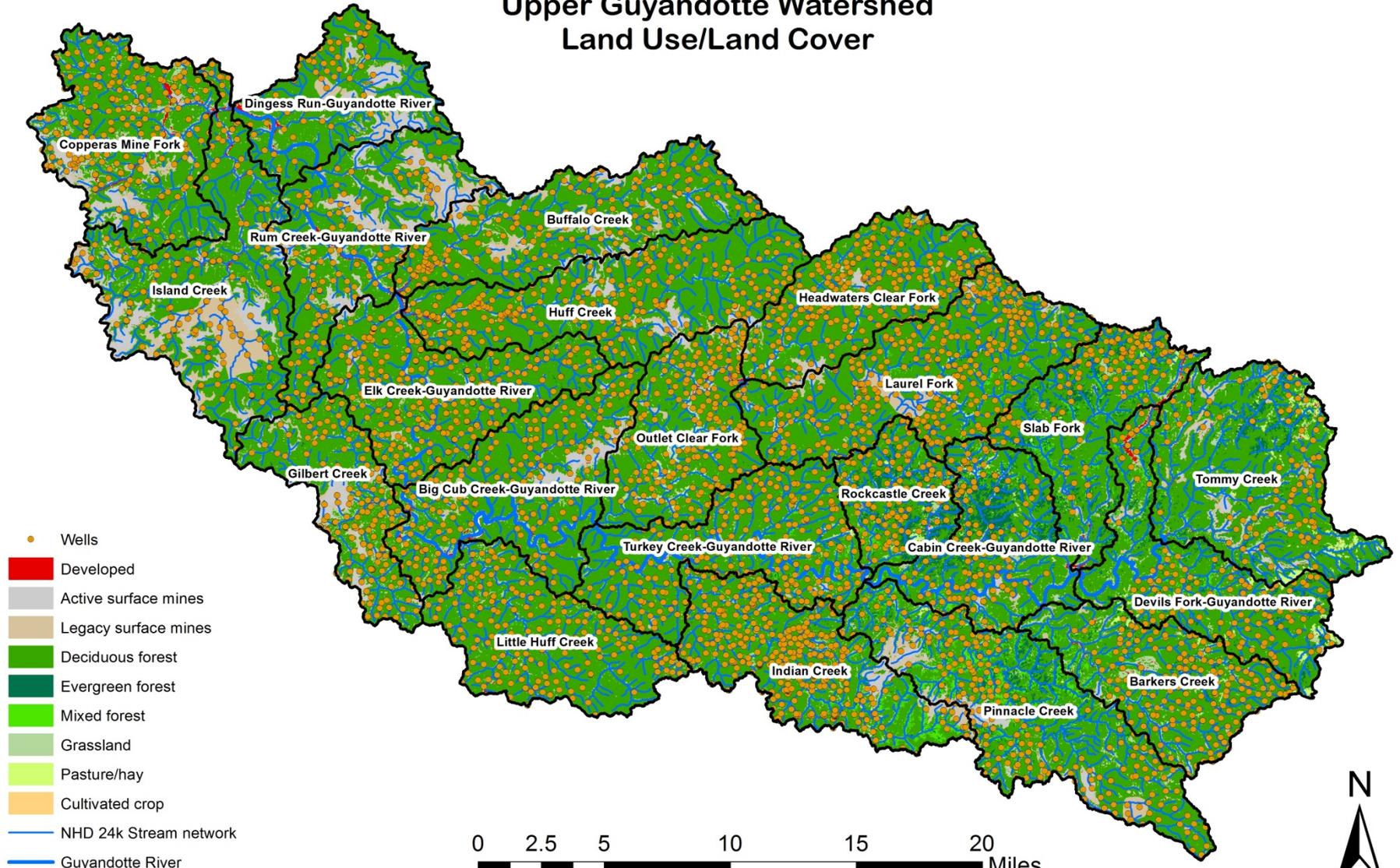


Second Expert Workshop: Upper Guyandotte Watershed  
January 8-9, 2013

# Upper Guyandotte HUC8 Watershed



# Upper Guyandotte Watershed Land Use/Land Cover



- Wells
- Developed
- Active surface mines
- Legacy surface mines
- Deciduous forest
- Evergreen forest
- Mixed forest
- Grassland
- Pasture/hay
- Cultivated crop
- NHD 24k Stream network
- Guyandotte River
- HUC12 Watersheds

0 2.5 5 10 15 20 Miles

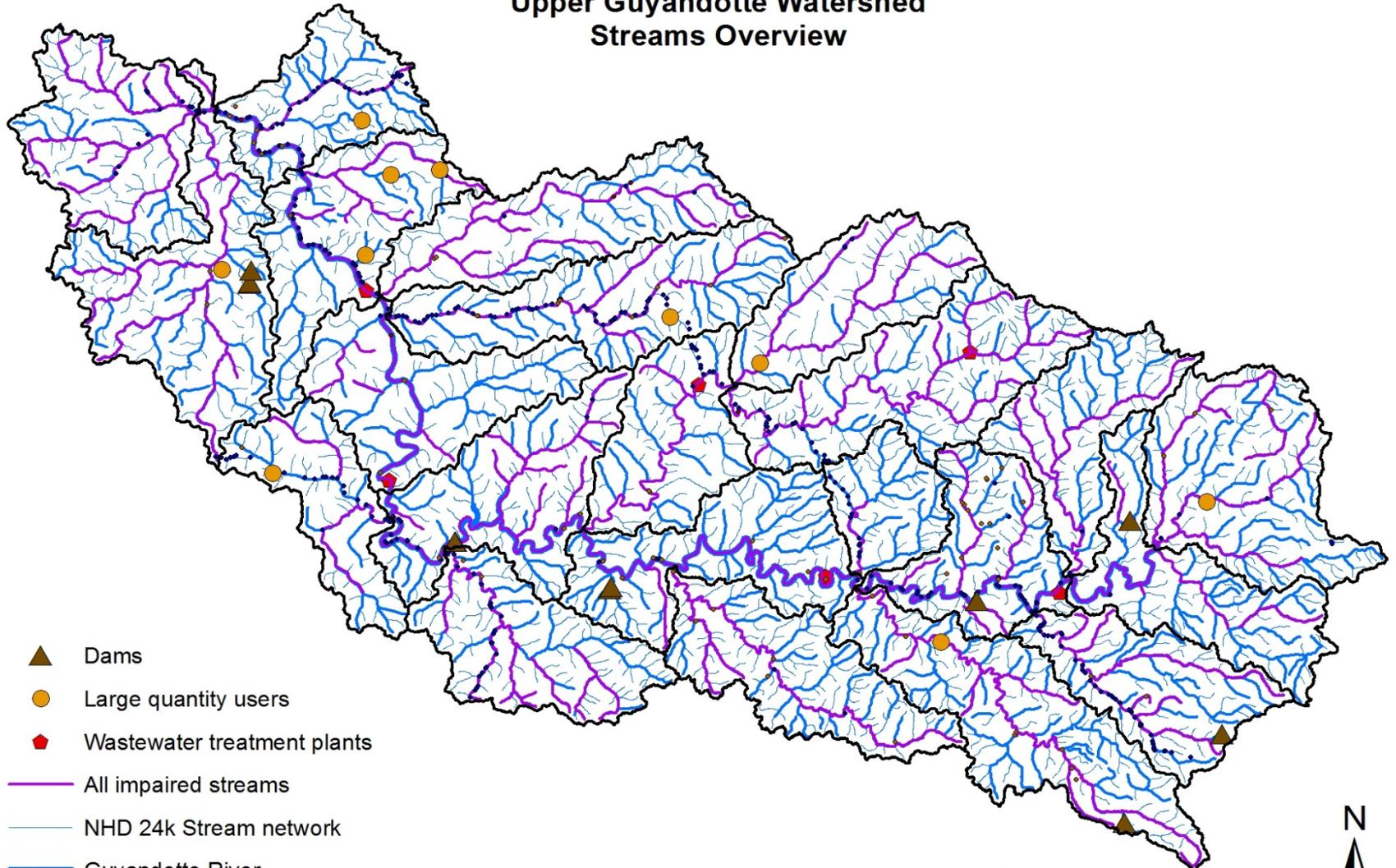


# Upper Guyandotte Watershed: Streams



USACE

# Upper Guyandotte Watershed Streams Overview

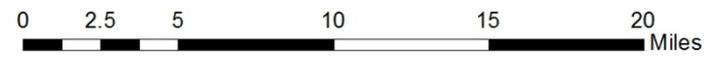


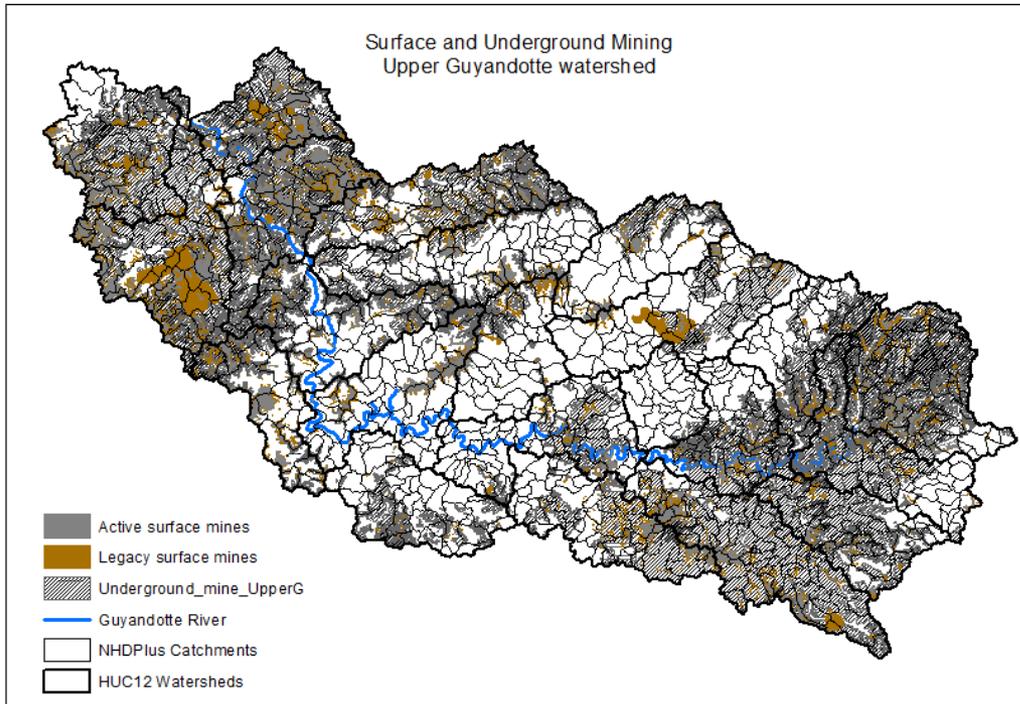
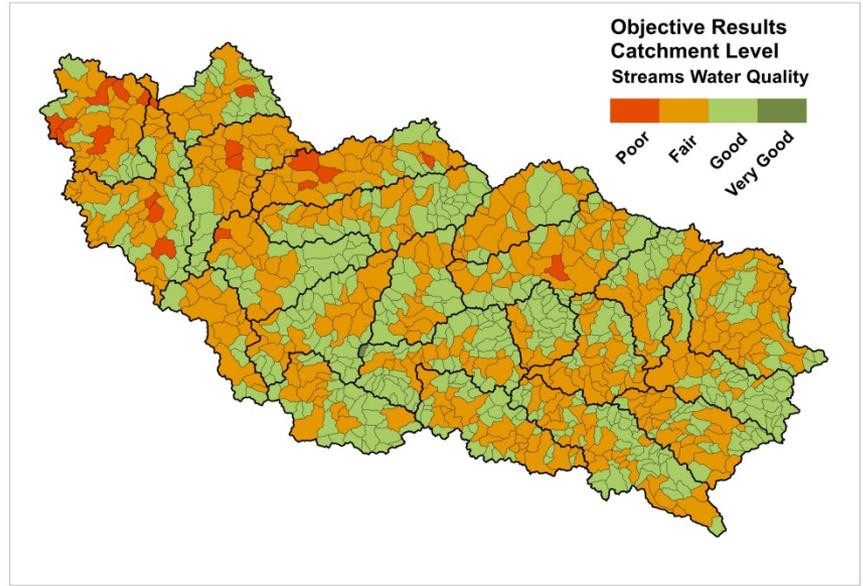
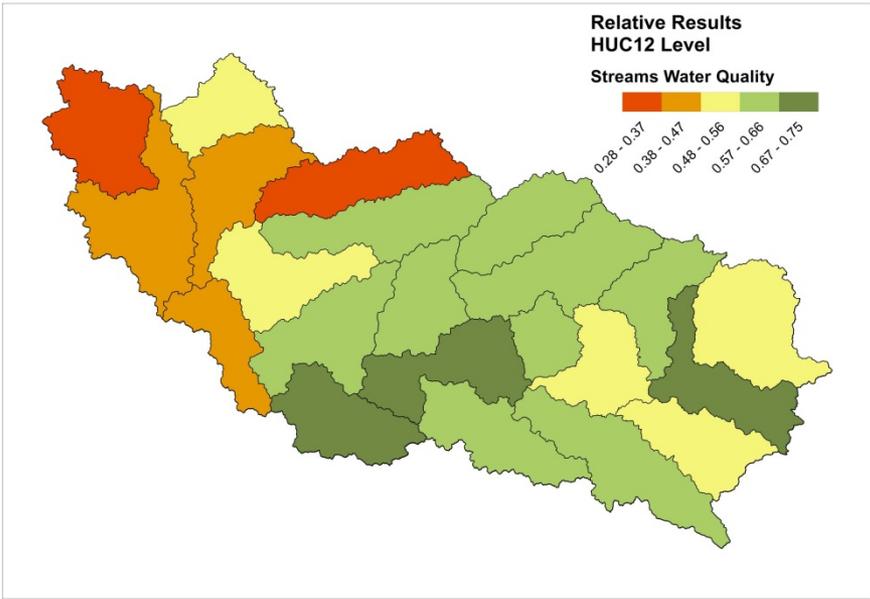
- ▲ Dams
- Large quantity users
- ◆ Wastewater treatment plants

