



Watershed Health Assessment

Chesterfield, NH

Moosewood Ecological LLC

5/23/2026

Photo: NH State Parks

Project Goals

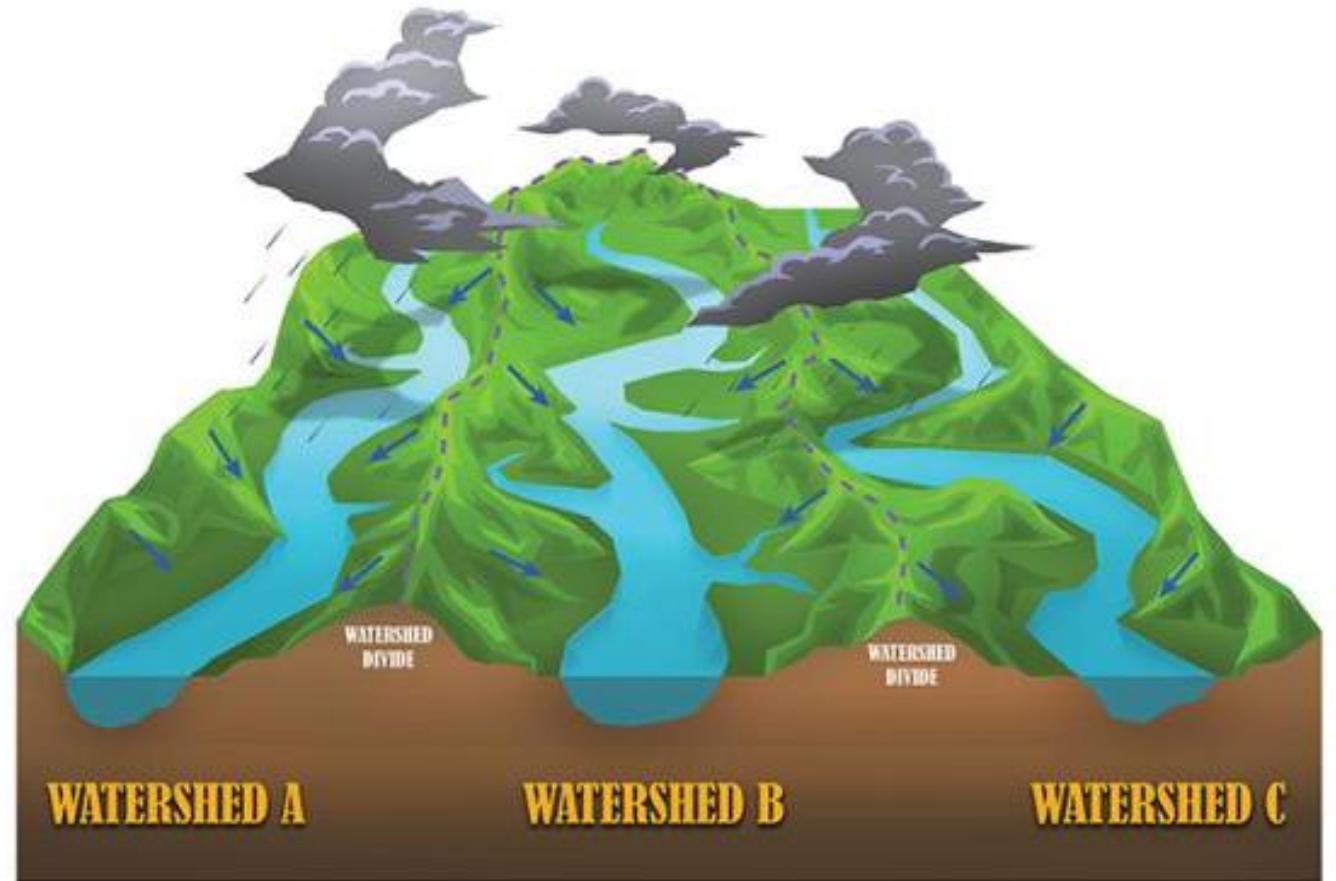
- Build upon the Chesterfield Natural Resources Inventory.
- Analyze overall watershed health.
- Rank watersheds by their *relative* overall health.
- Provide the Conservation Commission with a data-driven resource for watershed conservation and community outreach.



Mapping Watersheds

Watershed

An area of land that channels rainfall and snowmelt into a common outlet, such as a river, lake, or ocean.

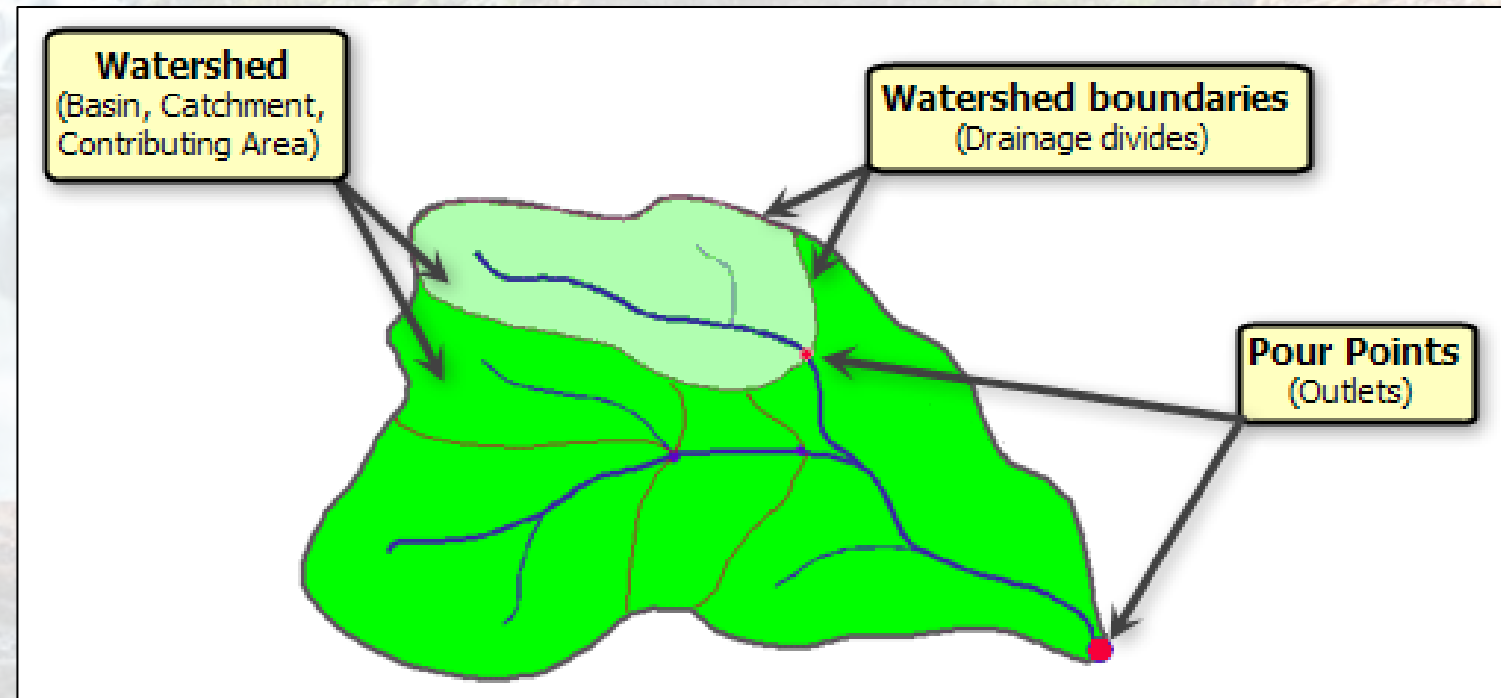


Mapping Watersheds

Watershed

An area of land that channels rainfall and snowmelt into a common outlet, such as a river, lake, or ocean.

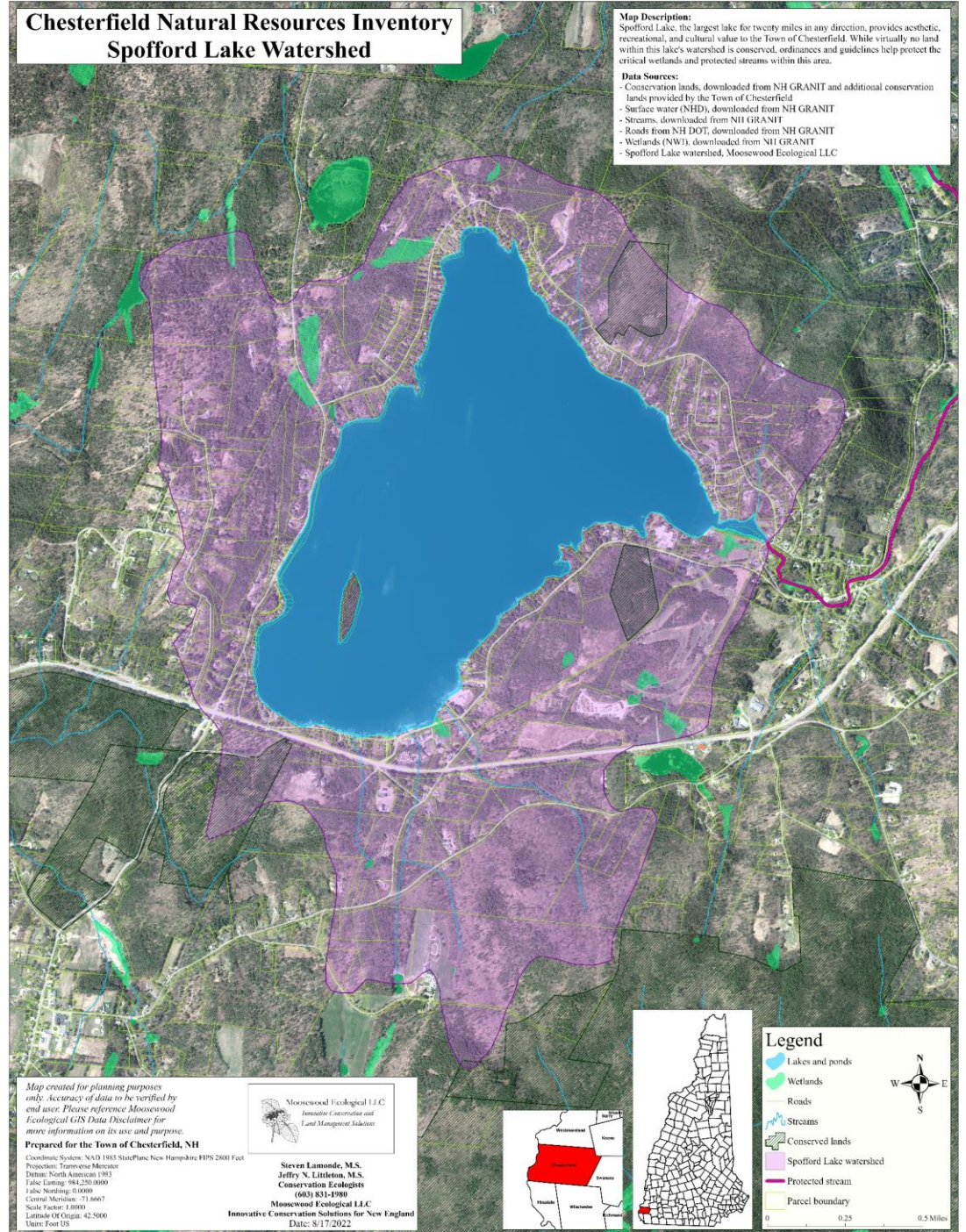
Every watershed can be divided into smaller watersheds



Chesterfield Natural Resources Inventory Spofford Lake Watershed

Map Description:
Spofford Lake, the largest lake for twenty miles in any direction, provides aesthetic, recreational, and cultural value to the Town of Chesterfield. While virtually no land within this lake's watershed is conserved, ordinances and guidelines help protect the critical wetlands and protected streams within this area.

- Data Sources:**
- Conservation lands, downloaded from NH GRANIT and additional conservation lands provided by the Town of Chesterfield
 - Surface water (NHD), downloaded from NH GRANIT
 - Streams, downloaded from NH GRANIT
 - Roads from NH DOT, downloaded from NH GRANIT
 - Wetlands (NW1), downloaded from NH GRANIT
 - Spofford Lake watershed, Moosewood Ecological LLC



Map created for planning purposes only. Accuracy of data to be verified by end user. Please reference Moosewood Ecological GIS Data Disclaimer for more information on its use and purpose.

Prepared for the Town of Chesterfield, NH

Coordinate System: NAD 1983 StatePlane New Hampshire FIPS 2800 Feet
 Projection: Transverse Mercator
 Datum: North American 1983
 False Easting: 96,250,000
 False Northing: 0.0000
 Central Meridian: -71.8667
 Scale Factor: 1.0000
 Latitude Of Origin: 42.5000
 Units: Foot US

Moosewood Ecological LLC
 Innovative Conservation and
 Land Management Solutions

Steven Lamonde, M.S.
Jeffrey N. Littleton, M.S.
 Conservation Ecologists
 (603) 831-1980
Moosewood Ecological LLC
 Innovative Conservation Solutions for New England
 Date: 8/17/2022



Legend

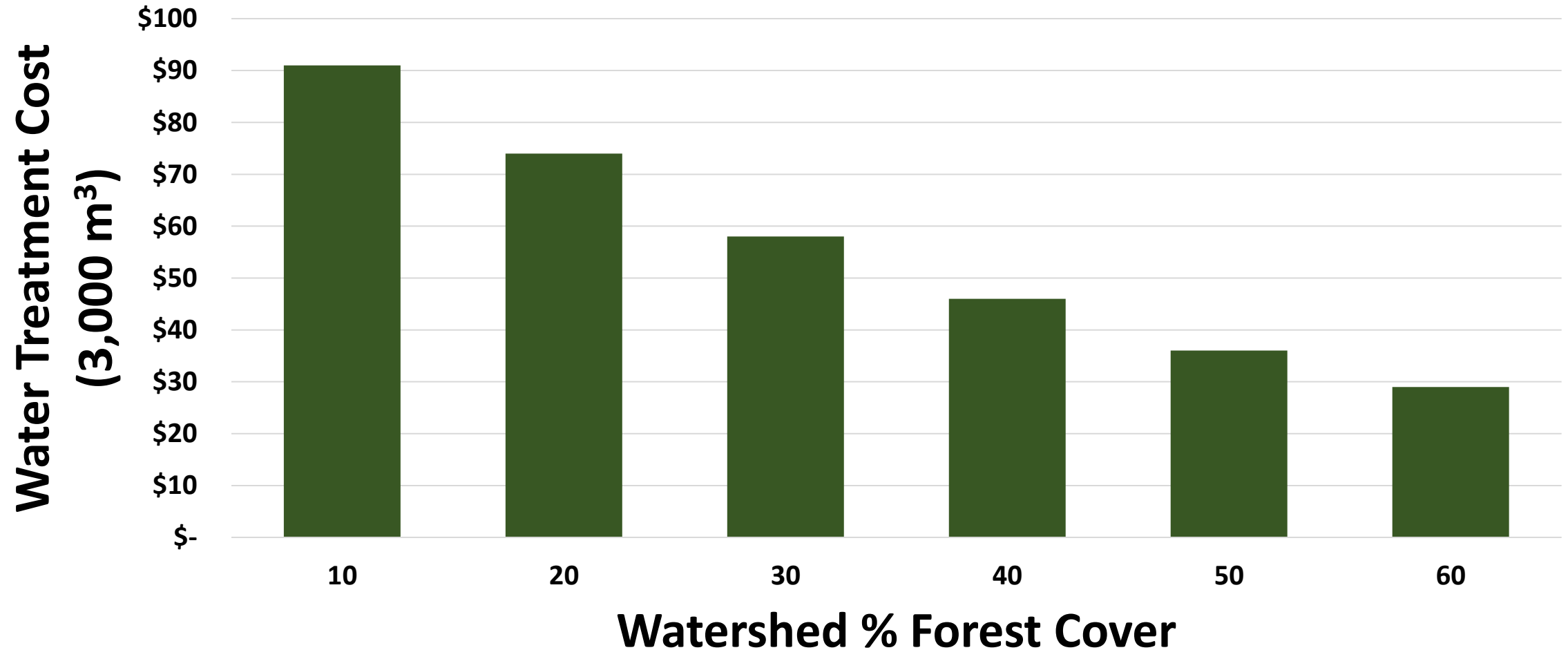
- Lakes and ponds
- Wetlands
- Roads
- Streams
- Conserved lands
- Spofford Lake watershed
- Protected stream
- Parcel boundary

0 0.25 0.5 Miles

Healthy, intact watersheds provide many benefits, including water filtration and storage, which are crucial to maintaining clean, safe



Keeping New Hampshire's rivers, lakes, and groundwater free from pollution is much easier and much less expensive than building costly water treatment facilities.



