

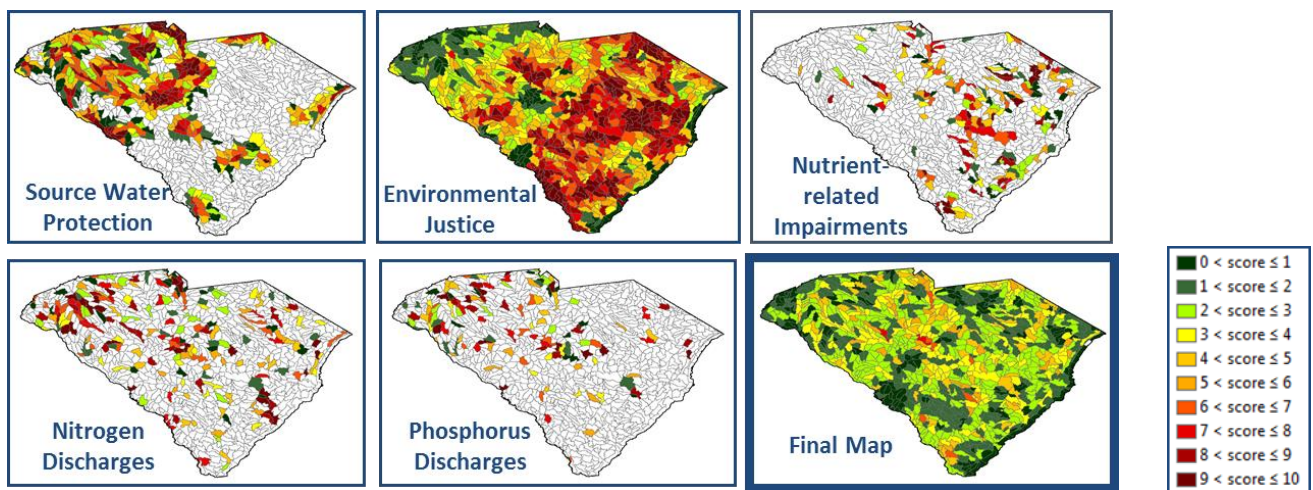


## WATERShed Characterization And Prioritization for Environmental Results

**Mission Statement:** Recognizing resource limitations, *WATERSCAPE* facilitates public engagement and eases the setting of TMDL priorities by enabling States and Tribes to quickly visualize maps and compare alternative prioritization scenarios that reflect their own value system.

### How *WATERSCAPE* Works

1. Developed by Esri for EPA as add-on to ArcGIS
  - No additional cost to user beyond ArcGIS license
  - Full Esri GIS capabilities maintained, e.g. add roads or county borders as locational aids
  - Scale: HUC12 from Release 2 NHDPlus, clipped at State borders
  - Operational for all 50 States, plus DC, Puerto Rico, and the Virgin Islands
2. Combines two types of “scored” State-normalized HUC12 data on properties (e.g., values/stressors) of interest in order to identify priority watersheds
  - Relative Intrinsic Score - percentile ranking of the density of each property of interest in each HUC12 in the State compared to the density of that property in other HUC12s in that State
  - Assigned Weighting Score – a value of 0-100% is assigned to each property by the user to reflect the desired extent to which that property should factor into the overall HUC12 selection vs. other properties, i.e. each property’s relative importance to the user
3. User then selects all or some of the HUC12s identified
  - Manual selection option available to supplement scored selection
4. Tool comes pre-loaded with State-specific HUC12 study areas and over two dozen key property data layers with their state-normalized intrinsic scores included



Example products from *WATERSCAPE* for South Carolina. Final map derived by applying the following weighting factors: Source Water Protection (25%), Environmental Justice (25%), Nutrient-related Impairments (25%), Nitrogen Discharges (12.5%), and Phosphorus Discharges (12.5%)

## **Properties Included (as of March 2015)**

### Drinking Water (source: fall 2014 SDWIS)

- Source water protection areas for surface water intakes
- Population served by surface drinking water systems
- Ground water well density (public)
- Population served by ground water wells (public)

### Designated Uses – parent categories (source: Jan 2014 Attains 305(b) summaries)

- Drinking water
- Recreation
- Agriculture
- Aesthetic
- Aquatic harvest
- Industrial
- Fish/shellfish/wildlife
- Exceptional uses

### Impaired Waters – parent categories (source: Jan 2014 Attains 303(d) summaries)

- All impairments
- Nutrient-related: algal growth, noxious aquatic plants, nutrients, & organic enrichment/oxygen depletion
- All except nutrient-related
- Pathogens
- Sediment
- Temperature
- Mercury
- pH/acidity/caustic conditions

### Incremental Nutrient Yield - (source: USGS SPARROW 2012 HUC12 analysis)

- Nitrogen – from agriculture sources
- Phosphorus – from agriculture sources

### Category 1 Waters – all designated uses being met (source: Jan 2014 Attains 305(b) summaries)

### Impervious Cover (source: EPA ORD Integrated Climate and Land Use Scenarios (ICLUS) Project)

- 2010
- 2040

### Environmental Justice – % low income and % minority (source: Census Bureau)

### Economic Stress – composite index of families in poverty, unemployment rate, educational attainment, per capita income, and housing affordability (source: Census Bureau)

### Superfund and RCRA Sites – individual layers for NPL and non-NPL and all Superfund sites; active and inactive RCRA sites

### Municipal Separate Storm Sewer Systems (MS4s) - (source: EPA Office of Wastewater Management)

### Clean Water Act Section 319 Non-point Source Grant Activity - (source: EPA GRTS database)

### Habitat

- Aquatic and wetland Imperiled and listed Threatened & Endangered Species (source: EnviroAtlas)
- Relative risk of fish habitat degradation (source: National Fish Habitat Partnership)
- Western Governors Association Crucial Habitat (source: WGA's Crucial Habitat Assessment Tool)

### Mass of Point Source Discharges – (source: EPA's Discharge Monitoring Report (DMR) Pollutant Loading Tool)

- Nitrogen
- Phosphorus
- Organic Enrichment Compounds
- Solids
- Hg
- Cu
- Se
- Zn
- Fe
- Metals Normalized by Toxicity