— All impaired streams  
— NHD 24k Stream network

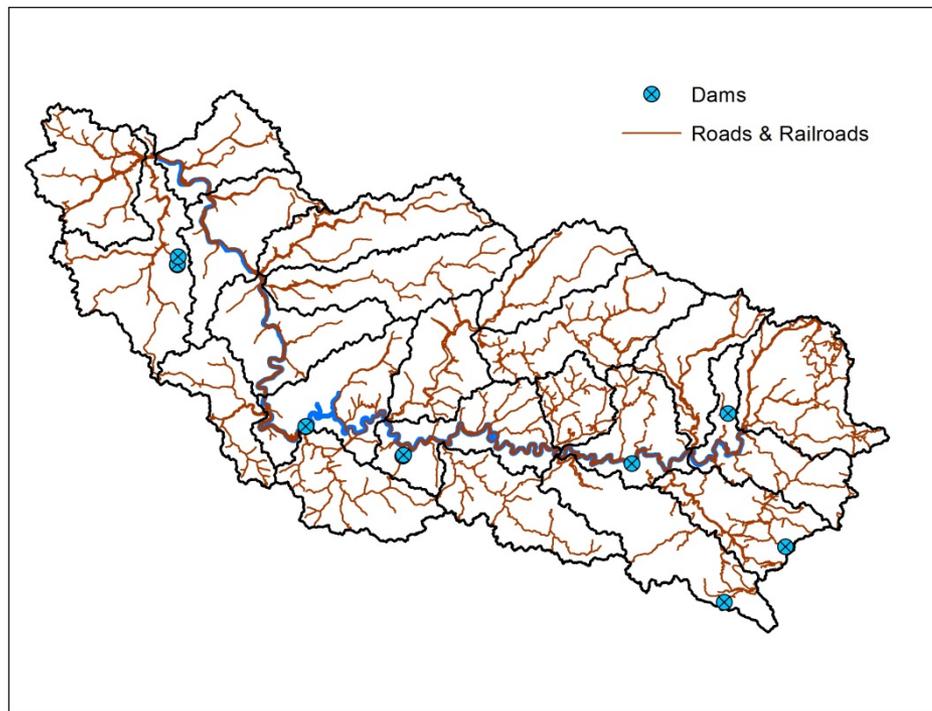
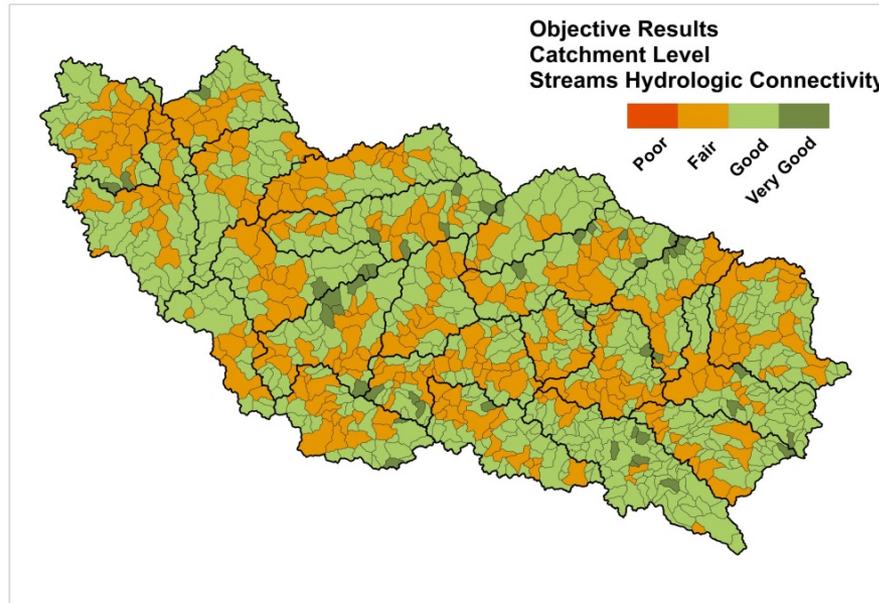
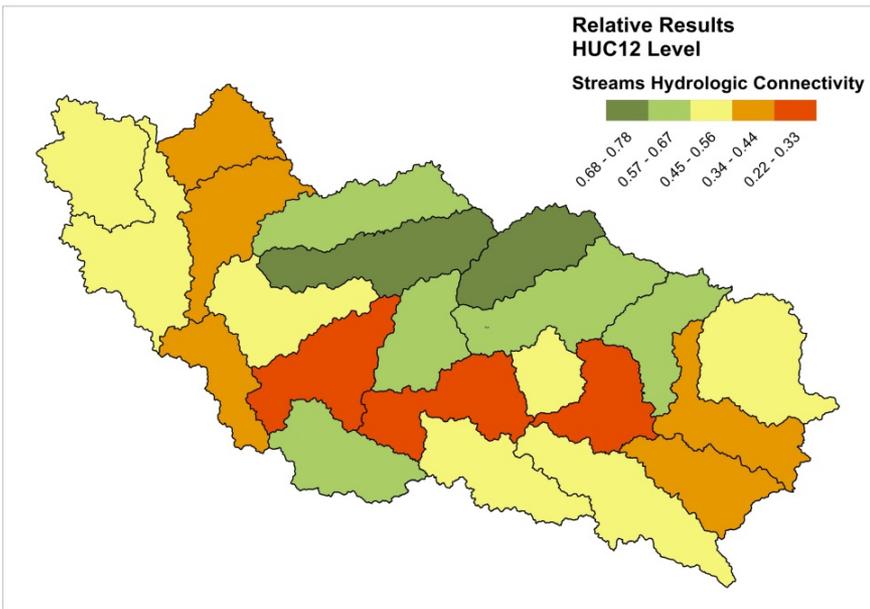
— Guyandotte River

□ HUC12 watersheds



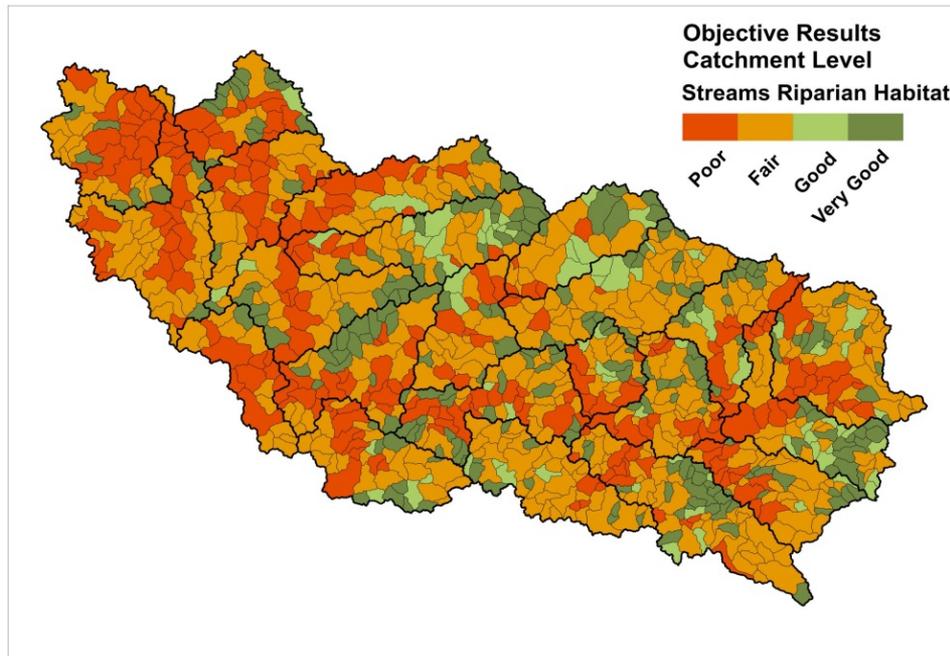
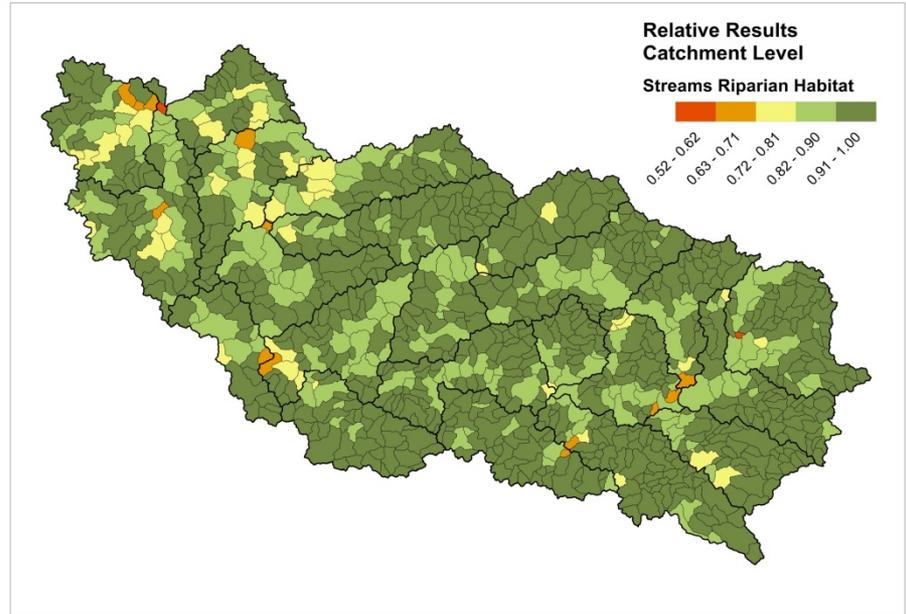
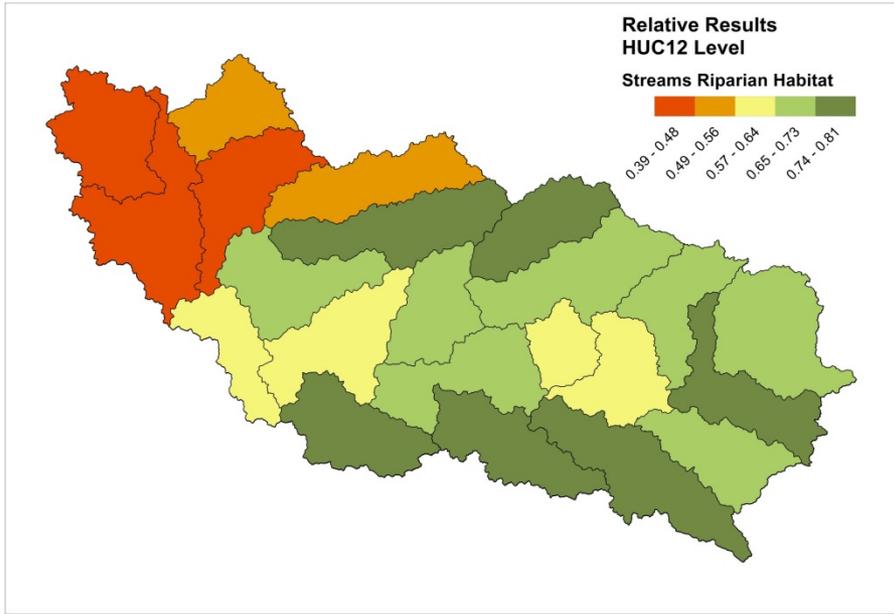