Flooding is the most expensive natural hazard in New Hampshire, with \$200 million in total losses from 2000 to 2019.



NYT



NHDES

Wetlands provide critical flood control by storing and slowing runoff from storms, thereby reducing the frequency and magnitude of floods.



Wetlands = lakes, ponds, rivers, streams, marshes, forested wetlands, floodplain wetlands, floodplain forests, and peatlands

Stormwater runoff causes or contributes to over 90% of the water pollution problems in New Hampshire.



Gulf Road, Chesterfield

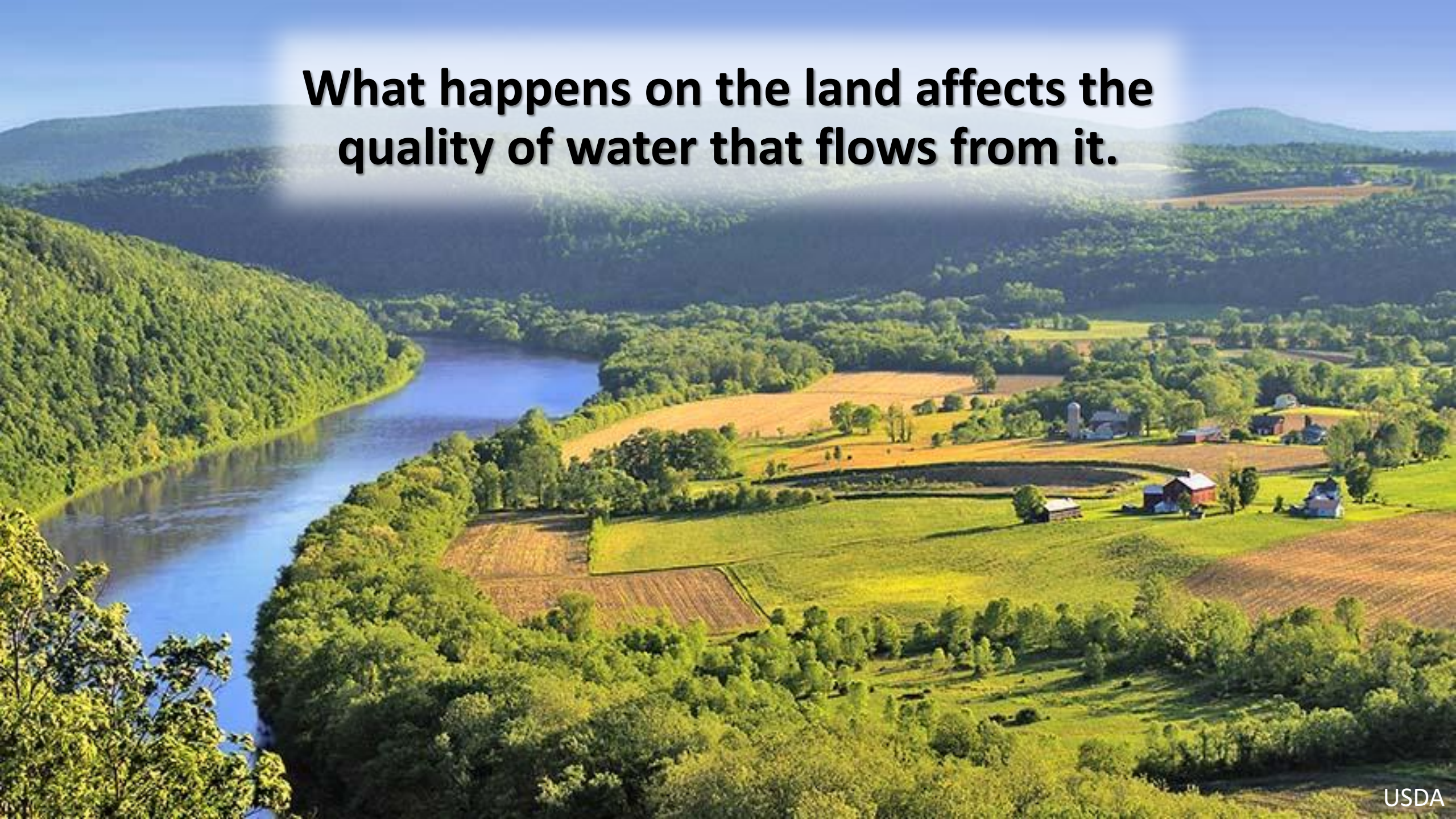
Studies demonstrate that home values decline by tens of thousands of dollars with declines in water quality.



The economic value of a single wetland acre ranges from \$150,000 to \$200,000, and New Hampshire's remaining wetlands provide over \$1 billion in services.

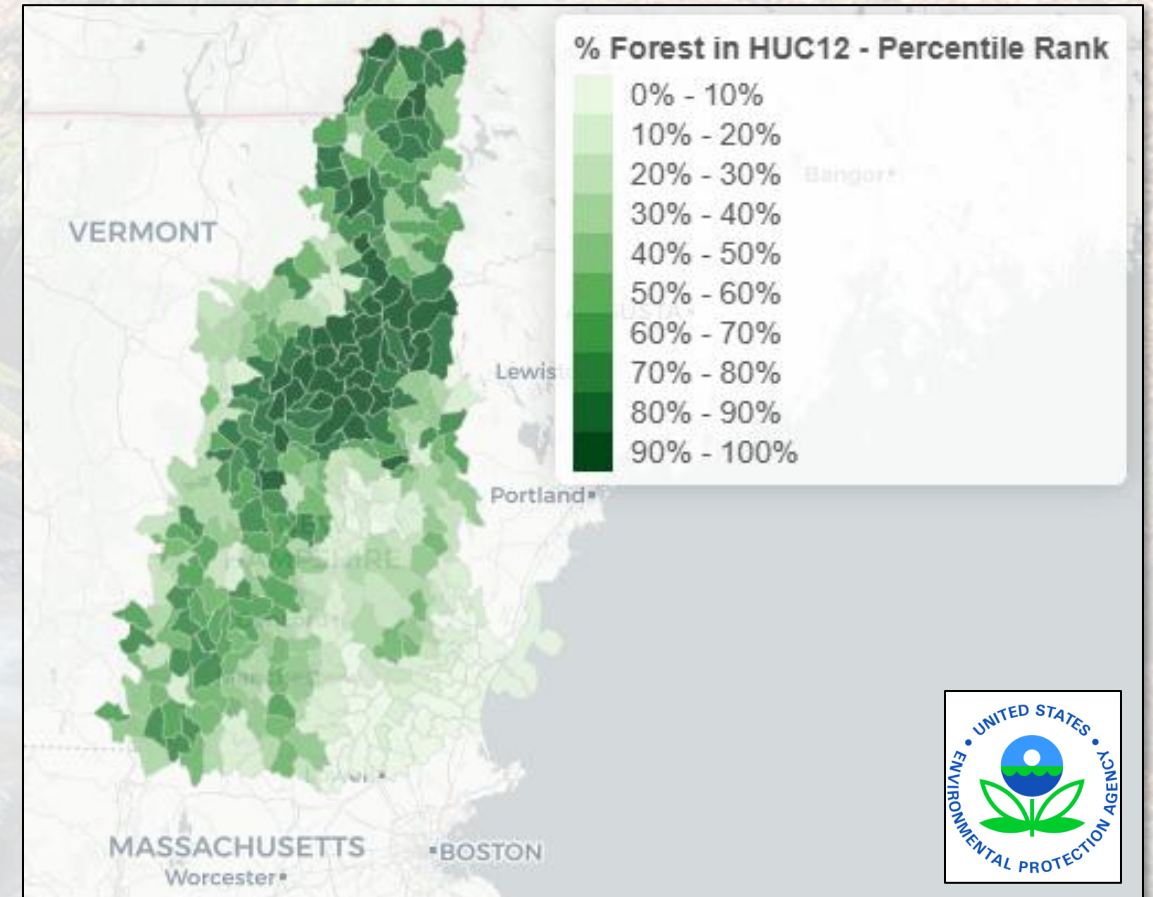


What happens on the land affects the quality of water that flows from it.



Assessment Process

- EPA Healthy Watersheds Team
 - Watershed Index Online
 - Recovery Potential Screening Tools
- 453 indicators of watershed health.
- Available for all 105,000 HUC12 watersheds.
- Standardized data used to calculate index scores.
- Index scores are used to calculate overall health.
- Systematic and comprehensive comparison of watershed health.



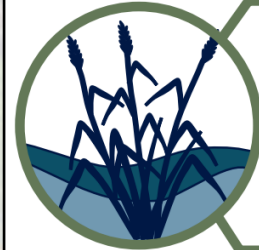
EPA Restoration and Protection Screening Tool

Key Indicators of Watershed Health



Landscape Condition

Patterns of natural land cover, natural disturbance regimes, lateral and longitudinal connectivity of the aquatic environment, and continuity of landscape processes.



Habitat

Aquatic, wetland, riparian, floodplain, lake, and shoreline habitat. Hydrologic connectivity.



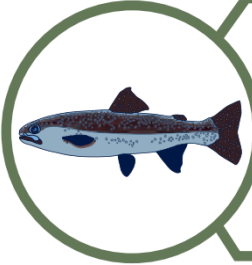
Geomorphology

Stream channels with natural geomorphic dynamics.



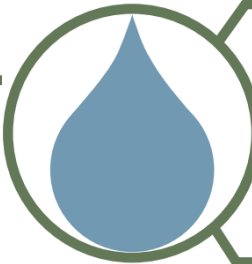
Water Quality

Chemical and physical characteristics of water.



Biological Condition

Biological community diversity, composition, relative abundance, trophic structure, condition, and sensitive species.



Hydrology

Hydrologic regime: Quantity and timing of flow or water level fluctuation. Highly dependent on the natural flow (disturbance) regime and hydrologic connectivity, including surface-ground water interactions.

Key Factors Contributing to Watershed Health

- **Ecological** – the condition of aquatic ecosystems and related landscape characteristics



Key Factors Contributing to Watershed Health

- **Ecological** – the condition of aquatic ecosystems and related landscape characteristics
- **Stressor** – risks to watershed health and aquatic ecosystem health

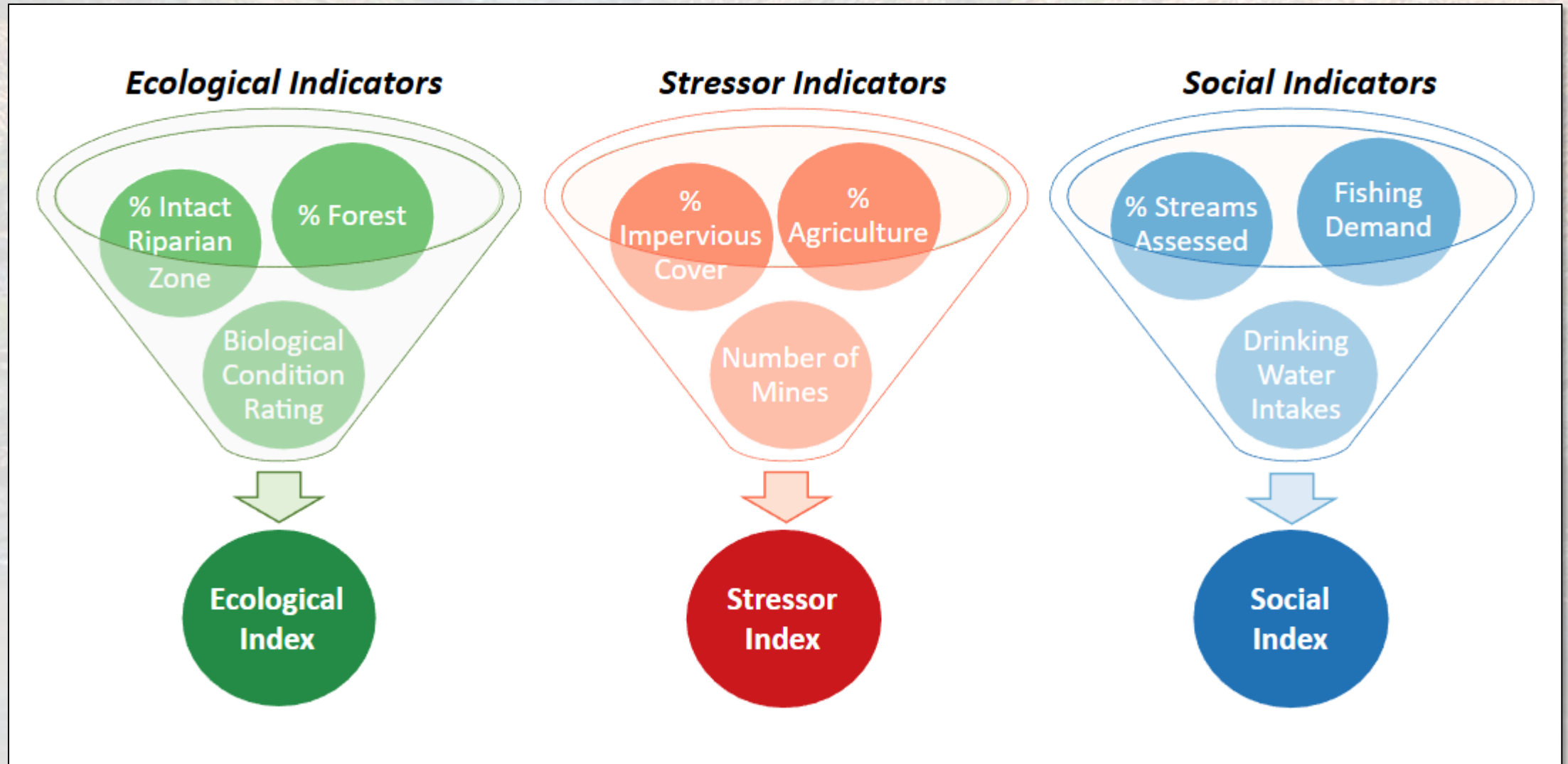


Key Factors Contributing to Watershed Health

- **Ecological** – the condition of aquatic ecosystems and related landscape characteristics
- **Stressor** – risks to watershed health and aquatic ecosystem health
- **Social** – variety of societal and programmatic factors that influence watershed management approaches and planning

