

IOWA'S 2008 FLOOD RECOVERY THE DAMAGE

JUST THE BEGINNING

As the floodwaters drained, it soon became clear that the end of the flooding was only the beginning of the disaster. Business districts, neighborhoods, and entire towns were uninhabitable, some damaged beyond salvation. Highways, roads, bridges, culverts, levees, and railroad tracks were badly damaged or destroyed. Crucial utilities were cut off: water, sewer, and electricity. A tenth of Iowa's cropland was scoured.

SIXTH-LARGEST DISASTER

2008 Iowa floods and tornadoes were the sixth-largest FEMA disaster declaration at the time, based on estimated financial public assistance.

1. Hurricane Katrina — Louisiana, \$8.2 billion
2. 9/11 Terrorist Attack — New York, \$4.6 billion
3. Northridge Earthquake — California, \$4.2 billion
4. Hurricane Katrina — Mississippi, \$3.1 billion
5. Hurricane Ike — Texas, \$1.5 billion
6. 2008 Floods and Tornadoes — Iowa, \$848 million

Source: RIO Quarterly Report, April 2009



Floodwaters in Columbus Junction after a levee failure

INDESCRIBABLE DAMAGES

"Damages defy description," declared a report in September 2008 by the Rebuild Iowa Office (RIO) to Iowa's governor. "That a smaller state like Iowa could suffer damages to the extent that this disaster places us in the top dozen or so all-time national disasters is sobering and presents Iowans with recovery challenges few states have faced."

The report continues: "People have lost their homes, neighborhoods, schools, and churches. Small businesses were devastated, and some may never reopen. Public buildings, historical sites, roads, bridges, and entire infrastructure systems were damaged or lost. Nonprofit organizations have lost offices, buildings, and financial support. Local governments face extraordinary challenges to sustain a tax base that is in jeopardy as a result of losses in housing and the local economy.

"Identifying all the damages and placing a dollar value on them is impossible. Those seeking a grand-total dollar figure for all damages in the state ... will be disappointed. That data does not exist," the report continues. "Most damage data are estimates. Data are not final, and, in some cases, the data are updated and changed daily. Some damage data have not been gathered yet or may never be collected. ... Simply adding up all the numbers would not yield a meaningful 'total damages' amount."

The United States Small Business Administration (SBA), which provides disaster aid to both businesses and homeowners, agreed. In an August 2008 report to the State of Iowa, it cautioned that the SBA didn't know the total number of damaged homes and businesses because not all flood-affected homes and businesses applied for relief — including a disproportionate number of large businesses with the greatest amounts of disaster damage. It also pointed out the SBA does not verify damages for home or business loan applicants who don't qualify for an SBA loan.

These observations about the enormity of the losses and the inability to accurately total the damages are still true a decade later. The numbers that follow and those in "Iowa Flood Losses," *opposite*, remain approximations that can only begin to give a sense of the scale of the disaster.

THE DAMAGE

TENTATIVE TALLY

More than 4,000 Iowa National Guard soldiers — “the largest deployment of the Iowa Guard since the Civil War,” according to Governor Chet Culver — were deployed during and immediately after the flood at a cost of \$7.4 million. They helped first responders rescue victims, ensure public safety, and deal with the catastrophe. More than 50,000 Iowans volunteered in the response, recovery, and rebuilding effort. In Johnson County alone, says a RIO report, an estimated six million sandbags were used — more than during Hurricane Katrina.

Housing

Statewide, an estimated 21,000+ housing units were damaged: 4,369 homes were destroyed or sustained major damage; 5,818 had minor damage; 11,943 had damage requiring repair. A total of 40,000 people were displaced from their homes; many lost everything. “My house was destroyed,” wrote one Cedar Falls resident in response to a State of Iowa flood questionnaire. “Also, all the tools that I work with.”

“We worked all our lives for what we had,” said a Cedar Rapids man standing in the doorway of his flood-ravaged home in a news clip from KGAN CBS TV 2 in Cedar Rapids. “Now, it’s all gone.”