Streams  
Water  
Quality



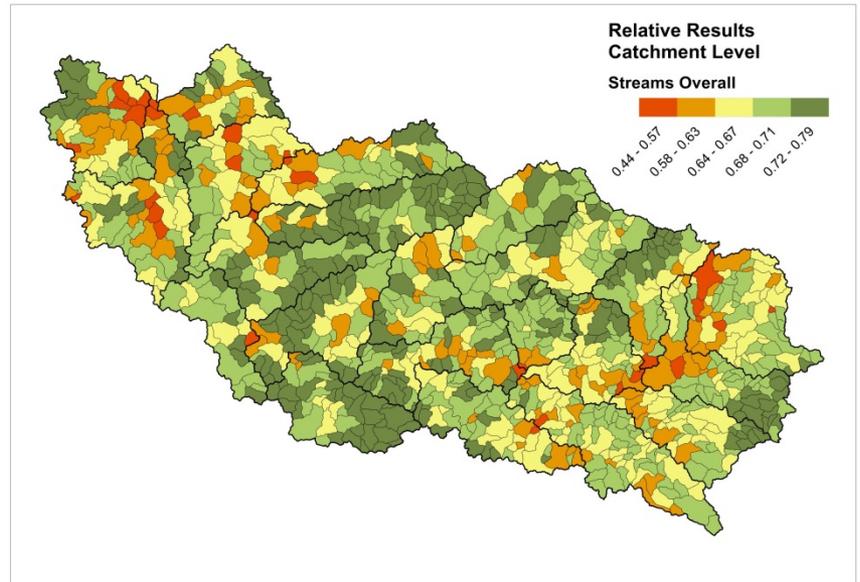
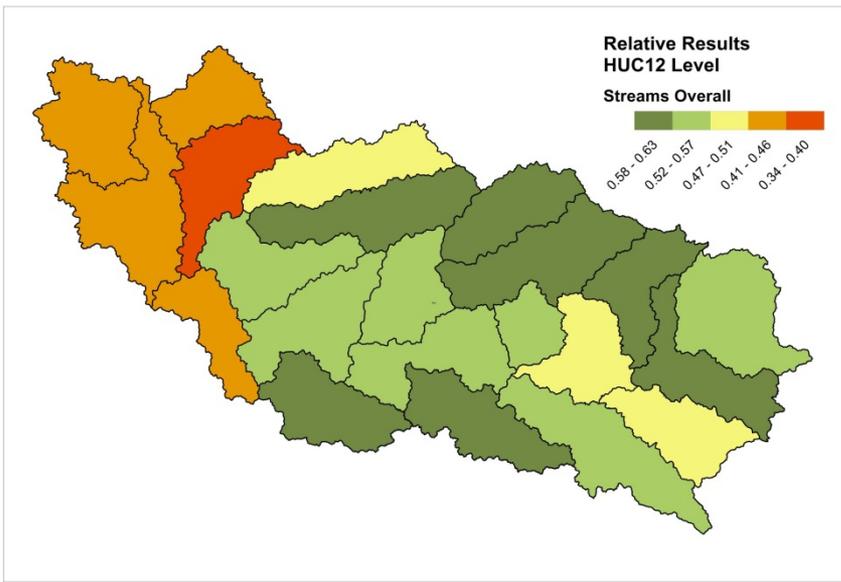
**Roads/Rail**  
**Dams**  
**Headwaters**  
**Riparian forest**

**Streams  
Hydrologic  
Connectivity**

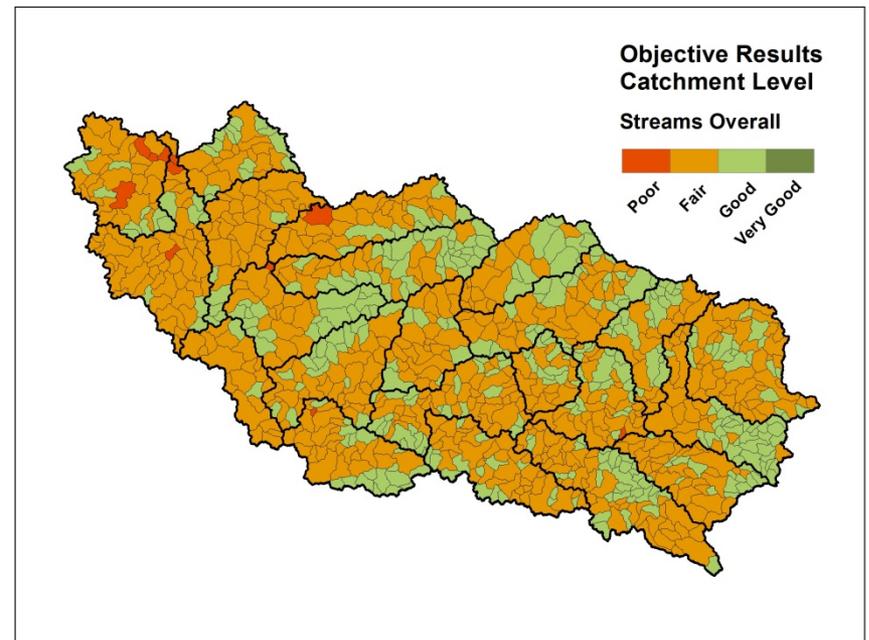


**Mining  
Wells  
Roads  
Land Cover**

**Streams  
Riparian  
Habitat**



**Little variation in results  
with objective method**



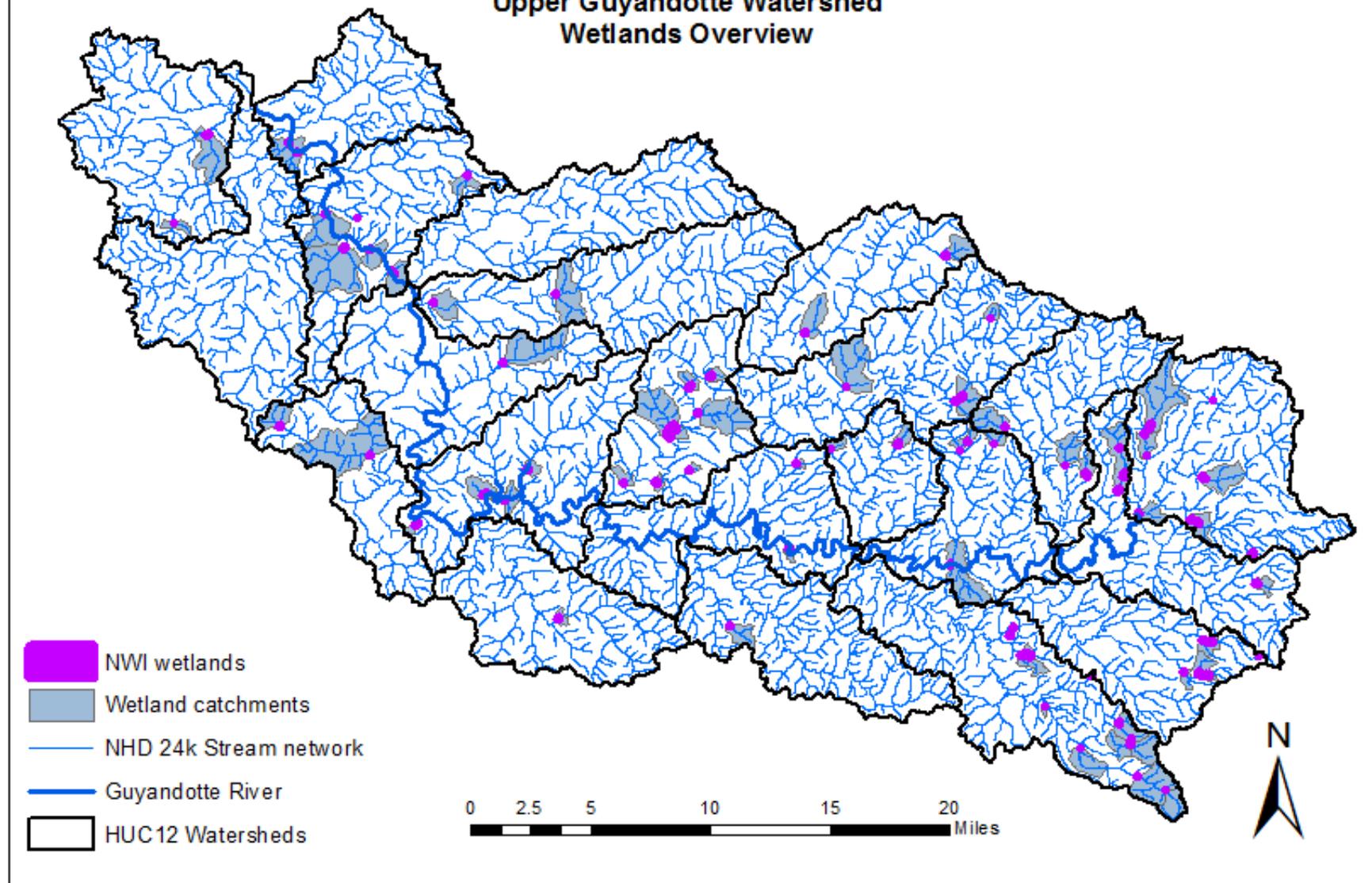
Streams  
Overall  
Model

# Upper Guyandotte Watershed: Wetlands

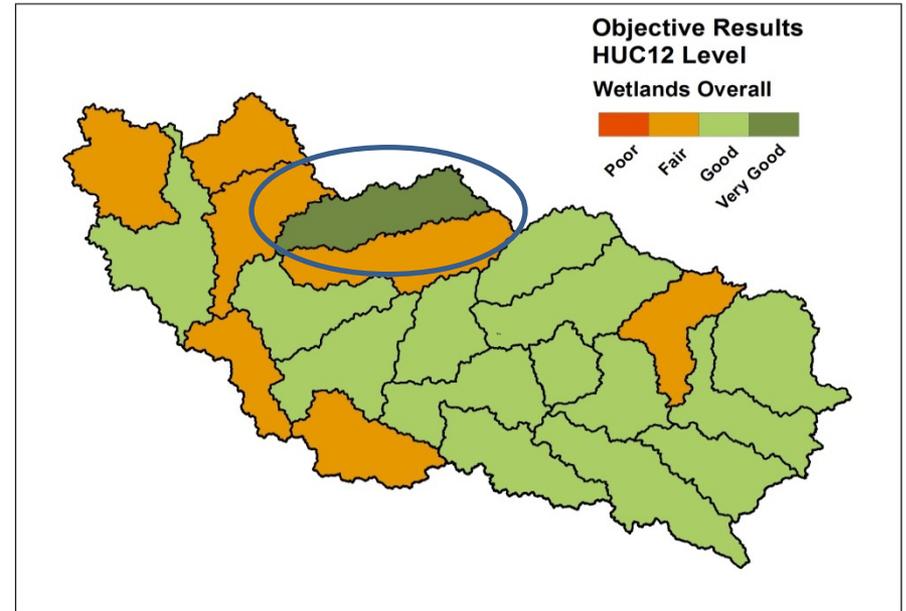
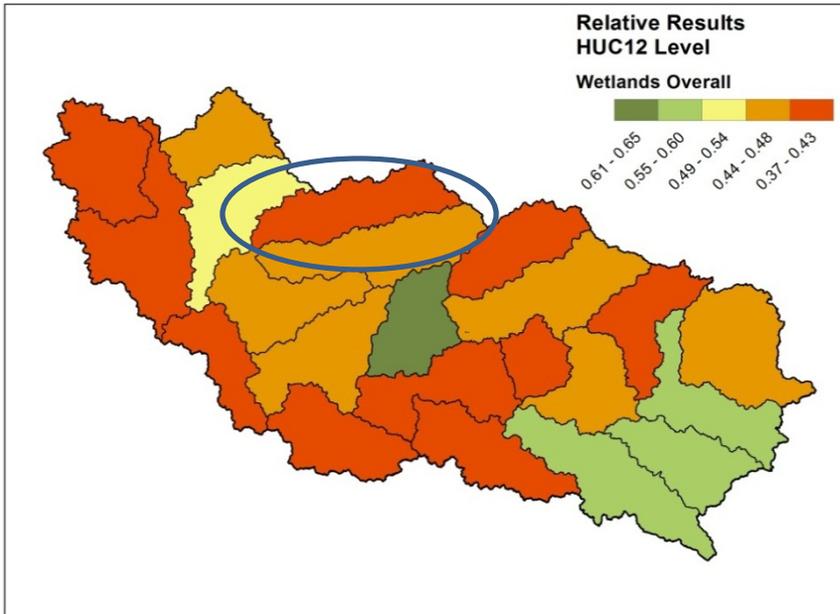


