

Annual Georgia Environmental Conference

11th Annual Georgia Environmental Conference Watershed Based No Adverse Impacts Policy Riparian and Coastal Community Flooding Resilience

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Introduction

Watershed based no adverse impacts policy aims to increase loss mitigation capacity and provide greater riparian and coastal community resilience to flood events. By tackling sources of increased flooding throughout a watershed, specific localized flooding vulnerabilities can be better addressed. Absorption of flood waters at their source will help reduce extent of flooding elsewhere within the watershed.

Existing legislation, policies and guidance can be utilized for development of informed legislation, the processes of information gathering, and planning for successful implementation. It is envisioned the proposed policy would mandate intergovernmental cooperation, participatory community level decision-making, science-based policy formulation, and evidence based practice. Successful implementation requires collaborative approaches for the prevention of and adaptation to fluvial and coastal flood events.

With projected increase in frequency and extent of flood events, this policy provides effectual protection and adaptation for riparian and coastal communities.



Brunswick, 1911, Storm Surge



Home



Vermont, 2011, Tropical Storm Irene

Section 1: Origins of the Idea



The Irish High Court found the Electricity Supply Board, as operator of the two hydro-electric dams on River Lee, 60% liable for flooding damage to University College Cork property in November 2009. UCC's failure to conduct a flood risk assessment prior to building on a known floodplain was key to finding of contributory negligence.



Heavy rain resulted in the ESB's release of an unprecedented 535 cubic meters a second to avoid uncontrolled flooding as water was entering the dam's catchment area at 800 cubic meters per second, the fastest rate since records began.

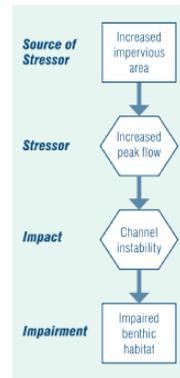
Two events of significance prompted this research:

1) a finding of contributory negligence by the Irish High Court, in *U.C.C. v. E.S.B.*,¹ wherein unprecedented release of water from two hydro-electric dams during a storm and at high tide, after a week of persistent heavy rain, intensified downstream flooding thereby causing substantial damage to university buildings built on a known floodplain without any flood risk assessments;

2) Tropical Storm Irene exposed the weaknesses of Vermont's Act 250.² The act was passed to preserve the environmental, social and aesthetic character of the state in the face of development pressure, its commitment to farmland preservation, and prevention of suburban and exurban sprawl around compact urban areas.³ Development on hillsides and adjacent to highly dynamic river systems were identified as the weak links in the State's long history of growth management, environmental protection, and anticipatory decision-making.³ Events provided a challenge to Act 250 thereby necessitating prudent future developments with focus on resilience to flood events. Hence the "No Adverse Impacts" concept.⁴

Section 2: Existing Laws, Policies & Guidance

Examples of watershed based protection exist in the US at both state and federal levels. Some have been enacted due to concern over the impact of development on the environment, such as Vermont's Act 250, and others to protect drinking water. The latter includes Georgia's Metropolitan Protection River Act, 1973,⁵ MS4⁶ permitting control of stormwater pollution to the maximum extent practical, and the Source Water Assessment Program (SWAP) to tackle potential pollutant sources in water supply watersheds. SWAP was implemented pursuant to the 1996 amendments to the federal Safe Drinking Water Act. Others have been implemented to meet Clean Water Act requirements, and to that end, the Environmental Protection Agency (EPA) has published guidance handbooks on developing watershed plans for acquisition and maintenance of water quality standards using narrative or percentile Total Maximum Daily Loads.⁷



Act 250 is a well established existing legislative framework that could be utilized as a basis to address watershed-level planning. It relates to increased flood hazard resilience and could be modified to address the weaknesses and unique characteristics of each watershed. After the fallout of Tropical Storm Irene experts recommended the adoption of a "No Adverse Impact" program; the creation of a more comprehensive fluvial erosion mapping program; and incorporation of flood resilience measures in Vermont.³ The No Adverse Impact program aimed to address the unintended consequences of the NFIP which does not account for the cumulative effects of upstream development patterns on downstream flood hazard vulnerability.³

Figure 1: Taken from EPA.⁷

Section 3: "No Adverse Impacts"

Watershed-based approach to creating increased riparian and coastal flooding resilience means tackling flood risk and flood events over an entire watershed without limitations of political jurisdictions. Adverse impacts within the scope of Vermont's proposed policy means the "actions of one property owner [. . .] adversely affect[ing] the rights of other property owners."⁴ Impacts are assessed by "increased flood peaks, increased flood stages, higher flood velocities, increased erosion and sedimentation, or other impacts the community considers important."⁴ This research proposes a no adverse impacts policy, framed by state or federal law, implemented and led by affected communities, with state environmental protection agencies having ultimate responsibility for oversight and action.

