Washed Out: Flood Risks Facing U.S. Municipal Water Systems

As climate change increases the frequency and severity of extreme floods,[1] more than one-third of large water systems in the U.S. face heightened flood risks endangering access to safe and reliable drinking water for nearly 60 million people across the country.

Floods can contaminate water supplies with human and livestock waste along with many pathogens and lab-made toxic chemicals,[2] and they can also damage water infrastructure and cut communities off from safe drinking water.[3] Flood waters can be deadly, and can overwhelm utility systems, knocking critical equipment, treatment facilities, and pumps offline, leading to water outages and boil advisories.[4] Flooding from Tropical Storm Helene washed out large water mains in Asheville, North Carolina and the surrounding area. Floods also damaged roads, making repairs to water systems harder to complete.[5] Since 2024, Iowa, Texas, and Tennessee have also experienced water outages due to flooding.[6]

More communities could lose access to safe drinking water from floods due to the agenda of the Trump administration. First, the Trump administration has aggressively promoted fossil fuels, set back renewables, and dismantled regulations, which will make climate change worse and hamper our ability to address it. At the same time, the Trump administration and Congressional Republicans are seeking to eliminate hundreds of millions of dollars of federal support for water infrastructure — funding necessary to build more climate-resilient systems that are better prepared for the threats posed by extreme flooding.

Against this backdrop, new mapping research from Food & Water Watch (FWW) calculates the flood risk faced by the largest community water systems across the country (those serving over 100,000 people). Many systems have significant portions of their service area in high flood risk areas. Without a strong federal investment in public systems going forward, millions of Americans could be at risk of losing access to safe drinking water and wastewater services following floods.

Specifically, FWW found:

- **More than one third of large community water systems have significant flood risks:** Of the 448 water systems serving over 100,000 people in the U.S., over one third of them have at least 10 percent of land in high flood risk areas. These systems serve 59.4 million people nationwide.
  - **Fifteen percent of water systems have elevated flood risks,** with at least 20 percent of land in high flood risk areas, and these water systems serve 21.7 million residents.
  - **Five million people are served by large water systems with extreme flood risks.** Three percent of large water systems have at least half of their service area in high-risk areas.

info@fwwatch.org
202.683.2500 (DC)
510.922.0720 (CA)
foodandwaterwatch.org

SEPTEMBER 2025

- **Floods pose the biggest risk to large water systems in Florida.** Ten of the 15 large water systems with at least half of land in high flood risk areas are in Florida. Two are in New Jersey, two are in Louisiana, while the largest system in this category is in Boston, Massachusetts, serving over 2.5 million people.

In Florida, one in four of the largest water systems have at least half of land in high-risk areas. Three out of four have at least 20 percent of land in high-risk areas, while the vast majority (36 of the 41 systems) have at least 10 percent of land in high-risk areas.

Other Regional Findings

- New York City's water system, which is the largest in the country and serves over 8.2 million residents, has over 12 percent of its land in high flood risk areas.
- In Texas, 26 of its 41 largest water systems have at least 10 percent of land in high-risk areas, while 10 systems have at least 20 percent. Notable systems include:
  - Corpus Christi — 23 percent high risk.
  - Houston — 23 percent high risk.
  - Dallas — 16 percent high risk.
  - San Antonio — 11 percent high risk.
- In California, over one in five of its largest water systems have at least 10 percent of its land in high-risk areas. Five out of its 87 large systems have at least 20 percent of its land in high-risk areas. Notable systems include:
  - Alameda County — 42 percent high risk.
  - Sacramento — 27 percent high risk.

