

# Water Quality Analysis of the Lamprey River Watershed

## Specific conductance, *E. coli*, and turbidity

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### *Importance of water quality in rivers*

The preservation of high water quality in streams and rivers is critical for the health of ecosystems and human health. The Lamprey River drains into Great Bay, which is a vital estuarine ecosystem. Keeping the Lamprey clean preserves the ecology and ecosystem services that we rely on. The Lamprey River is also a source of drinking water and recreation for many people in southeastern New Hampshire. Water quality parameters such as specific conductance, *E. coli*, and turbidity indicate the chemical, biological, and physical state of the river. By analyzing the historical water quality data, scientifically-based conclusions can be made and action can be taken to solve the potential threats to this Wild and Scenic River.

### *Data analysis*

To assess the past and current state of water quality in the Lamprey River watershed, analyses of historical data were carried out. Spatial and temporal trends were examined at 16 sites throughout the freshwater portion of the watershed. Other than specific conductance measurements which were taken throughout the year, samples were primarily taken by volunteers during the summer.

### *Results*

In general, the specific conductance, *E. coli*, and turbidity measurements suggested relatively high water quality in the Lamprey River watershed. Specific conductance only exceeded the Class B New Hampshire surface water quality standard three times throughout the record. However, lower levels of specific conductance can still harm aquatic ecosystems. Higher measurements were seen at stations with closer proximity to areas of greater urban density, likely due to the rate of road salt application. The median *E. coli* count was below the 129 colonies/dL stipulated by the state, but many values were above that. The measurements were higher at the headwaters than downstream.

### *Current watershed status and management implications*

Despite the high quality of water indicated by the generally low specific conductance and turbidity measurements, management in the Lamprey River watershed is critical. Future land use changes in the watershed could increase specific conductance levels as more road salt is applied. Turbidity measurements may also increase with stronger, more frequent rain events. These factors can be mitigated through continued monitoring and suitable management responses. High measurements of *E.*

*coli* should be the focus of future study and direct management. Increased sampling efforts could lead to more precise source identification. By identifying these sources, actions can be taken to ensure lower pathogenic activity in the Lamprey River. Specifically, working with policymakers and community members would make them aware of potential problems that may arise if these issues go unchecked.