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Thank you, Senator Yaw and the Senate Majority Policy Committee, for this opportunity to speak about the flooding issues and mitigation efforts in our local watersheds. As Tioga County continues to work with local landowners impacted by last summer's flooding, it is evident that there are a host of issues to be worked through to provide meaningful assistance to these communities. I believe a key factor to keep in mind is that in solely focusing on stream channel issues, we miss the potential for long-term, cost-effective floodplain mitigation.

The flash floods that have occurred throughout the last decade have caused tremendous damage to local infrastructure and put residents' lives at risk. The Tioga County Conservation District staff met with hundreds of landowners and were able to work with our local DEP region office to get emergency permits issued quickly. However, during site visits, we are told by municipalities and landowners that they do not have the financial means to pay for the costly repairs to property and structures that have been impacted. Having a dedicated funding source to work on streams, such as the Dirt and Gravel and Low Volume Road program or the Agriculture Conservation Assistance Program (ACAP), would allow conservation districts to work systematically on mitigating some of the issues from flooding.

Gravel bar removals are a common request in the northern tier, especially after flood events. We have worked with many landowners and municipal officials to issue permits for these activities over the years. While gravel bar removal can be effective at addressing localized issues, the practice does not offer long-term results or stability. Once removed, gravel often redeposits the very next storm. In addition to the expense associated with gravel bar removal, removing gravel from the stream in one location often destabilizes stream conditions leading to excessive erosion and or deposition near the site. While gravel bar removal at key locations may be an effective tool, we need to address overall watershed issues and work with all landowners. This issue is very complex and will require coordinated efforts of the community, legislature, and regulatory and funding agencies. We did not get to this point overnight; we have spent decades getting water off our properties as fast as possible with very little thought to the long-term consequences of each of these small practices. We need all landowners, from the top of the hill to the bottom of the valley, to work collectively on this issue.

The Tioga County Conservation District, through various grants and partnerships, has worked on a variety of projects that ultimately assist in reducing some of the impacts of flooding.

These projects include: streambank stabilization, increasing soil health, wetland restoration, rain barrels, rain gardens, culvert replacements, and infiltration projects.

There is a suite of practices that current policy supports that can make significant improvements to our local waterways including:

- Increasing organic matter in our soils - a 1% increase can increase up to 25,000 gallons of available soil water per acre. The more organic matter in the soil, the more water can infiltrate into the ground reducing peak flood discharges.

- Developing and protecting wetlands - wetlands act as a sponge that absorbs water during rain events, reducing overland runoff and erosion, and reducing peak flood discharges.
- Providing access to floodplains - we have entrenched streams that can no longer access the floodplains which greatly increases both flood depth and velocities downstream.
- Streambank stabilization and restoration.
- Planting trees both along streambanks and in upland areas - trees can both stabilize the soil and uptake water.
- Reducing impervious surfaces - as impervious surfaces increase, water runoff also increases.
- Replacing undersized culverts that cause excessive gravel deposits and streambank failures.
- Rain gardens, rain barrels, small infiltration projects
- Encouraging flood insurance - many FEMA/PEMA programs will only assist homeowners with flood insurance.
- Utilizing Floodplain Ordinance's to ensure safe development.
- Incentivizing buyouts and structure modifications to both owners and municipalities.
- Rethinking the usage of our streambanks for storage for our equipment, RVs, trash, hay bales, and vehicles. These items tend to mobilize very easily during a flood and end up caught under bridges and in local farm fields.

Some of these practices by themselves will not have a big impact on flooding, but a collective bundling of these practices can make a difference.

As funding is limited, we need to focus on projects that have multiple benefits and can utilize different funding sources to implement. Many of the suggestions listed have benefits that range from improved roadways, drought resiliency, increased crop production, reduced nutrients to our local waterways, and flood resiliency. Likely, a methodical and focused approach that works from the headwaters down will be the most effective. Continuing to operate as we always have will not address the increasing storm events that we are currently experiencing. It is important to keep in mind that the flooding we are experiencing is due to collective issues on the whole landscape and not just in the channel. We will need coordinated funding opportunities to implement a wide range of best management practices that will benefit our citizens as a whole. We need strong, coordinated messaging to all local landowners as to what they can do and the importance of everyone working together. If we don't address the water before it hits the stream, we will never succeed in mitigating our flooding issues.