Wayne County wetland Argus Energy

## Upper Guyandotte Watershed Wetlands Overview



# Wetlands Model Overall



Model Rollup: Water Quality, Hydrology, Habitat, Biodiversity, Protected Lands

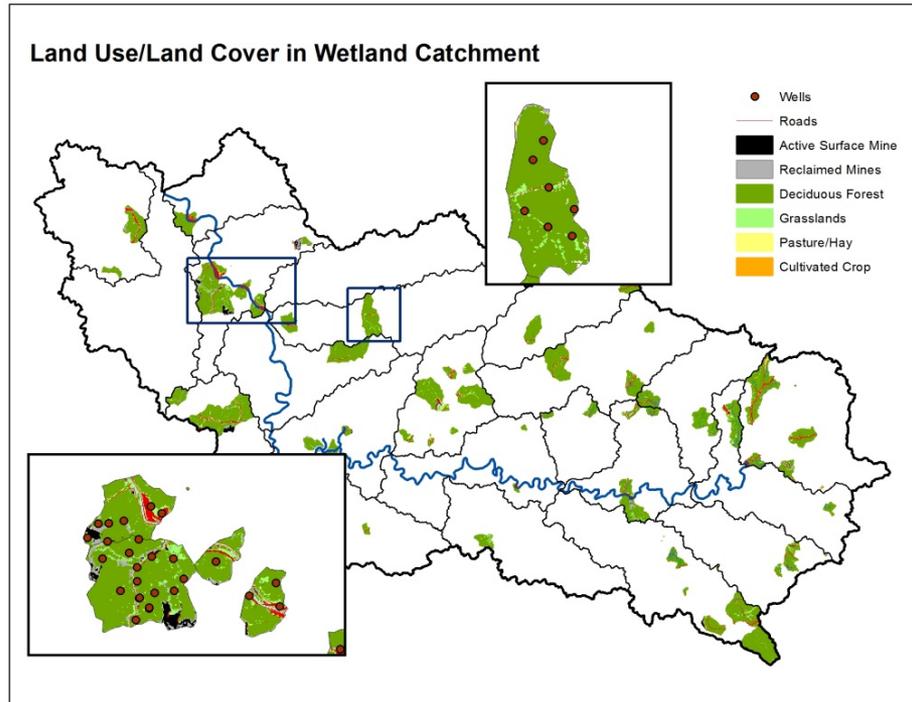
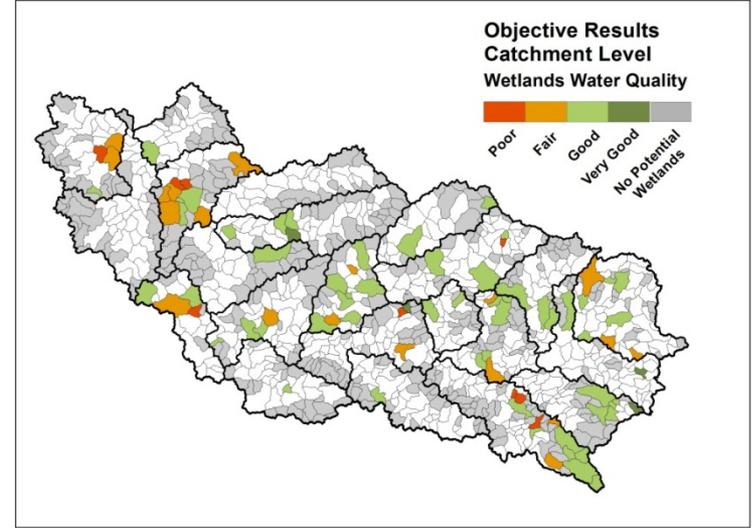
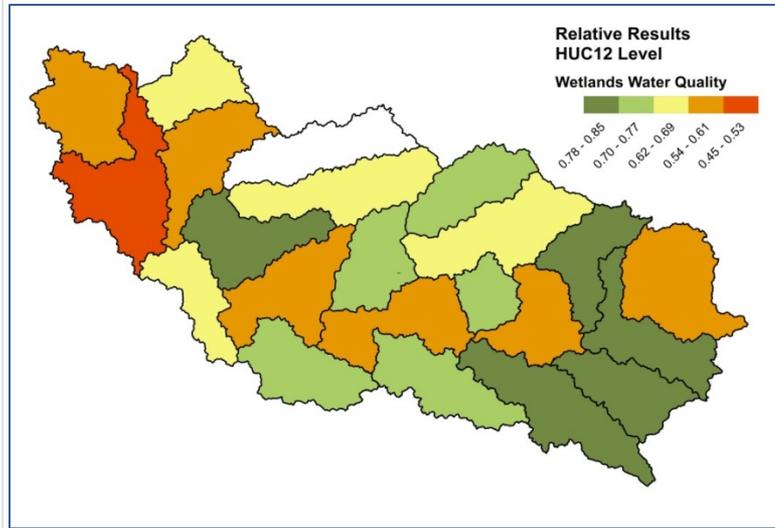
## Relative Method:

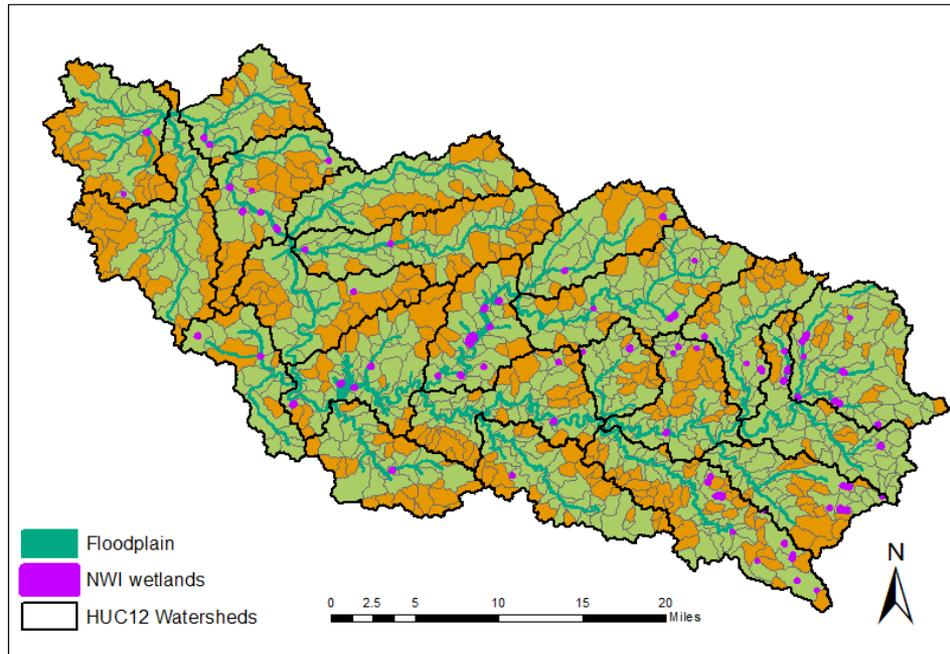
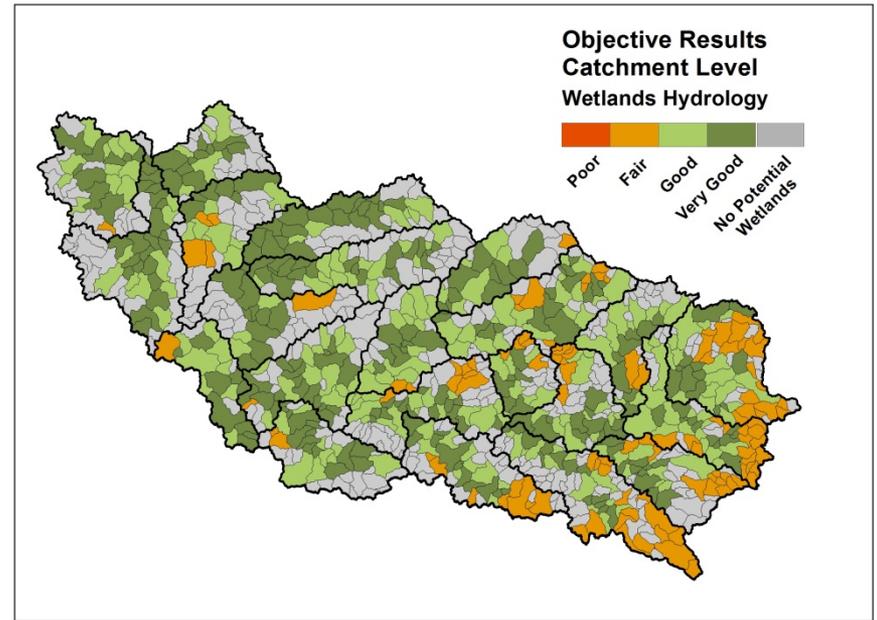
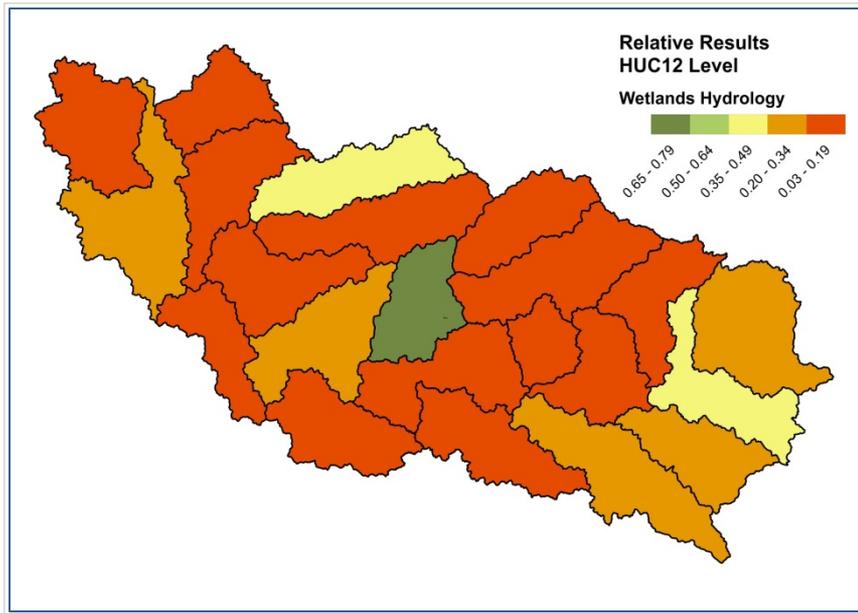
- No thresholds
- All Metrics Used
- No wetlands, lower score
- Equal interval classification
- forces a range of categories

## Objective Method:

- Thresholds and “Killer Metrics”
- No wetlands, uses wetland catchment metrics
- No wetlands or catchments, uses hydrology score (Wetland potential)

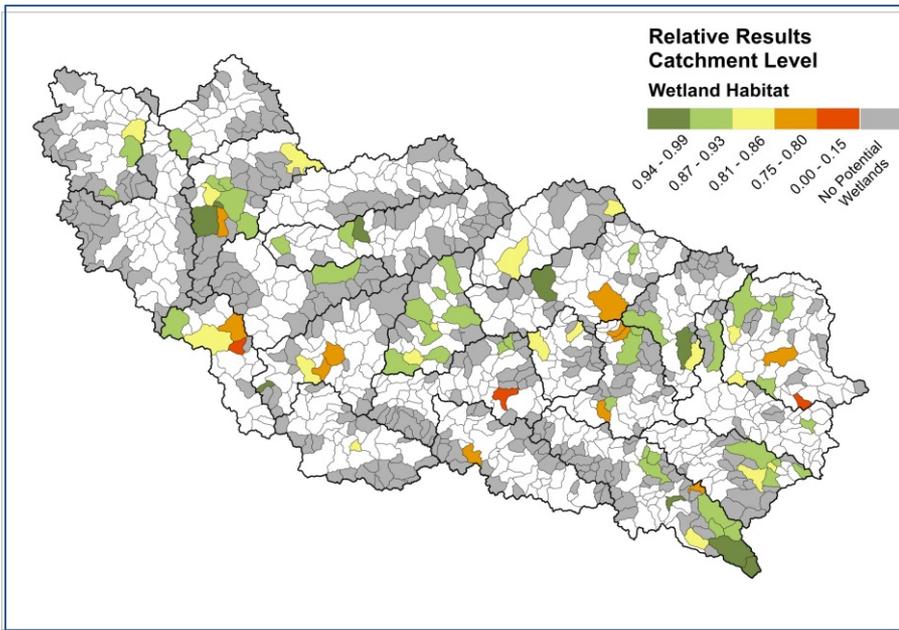
# Wetlands Water Quality: Catchment Metrics