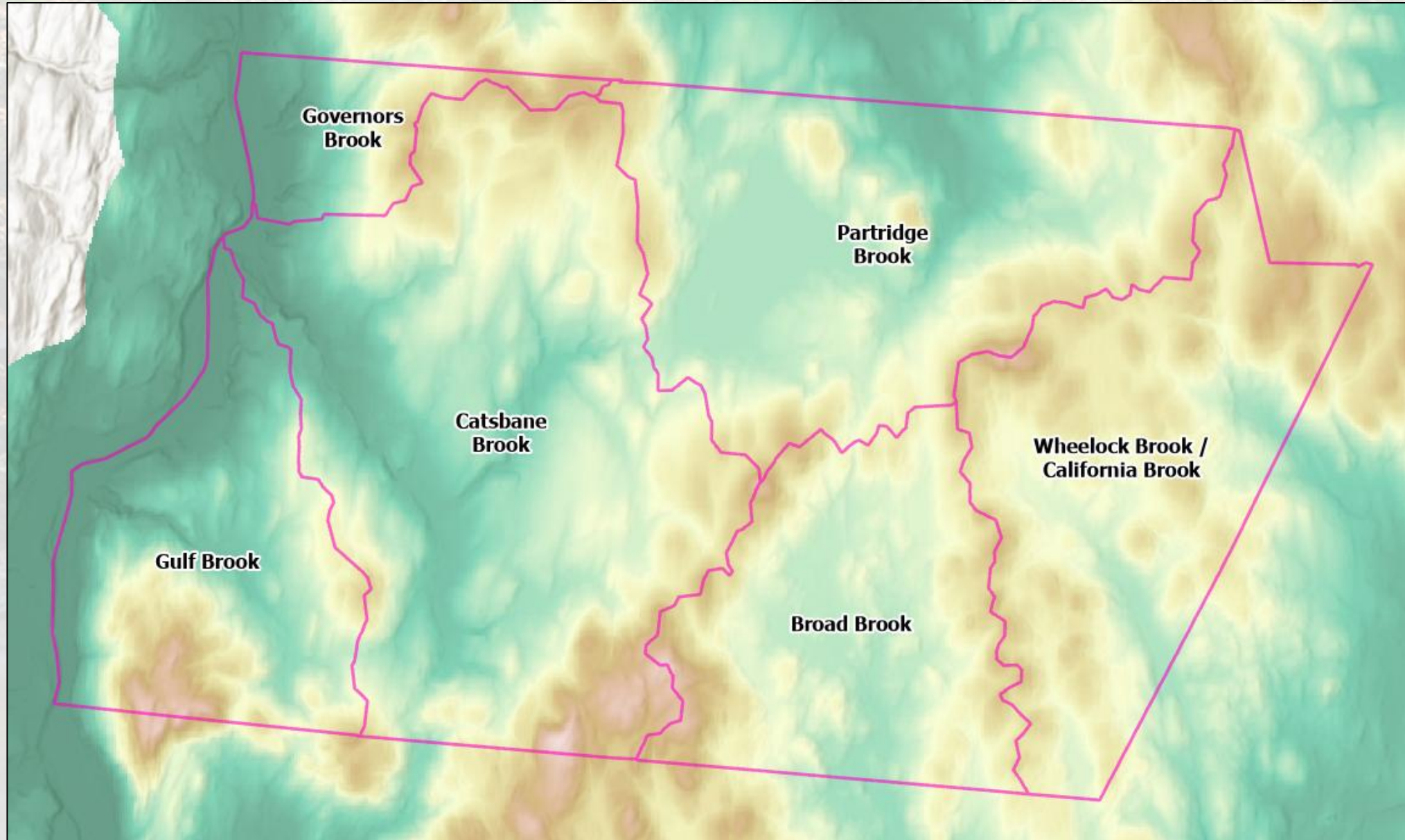


Key Factors Contributing to Watershed Health

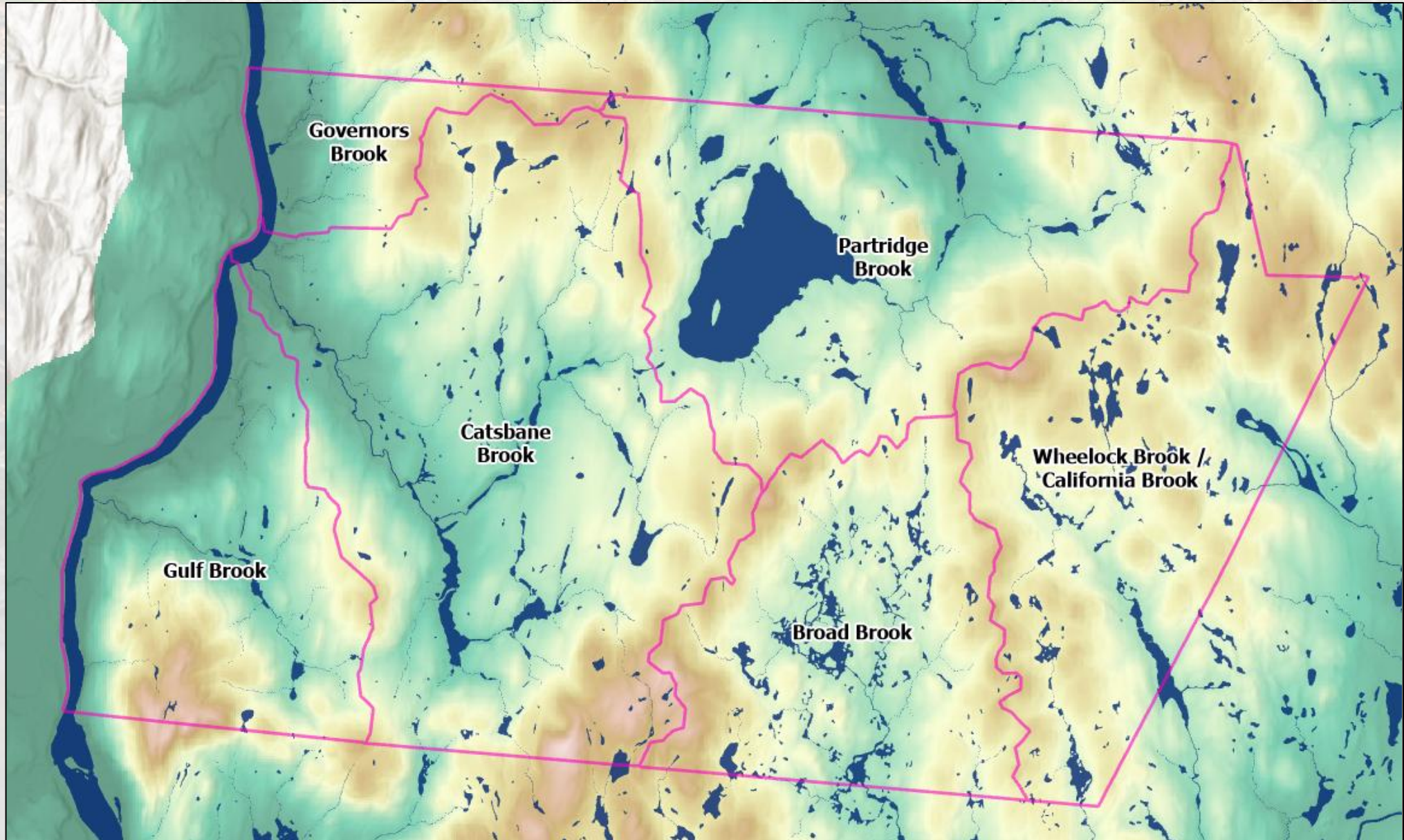


Indicator	Data and Description	High Index Score Definition
Ecological	Condition of aquatic ecosystem health, landscape characteristics (e.g. land cover).	Healthier watersheds that contain features that support conservation and restoration.
Stressor	Risks to aquatic health with a focus on human activities, pollution sources, watershed and stream disruptors.	Watersheds facing elevated levels of risk and degradation.
Social	The influence of current use landowner characteristics on management practices.	Watersheds that require increased levels of communication and coordination with landowners and managers.

