

Vermont River Management Program

Department of Environmental Conservation

Overview of Program Activities and Responsibilities

The River Management Program supports and implements channel assessment and management practices that recognize a stream's natural stable tendencies. The section provides regulatory review and technical assistance for protection, management, and restoration projects that affect streams and rivers. The objective is to guide and encourage projects that provide increased property and infrastructure protection and maintain or restore the ecological functions and economic values of the river system.

River Corridor Protection and Restoration

The River Management Program provides technical assistance to river corridor protection and restoration projects that establish or encourage natural river stability.



*Stability is defined as the ability of a stream, over time and in the present climate, to transport the flow **and** sediment of its watershed in such a manner that it maintains its dimension, pattern, and profile without aggrading (building up) or degrading (eroding down) its channel bed materials.*

River restoration should be undertaken only after careful consideration of alternatives and the benefits and costs to the natural environs and human property values. A commitment to riparian corridor protection is an essential component of any river restoration project. The River Management Program envisions a time when the protection and wise management of river corridors will diminish the need for river restoration projects.

Natural Channel Design

The Vermont DEC River Management Program (RMP) has sought to complete multi-partner, multi-objective projects in Vermont using the principles and applied methods of natural river channel design. A river's access to its floodplain, the necessary valley bottom to meander and adjust its slope, and the riparian vegetation to maintain stream bank conditions, channel width and depth are all important considerations in the design of river protection and restoration projects. The goal of River Management Program is to work with project proponents to achieve and maintain naturally stable river conditions that minimize erosion hazards, increase floodplain storage of nutrients, and restore the ecological functions of Vermont's rivers and streams. Project monitoring is conducted to evaluate the status of project goals and objectives.

Flood Hazard Management

A stream or river depends upon the use of its valley to form a stable channel. Within the valley, a combination of width, depth, meander pattern, flood plain, and slope is used to convey the water and sediment produced in the river's watershed. Roads, bridges, buildings, and land uses that have constricted



valleys or changed runoff patterns have destabilized rivers. Rivers throughout Vermont have been trying to adjust to these changes for decades at a tremendous cost on private and public investments and the natural communities that depend on rivers. The River Management Program (RMP) works with project proponents, landowners, towns, and other agency programs to protect the channel geometry, flood plains, and riparian vegetation that maintain a stream's natural stability and function. Watershed and municipal planning that result in river corridor protection would have enormous economic, social, and environmental value to the state of Vermont.

Flood Plain Management

Vermonters suffered nearly \$60,000,000 in flood damages between 1995 and 1998 alone; much of these losses are avoidable. The River Management Program (RMP) provides technical support to communities and individuals in towns enrolled in the National Flood Insurance Program to assist in local administration of the NFIP. Technical assistance is available to communities wishing to better protect riparian corridors from potential encroachments that will cause conflicts with stable channel functions and potentially increase future flood and erosion damages. In addition, the RMP provides support to the VT Division of Emergency Management, communities, watershed associations, Regional Planning Commissions and individuals to help plan for, design and implement flood hazard avoidance, reduction, mitigation and recovery planning and projects.



Avoiding Fluvial Erosion Hazards

In recognition that Vermont experiences far more erosion than inundation-related flood damages, the RMP has established a Fluvial Erosion Hazard (FEH) Program to assist local, regional, and state planning agencies in the identification and mapping of erosion hazards and to provide municipalities with model FEH zoning overlays in order to promote conflict and hazard avoidance and thereby reduce flood recovery costs in the long term.

Geomorphic Assessment

Nearly every stream and river in the state of Vermont is undergoing change. Sometimes these changes are natural or imperceptible. Other times, and more often, streams and rivers are adjusting to channel, flood plain, or watershed changes imposed in years past by human activity. Understanding the natural tendencies of a stream, its current condition, and what changes may be anticipated in the future is invaluable to making sound protection, management, and restoration decisions.



The River Management Program provides the technical assistance to conduct geomorphic assessments of streams and their watersheds. A web-based data management system (DMS) is under development to make it easy for data input and retrieval. Contact RMP River Scientists for data forms, assessment protocols, and geomorphic reference tools used by the State to assess stream condition and responses.

River Management and Permits

Ever since the beginning of contemporary settlement of Vermont's landscape, we have relied on development of lands and resources along rivers and streams. Much of this human investment in land use and public infrastructure has not adequately respected the physical functions of stream systems. As a result, conflicts frequently arise between the interests of landowners and infrastructure managers and the dynamics of rivers and streams. Many conflicts are the result of channel instability which, in turn, is often times a manifestation of past channel management practices such as gravel mining or channelization performed to "control" flooding or erosion. These past practices may even have been performed upstream or downstream of the problem area.

Analyzing Management Alternatives

The River Management Program provides regulatory review and technical assistance to landowners, municipalities and other agencies to help determine the appropriate channel management practices necessary to resolve conflicts with river systems. The practices selected will be designed to recognize and accommodate, to the extent feasible, the stream's natural stable tendencies. The recommended conflict resolution will recognize the stream's long term physical response to past and proposed management practices. The resulting work will provide increased property and infrastructure protection and will maintain or enhance the ecological functions and economic values of the river system.



Regulations, Permits, and Stream Crossing Approval

Most in-channel management activities and new projects like bridges, culverts or utility crossings require regulatory action by the River Corridor Management Program. State jurisdictional thresholds and guidance on permit application is provided within the documents posted on the Program's web page (listed below) or by contacting the Stream Alteration Engineer in your area.



Gravel Removal and Prospecting

Once a widespread commercial activity in Vermont's rivers, gravel removal is now restricted to maximum annual volumes for landowners use and for the maintenance or restoration of stream channel stability. As a commercial activity, gravel mining has proven to be extremely damaging to natural stable stream functions and has greatly increased flood and erosion damages in VT on stream systems that have experienced extensive mining in the past. Information on how to get assessment of potential stream sedimentation problems, approval for gravel removal projects and the effects of gravel removal

on stream stability is provided in the documents below or by contacting the Stream Alteration Engineer in your area.



Mineral prospecting activities in Vermont streams are regulated under 10 V.S.A. 41, Section 1021(h)(1). Operation of suction dredges is prohibited. Operation of sluice boxes is allowed by permit. Hand panning is unregulated. Only hand panning is allowed on state lands. Written permission from property owners is required on private lands.

More Information

Documents further explaining and supporting River Management Program activities are posted on the Program's web page: <http://www.anr.state.vt.us/dec/waterq/rivers.htm>. The web page also contains contact information for staff members of the River Management Program including their location and their regional or statewide responsibilities.