

TESTIMONY

Concepts for the Next Water Resources Development Act: Promoting Resiliency of Our Nation's Water Resources Infrastructure

Before the
Subcommittee on Water Resources and Environment
Committee on Transportation and Infrastructure

By

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Dear Chairman Napolitano, Ranking Member Westerman, and Honorable Members of the Subcommittee:

Thank you very much for the opportunity to join you today as you consider the Water Resources Development Act of 2020, and as you weigh priorities for mitigating flood-related threats to American communities and businesses. I hope you find this testimony helpful as you make far-reaching decisions that benefit American businesses today and into the future.

My name is Dr. Louis Gritzo. I am vice president of research for FM Global, one of the world's largest commercial property insurers, headquartered in Johnston, Rhode Island. My doctoral degree is in mechanical engineering and mathematics, and I oversee a team of more than 120 scientists and engineers who focus on property-loss prevention with the aim of keeping our clients resilient, and therefore, in business.

Approximately 1 of every 3 Fortune 1000 companies turns to FM Global for protection against property loss and business interruption related to fire, natural hazards, equipment failure, and cyber attack. Since we are a mutual insurer, every client is also an owner of our company.

FM Global and its policyholders are deeply concerned about the serious and growing risk of flooding to U.S. businesses. It is a big priority for our clients, especially because more than 10,000 of the commercial properties they insure with us in the U.S. are located in flood zones.

FM Global has been working to prevent, and insure for, commercial property loss since 1835, when mills sprouted along the nation's rivers at the dawn of the U.S. industrial revolution. Our founder, Zachariah Allen, was a Rhode Island textile mill owner who joined forces with other like-minded mill owners who insured one another in a mutual company and collectively reduced their property risks by engineering resilience into their business locations and operations.

We take a unique engineering approach to understand and reduce risk, giving us unparalleled insight into the threats and opportunities that businesses face with respect to today's perils. We embrace this property-loss prevention role and have shared our proprietary research and data publicly for use by property owners, code enforcement bodies and product developers. Our efforts are most successful when they complement investment by local, state and federal government. When structured correctly, such public-private partnerships can be extremely successful.

Floodwaters' rising threat to American business

Flooding, as has been painfully evident in the past few years, is a serious threat to the nation's economic well-being and the livelihoods of its citizens. The risk is getting worse due to heavier rains from a warming climate and an increasingly developed and hardened landscape.

Nonetheless, FM Global believes that much of the loss caused by nature's hazards is preventable, not inevitable. History confirms this premise in cases where the risks are recognized, understood and properly addressed.

Our loss-prevention approach for flood and all other property risks throughout the world is uniquely rooted in developing engineering solutions that drive out risk for commercial property owners. Our 1,300 engineers around the world make upwards of 100,000 visits to client properties every year, conducting thorough risk assessments and providing solutions tailored to each site.

When this work relates to flood risk in the United States, our engineers apply flood maps created by FEMA, as well as our own physics-based flood maps, to address the hazard. Then we drill into the details: Which properties are exposed? Which parts of each exposed property are threatened? How deep could the water get? What damage would it do? How much would the damage cost? And how much would eliminating or mitigating the risk cost?

We underwrite the risk based on scientific principles and engineering assessments, not actuarial tables. It has been a successful business model that our client-owners appreciate and from which they have benefited financially. Science and engineering are also superior to actuarial tables because the future of the climate and business world will be very different from the past.

Quantify the risk

For each location of every business we insure, and every hazard that each property faces, we create a loss expectancy. For example, our engineers may determine that seven out of 10 buildings on a client's corporate campus lie in a flood zone. The loss expectancy will include a dollar amount associated with that flood risk (e.g., that a flood will likely cause \$10 million in property damage and business interruption to an affected building).

Then we make recommendations to help clients cost-effectively mitigate their risk. Our flood-related recommendations for a client may involve many different loss-prevention actions as detailed in the loss-prevention engineering guidelines¹ we make freely available on our website. These data sheets include advice on how to site new construction (e.g., on higher ground), better manage stormwater runoff, elevate key equipment, install flood protection valves/gates, or acquire temporary protection systems, such as barriers or inflatable dams. In order for a business to implement these recommendations, they must be cost-effective.

Our recommendations must also significantly reduce the loss, as was borne out during Hurricane Harvey. In that storm, clients who followed our recommendations for physical improvements to prevent flood losses experienced losses that were 80% lower than those of clients who did not. We believe this approach, as part of a public-private partnership, can inform public efforts to significantly reduce loss to American business on a national scale.