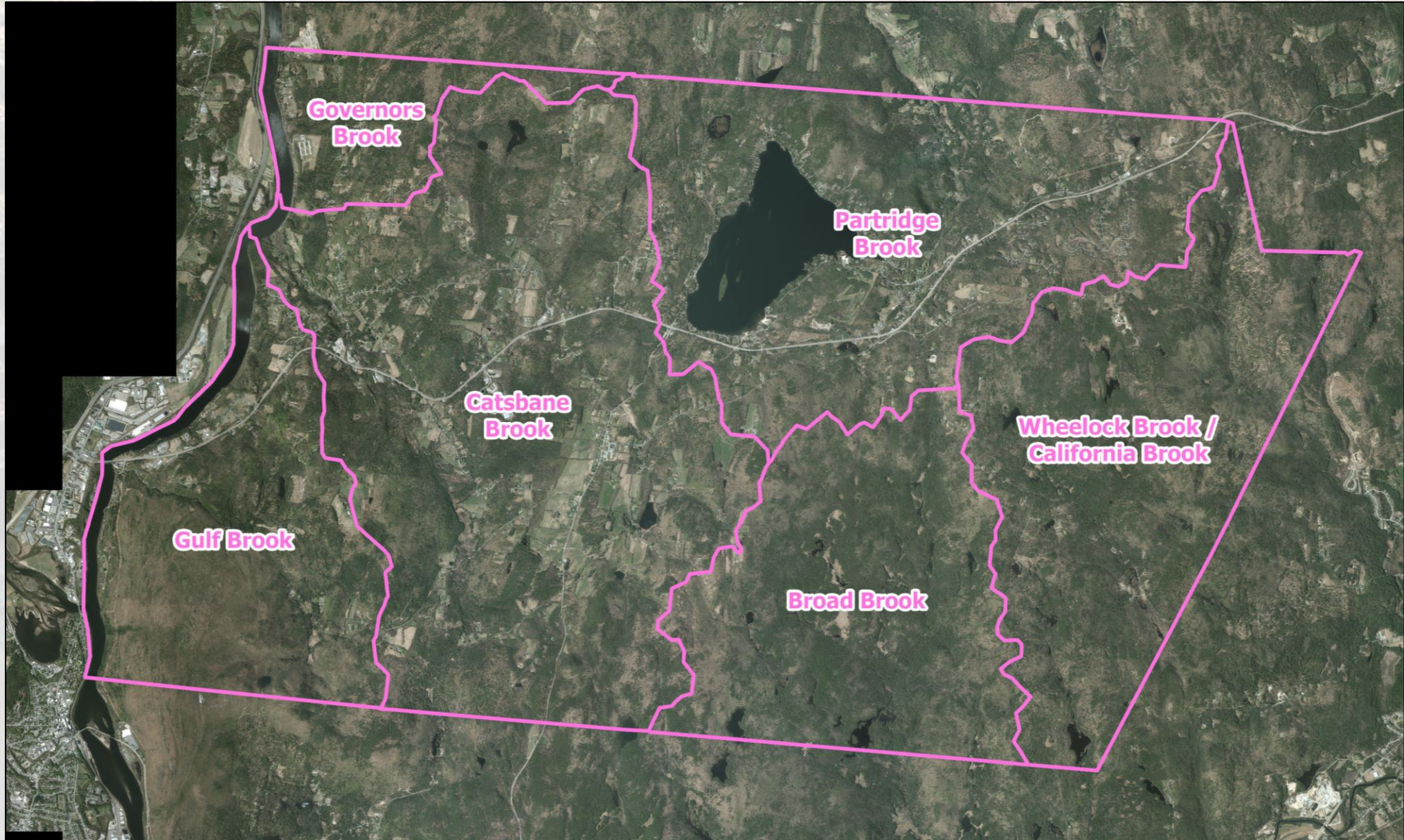
Chesterfield Watersheds



Chesterfield Watersheds

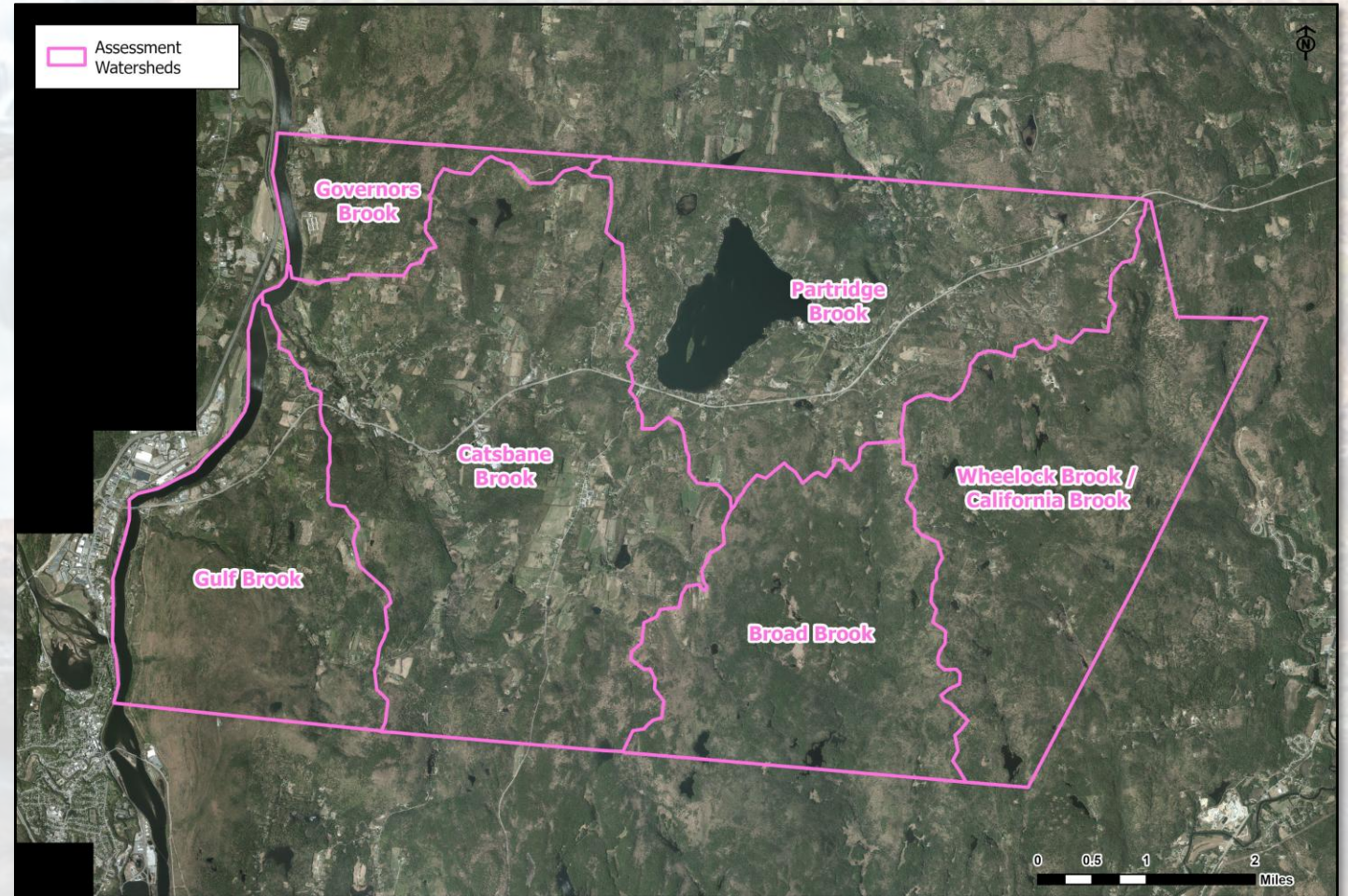


Chesterfield Watersheds

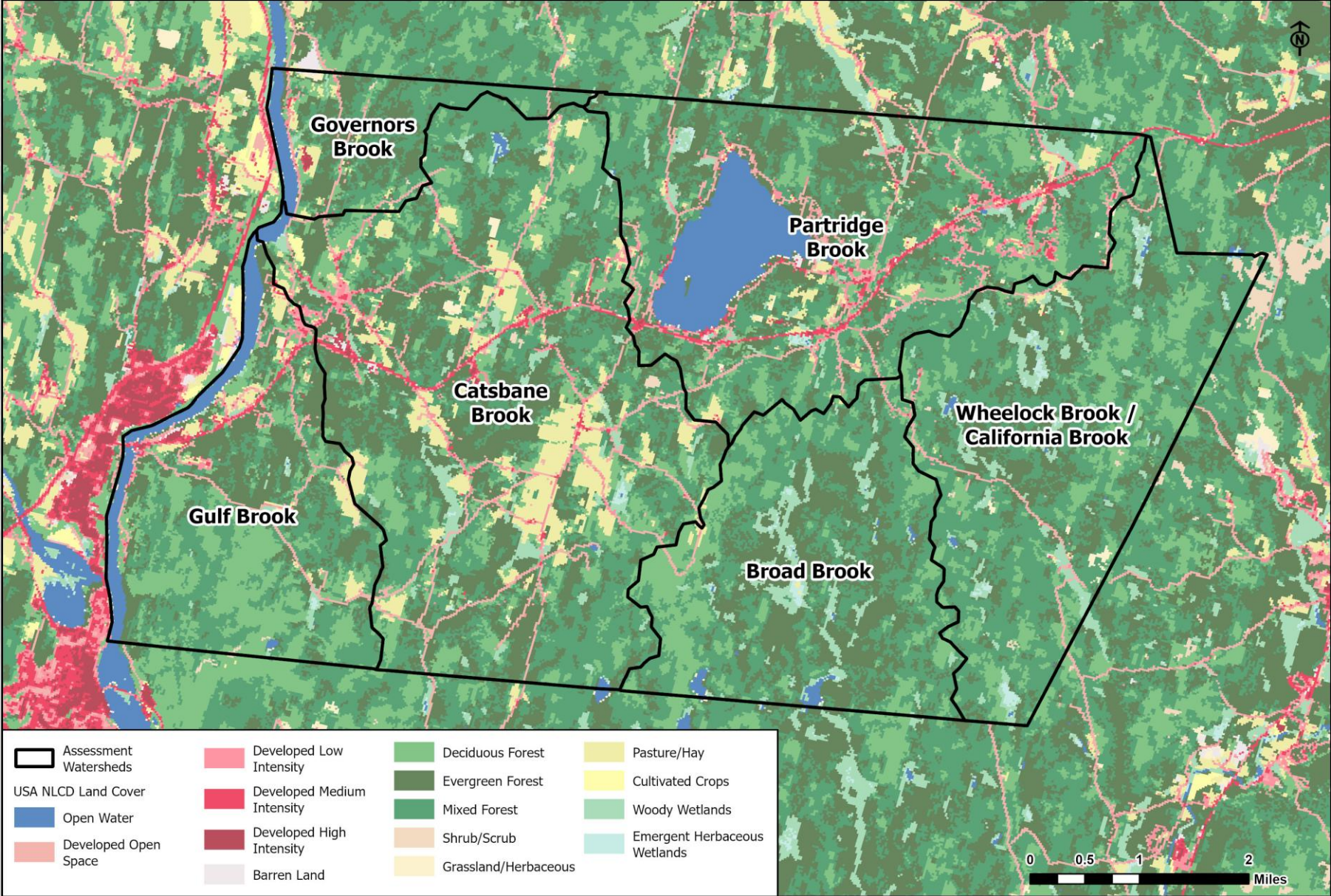


Chesterfield Watershed Health Assessment

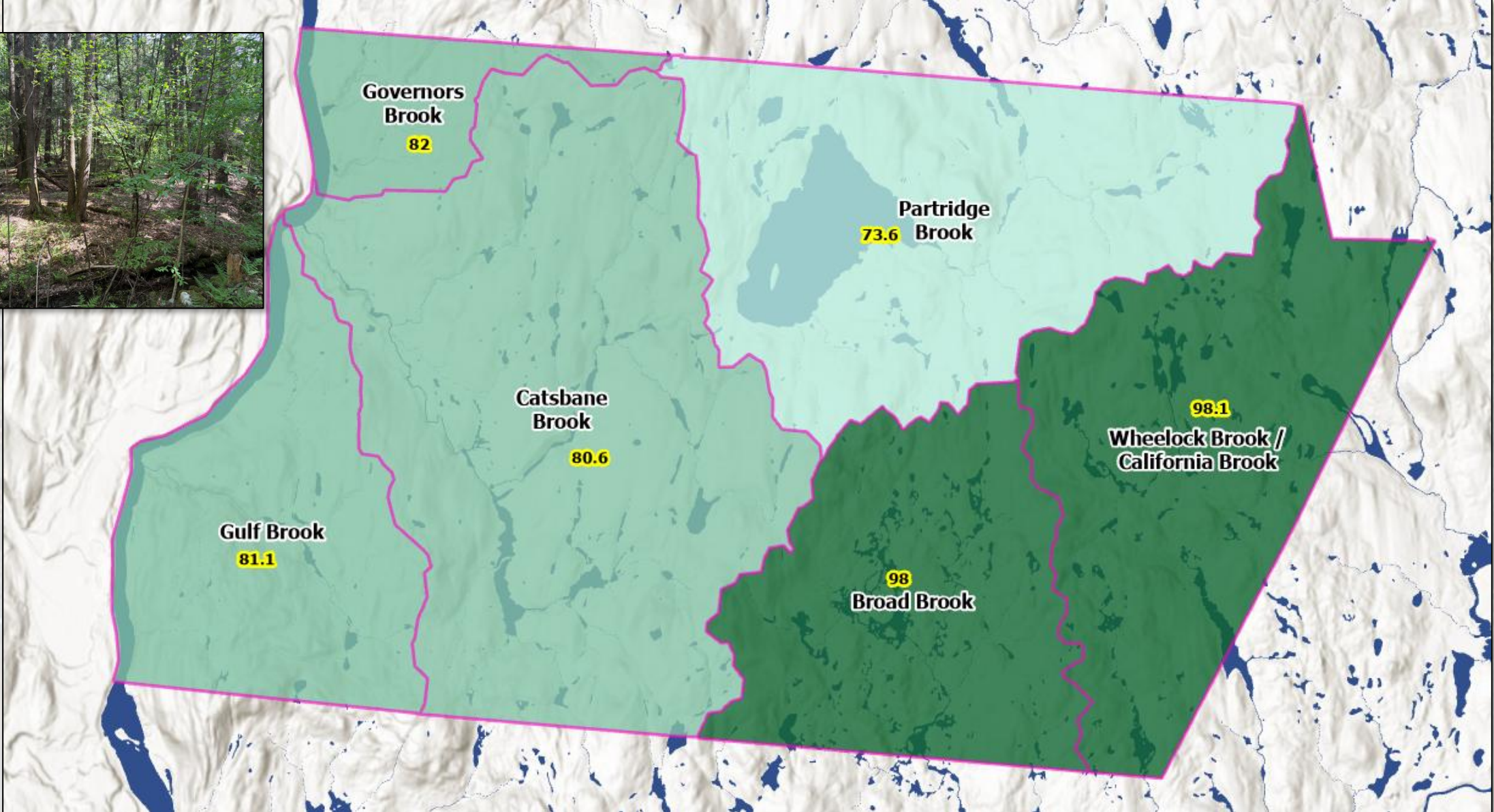
- Standardized & comprehensive
- Community-relevant factors
- Finer scale than HUC12
- Refined watershed boundaries



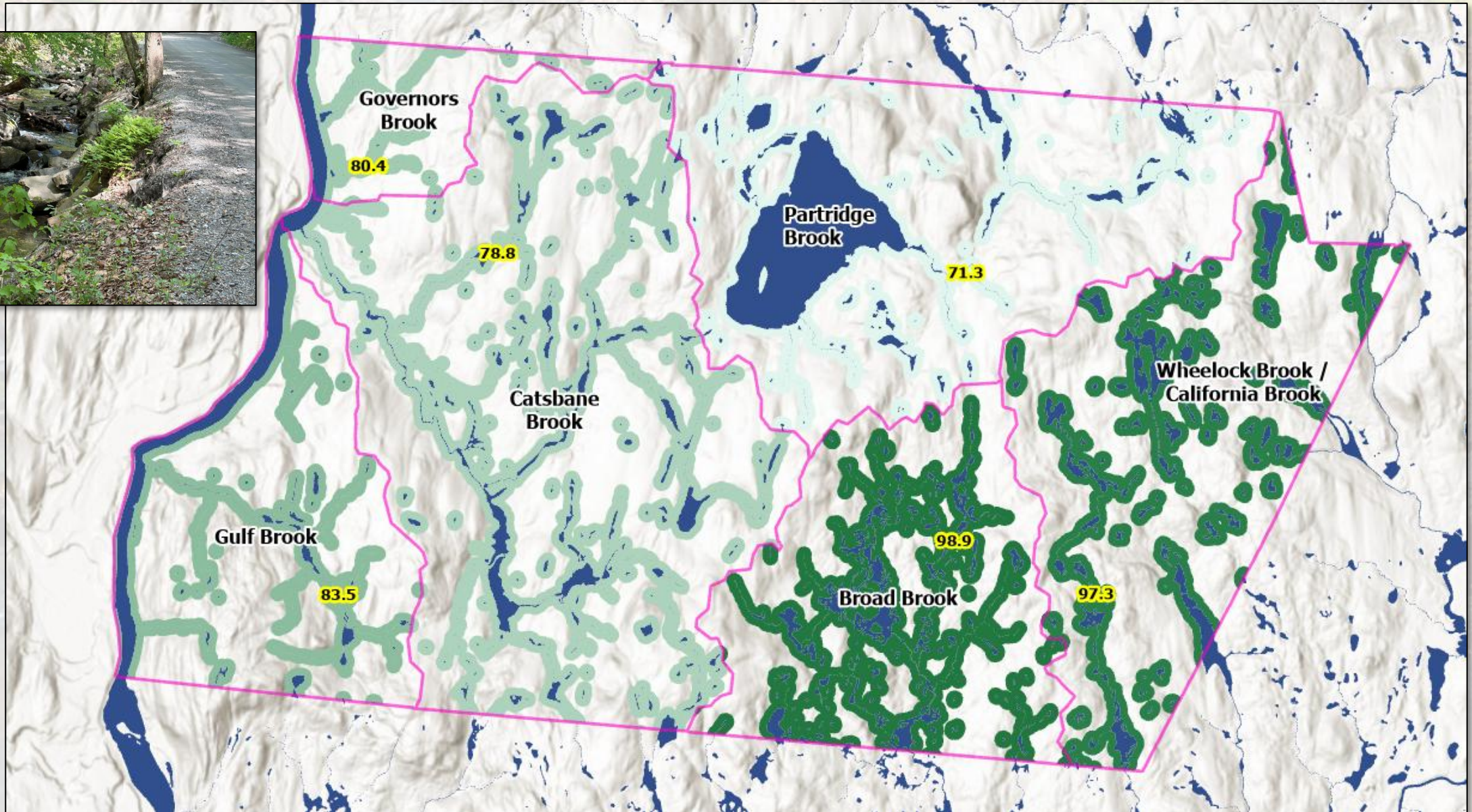
Land Cover Types



Naturally Vegetated Land Cover (%)