Footnotes:

1. *University College Cork v. Electricity Supply Board*, [2015] IEHC 598 (I.r.).
2. Land Use and Development Act, 1970.
3. Gavin Smith, Dylan Sandler and Mikey Goralnik, *Assessing State Policy Linking Disaster Recovery, Smart Growth, and Resilience in Vermont Following Tropical Storm Irene*, VERMONT J. OF ENV'T'L. L., vol. 15 (2013).
4. Gavin Smith, Dylan Sandler & Mikey Goralnik, *Vermont State Agency Policy Memo Smart Growth Implementation Assistance Program: Disaster Recovery and Long-Term Resilience Planning in Vermont* 12 (2013), available at <http://coastal hazardscenter.org/news/chc-in-the-news>
5. O.C.G.A. § 12-5-44 et seq. as amended, which creates a 2000 foot corridor along both banks of the Chattahoochee River to prevent harm to the river.
6. Municipal Separate Storm Sewer System, a requirement of the Clean Water Act.
7. EPA, HANDBOOK FOR DEVELOPING WATERSHED PLANS TO RESTORE AND PROTECT OUR WATERS (2008).
8. Greenery in and around work and home have been shown to reduce stress. See Florence Williams, *This is Your Brain on Nature*, NATIONAL GEOGRAPHIC: THE POWER OF PARKS, (January 2016).
9. Transferable Development Rights.

Sample No Adverse Impacts measures

1. Utilization of low impact development and green infrastructure minimizes flash flooding caused by stormwater runoff. It also enhances livability of communities and reduces stress.⁸
2. Coordinate increased dam releases during storm events with low tide to alleviate potential flooding at the interface of fresh and salt water.
3. Establish greenways along river banks for public use – e.g. design waterside parks with due consideration for shifting river courses, fluvial flooding and provision of public access to scenic river banks and recreation areas. This also enhances the value of surrounding properties.

Section 4: No Adverse Impacts – A Proposal

Authorizing Legislation and Planning Process:

Enact legislation mandating flood resilience and intergovernmental cooperation for watershed planning. Legislation could be state or federal and, at a minimum, incorporates the following:

1. **The Framework:** be applicable to all political jurisdictions wholly or partially within a geographically defined watershed which integrates land use planning and development law, provides for iterative and adaptive procedures, and consists of collaborative and participatory processes.
2. **Data and Characteristics:** require consideration of watershed boundaries; hydrology, topography, soils, climate, habitats, fish, wildlife and ecosystems, current land use and land management practices; and demographics.
3. **The Process:** build partnerships with stakeholders, local governments, community driven issues, federal and state government initiatives and regulatory requirements.
4. **Accountability:** Impose ultimate responsibility on an agency, or other body which is answerable to the community, acts with transparency, and is guided by local government and public participation, and acts where a community or political unit fails or refuses to act.
5. **Discretion:** permit sufficient discretion to facilitate implementation in diverse built and natural environments within each watershed and across watersheds.
6. **Minimum "No Adverse Impacts":** adoption of minimum "No Adverse Impacts" standards at state level limiting development in floodplains or flood prone areas. These could be directly applicable or mandate local governments to adopt them through ordinances or bylaws. Such No Adverse Impact standards could facilitate trading between communities and property owners within a single watershed, in a manner similar to TDRs.⁹

Potential Obstacle	Suggested Solution
Financing	Tailor plans to qualify for grants (e.g. FEMA/HUD); home insurance reductions; interest free financing.
Community Resistance	Engage communities in the entire process; incorporate existing compliance requirements (e.g. Clean Water Act).
Lack of Resources	Grants; long term benefits; TDR type trading within watersheds.
Lack of community cohesion	Education of communities; shared historical and preservation ties; shared interest in recreational and conservation species.

Conclusion

Tools for addressing flood mitigation and prevention have been researched, analyzed, assessed and implemented. Implementation from a watershed based No Adverse Impacts approach is lacking. Inroads on this approach have been studied in detail in a number of contexts including water quality attainment and maintenance for acquiring acceptable TMDLs pursuant to the Clean Water Act, in the wake of Tropical Storm Irene in Vermont in addressing strengths and weaknesses of Act 250, Georgia's MRPA to protect the Chattahoochee river, and, to a lesser degree, in stormwater management programs to prevent storm water runoff polluting surface waters. Missing are Watershed Based No Adverse Impacts Policies for the development and maintenance of Riparian and Coastal Community Flooding Resilience. Because upstream activities have a direct and often simultaneous consequential effect on downstream communities and activities it is imperative flooding be dealt with on a watershed basis.

Watershed Based No Adverse Impacts policy offers a means, rationale, and method for the development and implementation of legislation and plans for tackling flooding and building flood event resilience.

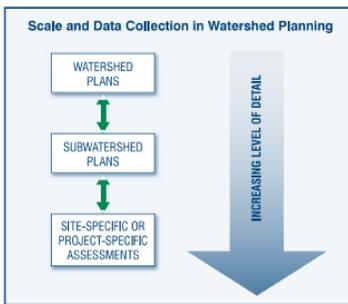


Figure 2: Taken from EPA.⁷