Of course, not all loss is preventable. That's why we work with our clients to capture whatever fraction of coverage is available through the National Flood Insurance Program, and then to use our own insurance to transfer any remaining risk.

¹ <https://www.fmglobal.com/research-and-resources/fm-global-data-sheets>

Unfortunately, even the most comprehensive insurance policies fail to cover the total financial loss when flood damage disrupts a business. A disruption not only affects immediate revenue. It takes a longer-term toll on market share, shareholder value, supply chain integrity, reputation, investor confidence and growth. In aggregate, these long-term losses to U.S. businesses erode our country's economic competitiveness.

Furthermore, any disruption at any company is a serious setback that affects not only the business owners, but the regional economy and community, including families depending on paychecks from an employer.

Since insurance alone is not enough to make a company and community fully whole again, the best solution is minimizing loss in the first place.

Flood loss prevention infrastructure policy update needed

A wide range of strategies is available to mitigate flood damage, including wise urban planning and environmental solutions such as conserving wetlands. For many commercial properties, the first line of prevention is levees. FM Global frequently works with clients and local authorities to assess levees and other flood management solutions. When these measures are well-designed and maintained, they are quite effective in preventing loss. Maintenance, however, is often underfunded, jeopardizing people who depend on these prevention measure for protection. Building on high ground is always best, though it's not always available or affordable.

Our experience working with business is consistent with the 2017 Infrastructure Report Card² published by the American Society of Civil Engineers (ASCE), which says an estimated \$80 billion is needed in the next 10 years to maintain and improve the nation's levees. We and our clients understand the solution is not a simple case of federal funding for federally owned levees: More than half of levees we encounter are owned by states and localities, which have limited budgets for repair and maintenance.

Levees and other flood solutions need to be strategically developed. The U.S. needs a cohesive flood-loss prevention policy for designing, implementing and maintaining regional systems for our largest flood-exposed areas. Whatever the cost of developing this policy, it is likely to be offset by avoided loss and economic stability for flood-prone regions.

Business actions mitigate flood risk

When flooding is imminent, the property owner must act. Much of the flood-mitigation equipment a Fortune 1000-size company might use to protect its property from floodwaters is tested and certified by FM Approvals,³ an FM Global business unit and global leader in third-party product testing and certification services.

² <https://www.infrastructurereportcard.org/wp-content/uploads/2017/01/Levees-Final.pdf>

³ <https://www.fmapprovals.com/products-we-certify/products-we-certify/flood-mitigation-products>

FM Approvals, a Nationally Recognized Testing Laboratory by OSHA,⁴ has developed the widely adopted industry standard for flood barriers, the American National Standard for Flood Abatement Equipment, ANSI/FM 2510,⁵ and conducts testing in part for these products at the U.S. Army Corps of Engineers' U.S. Army Engineer Research and Development Center in Vicksburg, Mississippi. This activity is a central part of the National Flood Barrier Testing and Certification Program.⁶ The program – a partnership between the U.S. Army Corps of Engineers, the Association of State Floodplain Managers and FM Approvals – assures property owners that certified flood-loss prevention products meet the highest property-protection performance standards and, hence, will perform as intended.

To date, FM Approvals has certified more than 60 flood barrier products according to the ANSI/FM 2510 standard. These products – typically superior to sandbags in ease of use, performance and reliability – are allowed to be labeled by the manufacturer as FM Approved.

Flood-loss prevention solutions that can be tested and certified to ANSI/FM 2510 include:

- **Perimeter barriers**—Emergency structures that when deployed, are intended to protect buildings and equipment from rising water. These temporary perimeter barriers have been evaluated for their ability to control riverine- or rainfall-related flood conditions.
- **Opening barriers**—Permanent or temporary devices, such as flexible walls or stackable aluminum gates, that prevent floodwater passage through doors, windows, vents and other openings in a building.
- **Flood mitigation valves**—Devices that block floodwaters from entering buildings through overwhelmed drainage systems. These valves prevent buildings from flooding from the inside out.
- **Flood mitigation pumps**—Devices that remove water that has already entered buildings, and that help mitigate damage from corrosion and mold.
- **Penetration sealing devices**—Products that are used to seal small openings in a building.
- **Flood glazing**—Reinforced glass structures used in urban settings, that serve as flood barriers.

Contributing to the public domain

FM Global contributes research-related resources freely to the public to help businesses beyond our own clients mitigate flood risk.