Business

Approximately 4,800 nonmanufacturing small businesses and 800 intermediate businesses were affected. More than 3,000 businesses suffered economic losses. Another 2,400 were physically damaged. Total assessed damage for small and intermediate businesses was \$5.36 billion. Total estimated need left unmet by FEMA and Small Business Administration (SBA) relief for small and intermediate businesses was \$2.78 billion, according to RIO. Large businesses experienced an estimated \$100 million in losses.



*Flooding on the fine arts campus
of the University of Iowa*

Infrastructure

More than a half-million cubic yards of debris — about 50,000 dump trucks full — lined streets waiting to be hauled away, according to a press release issued jointly by RIO and FEMA in October of 2008. In Cedar Rapids, landfill waste flows more than quadrupled in months following the floods.

More than 125 miles of primary highway in Iowa were washed out completely. More than 300 bridges, overpasses, and culverts were affected, 450-plus miles of state highways were closed, and 1,500 miles of road needed to be replaced. Iowa’s railroads counted 17 bridges damaged or destroyed; upwards of 400 miles of track, plus associated crossing signals, mile markers, and other related equipment were needed.

The University of Iowa reported nearly two dozen buildings flooded, with an estimate of nearly \$1 billion in total damages. The Iowa Department of Education reported a total of \$62 million in damages to 73 Iowa public school districts.

Twenty-four state parks sustained \$3.6 million in damages and lost nearly \$1.2 million more in revenue due to the floods. Courthouses, jails, water treatment plants, sewage treatment plants, and other public facilities and utilities suffered tens of millions of dollars of damage. Some were beyond repair, including many cultural facilities such as the University of Iowa’s Museum of Art in Iowa City and the National Czech & Slovak Museum & Library in Cedar Rapids.

THE DAMAGE

A NIGHTMARE

If you've never been through a flood, you might imagine something like this: Water goes up. Things get wet. Water goes down. If only it were that simple. Floods are among the most damaging and traumatic of disasters - and they can wreak havoc in surprising ways.

THREE TYPES OF FLOODING - Three types of floods affected Iowa in 2008:

1. Riverine flooding — a river rises and spreads beyond its usual channel into the surrounding floodplain. In severe cases, riverine flooding causes uncontrolled releases of water over emergency spillways at dam sites when crests exceed the dams' design capacities. Floods can also overtop (flow over) or breach (cause a break or failure in) levees.
2. Flash flooding — rainwater from localized heavy storms running off the land overwhelms agricultural field drainage systems, creeks, and urban drainage ditches, storm sewers, stormwater detention basins, and the lift pumps that empty these basins into a river. Properties protected by levees that may be safe from riverine flooding can be inundated by flash flooding.
3. Sewer backup — sewer systems that carry both storm sewer runoff and sanitary sewer sewage are overwhelmed by runoff. Instead of draining sewage from buildings, sewage flows upwards through floor drains into basements. In extreme cases, toilets explode upward from their mountings and manhole covers are blown off by geysers of combined sewage and stormwater. Sewer backup can occur even in low-lying areas far from rivers and streams.

TYPES OF FLOODWATER - Floodwater takes a variety of forms. It can be fast-moving or slow-moving and travel through ground or air, as well as over land. Each brings its own type of destruction. Often, areas are hit by all four types at once.

