

Becoming a Good Upstream Neighbor

The recent flooding and associated widespread property damage caused by Hurricane Irene are perhaps unprecedented since the Mad River Valley was originally settled in the mid 18th century. But the geologic history of both the rivers and streams of our area tells a story of continuous and frequent fluctuation in the location of the stream channel as it literally meanders within the valley floor. Warmer rainwaters and colder snowmelts give the river channel volumes of water and, succumbing to the demands of gravity, it all immediately begins to flow down valley.

Rivers and streams are dynamic bodies of water and sometime as we enjoy the rivers and streams for our pleasure, we forget that they can, at times of flood stage, be quickly and surprisingly destructive. These active bodies of water seem to have a mind of their own at times and this notion is actually truer than you might expect or imagine.

Simply because water flows downhill, all the while seeking a path of least resistance, a river's course and purpose is dynamic; it is constantly undergoing change. Regardless of what attempts man can make to confine a river's course or to modify its behavior, the energy derived from its flow downstream cannot be abated. At best, it can only be re-directed. In fact, often is the case whereby when trying to contain a river's channel, we mistakenly create situations where the contained waters actually gain more energy and, as a consequence, gain more destructive capacity.

There is a simple balance that stream and river scientists study that evaluates a river's volume of water, its speed, and the amount of debris or sediment that the same water can contain. Rivers with more volume and greater speed can, of course, move greater and heavier objects. When the river channel is more confined (narrow) the water must flow even faster, making the ability to carry and move heavier objects even greater. If you think of this in another way, though, if you allow the river to widen, then the volume and energy of that same river is then more spread out. Even though immediate flooding may occur, the potential for more large-scale damage is reduced greatly at early flood stages.

Part of the job of a river is to move sediments: rocks, gravels, sands, and silt. The instant that the river's flow (speed) lessens these sediments are then "dropped" by the river. A river certainly does not discriminate between a large rock or a gas tank, a tree trunk or a section of retaining wall. It all goes downstream carried by the momentum of the water and directed by the channel's course. How often do we all catch ourselves gazing at the calmness of a river or stream and when in flood stage, we then marvel at the destructive power of that very same channel. The same river, but with very different personalities.

The State of Vermont, supported by riverside communities, has begun an evaluative and educational program targeting the FEH or “Fluvial Erosion Hazard.” This is a state funded initiative to, in very practical terms, help all valley (floodplain and fluvial area) landowners become better examples of “good upstream neighbors” through a better and more fundamental understanding of stream dynamics. There simply could not be a better time to have this discussion than during the aftermath of Irene. Through talking with our neighbors and sharing stories, opinions, information, and concerns, we can, as a community, minimize the overall impact of the next flood. For surely, the next Irene is not a matter of “if” but a matter of “when.”

Randy Graves, member, Warren Planning Commission

**FLUVIAL EROSION HAZARD:
SMART DESIGN AND LOCAL IMPLEMENTATION**

The Philosophy: Federal, state or local zoning laws, regardless of how well intentioned, simply cannot protect properties that exist on the floodplain or the adjacent fluvial plane. This is not the goal. The goal is to offer information about how streams and rivers work and how to best advise property owners of the inherent risks to their property in these critical geographic areas.

The Objectives:

(1) To better understand how your land and property can be adversely affected by rising and potentially destructive floodwaters and,

(2) To better understand how property downstream can be seriously and adversely impacted by upstream materials, either natural or manmade.

The Process: We look to the VT Agency of Natural Resources and their River Management Program for their expertise and their vast base of information as the Town of Warren begins the process of *Fluvial Erosion Hazard Mitigation*. Powered by local needs, the ultimate success of this and future such initiatives will be a direct function of the overall effectiveness of local government in its desire to gather valuable local information and to then garner essential local support. Candidly, “big brother” and “big government” initiatives often come up lacking simply because, on the front end, they often forget the importance of “grassroots” local support. It is difficult for any land owner to blindly offer support without first having an avenue for giving input or advice. Therefore, for the members of the Warren Planning Commission, this initiative is as much about good communication as it is about our waterways. As a Commission, we want the best for the residents of Warren and the beautiful and fragile natural resources of this wonderful state.

The Specifics:

- 1. Implement related goals, policies, objectives, and recommendations of the Town Plan, hazard mitigation plan, and supporting river corridor management plans.**
- 2. Avoid and minimize the loss of life and property, the disruption of commerce, the impairment of the tax base, and the extraordinary public expenditures that result from flood-related erosion.**

- 3. Avoid and minimize the undue adverse effect on public services and facilities, including roads, bridges, culverts, and emergency services, during and after fluvial erosion events.**
- 4. Protect mapped fluvial erosion hazard areas that are highly subject to erosion due to naturally occurring stream channel migration and adjustment.**
- 5. Limit new development within fluvial erosion hazard areas to protect public safety and to minimize property loss and damage due to fluvial erosion.**
- 6. Allow rivers and streams to maintain or re-establish their natural equilibrium, thereby avoid the need for costly and environmentally degrading stream channelization and bank stabilization measures.**

Maps of the proposed district are available in the Planning and Zoning office located in the Warren Municipal building or online at www.warrenvt.org/depts/planningcommission.htm.

The Commission has scheduled a public hearing to receive comment on the proposed district boundaries and a draft of the regulations for Monday March 12, 2012. (Copy attached).