Among our contributions:

⁴ <https://www.osha.gov/dts/otpca/nrtl/nrtllist.html>

⁵ <https://www.fmapprovals.com/approval-standards>

⁶ <https://nationalfloodbarrier.org/>

- **Flood maps**—Our Global Flood Map⁷ is a strategic planning tool that helps American businesses address flood exposure at all their locations. Based on hydrologic and hydraulic models, it uses past and current climate data, including rainfall, evaporation, snowmelt and terrain – not just event history. The online interactive map provides a view of high- and moderate-hazard flood zones across the globe, including in previously uncharted territories. In the United States, we use FEMA’s flood map as the primary source and our Global Flood Map as a secondary source.
- **Property loss prevention data sheets**—We have produced more than 350 engineering guidelines⁸ based on our own research, loss experience and engineering knowledge. These data sheets give businesses proven engineering solutions and recognized standards to help them mitigate a wide range of property risks, including flood, fire, natural hazards and cyber attack, and also to inform national and global building codes and standards.
- **Research, testing and education**—We study flood dynamics and protection at our 1,600-acre FM Global Research Campus⁹ in West Glocester, Rhode Island. It’s the world’s premier center for property-loss prevention scientific research and product testing. The Research Campus includes a Natural Hazards Laboratory for assessing hazards and developing loss-prevention solutions for hurricanes, hailstorms, earthquakes and floods. Much of this work is shared with governments to inform building and fire codes around the world. The Research Campus is also a resource for manufacturers seeking third-party certifications of their products through FM Approvals. Finally, we conduct extensive computational and fundamental research and educational activities in Norwood, Massachusetts, where we have offices, laboratories, a learning center for employees and clients, and the SimZone, which is a collection of experiential learning labs.

Unmet needs

We believe private sector efforts like these are most effective when supported by congruent government policy, planning and resources. Thus, we deeply value our collaboration with the federal government, including the U.S. Army Corps of Engineers and FEMA. As FM Global looks to the future of increasing flood risk, we see two major unmet needs: 1) protections against higher flood depths; and 2) the improved use of technology for flood monitoring and mapping.

Of the over 10,000 U.S. business locations that have been identified by FM Global engineers as being exposed to flood hazards, more than 1 in 4 may experience flood depths greater than 3 feet, the limit of flood barriers tested at the U.S. Army Engineer Research and Development Center. Thus, we consider any flood mitigation device intended to withstand floodwaters above 3 feet *experimental*, and, by definition, risky to use. Accordingly, we would support an improvement in the U.S. Army Engineer Research and Development Center laboratory to

⁷ <http://www.fmglobal.com/globalfloodmap>

⁸ <http://www.fmglobaldatasheets.com/>

⁹ <https://www.fmglobal.com/research-and-resources/research-and-testing/fm-global-research-campus>

enable testing of solutions to address higher floodwaters. Such a capability would enable significant enhancements to the resilience of American businesses.

Taking advantage of new technology

Another potential area of collaboration is improving the ability to apply current and future advanced technology to improve early flood warning, to better respond to floods in progress, and to improve long-term planning. These improvements include deployment of both on-the-ground and remote sensing at greater scale, the ability to transfer and openly communicate information, and the ability to allow more innovation in loss prevention products based on greater real-time insight.

Achieving this goal will require investment in sensors and systems, and better data and imaging technology, to be used in conjunction with geographic information system (GIS) technology to make businesses more agile and successful in their loss-prevention efforts. We believe a strategic public-private-academic partnership to fully develop and deploy improved technology at scale will better allow the country to control its fate as it becomes more vulnerable to flood risk.

Choosing resilience

When it comes to our nation's flood resilience, the risk for American businesses is real. Insurance is not enough. Yet, through science and tested solutions, as well as strong and sustained public-private partnerships, together we can better assess risks and develop a national strategy to reduce them, thereby preserving and enhancing U.S. economic competitiveness.

Elected officials are uniquely positioned to make far-reaching risk-reducing policy based on research. In partnership with American business, they can choose prevention over wishful thinking, and continue supporting the U.S. Army Corps to engineer flood resilience into every corner of our nation – and to drive risk out.

Driving risk out before catastrophe occurs: That's what the savviest, most successful businesses do.

These savvy businesses realize that resilience isn't luck. It's a choice our country has to make, and if we choose wisely and work together, our nation will continue to thrive in the face of an increasing threat.

Thank you for considering my testimony, and for the opportunity to meet you today in person.

Sincerely,

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