Correlating Geomorphic and Habitat Assessments with Water Quality Parameters in Vermont Streams

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Understanding the relationships between stream water quality, geomorphology, and habitat is essential for effective watershed management. Vermont EPSCoR Streams Project water quality parameters such as total phosphorus (TP), total suspended solids (TSS), *E. coli* (EC), and total coliforms (TC), are seen as primary risk indicators of environmental and human health. With the Vermont Agency of Natural Resources' (VTANR) rapid geomorphic assessments (RGA) and rapid habitat assessments (RHA) now completed over most of the state and with the growing base of water quality data, we can begin to compare these datasets. Where strongly correlated, the data could be used as a predictive tool to direct future watershed improvements and inform future monitoring.

Using GIS, the Streams Project sites were joined to the VTANR Phase II RHA/RGA reaches. Streams Project water quality data were compared with RGA and RHA total scores as well as their component values. The RGA assesses 4 components: channel degradation, aggradation, widening, and changes in planform. The total RGA score was found to be highly negatively correlated to Average TSS (especially widening), whereas the other water quality parameters show little correlation. The RHA assesses 10 components including substrate and pool characteristics, sediment and channel flow, channel alteration and sinuosity, and stream bank and buffer characteristics. The total RHA score was found to be negatively correlated to total coliform (especially bank stability), whereas total phosphorus was most correlated to channel flow status.