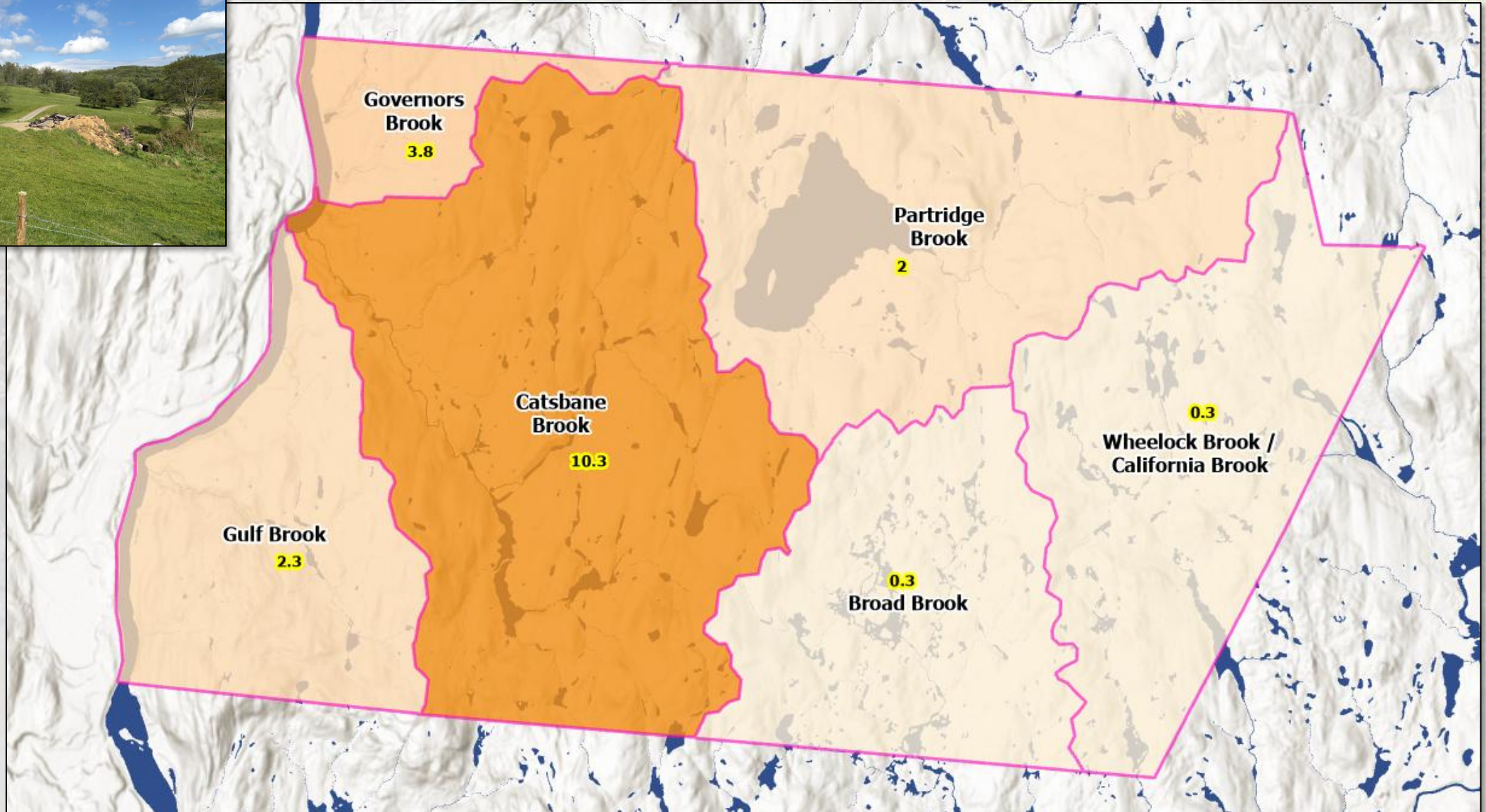
Riparian Naturally Vegetated Land Cover (%)



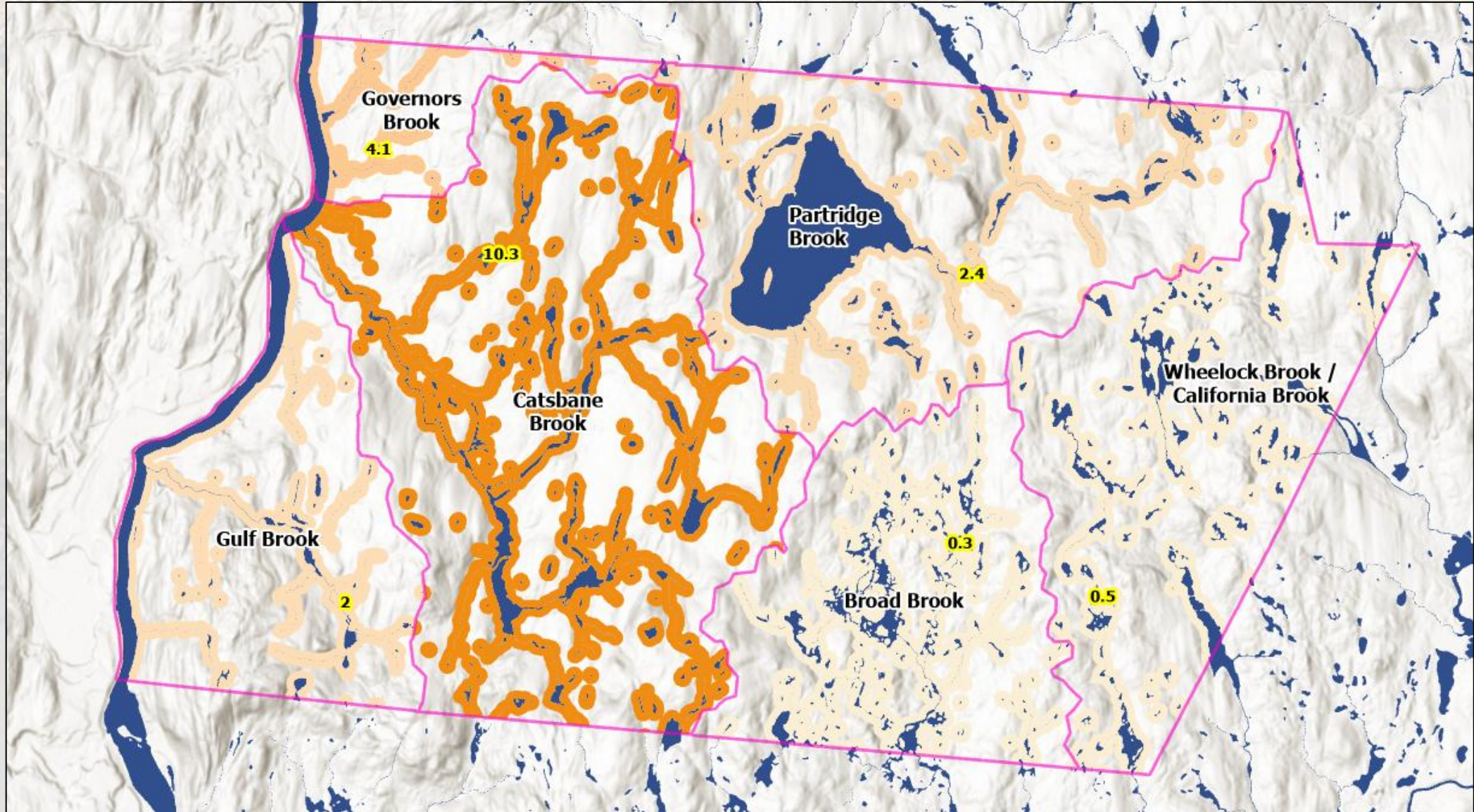
Naturally Vegetated Land Cover (%)

Watershed	Watershed Natural Veg. Cover	Riparian Natural Veg. Cover	
Broad Brook	98.0%	98.9%	←
Catsbane Brook	80.6%	78.8%	←
Governors Brook	82.0%	80.4%	←
Gulf Brook	81.1%	83.5%	←
Partridge Brook	73.6%	71.3%	←
Wheelock Brook / California Brook	98.1%	97.3%	←

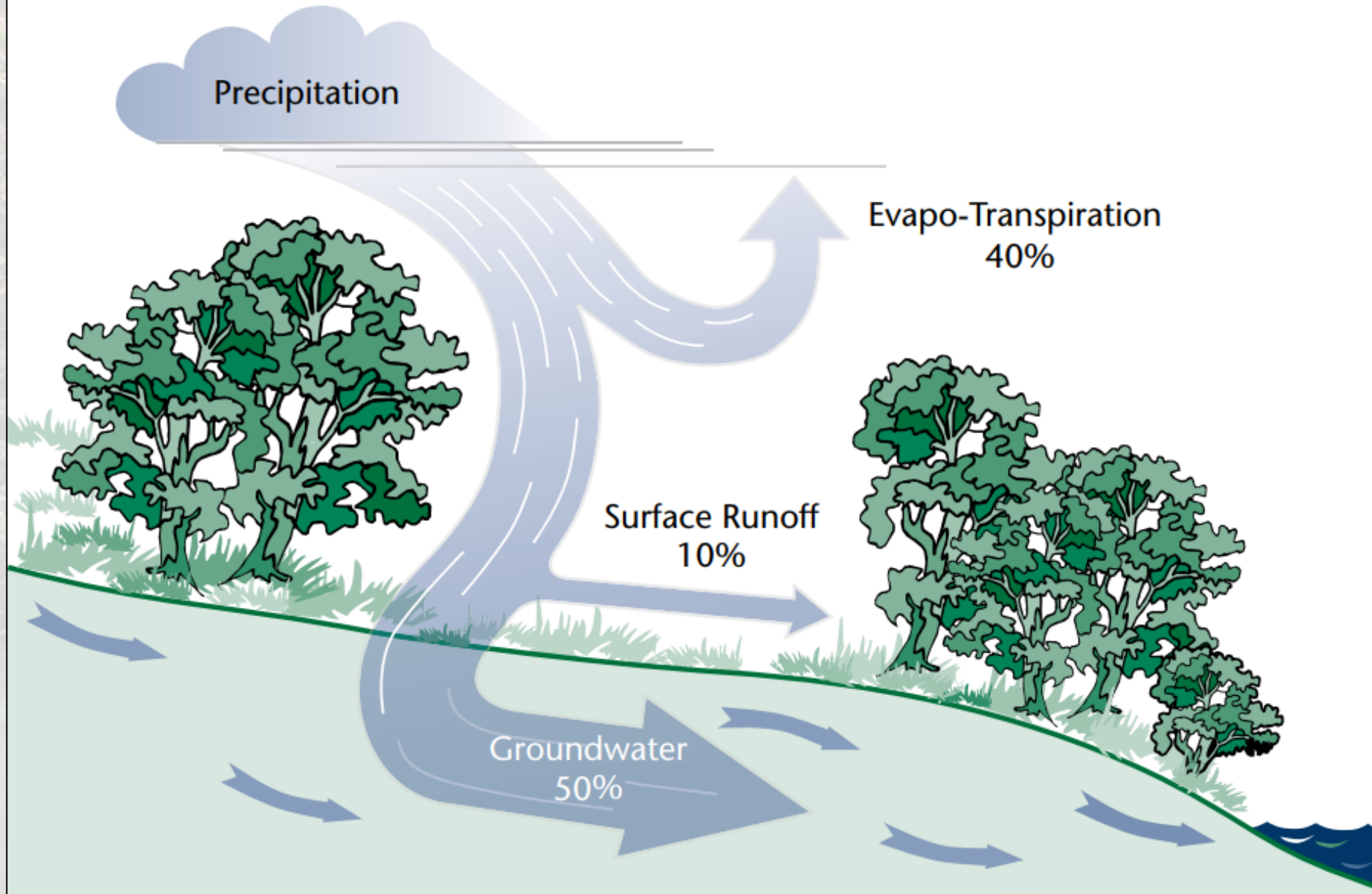
Agricultural Cover (%)



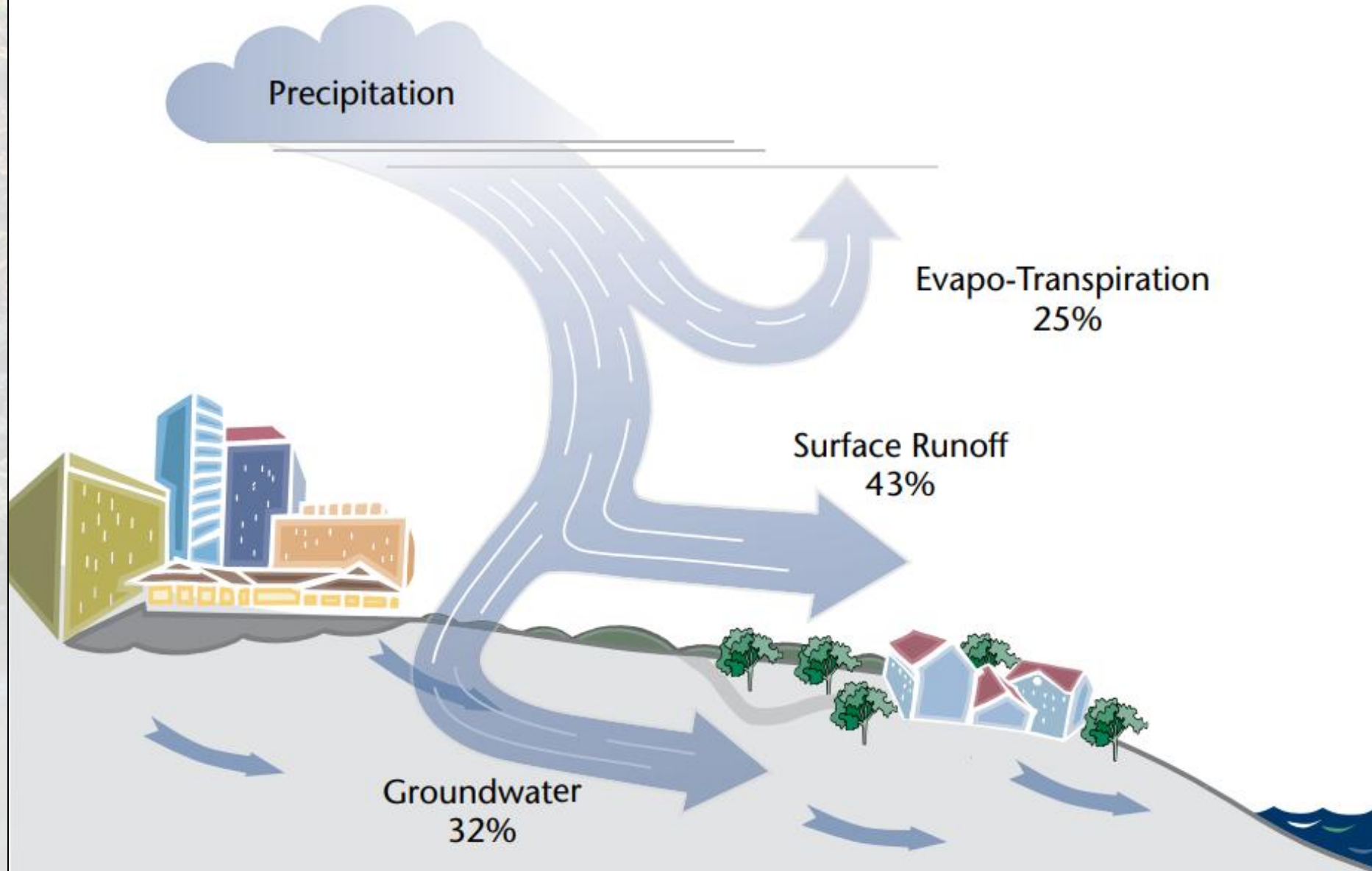
Riparian Agricultural Cover (%)

