

VERMONT RIVER CORRIDOR MANAGEMENT PROGRAM DEFINITION AND APPLICATION OF FLUVIAL GEOMORPHOLOGY

Fluvial geomorphology seeks to explain the physics of flowing water, sediments and other products of watersheds in relation to various land forms. It uses the analysis of physical, chemical, biological, and social data to explain the historic causes of problems being experienced by Vermont's water bodies and to resolve or avoid conflicts between fluvial system dynamics and human investments in the landscape. Eroding stream bank soils may represent the largest source of sediment and phosphorus pollution entering Vermont's surface water; thereby creating our most serious and pervasive water quality degradation problem.

Unstable river channels, coupled with and oftentimes exacerbated by historic flood plain and riparian corridor encroachments and traditional channel management practices have caused tens of millions of dollars in property loss, infrastructure damage, diminished agricultural productivity and degradation of the economic, recreational and ecological values of VT's surface waters.

Stream channel instability has profoundly diminished the economic potential of Vermont's surface waters and has extensively degraded the ecological, recreational and intrinsic values of our river systems.

The Agency of Natural Resources is incorporating the principles and applied methods of fluvial geomorphology into its river corridor protection, management, restoration and public education activities. Fluvial geomorphology is the key to achieving multi-objective, community and watershed based goals by providing a management approach that avoids a fish vs. people conflict; rather, understanding and managing for natural channel stability is good for stream ecological functions *and* for long term property protection.

Fluvial geomorphology provides the scientific basis supporting the ANR River Management Program's technical assistance to communities, landowners, watershed associations and infrastructure and resource managers. The science also supports evaluation of stream alteration proposals, planning, designing and restoring physical and ecological river functions, identifying, avoiding, mitigating and reducing flood hazards, protecting and managing flood plains and riparian corridors, developing river education programs, sustaining or restoring riverine economic, recreational and intrinsic values, and implementing the ANR watershed basin planning initiative.

For example-watershed basin plans that include an assessment of stream type and stability will effectively explain the sensitivity of streams to: land use changes, flood plain encroachments, loss of riparian vegetation and channel management activities. Once completed, these comprehensive plans will identify and address a large root cause of the erosion/sedimentation, phosphorus loading and channel stability problems as well as provide a framework supporting specific corrective/preventive actions that can be prioritized on a watershed by watershed basis.