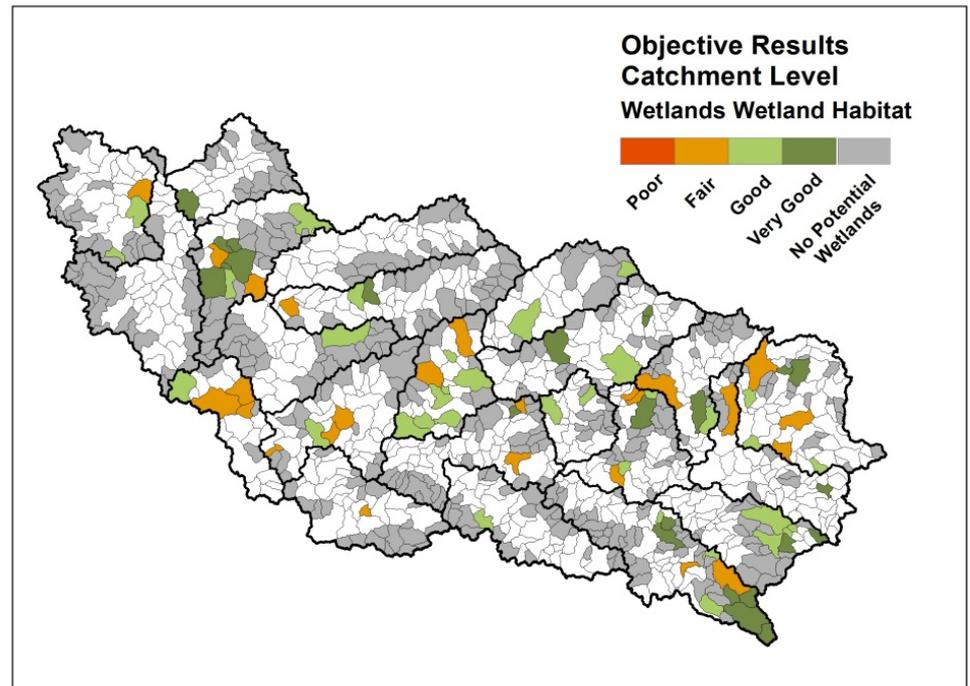


Wetlands  
Hydrology

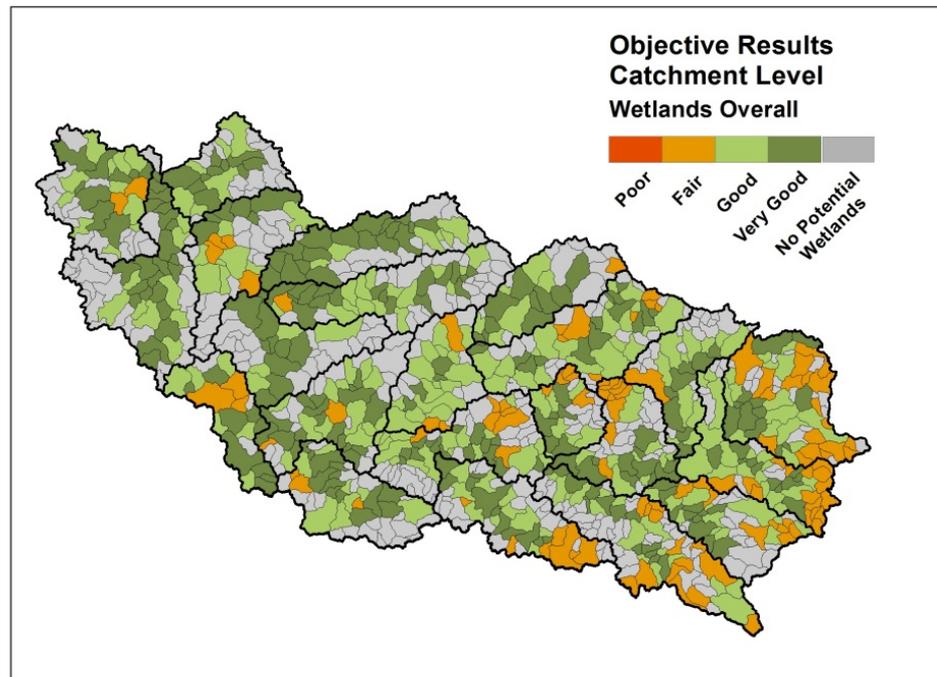
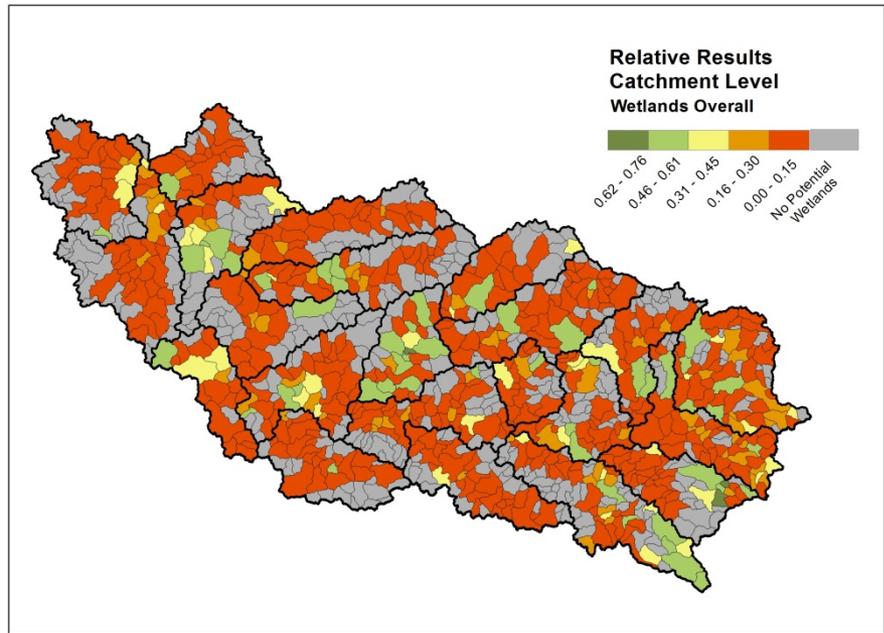
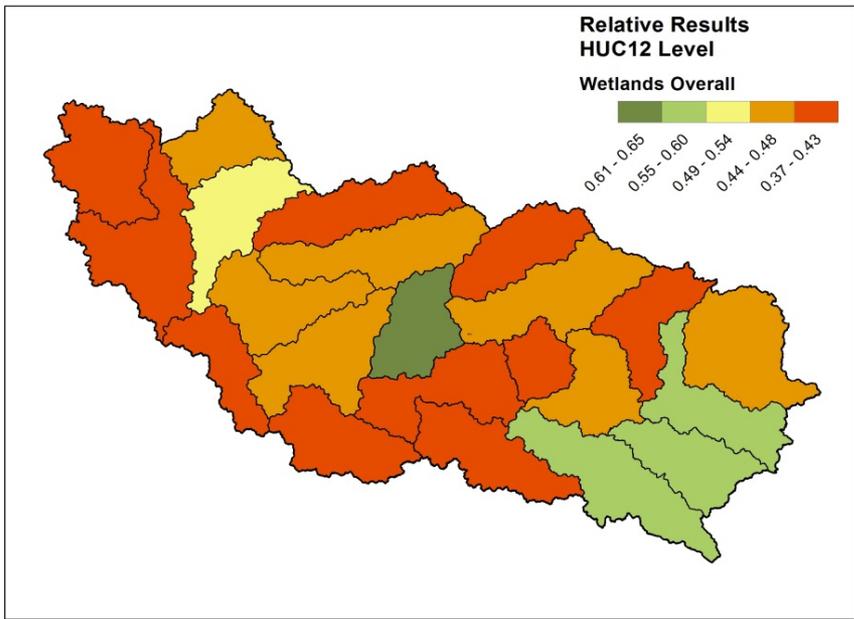
Wetland area  
Forested wetlands  
Floodplain  
Hydric soils



Land Use/Land Cover within  
Wetland Buffer: Forest, Ag,  
Development  
Size of Intersecting forest patch  
Mining, Roads, Wells



Wetlands  
Wetland  
Habitat

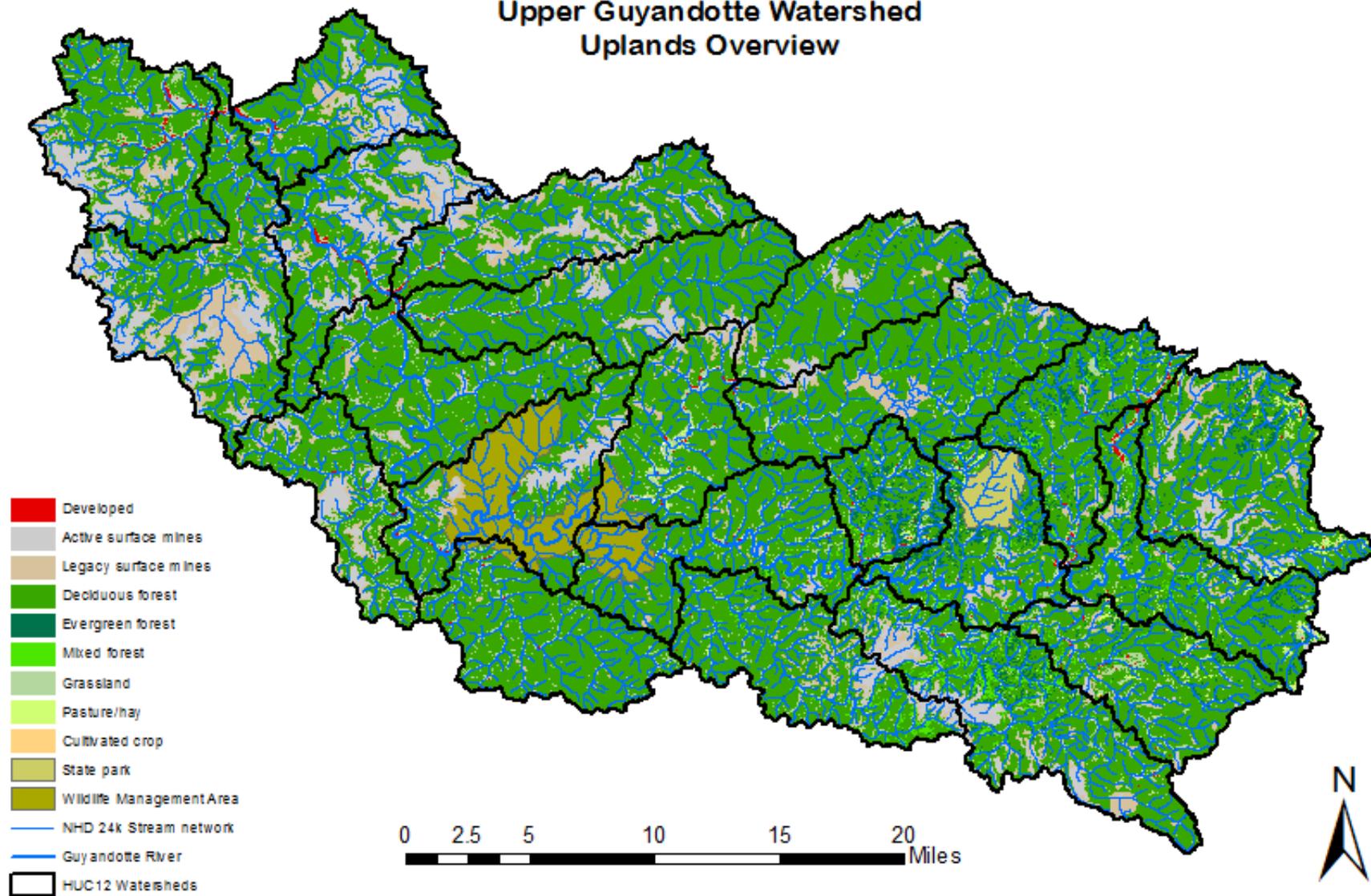


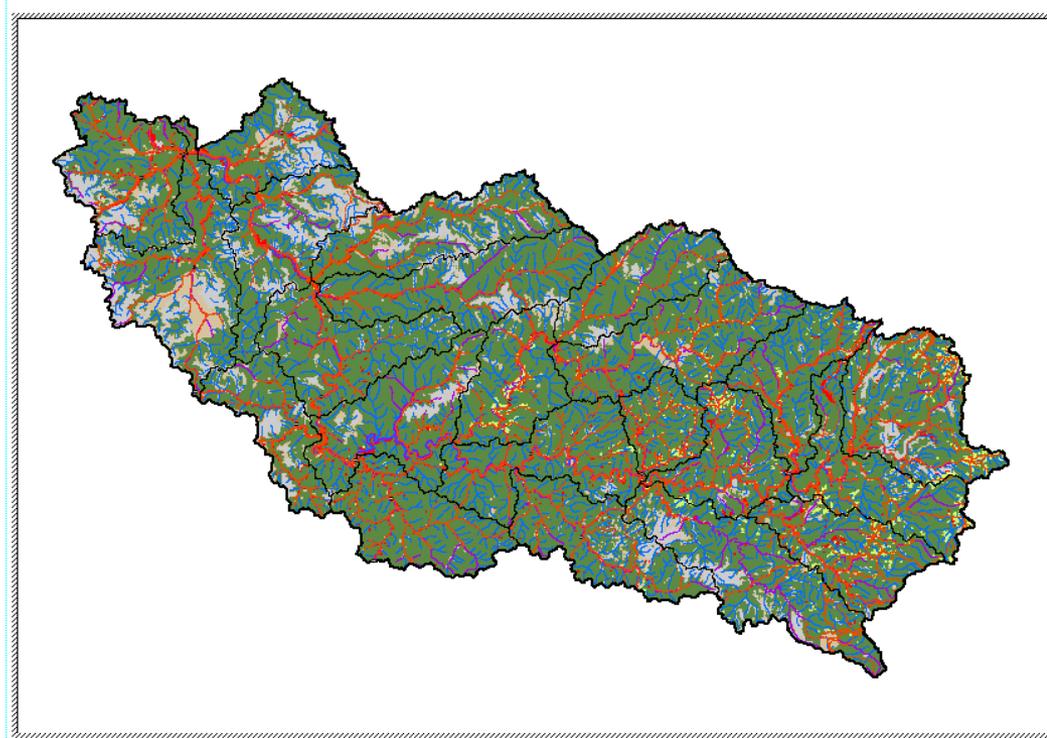
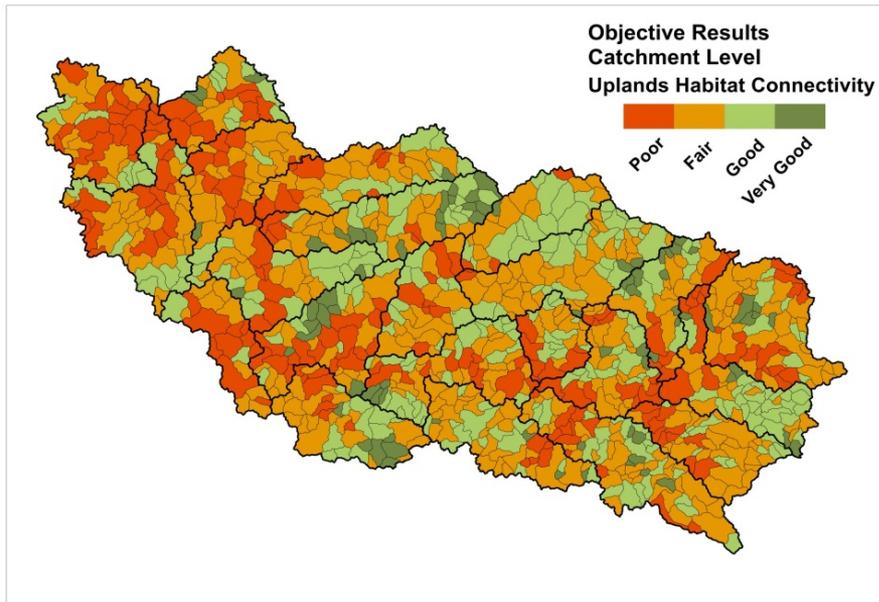
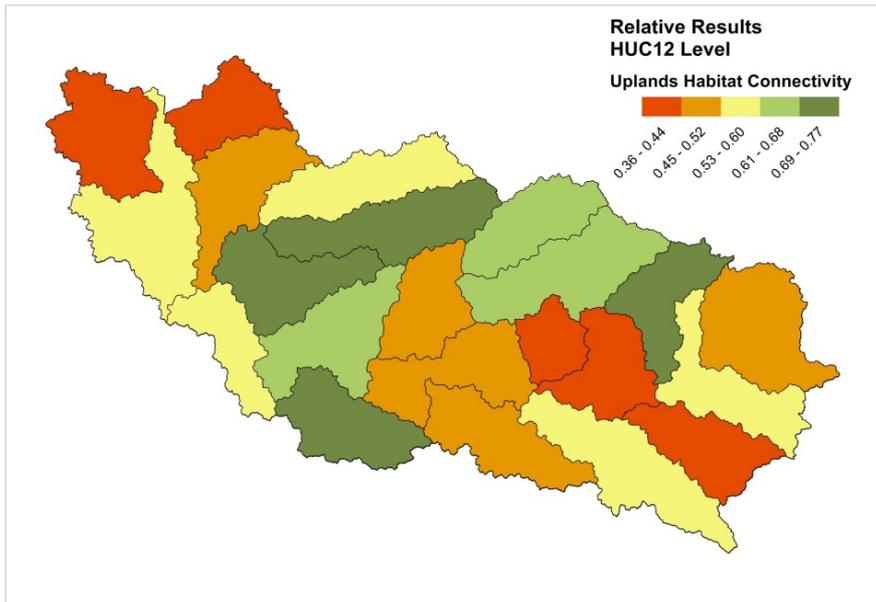
Wetlands  
Model  
Overall