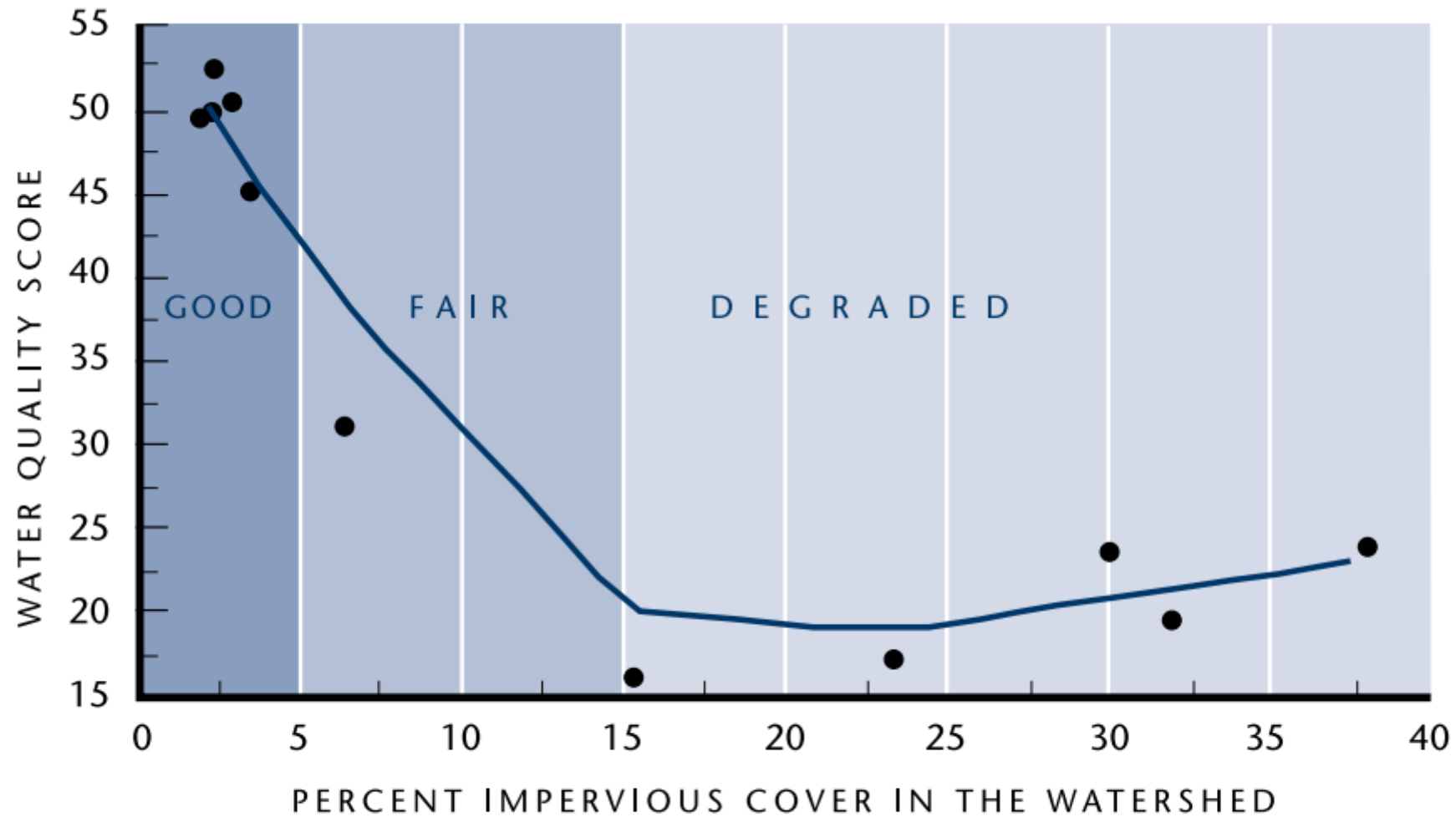


TYPICAL ANNUAL WATER BUDGET: NATURAL WATERSHED



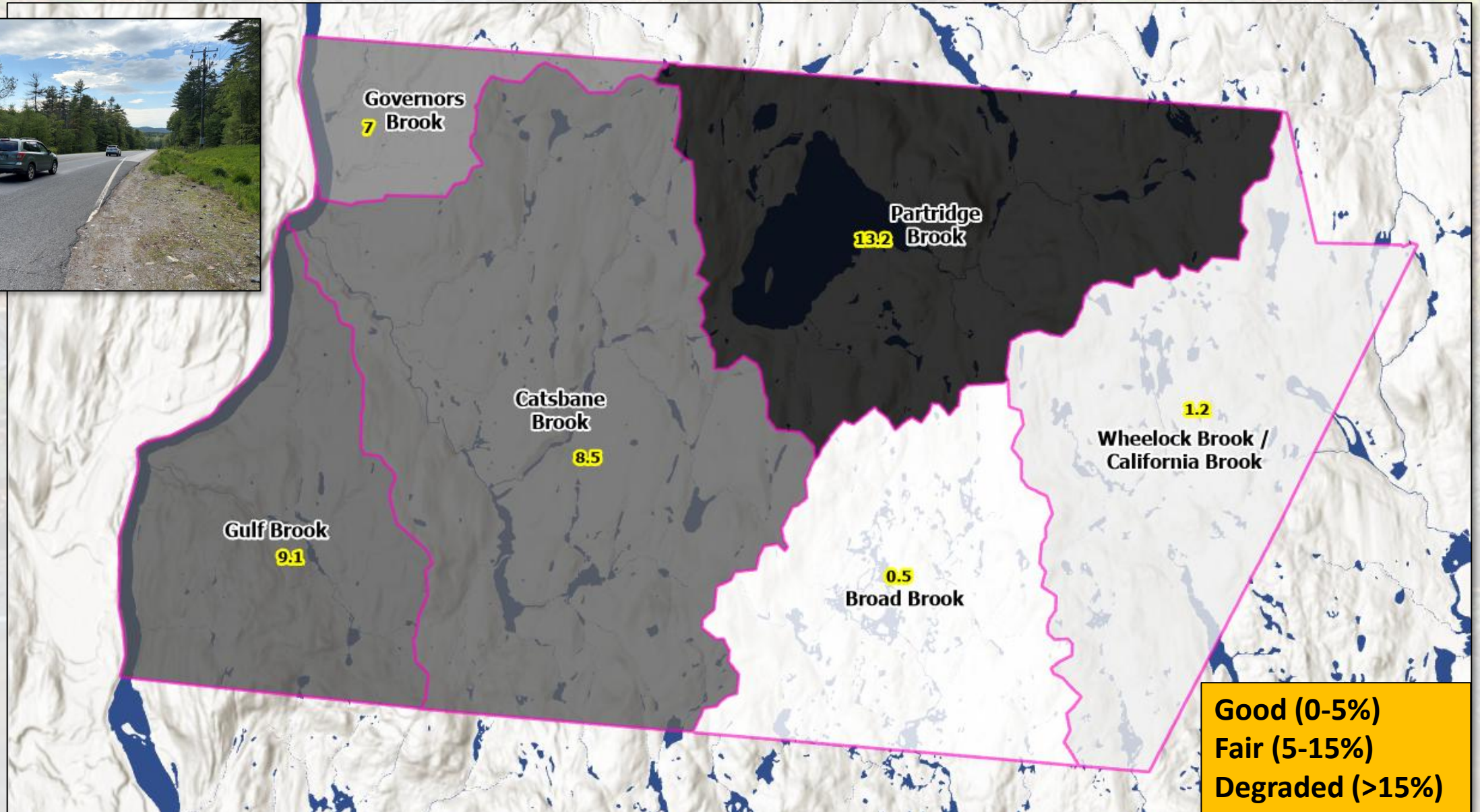
TYPICAL ANNUAL WATER BUDGET: DEVELOPED WATERSHED



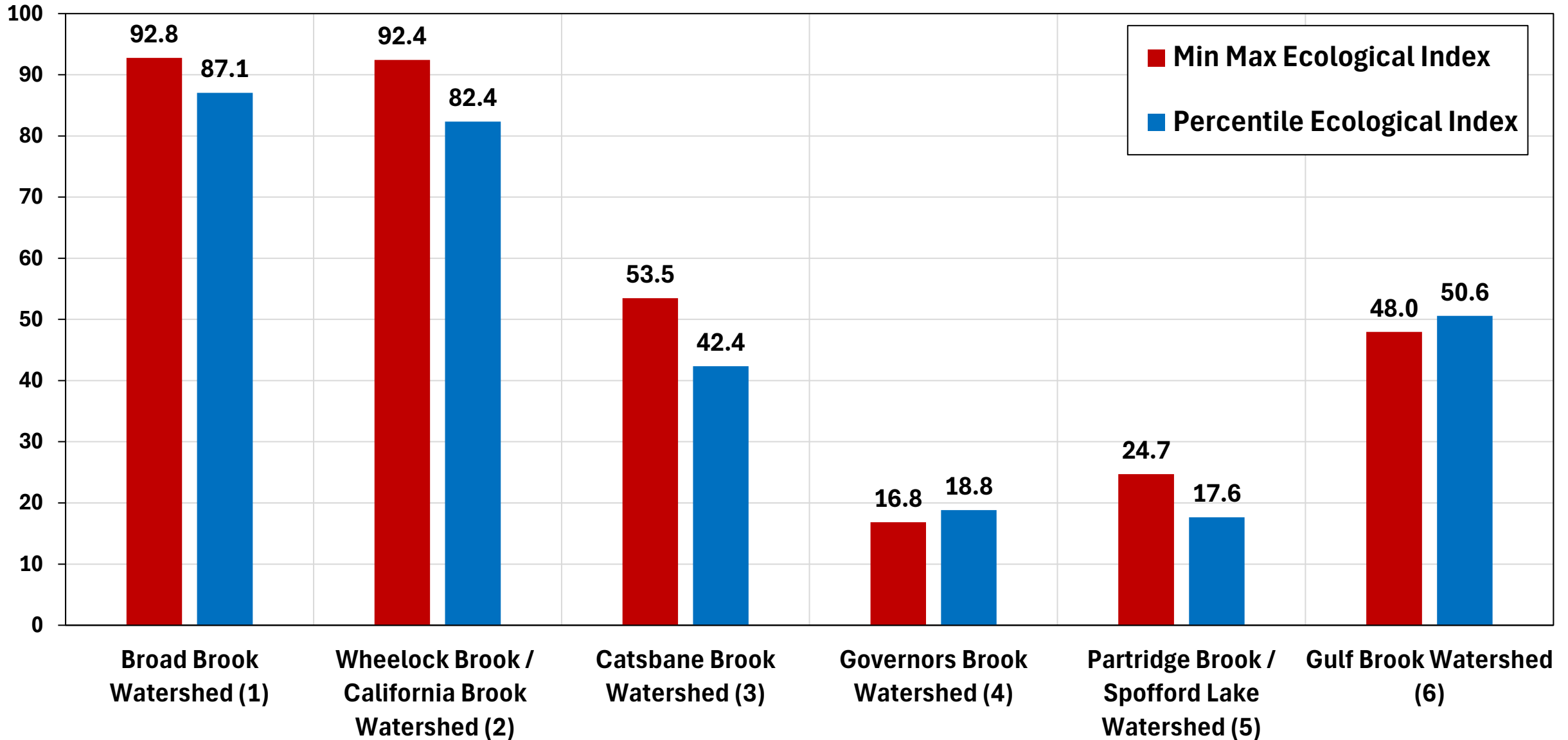


Adapted from USGS Report 20055103: *Effects of Urbanization on Stream Quality at Selected Sites in the Seacoast Region in New Hampshire 2001-03.*

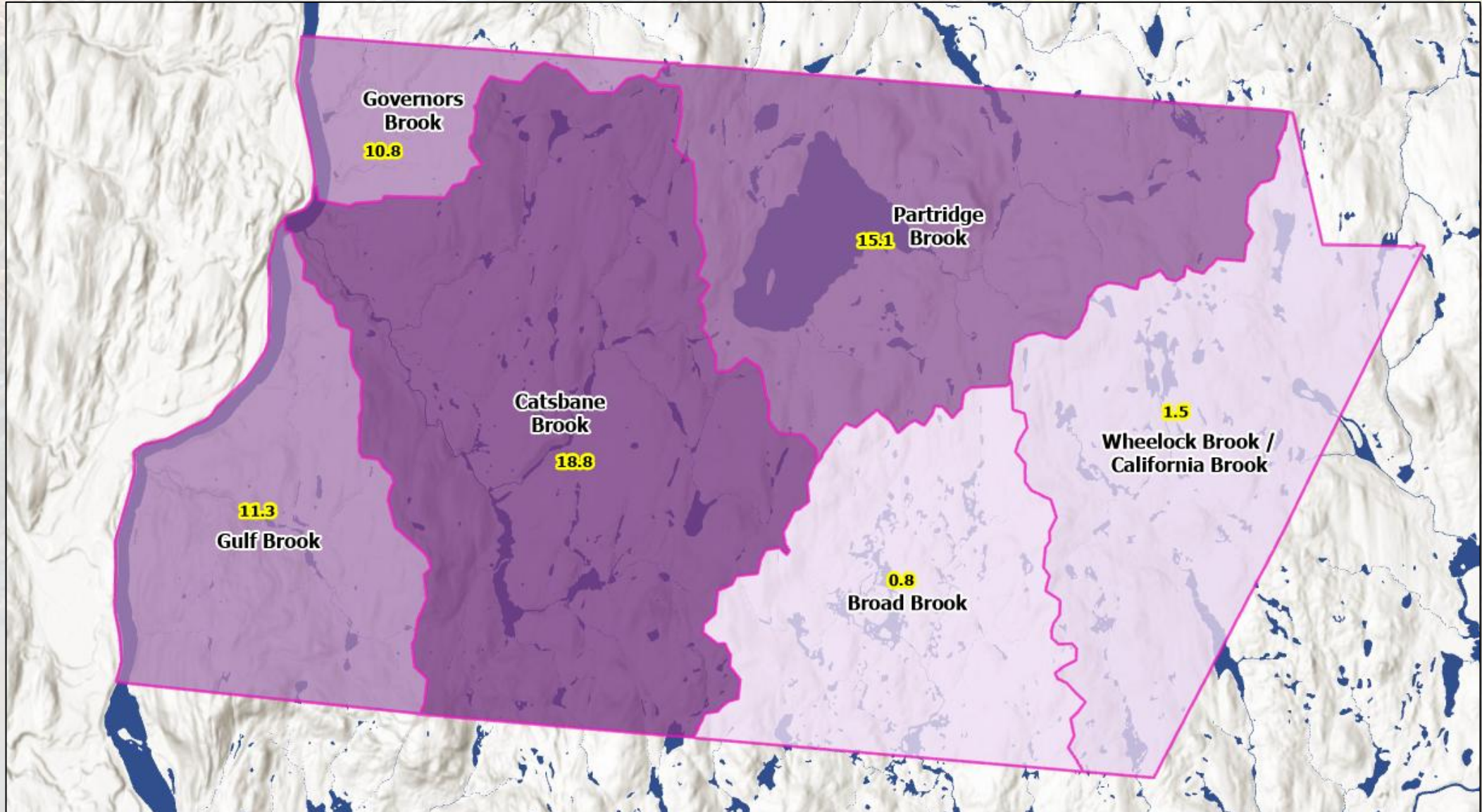
Impervious Cover (%)



