

# Protecting United States Critical Infrastructure Prior To The Next Storm

(201) 746-0921 | Sales @OrangeFloodControl.com | OrangeFloodControl.com



Today, flood damage is one of the most pressing problems facing wastewater treatment plants and pump stations in the Northeast. When Superstorm Sandy barreled into the New Jersey coast in 2012, it pushed a massive storm surge through the fifth-largest wastewater treatment plant in the United States. As a result, nearly 840 gallons of raw sewage poured into the Passaic River. In addition, nearly 4.4 billion gallons of partially treated sewage were released into New York Harbor as the facility struggled to repair damaged equipment and restore operations. This is only one of the 80 wastewater treatment facilities that incurred damage from the storm.

Wastewater treatment plants are vital to minimize pollution and maintain the health of river ecosystems. When these facilities shut down, harmful bacteria, viruses, and pathogens can contaminate the water. Untreated sewage introduces excessive nutrients such as phosphorus and nitrogen into the environment. Over time, this can cause eutrophication or over-fertilization of the water and lead to excessive plant growth. When blooms and decaying organic matter reduce the available oxygen, this can lead to a decline in fish species. Pharmaceutical contaminants, mercury, and chlorine compounds can also pose a threat to human, aquatic, and wildlife health.



## Flood Mitigation Protects Critical Infrastructure

Flood mitigation technologies, devices, and solutions drastically reduce the risk of critical infrastructure experiencing water damage. Mitigation is the effort to minimize property damage, loss of life, and the overall environmental impact of natural disasters. Proactive flood control techniques emphasize taking action now - before the next catastrophic weather event strikes.

Mitigation lowers critical infrastructure's risk for future weather events. These efforts reduce flood risk for critical infrastructure assets like wastewater treatment plants, transportation hubs, and utility stations. Mitigation pays off in the long run - often just after one flood. In fact, according to the National Institute of Building Sciences (NIBS), every \$1 spent on mitigation results in \$13 savings from future losses. With proper flood mitigation, wastewater treatment plants can stay operational to keep pollutants from entering irreplaceable critical infrastructure facilities.



### Solution Driven Flood Door | Andover, MA

Orange Flood Control installs easy-to-use, low risk flood mitigation devices for critical infrastructure protection across the United States.



### Trusted & Safe Swing Gate | New Haven, CT

With our custom designed flood prevention plan, you can keep your wastewater treatment plants, utilities, and vital facilities safe during the storm.



### Installed Devices Flood Planks | New Haven, CT

OFC can install devices including flood doors, gates, barriers and walls. We specialize in passive, point-of-use, and active solutions for WWTPs across New England.

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## Passive Flood Mitigation

Passive flood control technologies operate automatically during a major flood or natural disaster. These automatic devices don't require any human involvement or manpower to keep your facility safe. Some of the most popular options include passive gates, entry doors, or glass walls.

Passive flood devices are the optimal choice to defend your employees and facilities 24/7 - without human involvement. With no dependence on power, people, or manual intervention, you can improve your property's resilience from even the most severe storms. These automatic devices protect hundreds of schools, commercial buildings, and critical infrastructure assets from devastating natural disasters.

### Passive Flood Device Options

- Flood Doors
- Flood Glass
- Concealed Automatic Gates



## Point-Of-Use Flood Mitigation

These dependable, simple solutions are strategically designed for rapid manual deployment. Of course, this unique configuration is known to consume minimal storage space and promote superior visual aesthetics. Point-of-Use solutions can even be stored out-of-sight, and custom designed to fit any opening.

Point-of-use flood devices serve as an impact-resistant barrier during severe weather events. Using watertight seals and pre-fabricated anchors, these devices can be rapidly deployed in 30 minutes or less. This way, facilities can wait until the last possible moment for deployment - guaranteeing minimal operational downtime and disruption. This allows organizations to reduce lost profits, damaged reputation, and unsatisfied clients.

### Point-Of-Use Device Options

- Vertical/Side Deploy
- Swing Gates
- Sliding Doors

## Active Flood Mitigation

These dry floodproofing devices keep surging stormwater out - minimizing economic impact and harm to critical infrastructure. This helps to keep communities safe and promote social well-being. These manual barriers are a reliable, effective flood defense.

Active devices can be manually deployed for emergency flood protection across buildings or entire properties. Their high-strength design defends against strong winds and debris impacts as well. With rapid and easy deployment, facilities can secure their sites within less than an hour.

### Active Flood Device Options

- Flood Planks
- Flood Panels
- Flood Shields





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## Abstract

Over the past 7 years, Orange Flood Control has installed flood protection devices for more than 220 wastewater treatment plants and over 300 projects across the United States. Our expert flood mitigation and prevention team is committed to providing installation, maintenance, consulting, testing, and training services so wastewater treatment facilities can stay fully operational during the next storm. In this presentation, we will cover different equipment options and our solution-driven flood mitigation approach for New England's wastewater treatment plants.

## Design Parameters To Consider

- Lightweight Stainless Steel To Prevent Product Corrosion
- Rapid Deployment Options For Limited Staff Intervention
- Protected Storage To Prevent Product Loss & Damage
- High Durability To Withstand Toxic, Acidic Environments



Custom-Designed Storage Solution



## Lessons Learned

From installing flood mitigation devices at wastewater treatment plants in the Northeast, our team has mastered quality workmanship and attention-to-detail to keep facilities in operation. Over the years, we have learned how to:

- Select flood devices based on environmental, infrastructural, and staff requirements
- Provide expert device deployment training for seamless use in a flood event
- Design custom spill containment solutions to prevent environmental contamination and costly cleanups



## Dos And Don'ts

With our experience, we will share our expert knowledge to protect your wastewater treatment plants from damage. Our team knows how to assess wastewater treatment flood risk and design a plan that meets your facility's needs. From there, we can recommend appropriate choices and location for flood control devices as we address your design requirements. We review and distribute timelines, budgets, methodologies, and outcomes to facilitate a turn-key installation experience. We can provide guidance and implementation on testing, training, and maintenance to ensure reliable operation for New England's wastewater treatment plants.