1. Fast-moving water can have every bit as much force as a hurricane or tornado. A flood torrent can:
 - knock down buildings.
 - turn tree trunks, power poles, dumpsters, vehicles, and unmoored boats into waterborne missiles that destroy nearly everything in their paths.
 - knock out electrical power, water, and sewer service.
 - obliterate roads and rail lines.
 - topple bridges, turning them into dams that can increase the severity of upstream flooding.
 - scour topsoil from farm fields and parkland and replace it with mountains of sand, gravel, and rock.
 - scatter debris over hundreds of square miles.
2. Slow-moving water also causes great damage. It can:
 - drown trapped livestock and wildlife – and people, although no flood-related drownings were reported in Iowa in 2008.
 - float huge underground gasoline tanks up from under gas stations, rupturing the ground that covers them, spilling fuel into the floodwaters.
 - lift entire houses and other buildings off their foundations. In the 2008 floods, some houses drifted hundreds of yards.
 - pollute water by spilling and distributing toxic industrial and agricultural chemicals, raw sewage, and household hazardous wastes throughout the flood zone, endangering human life and health and killing wildlife, domestic animals, and vegetation.
 - pollute soil by depositing anything from a light film to several feet of polluted sediments ("muck") that can be nearly impossible to remove. Much of what is covered is unsalvageable.
 - pollute air; evaporating chemicals, rotten meat, and toxic mold result in noxious and often toxic air that can sicken people, sometimes over a wide area.
3. Saturated ground. Floodwater trapped in the soil can:
 - cause foundation walls to cave in, destroying buildings.
 - undermine and fracture roads, train tracks, utilities, flood walls, and levees.
 - create sinkholes and ground collapse.
4. High humidity. Even above the high-water mark, buildings and their contents can be damaged beyond repair by the high humidity that occurs inside flooded structures, particularly when no ventilation is available. Humidity can:
 - corrode heating, cooling, and other mechanical and electronic equipment and appliances beyond repair.
 - permeate and rot building materials.
 - cause rapid growth of toxic mold, which can cause serious illness and is very difficult to remediate.

The combination of these elements and the large areas affected make flooding a particularly noxious, difficult, long-lasting disaster. The emotional process of disposing of sodden, reeking, and ruined possessions adds a level of emotional distress to the work many flood survivors said was particularly traumatic.

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IOWA FLOOD LOSSES

As of September 2008 — barely a month after floodwaters receded — the State of Iowa estimated damages. The biggest hit was to structures (mostly private homes), but agriculture and the environment (mostly crops), public infrastructure (mostly utilities), educational facilities (mostly the University of Iowa), and cultural and historic landmarks (including museums, libraries, historic theaters, and more) all suffered hundreds of millions of dollars of losses. It all [added up to an estimated nearly \\$3.5 billion](#) in total damages.

EASTERN IOWA: THE BRUNT

In mid-June 2008, with flooding still ongoing, President George W. Bush declared a state of emergency in 85 of Iowa's 99 counties, allowing federal agencies such as FEMA and the SBA to provide disaster relief in the form of on-site help and financial and other assistance to people and businesses.

Damage was most intense in eastern Iowa. Although 85 of Iowa's 99 counties were declared presidential disaster areas, 80 to 90 percent of flood losses were concentrated in 10 Iowa counties: Black Hawk, Benton, Bremer, Butler, Cerro Gordo, Floyd, Johnson, Linn, Louisa, and Muscatine.

By far the largest losses were those of Iowa's second-largest city, Cedar Rapids in Linn County, where 13 square miles were underwater. Sixty-two percent of the state's flood damage occurred there, including more than 61 percent of Iowa's estimated housing losses, nearly 50 percent of public school damages, and more than 39 percent of the state's business losses.



Cedar Rapids home knocked from its foundation



Cedar Rapids furniture store – note the water line above the fence on the right



Debris removed from homes in Cedar Falls

DOWN, BUT NOT OUT

Many Iowans retained the generous spirit, optimism, and toughness that Iowans are known for, as comments scrawled on State of Iowa damage surveys revealed.

"Filled out the FEMA paperwork, but others need help more than me," wrote one.

"I am sharing a home with a friend," wrote another.

"Is there assistance available that would enable me to assume responsibility for some of the mortgage payments?"

"We been hit hard. I'm resilient, I'm from IOWA!" a Cedar Falls resident wrote.

Even in the grips of one of the country's largest national disasters, Iowans remained loyal to their home state.