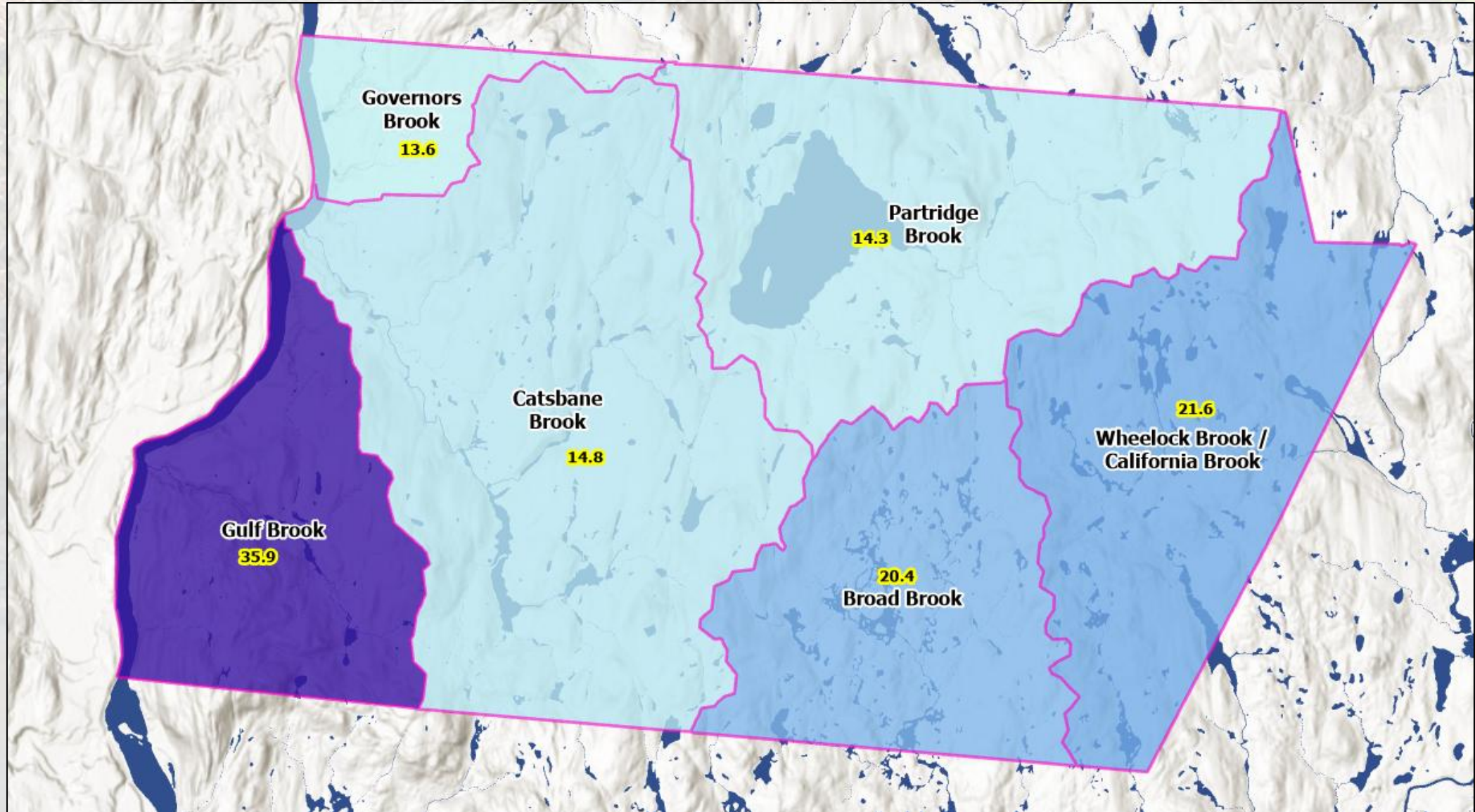
Ecological Index Values by Watershed



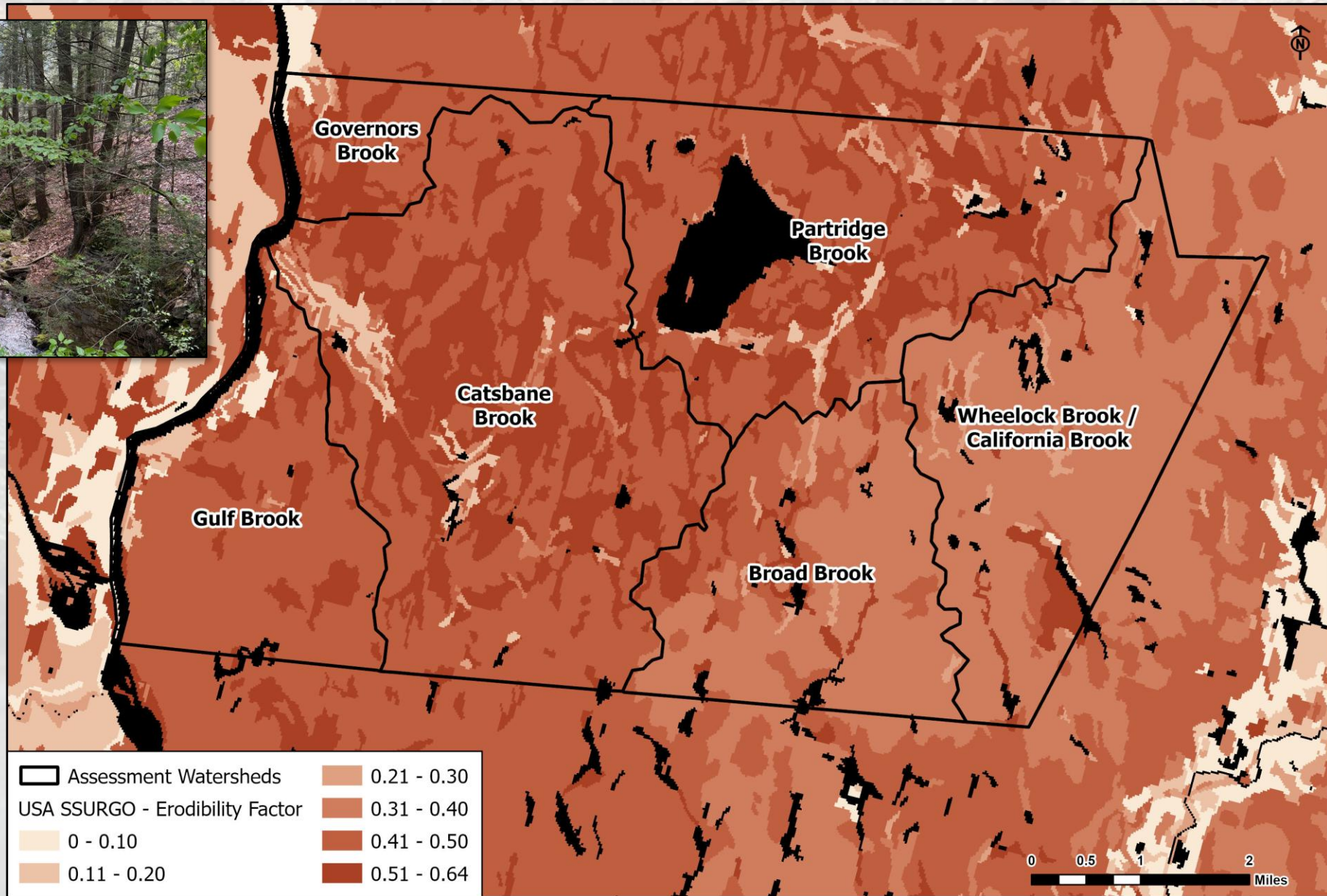
Human Use Land Cover (%)



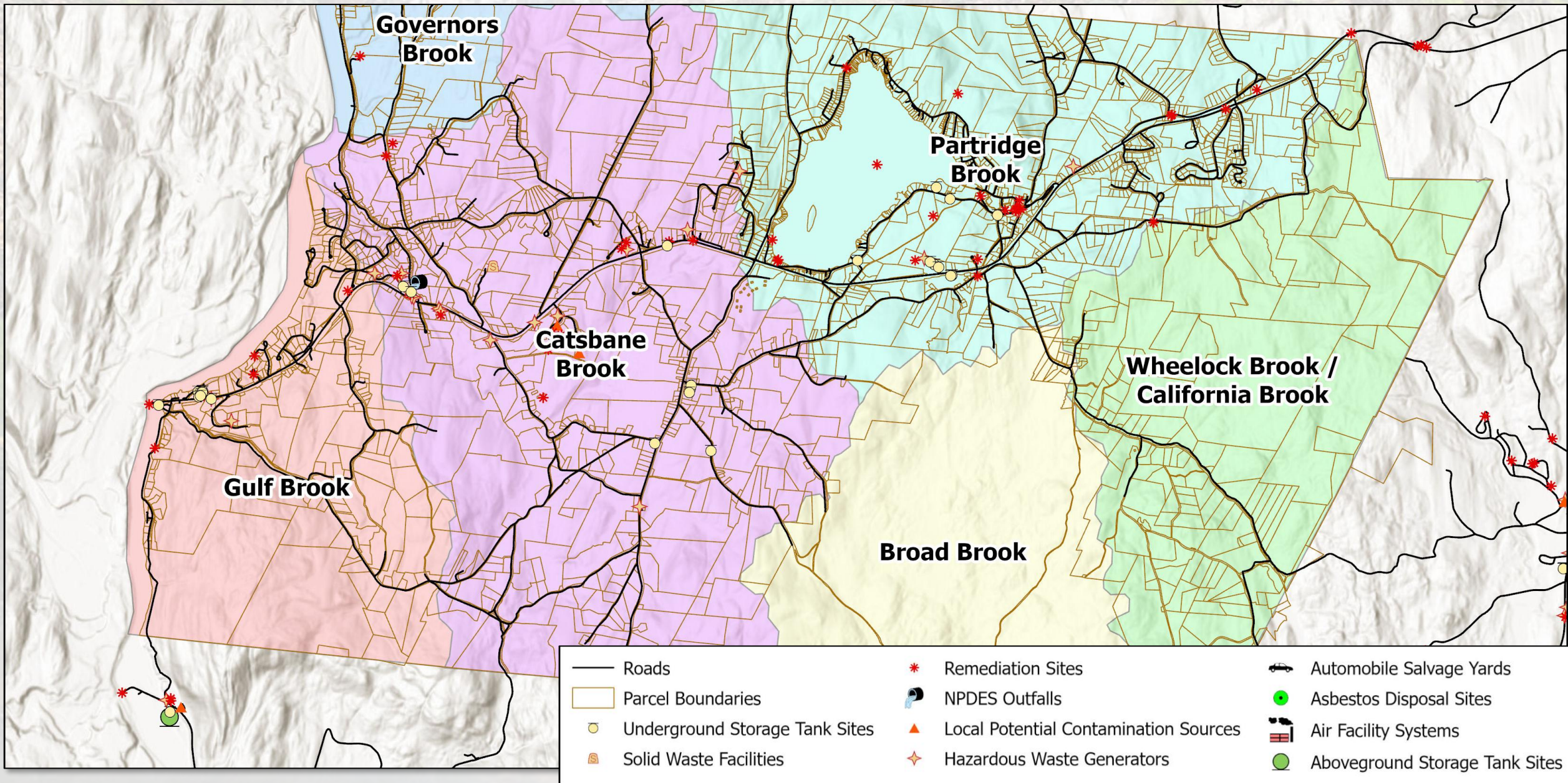
High-Runoff-Potential Soils (%)



