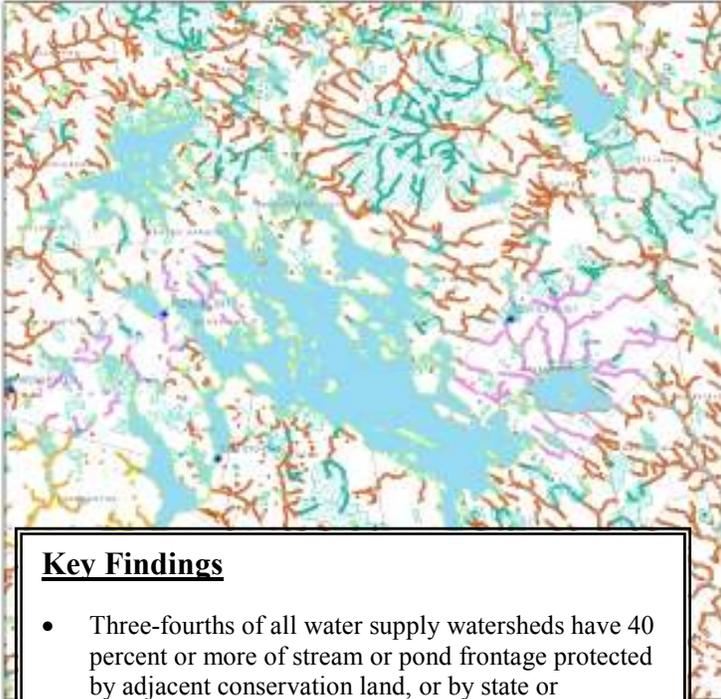


# Measuring Riparian Buffer Protection within Water Supply Watersheds in New Hampshire



**Project Overview:** The protection of riparian buffers is essential to the protection of water quality. In New Hampshire, a patchwork of state and local programs protects some riparian buffers but not others. To inform the ongoing revision of the NH DES's Source Water Protection Strategy and the State Water Plan, various geographic data sets have been used to identify which stream and pond riparian buffers are protected and which are not, and to characterize various levels of protection. The analysis is being conducted for the state's water supply watersheds and takes into account the following buffer protection mechanisms: permanent protection of conservation lands, the Comprehensive Shoreland Protection Act (CSPA), and municipal shoreland and wetland protection ordinances. The geographic data on the spatial extent and regulatory provisions of the local shoreland and wetland protection ordinances was developed recently by NH DES's Drinking Water Source Protection Program. This analysis enables NHDES to identify the extent to which each of the state's 55 surface water supply sources benefit from riparian buffer protection and conversely, which are most vulnerable to future riparian development.

### Key Findings

- Three-fourths of all water supply watersheds have 40 percent or more of stream or pond frontage protected by adjacent conservation land, or by state or municipal buffer protections.
- Most buffer protection is provided through land conservation or the state's Comprehensive Shoreland Protection Act.
- Municipal buffers play a relatively minor role in filling the remaining gaps in buffer protection.

**Table 1** reports the percentage of stream and pond frontage (e.g. shoreline) that is protected by land conservation, New Hampshire's Comprehensive Shoreland Protection Act and municipal zoning buffer protection. Each buffer protection class percentage is non-overlapping with other classes. If multiple buffer protection classes co-occur on the same shoreline frontage, the more protective class, assigned a higher "tier" or rank, takes precedence and is reflected in the values within the analysis.

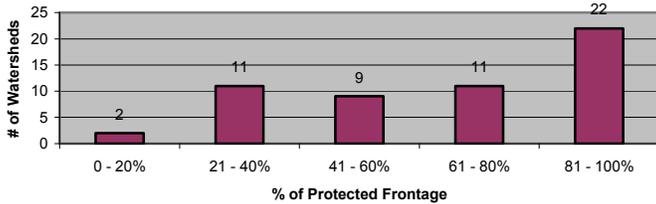
**Table 1**  
Percentage of Protected Stream and Pond Frontage within Water Supply Watersheds

Buffer Protection Class	Percentage of Protected Stream Frontage (%)	Percentage of Protected Pond Frontage (%)	Total Percentage of Protected Frontage (%) <sup>1</sup>	Protection Class Tier/ (Rank)
Land Conservation > 300 ft	24%	6%	21%	1 – High
Land Conservation > =100 ft or <= 300 ft	1%	1%	1%	2 – Medium to High
CSPA Buffer Protection (150 ft)	7%	47%	13%	3 – Medium
Local Zoning buffer >= 100 ft	1%	4%	2%	4 – Medium to Low
Local Zoning Buffer >= 50 ft or < 100 ft	4%	8%	4%	5 – Low
No Buffer Protection	63%	34%	59%	6 – None

<sup>1</sup>Total Percentage of Protected Frontage is weighted according to overall stream and pond frontage length.