"Iowa is a great state, great community, great place to live. We have our downfalls, but we're a great and proud caring community," commented one flood-affected Iowan.

The sentiment was surprisingly widespread.

"We didn't have the diaspora (group migration) that New Orleans had after Katrina," said Tim Waddell, IEDA Community Development Division Administrator, who played a key role in the state's recovery. "In Iowa, we take care of our own."

THE DAMAGE

IOWANS' NEEDS

In the wake of the floods, lowans needed help rebuilding housing, jobs, and communities. Here are some of the major needs articulated:

Buyouts

- Buyout programs.
Many lowans in the most severely flooded areas knew damaged houses could never be made habitable again. Some were so damaged — undermined, knocked askew, or entirely torn from foundations — that they were a safety hazard in danger of toppling. Some structures floated free and were blocking roads and intersections. Thousands more had marinated in filthy water for days or weeks and spawned a sickening growth of toxic mold. Even if the owners of these homes were willing to attempt the expense and risk of restoration, the structures would still be vulnerable to flooding. Also, ongoing flood risk meant that even if homeowners wanted to stay, they'd likely be left behind in a ghost town without nearby neighbors, stores, schools, and other services. In any case, they'd never be able to recoup their restoration investment. Many homeowners in flood zones decided it would be better to sell their home to the city at pre-flood value and relocate to higher ground. Buyouts also ensured that unlivable homes would be demolished, rather than stand empty as moldering eyesores and safety hazards.
- Land use planning, including green space.
2008 made it clear to lowans that they need to "give more room for the river," in the words of Cedar Falls City Council member Kamyar Enshayan. That meant buying and demolishing homes in flooded areas and converting the areas into green spaces: parks or recreational areas that can flood without placing people and buildings in harm's way.

Housing

- Affordable housing was Iowa's most critical housing need following the flood for two reasons:
 1. Vast scope of the floods — according to a State of Iowa survey of affected communities in August 2010, approximately 8,500 Iowa households were displaced by the disasters. Roughly 60 percent of those affected owned homes; the rest rented houses or apartments. A loss of 8,000 to 9,000 housing units took a huge bite out of Iowa's housing stock. The resulting restricted housing supply caused higher housing prices — not only in flood-affected communities, but in entire regions of the state.
 2. Age and affordability of the housing stock lost — in 2007, 29 percent of Iowa's housing units were built in 1939 or earlier — double the national average, according to a May 2010 study commissioned by IEDA. That study also found that in 2003, almost half of the state's stock of rural, nonmetro structures were built before 1940 and that Iowa lags significantly behind the rest of the nation in the percentage of housing built since the 1980s. That means lowans are more likely than most Americans to live in older, more-affordable homes. When pre-1940 homes, for example, are destroyed, they must be replaced with new ones — which can't be built for anything near pre-1940 land, material, and labor costs. In addition, the study found that flood-affected homes were often in older neighborhoods, making them even more likely than the average Iowa home to be affordable. As a result, after the floods, Iowa faced an acute need for affordable housing.
- Housing that helps mitigate future natural disasters — an investment in affordable replacement housing - could be washed away in the next flood if simply rebuilt in the same way and in the same flood-prone locations. New and restored housing units needed to be made safer from flooding — either built on higher ground or elevated high enough to keep the living spaces dry in the event of another flood.

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Jobs

- Support for companies affected by floods so they stay in the state — a new place to live, no matter how affordable, can remain unattainable if you don't have a job that pays the mortgage or rent. After the floods, thousands of Iowans were in danger of losing their businesses or livelihoods. Not only were many businesses flood-damaged, they were also plagued by disruption to infrastructure such as water, power, and transportation. This added more loss, as did a population turning its attention to immediate survival. Businesses needed the same help rebuilding as residents.
- Support for businesses that create jobs or help with the rebuilding process — inevitably some businesses that had existed pre-flood closed because of the disaster. New businesses to replace them would be needed if the flood-affected areas were to continue to thrive and grow. Also, the flood created a tremendous need for jobs in some fields, such as construction, to help with the rebuilding effort. Filling those jobs locally rather than importing the services was in the best interest of flood-affected areas.
- Providing good jobs to the best and the brightest Iowans to keep them in the state — Iowans wanted the state to seize the opportunity to use the flood recovery funding to help create well-paying jobs in areas that would help Iowa rebuild stronger, safer, and smarter.