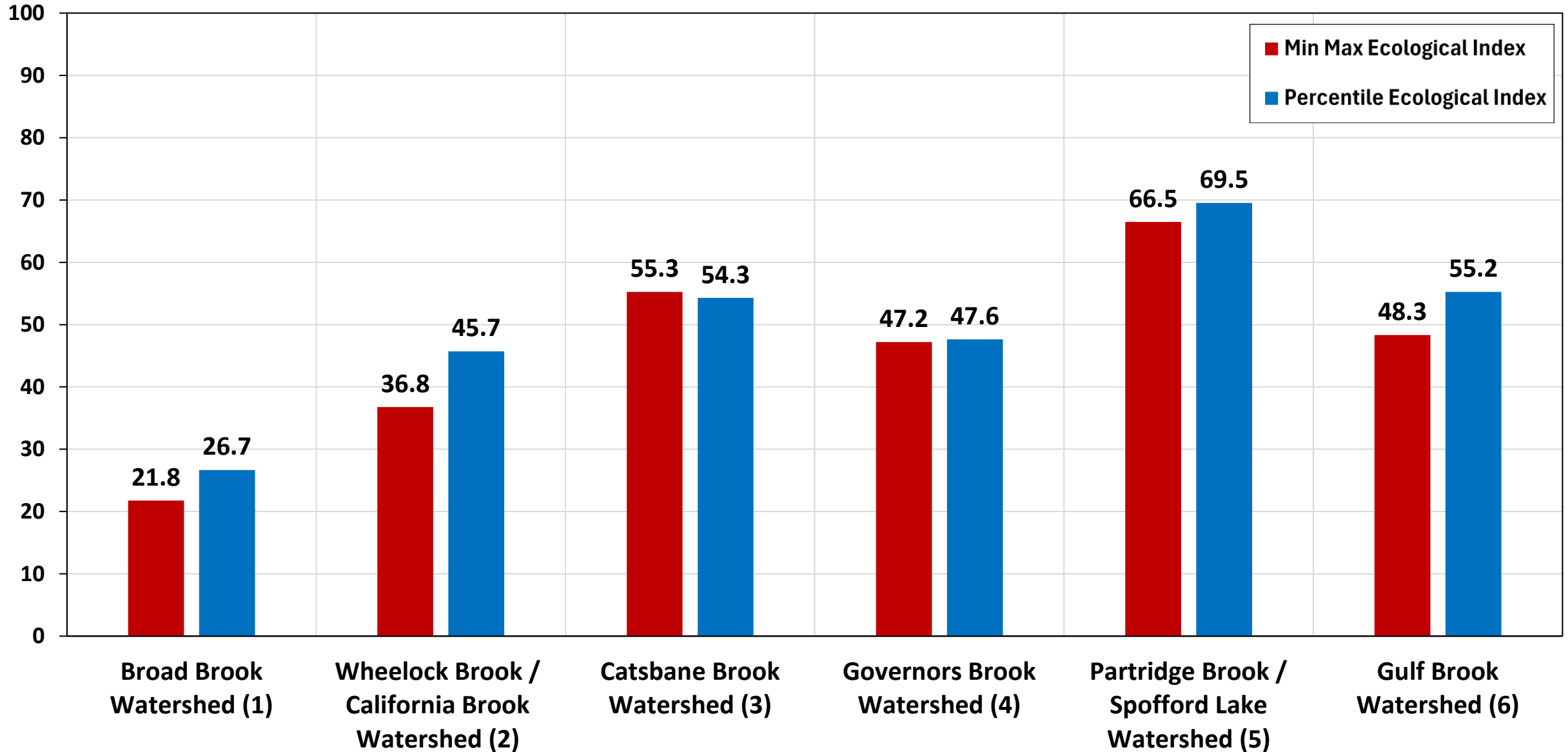
Soil Erodibility



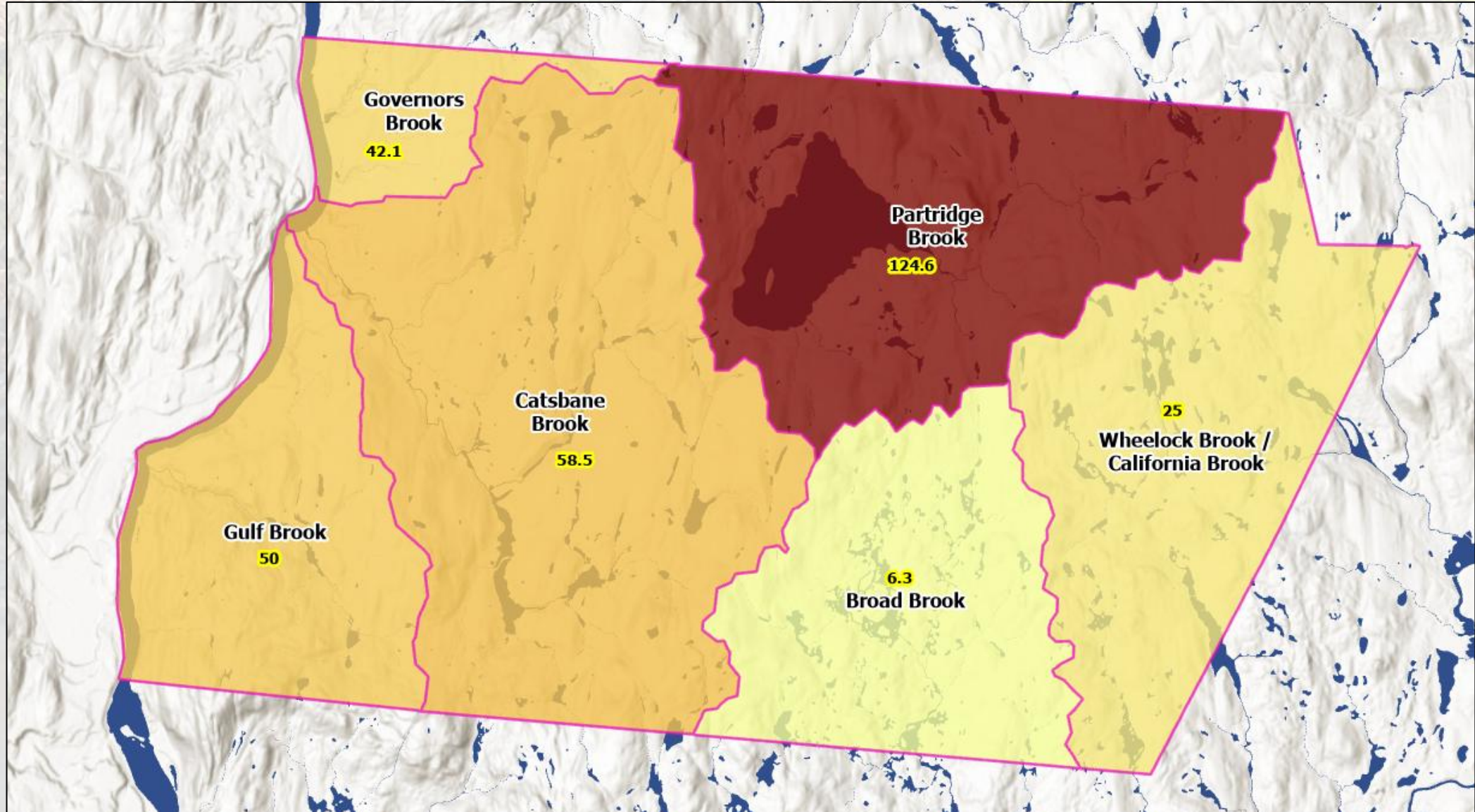
Known & Potential Contamination Sources



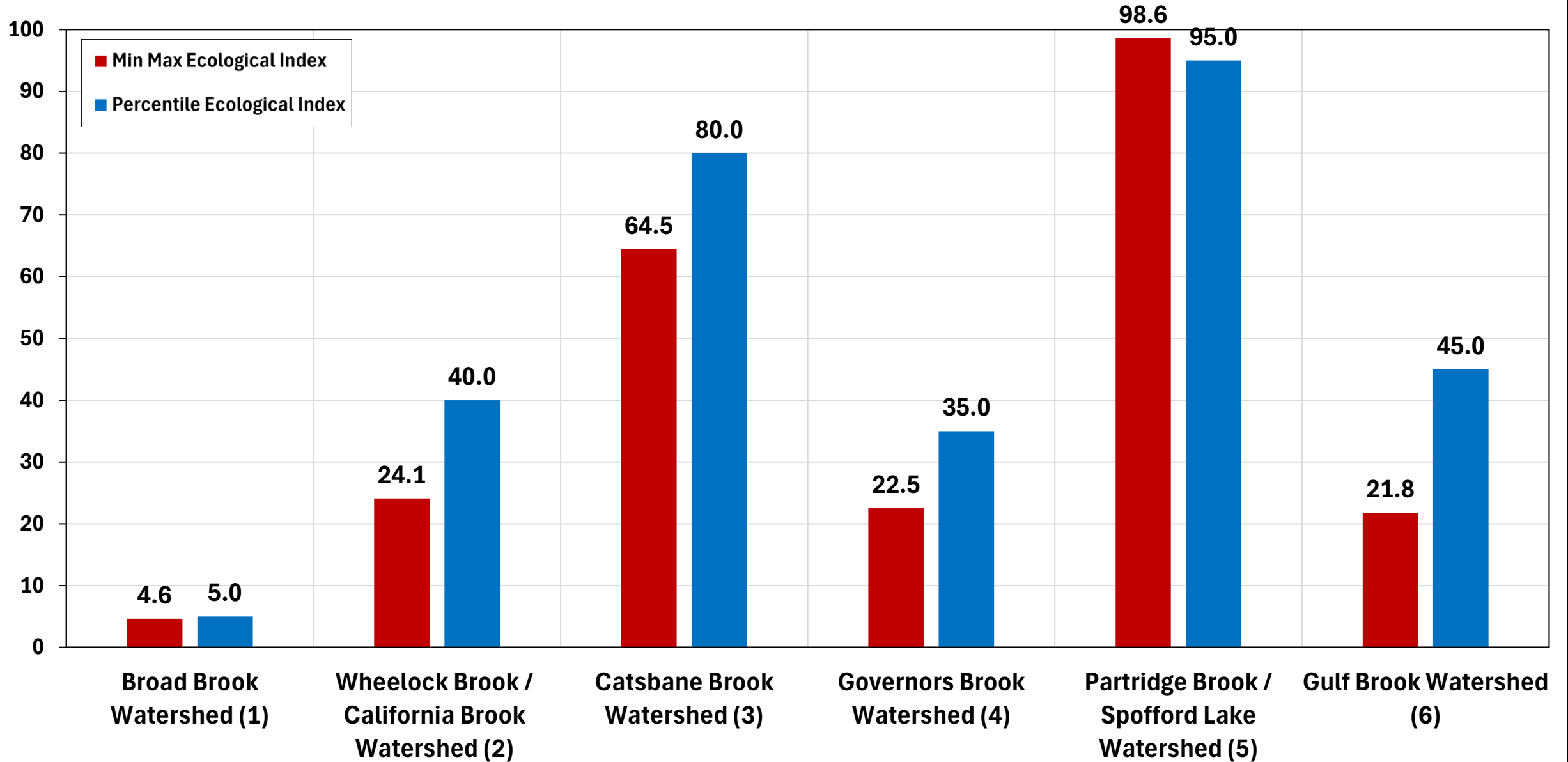
Stressor Index Values by Watershed



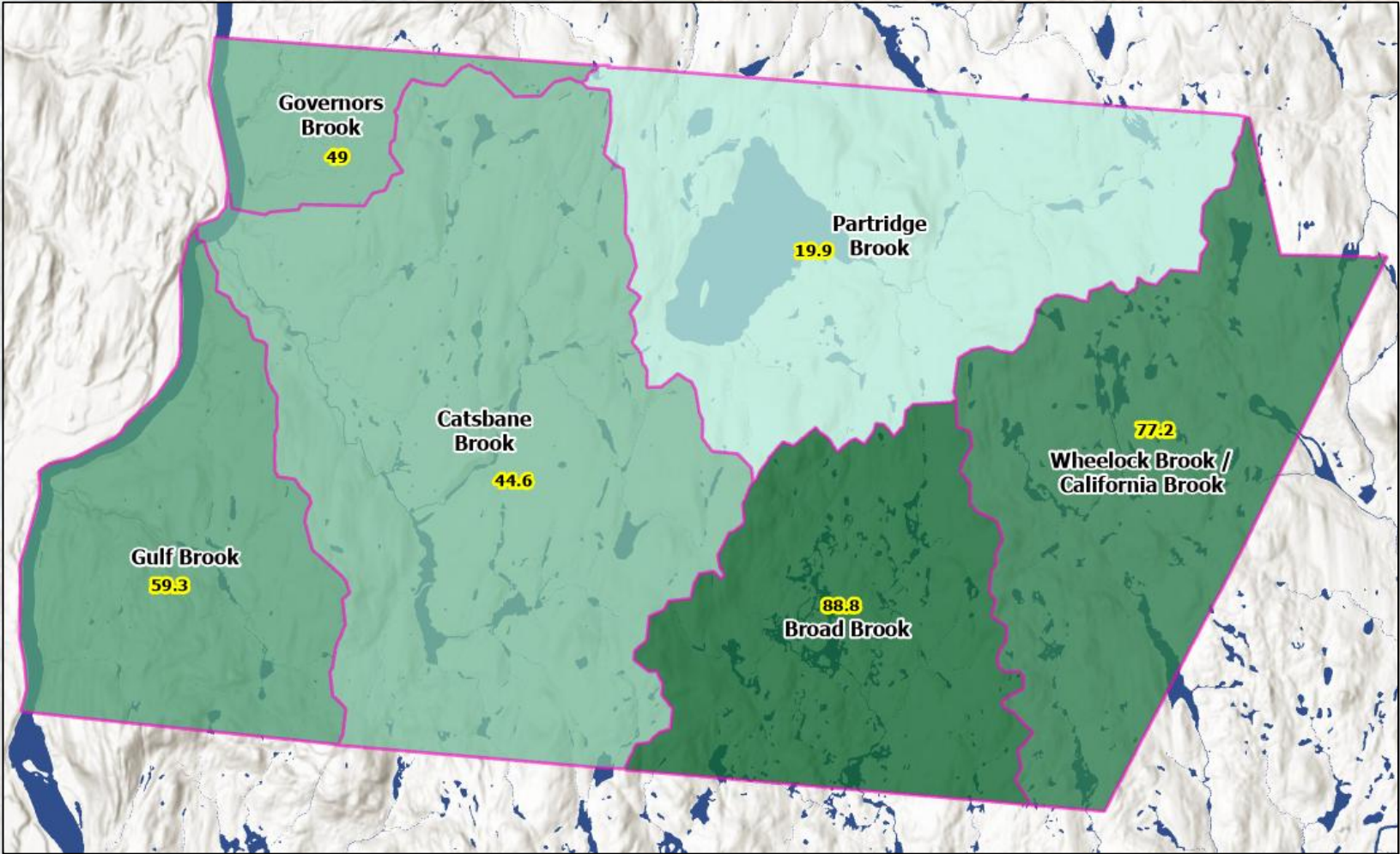
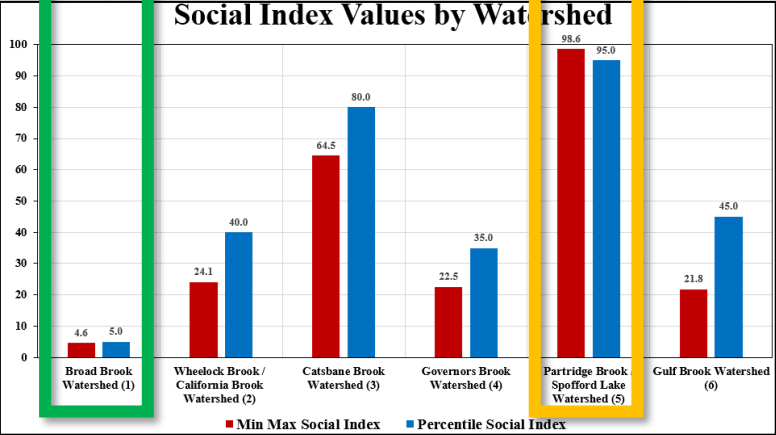
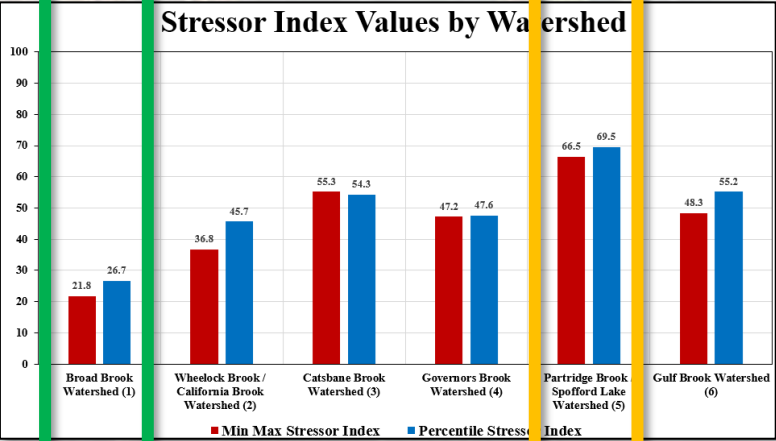
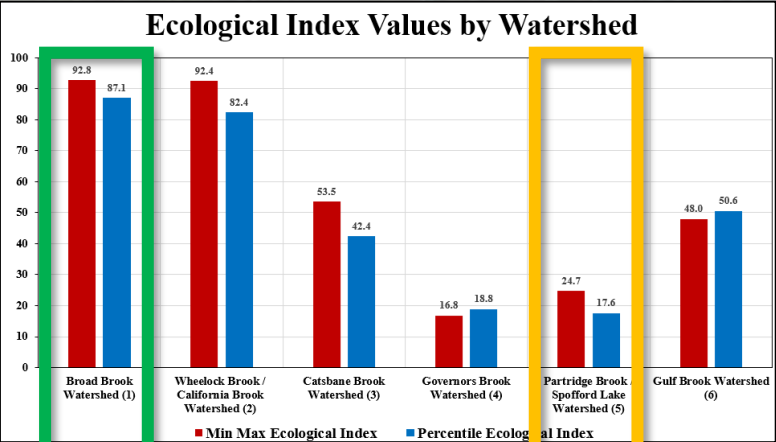
Unique Parcels per Square Mile



Social Index Values by Watershed



Overall Relative Watershed Health



How You Can Help

- **#1 best practice: manage and maintain natural areas**
- **Create and maintain a vegetated buffer around wetlands**
- **Minimize soil erosion, impervious surface area & chemical use**
- **Install a rain garden with native plants**
- **Dig an infiltration trench or well**

Online Resources

- **UNH: Water Quality and Lawn Care Recommendations**
- **UNH: Landscaping for Water Quality**
- **Soak up the Rain NH (<https://www.soaknh.des.nh.gov/>)**



Questions?

NH State Parks