# Upper Guyandotte Watershed: Uplands

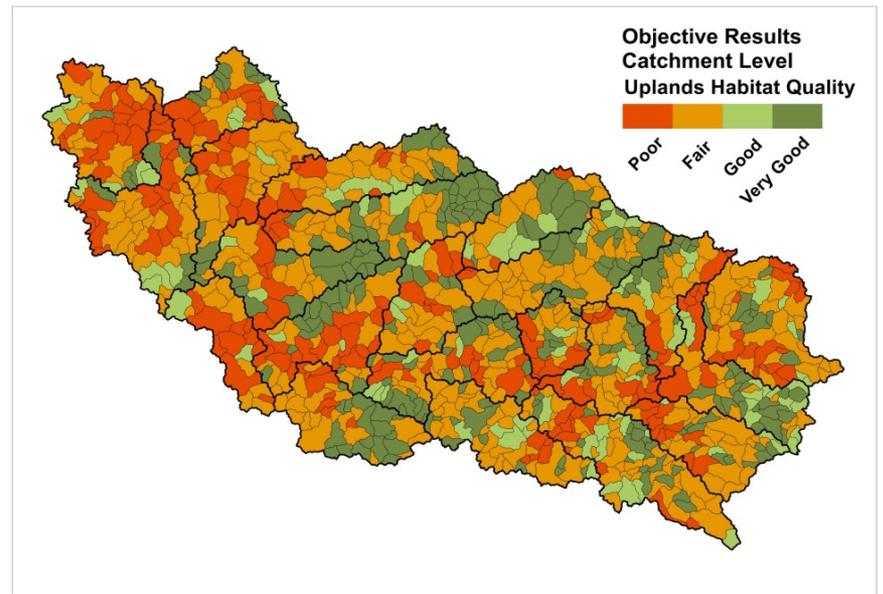
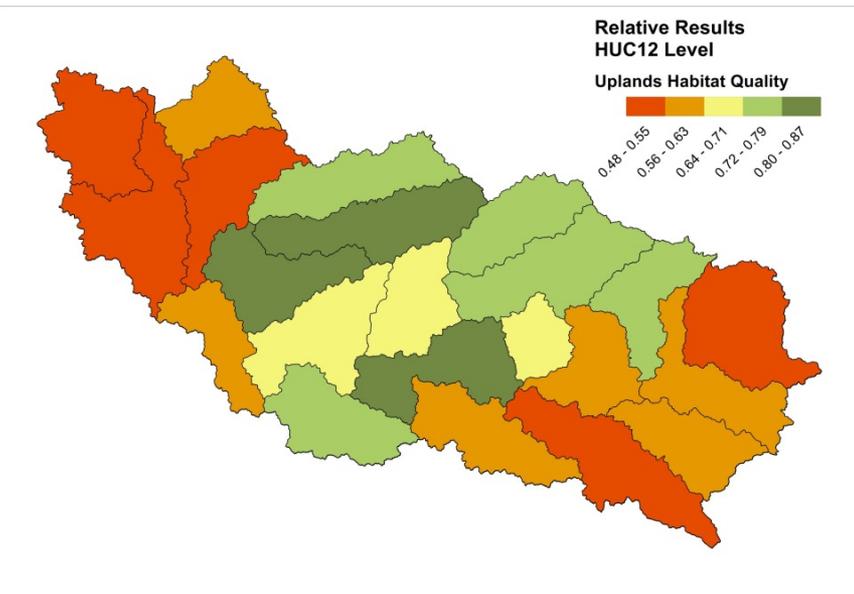


## Upper Guyandotte Watershed Uplands Overview

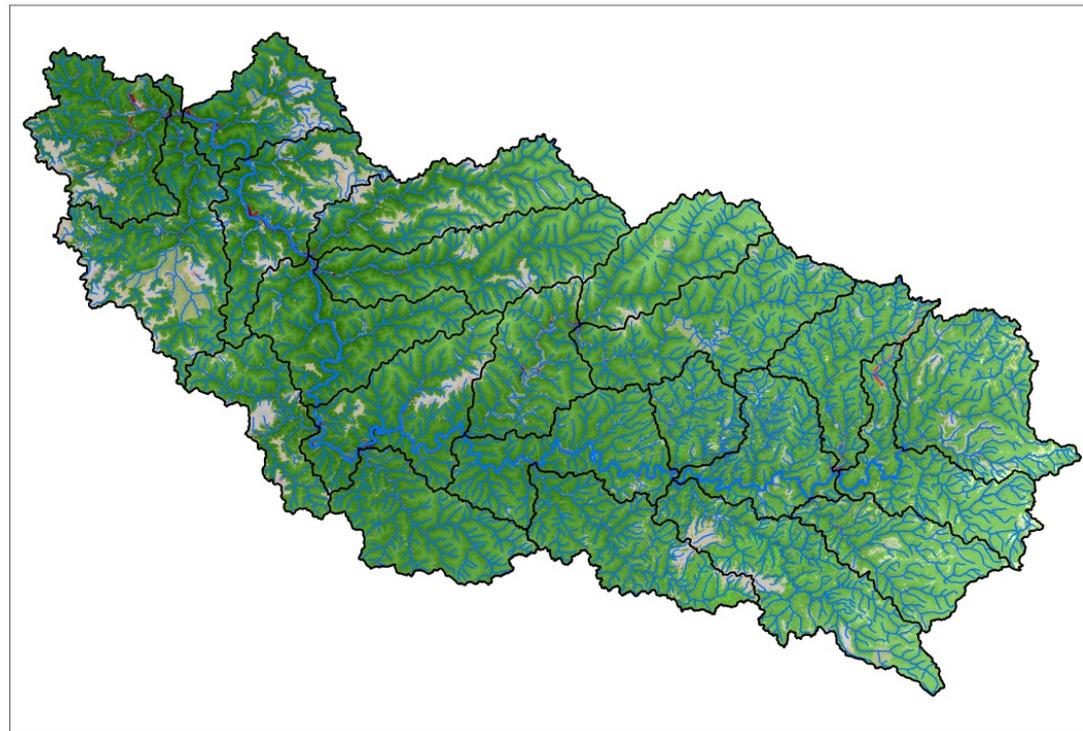




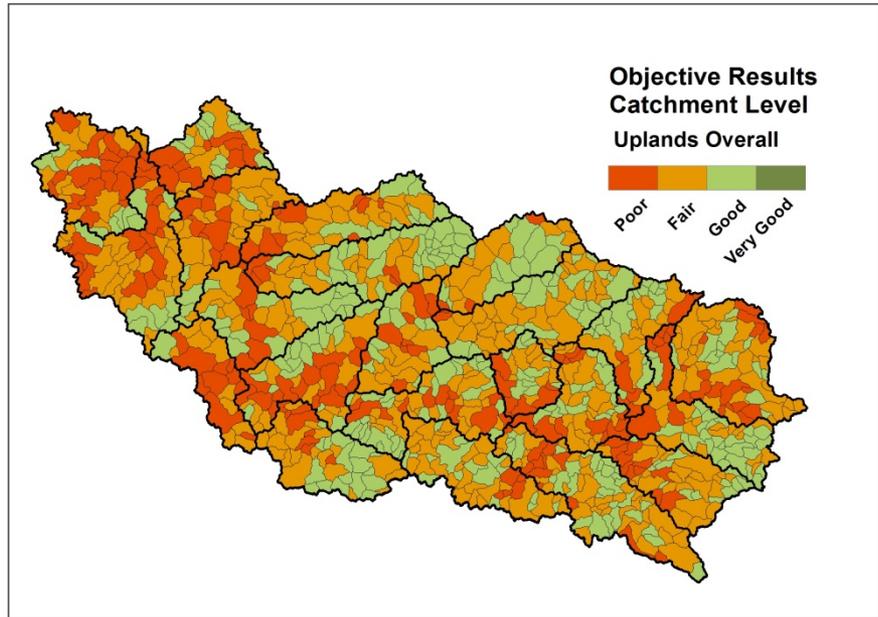
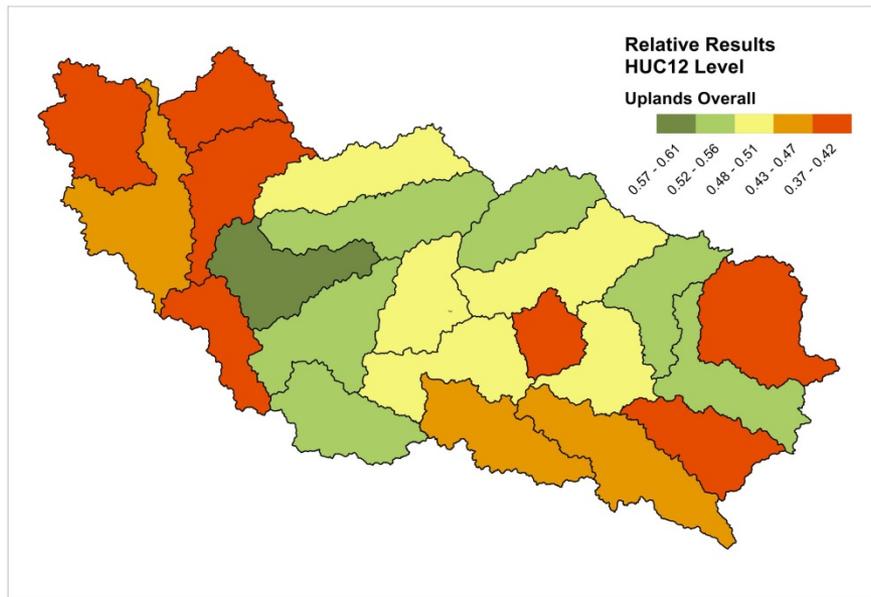
Uplands  
Habitat  
Connectivity



**Natural cover  
 Heterogeneity**



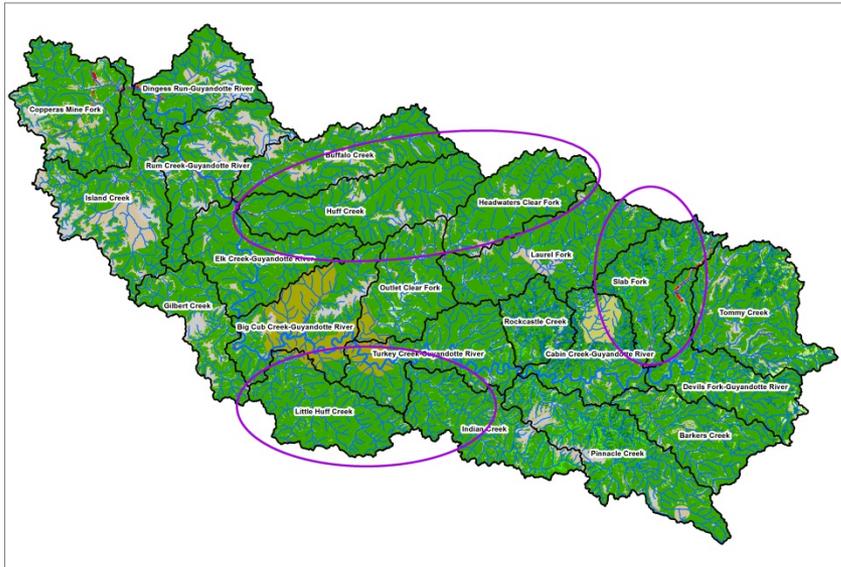
Uplands  
 Habitat  
 Quality



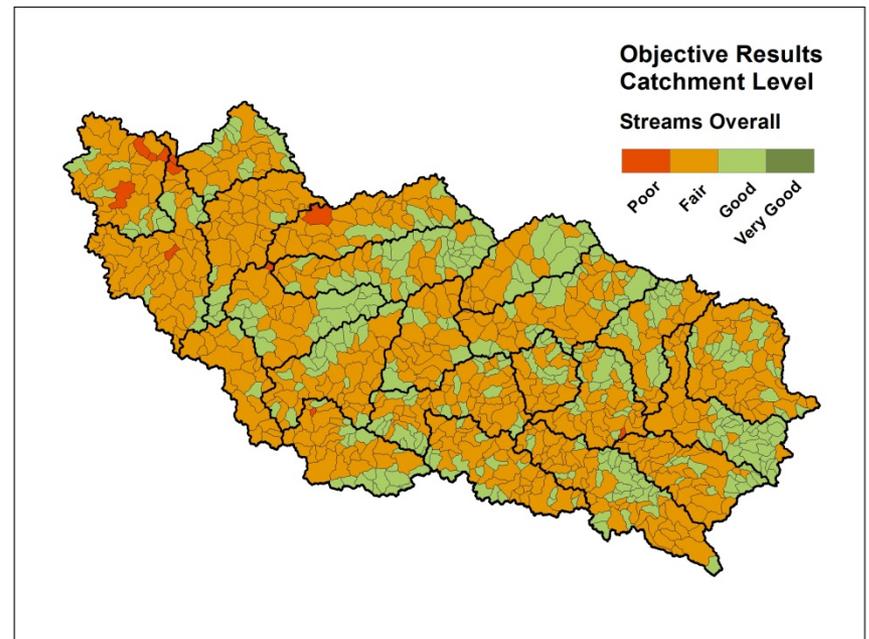
Uplands  
Model  
Overall

# Findings

Higher quality areas for potential protection tend to be at north and south edges of the watershed