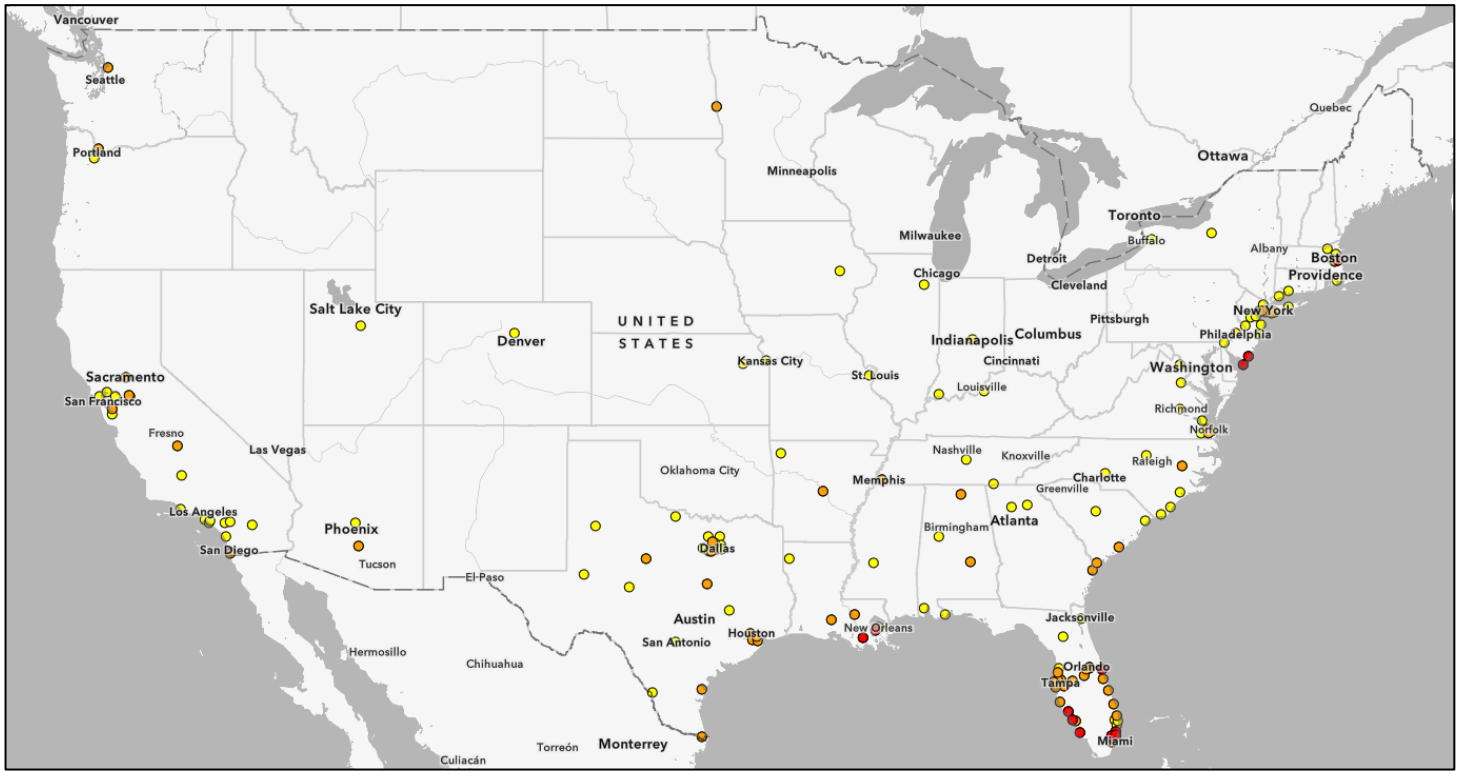
Conclusion

Extreme floods from climate change-driven severe weather threaten access to safe drinking water for tens of millions of people across the country. We rapidly need to move from fossil fuels to renewable energy in order to avoid rapidly worsening climate change. Local water providers must also improve their systems to withstand today's climate reality. This level of investment will require a strong federal commitment.

Congress must reject proposals to eliminate support for safe and clean water and pass an appropriations bill that fully funds the Drinking Water and Clean Water State Revolving Funds, the main source of federal funding for safe and clean water. Moreover, Congress must ensure that this funding is safeguarded from future cuts from the Trump administration through partisan rescissions. Long-term, Congress must pass the Water Affordability, Transparency, Equity and Reliability (WATER) Act to guarantee federal support for safe and clean water in every community.

Fig. 1: Flood Risks Faced by Major Municipal Water Systems

Water Systems serving 100,000 or more customers, with 10/20/50 percent of land area in high risk flood zones



MAP LEGEND

- 20% OF LAND IN HIGH RISK FLOOD ZONE
- 50% OF LAND IN HIGH RISK FLOOD ZONE
- 10% OF LAND IN HIGH RISK FLOOD ZONE

Methodology

This analysis reports the flood risk facing large water systems across the country (those serving over 100,000 people). The water system data are shapefiles from the U.S. Environmental Protection Agency's (EPA) Community Water System Service Area Boundaries.[7] The flood risk data are raster data of Flood Hazard Areas from the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map.[8] We matched the raster data with flood hazard categories, and then used the zonal histogram tool in ArcGIS Pro to calculate the percentage of area within each water system that falls under FEMA's high-risk categories for flood hazard area. We highlighted water systems with 10, 20, and 50 percent of land within high-risk flood areas. "High risk" means that there is a 1 percent annual chance of flooding, and a 26 percent chance of flooding over the life of a 30-year mortgage.

Endnotes

1 Ionno, Alexandre et al. "Impacts of climate change on flood volumes over North American catchments." *Journal of Hydrology*. Vol. 630. February 2024 at abstract; Robbins, Jim. "How climate change puts the safety of drinking water at risk." *Yale Environment 360*. February 27, 2025.

2 U.S. Centers for Disease Control and Prevention. "Safety Guidelines: Floodwater." Available at https://www.cdc.gov/floods/safety/floodwater-after-a-disaster-or-emergency-safety.html. Accessed August 2025.

3 Huang, Pien. "In Asheville, N.C., many residents may be without drinking water for weeks." *NPR*. October 3, 2024.

4 Meszaros, Jessica. "How Florida water managers are dealing with increased flooding from rainfall due to climate change." *WUSF*. January 16, 2025; Heckt, Shannon. "Petersburg officials: Flooding spurred by intense rain, aging water system, lack of river dredging." *Virginia Mercury.* July 15, 2025; Cossin, Alex. "Kentucky experiences water outages amid flooding." *Water World*. February 18, 2025; Danielle, Monica. "Death toll climbs to 15 amid devastating flooding in Kentucky." *AccuWeather.com.* February 17, 2025.

5 Vazquez, Tyler. "Asheville water system restoration efforts underway, but no timeline yet: What to know." *Citizen Times*. October 3, 2024.

6 Tennessee Department of Military. Tennessee Emergency Management Agency. "Flash Report #6 Severe Weather + Flooding." April 7, 2025. Available at https://www.tn.gov/tema/news/2025/4/7/flash-report--6-severe-weather---flooding.html; Bass, Isabella and Tara Brolley. "Boil water notice rescinded for most Georgetown residents." *CBS Austin.* July 5, 2025; Brummer, Sheila and Grant Gerlock. "Northwest Iowa rivers are flooding homes and farms. Now the water is moving downstream." *Iowa Public Radio*. June 24, 2024.

7 U.S. Environmental Protection Agency (EPA). "Community Water System Service Area Boundaries." Available at https://www.epa.gov/ground-water-and-drinking-water/community-water-system-service-area-boundaries. Accessed June 2025.

8 U.S. Department of Homeland Security (DHS). Federal Emergency Management Agency (FEMA). "Flood Data Viewers and Geospatial Data." Available at https://www.fema.gov/flood-maps/national-flood-hazard-layer. Accessed June 2025.