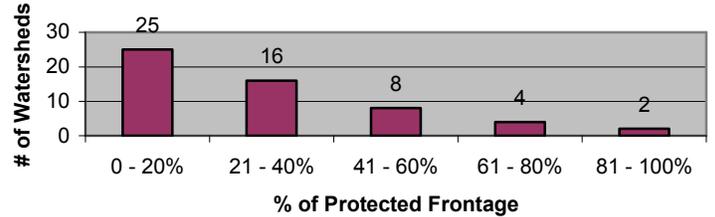
## Buffer Gap Analysis

**Distribution of Water Supply Watersheds: Shoreline Buffer Protection (Composite of All Buffer Protection Classes)**



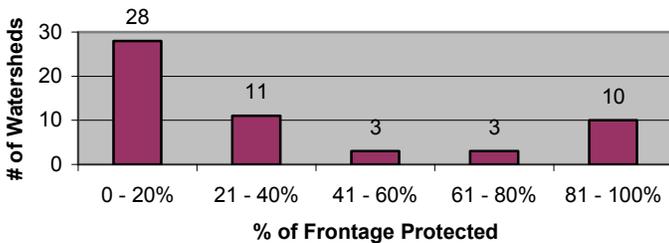
- 77 percent (42 of 55) of water supply watersheds have more than 40% of the total frontage along rivers and ponds protected by either land in conservation or buffers established under the New Hampshire's Comprehensive Shoreland Protection Act or municipal zoning.

**Distribution of Water Supply Watersheds with Shoreline Buffer Protection Under the New Hampshire Comprehensive Shoreland Protection Act (CSPA)**



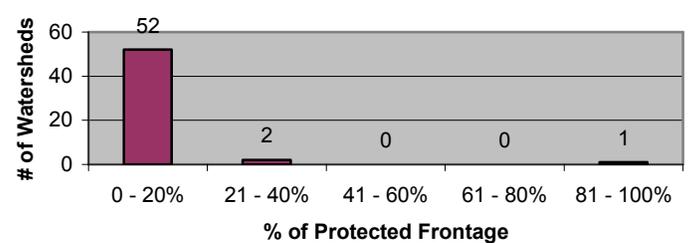
- 25 percent (14 of 55) of water supply watersheds have more than 40 percent of the total frontage along rivers and ponds protected by the state's Comprehensive Shoreland Protection Act.

**Distribution of Water Supply Watersheds with Shoreline Buffer Protection from Adjacent Conservation Land**



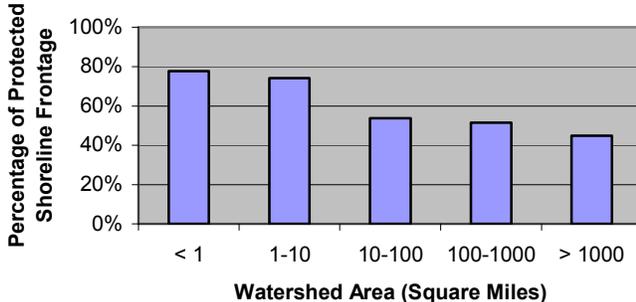
- 29 percent (16 of 55) of water supply watersheds have more than 40% of the total frontage along rivers and ponds protected by land in conservation that is at least 100 feet in width from the pond or river's edge.

**Distribution of Water Supply Watersheds with Shoreline Buffer Protection Under Local Zoning**



- Only five percent (3 of 55) of water supply watersheds have more than 20 percent of the total frontage along rivers and ponds protected by local zoning ordinances that include requirements to maintain a vegetated buffer.

**Watershed Area (size) and Percentage of Protected Shoreline Frontage**



- The area of a water supply watershed tends to be inversely proportional to the calculated percentage of protected frontage within the watershed; with decreasing watershed size, the percentage of protected stream or pond frontage increases.

This chart represents the 55 water supply watersheds grouped into five groups according to total watershed area. Each group's percentage of protected frontage is an average of the watersheds within that group.