Intermediate/fair areas for potential restoration exist throughout the watershed





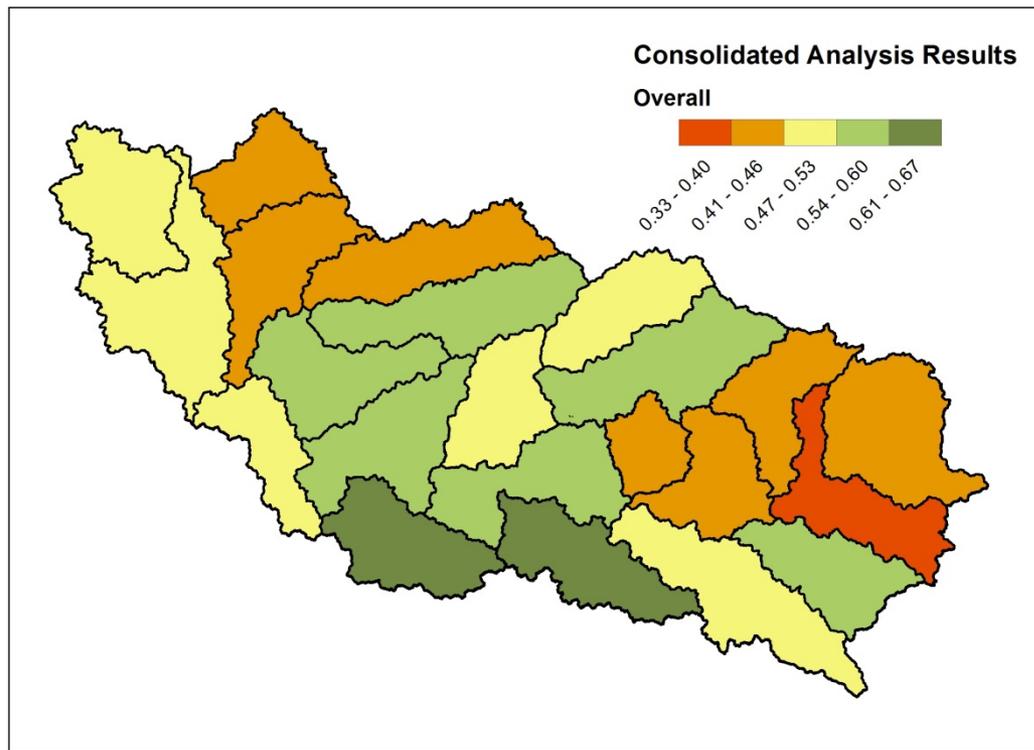
Twisted Guns Golf Course [ovec.org](http://ovec.org)

COMMENTS/QUESTIONS?

# Upper Guyandotte Watershed: Consolidated Analysis



Mingo County Redevelopment Authority



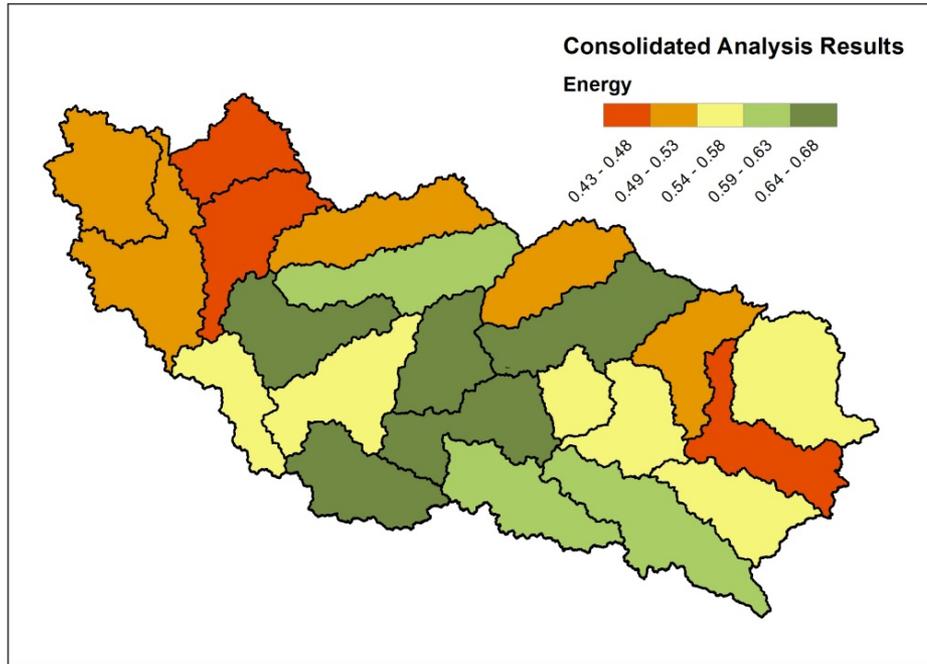
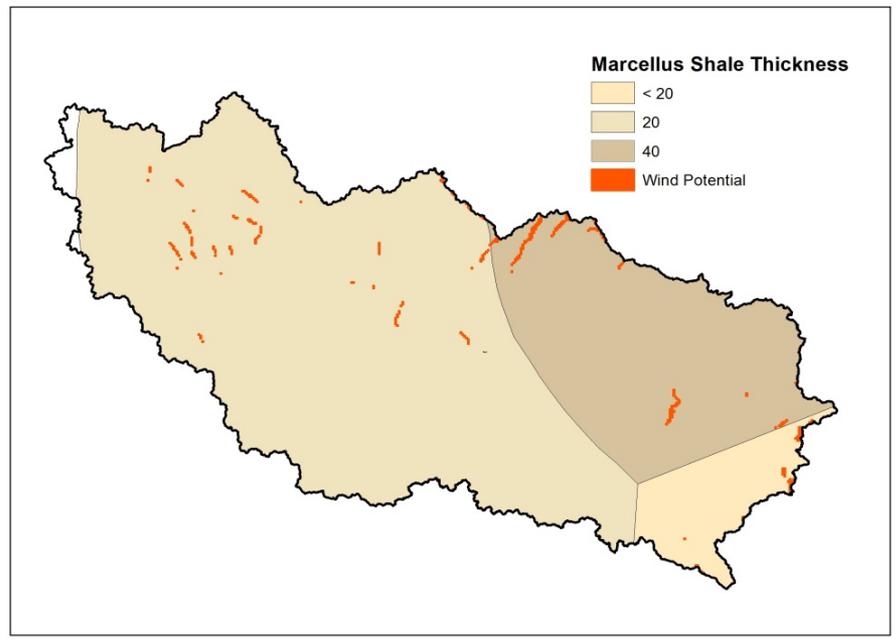
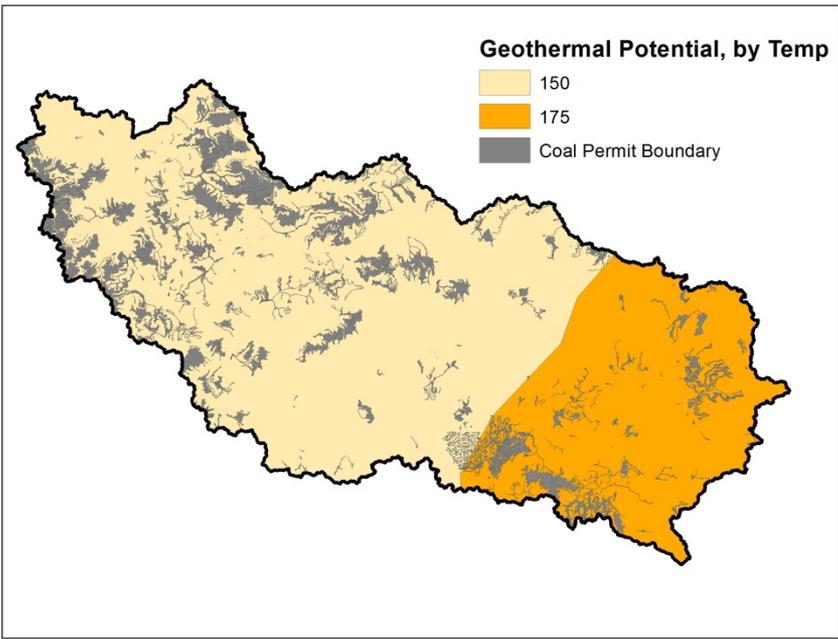
**Energy:** Unmined coal, Marcellus shale thickness, Wind development potential, Proposed transmission lines/pipelines/power plants/wind, Geothermal development potential

**Population/Development:** Population projections, Development plans, Future roads, Proposed wastewater plants/dams/water withdrawals

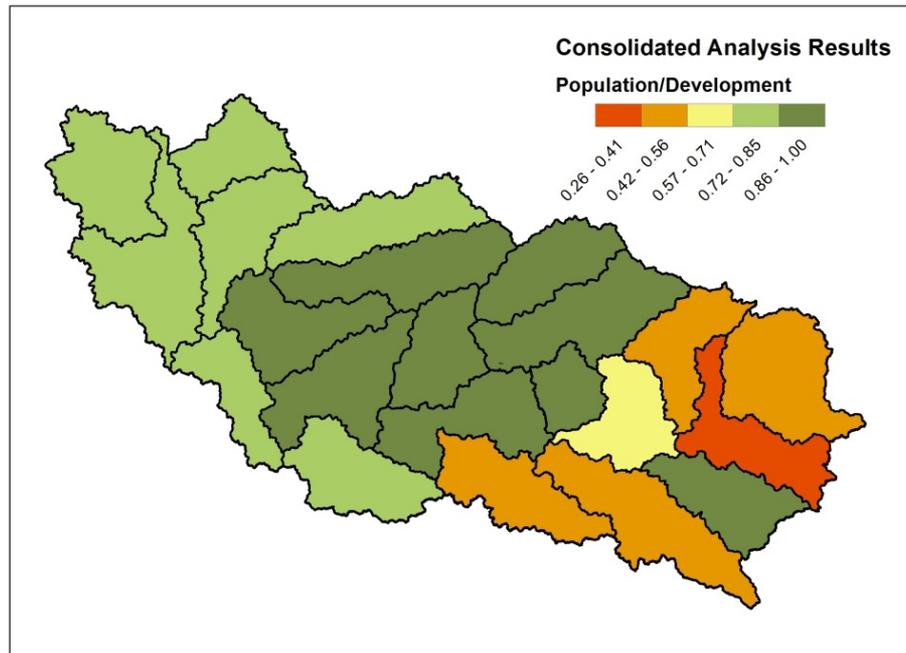
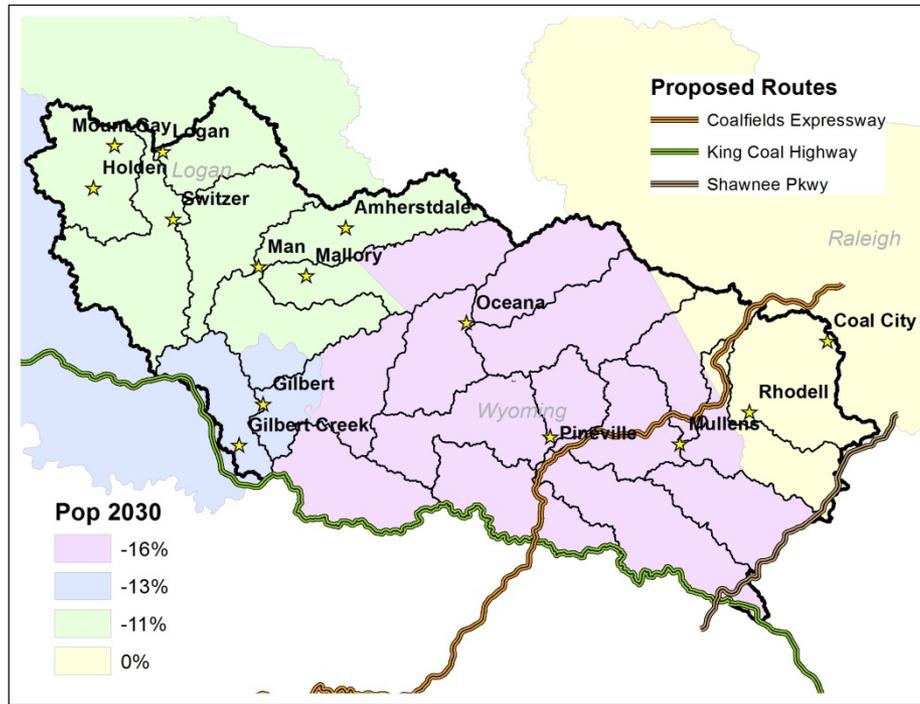
**Climate Change:** TNC Resiliency & Current density models, TNC Climate Wizard Precipitation & Temperature change

**Priority Interest Areas:** TNC aquatic & terrestrial portfolio, US Forest Service proclamation boundary, WV Division of Forestry priority HUC<sub>12</sub> watersheds