Communities

Iowans first pointed to obvious, immediate infrastructure needs such as restoring and upgrading power, water, sewage, and storm drainage systems; public services; debris removal and disposal; hazardous waste mitigation; and restoration of government offices and services. Additional needs mentioned:

- Repair and maintenance of existing levee systems — in general, federal dam and levee projects in Iowa performed exactly as designed, although many were not designed to protect against floods of this magnitude. But other Iowa levees were a patchwork of local and private projects, some of which were not sufficiently maintained.
- Review and modification of long-term land use policies to mitigate flooding — including studying entire watersheds to see what causes flooding, reducing concrete-based construction (such as impervious paving), ensuring that floodplain zones are used exclusively for park and recreation areas, investing in buffer systems to contain and infiltrate runoff, and helping farmers transition to crops that build the soil and absorb runoff.
- Educating the public about flood mitigation practices — these include farming practices that maintain soil quality and control erosion, education about causes of natural disasters and how to minimize damages, and rebuilding cultural attractions lost in the flood.

UNMET NEEDS

As FEMA and SBA staff (1,400 from FEMA alone) fanned out across Iowa to begin the relief process, it became clear that many of the needs discussed would not be met by FEMA and SBA programs alone. By April 2009, the state calculated that even with FEMA's help, Iowa would be left with \$856 million in unmet single-family housing needs, \$90 million in unmet rental assistance needs, and \$2.7 billion in unmet business needs — plus vast amounts for transportation, public utility, and other infrastructure. Fortunately, more help was on the way in the form of Community Development Block Grants (CDBGs) from the U.S. Department of Housing and Urban Development.

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LOW-INCOME CHALLENGES

Disaster poses new risks to families struggling in an already soft economy.

Flooding created an unprecedented economic disaster when Iowa's economy was already struggling, and many people were out of work. The poorest families — especially the low-income, the elderly, and single mothers — faced the longest road to recovery. Some challenges low-income families faced disproportionately included:

Loss of Childcare. An estimated 2,500 children may have been affected through the closing and relocation of 113 licensed preschools, childcare centers, Head Start sites, and registered in-home daycare. Low-income families have limited options because of cost, nontraditional work schedules, and the need to take public transportation to and from childcare and work.

Loss of Affordable Housing. A post-flood housing shortage drives up rent while displaced families are searching for a place to live. Flooded communities throughout Iowa faced increased housing costs and a loss of rental units. Early reports indicate Cedar Rapids alone lost at least one-quarter of its affordable housing. A Cedar Rapids Metro High School teacher conducting home visits found one-third of her students' families were doubled up and living with other families.

Increased Transportation Difficulties and Costs.

Road and bridge closures increase travel times and cost. People who have relocated out of city centers to find affordable housing also face greater transportation costs. Workers who previously relied on public transportation or walk to work deal with double jeopardy if their employers were also flooded.

Loss of Work. More than 10,000 Iowans lost work because of the floods. Through the end of July 2008, 9,580 people received disaster-related unemployment benefits, and that number likely does not include all people affected.

Strained Food Budgets. Even before the flooding, many Iowa communities saw growing demand at food banks due to rising food costs. In flooded communities, the cost of groceries rose even more. For example, Aldi— a grocer with a high percentage of food stamp customers and low-cost food in Iowa City — was closed for a time after the flood.

Inconveniences and setbacks for more-affluent families can become crises for low-income families without a timely, targeted, and effective response.

Source: Iowa Fiscal Partnership