

Testimony before the Senate Committee on Natural Resources and Energy

S.213

January 9, 2024

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Middlesex, Vermont

Good morning Chair Brey and Committee members. My name is Mike Kline, and I am a river ecologist and a fluvial geomorphologist. I am retired from the Department of Environmental Conservation, where I served as Rivers Program Manager from 2009 to 2019. I led the science and management team in the development of river corridor planning and protection, and I served as Program Manager during the response and recovery from Tropical Storm Irene. I was responsible for the development of the emergency stream alteration and river corridor protection standards in the rules that were adopted after Irene in 2015, as required by Act 138.

My testimony today will be about the two different paths that lie before us. One path will be expensive but will be paid for by lower disaster recovery costs over time. The other path will be far more expensive with each successive flood going forward. One path will give us a chance to recover from floods more quickly because we've dialed into ways that natural landscape features at a watershed scale can absorb storm runoff and release flood waters gradually. On the other path, we've cut ourselves off from these natural defenses and spent millions buying out or slowly fortifying an increasing number of structures placed in river corridors. It is a question of whether we're going to act now to protect and restore places where natural flood storage can occur, or turn our heads and let these landscapes fill with private and public investments that get damaged repeatedly. I strongly urge the legislature to get us out of the vicious cycle of river encroachments getting fortified with structures that fail during the next flood, or that shunt floodwaters downstream causing damage at other properties.

We need flood storage in watersheds upstream, and since we won't be building new flood storage reservoirs behind large dams like the Waterbury dam, we have to seek out opportunities to restore the natural flood storage we've lost due to historic land use and river management practices.

- We can protect our forests and forest soils that are regenerating after an era of deforestation. Intact forest blocks, riparian areas, and wetlands serve as sponges during rain events.
- We can reverse or disconnect more of the drainage and ditching that's been done in Vermont forests, fields, and wetlands and along our roadways. We can do more to infiltrate drainage flows before they get to the stream or river.
- We can strategically build new floodplains in or near our community centers to lower flood depths in our downtowns. These projects along with floodproofing, for example, moving utilities out of basements, could make our historic settlements more resilient.
- And, perhaps most importantly, we can limit new encroachments within mapped river corridors so that as rivers meander, they build and maintain the floodplains they lost when they were dredged, straightened, bermed, and armored. Naturally generated floodplains dissipate erosive energy and store floodwaters, thereby sparing downstream locations that would be damaged otherwise.

Vermont has been doing all of these all these flood storage and mitigation practices—but not enough and not always with intention. The state's watershed planning and funding is geared primarily toward water quality improvement, with flood resiliency described as a secondary co-benefit. I would urge the legislature to mandate state watershed planning and funding with flood water storage as a primary objective on equal footing with nutrient load reduction. I believe this would encourage more Vermonters and municipalities into the project planning process.

I would also urge the passage of S.213 and the expansion of state river corridor jurisdiction, because vulnerable communities and public infrastructure will only benefit from the flood storage and energy dissipation in river corridors and floodplains if they are protected at the watershed scale. The efforts of one town to address repeated flood damage by passing a river corridor protection bylaw are being frustrated when upstream municipalities don't have the capacity or aren't willing to do the same.

There is a great call for more affordable housing, which, by definition (I believe), needs to go where there are services. We also know that most of our service areas—our villages and downtowns—are highly vulnerable to flood damage along our rivers. I believe it is a matter of risk management. If we employ the natural watershed storage described above, step back from

the river's edge in downtowns where we can, floodproof and harden downtown infrastructure where need be, then the costs and risks will be lower than if new housing and other development were to sprawl out along the river valleys. In other words, existing settlements and road systems are generally safer with new infill housing within settlement boundaries, than those same settlements would be if the new development were to be placed along otherwise unconstrained reaches of river upstream or downstream. We've made huge investments in protecting historic settlements and public infrastructure from erosion, more will be necessary, but the more a river is constrained from depositing and dissipating energy upstream, the more dangerous and damaging it becomes downstream.

It is far more possible to manage risks in a few places along a river's length, than attempting to manage them along its entire course. Individual landowners cannot afford to armor a larger stream or river, they turn to the government program, the taxpayer, and I'm very concerned that when we use the public till and borrow every year to respond to multiple disasters and repeated failures, as we're seeing with climate change, there will be less and less to spend on other pressing needs—like affordable housing. We should focus on lowering our costs, by continuing to invest in floodplain restoration like we have within the neighborhoods of Bennington, Brattleboro, Brandon, Barre, Ripton, Northfield, and Middlebury. We can also keep our costs down and reduce repetitive losses when we build or rebuild to meet higher floodproofing standards.

Vermont settlements and road networks grew up along rivers—if we are to both mitigate the causes and adapt to the impacts of climate change, it is both prudent and timely to combine the steps of promoting new infill housing in compact settlements while mitigating flood and fluvial erosion hazards, as proposed in S.213. A state training course with the regional planning commissions on the technical process for creating and adopting infill maps within Vermont settlements should be created. Such *a priori* mapping would create greater efficiency for developers, municipalities, state programs, emergency managers and environmental advocates.

I would strongly urge the legislature to expand state jurisdiction under the Flood Hazard Area and River Corridor Rule—a priority in the Climate Action Plan for addressing the frequency and

intensity of flooding that lies ahead—as outlined in S.213. I also urge that a state permit under the Rule be presumptive of meeting the flood hazard criterion in Act 250. This would be way more efficient for all parties. New encroachments that result in hemming in another segment of the river into an exceedingly narrow slice of its valley translates into the kind of adjacent and downstream destruction of infrastructure and neighborhoods we saw in Irene and this past July. But in my previous role as State River Manager, I know that such statewide jurisdiction would take additional regulatory staff, including floodplain managers and river scientists, as well as additional legal and administrative support.

I believe the cost of additional or reallocated staff would be offset by a fraction of the annual savings that would be accrued from ending new structural encroachments in river corridors outside of settlement areas. I believe we can and must afford this, but if we don't, then I don't think state jurisdiction should be expanded, because there's no way the Rivers Program could serve Vermonters effectively and fairly with the current staffing.

Thank you for the opportunity to provide this testimony, and please know that I would be happy to try and answer any questions you may have now or in the future regarding rivers and river corridors.