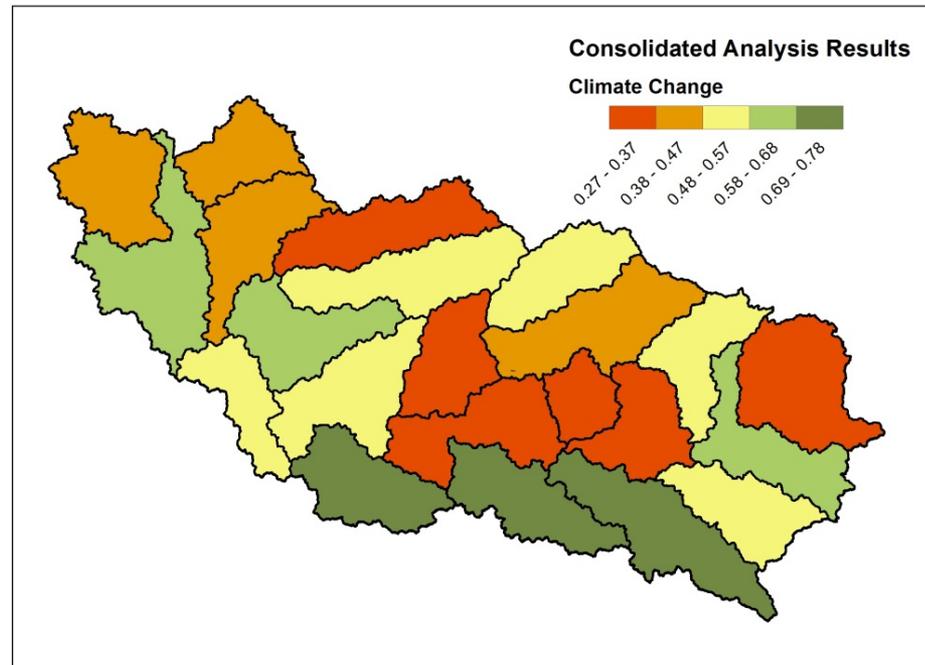
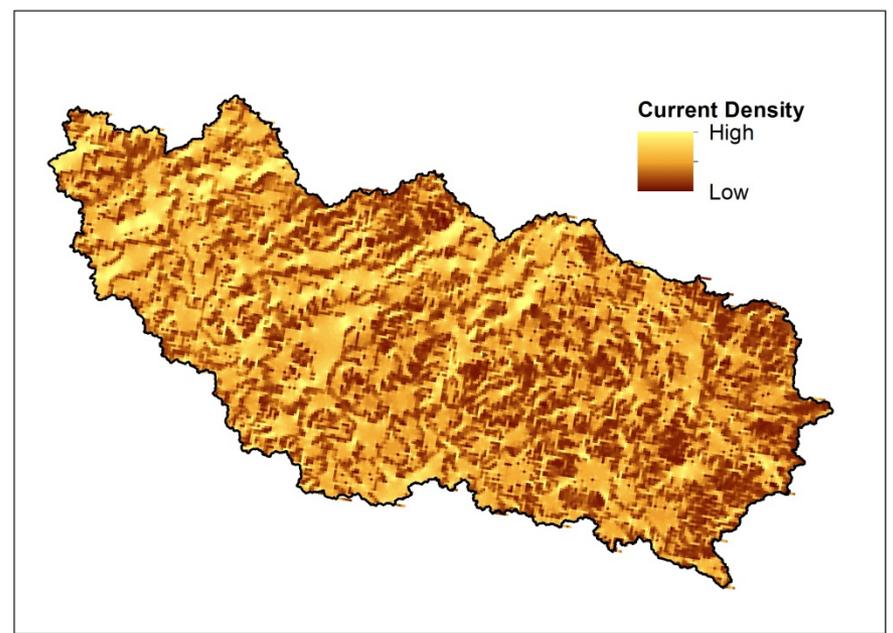
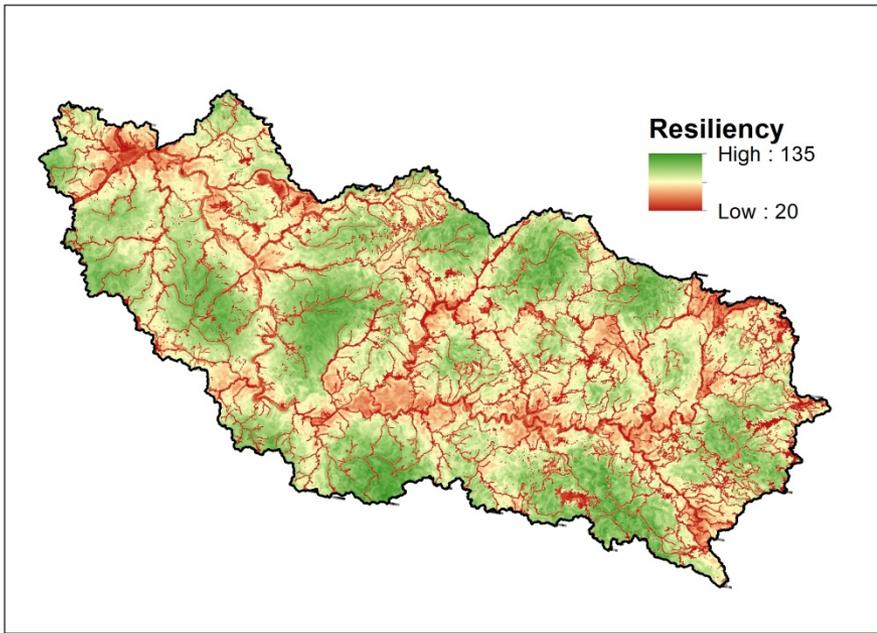
Consolidated  
Analysis  
Overall



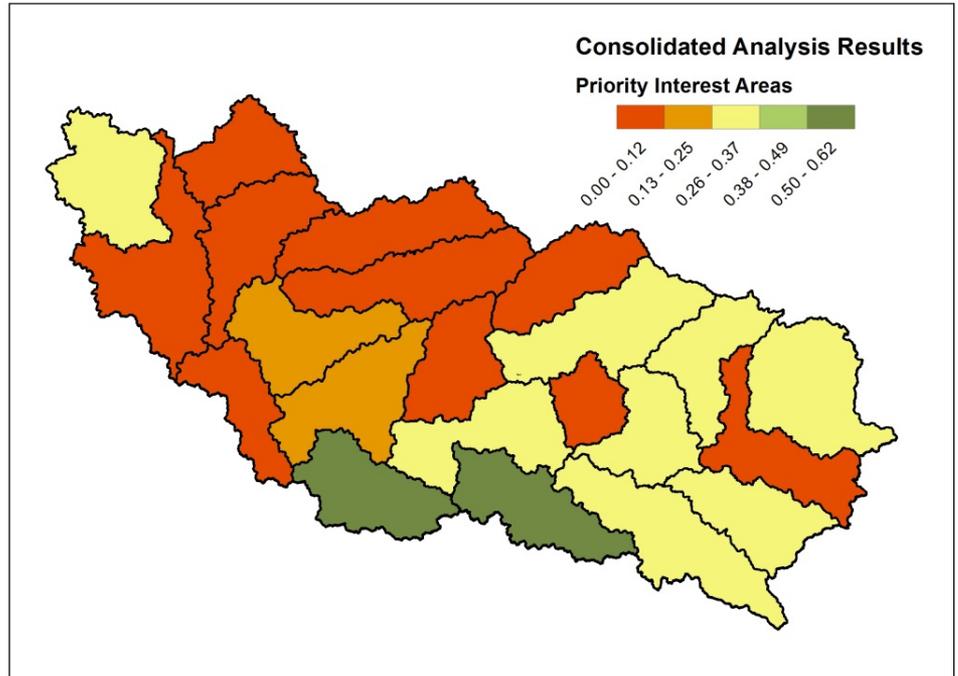
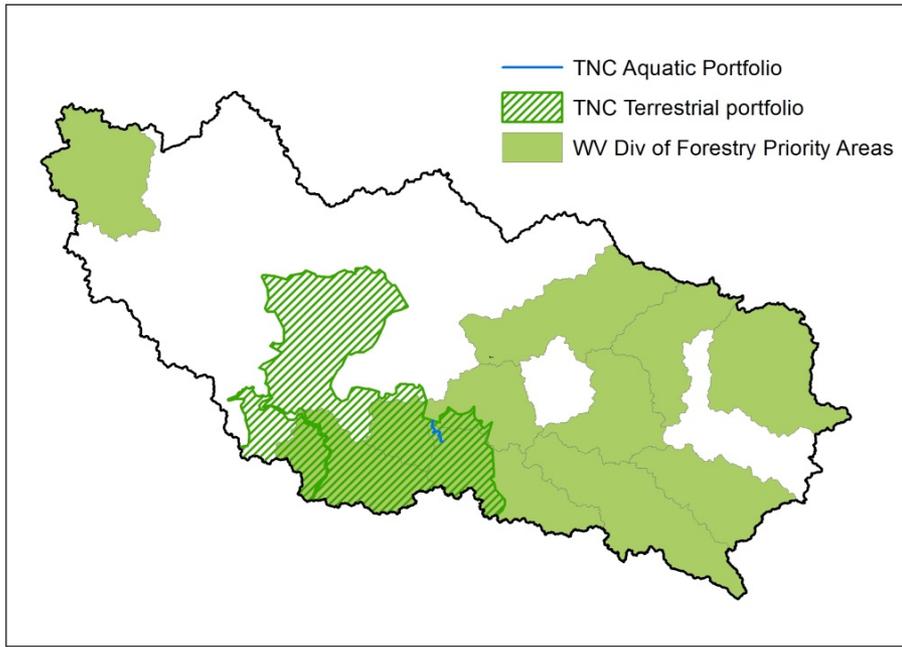
Consolidated  
Analysis  
Energy



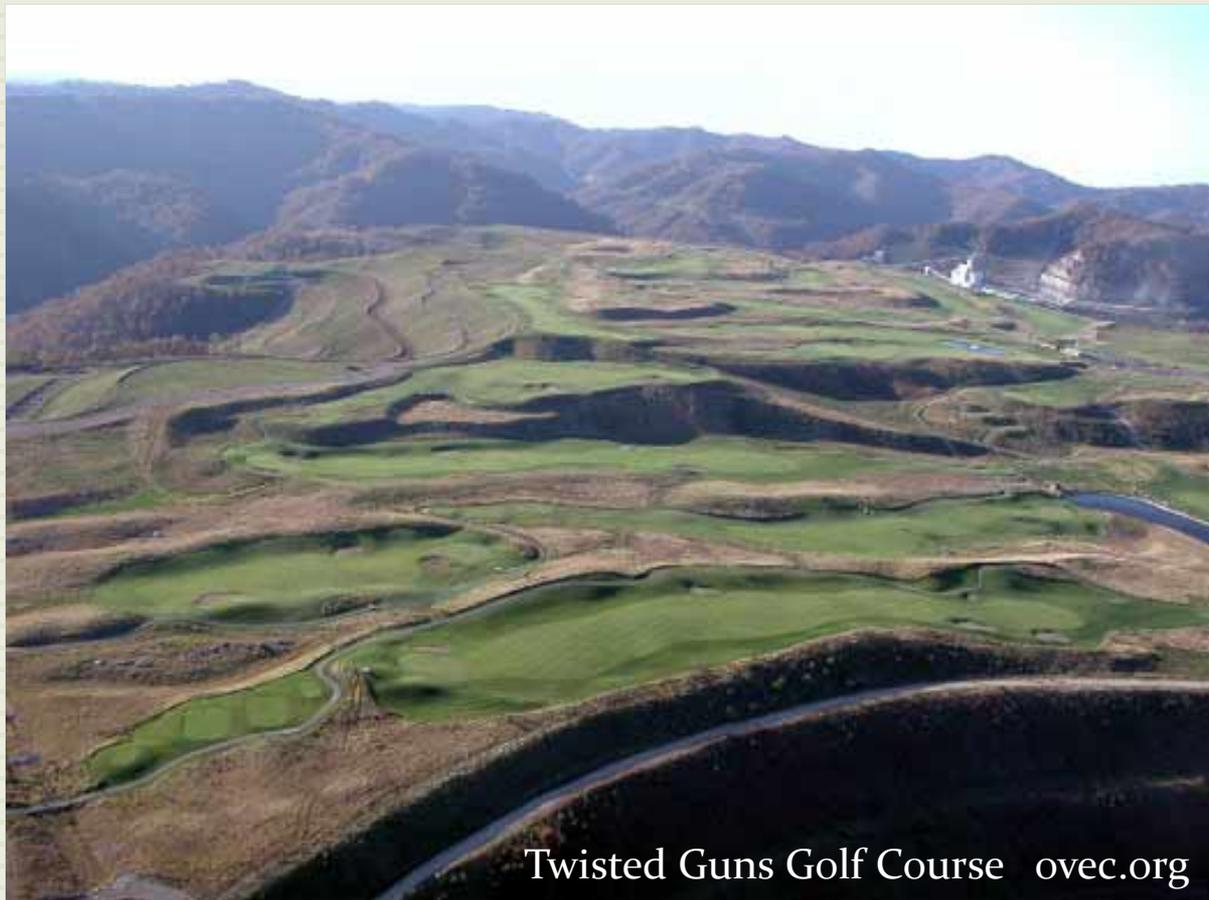
Consolidated  
Analysis  
Population &  
Development



Consolidated  
Analysis  
Climate Change



Consolidated  
 Analysis  
 Priority  
 Interest Areas



Twisted Guns Golf Course [ovec.org](http://ovec.org)

COMMENTS/QUESTIONS?