
Under **WATER**

Under **FIRE**

**“Epic” Floods
In Eastern
Iowa Test
And Define
A Clean Water
Community**

By Roy Hesemann

For most of the country, mid-June 2008 was like any other summer. In Iowa, and especially in the Cedar River Basin of eastern Iowa, however, June 2008 was anything but normal.

A wet fall of 2007, along with record snowfall and constant rain during the spring of 2008, led to high river levels and saturated soils. The Cedar River, which runs through the cities of Cedar Falls, Waterloo, and Cedar Rapids, was swollen out of its banks most of that spring. June provided no relief. Heavy thunderstorms began to roll into the 7,600-square-mile basin, causing floods first in Mason City and then down the river to Cedar Falls and Waterloo before barreling toward Cedar Rapids.

The skies opened, and some seven to eleven inches of rain fell in the basin immediately upstream of Cedar Rapids on June 12. The previous flood record for the

CEDAR RIVER WATER LEVELS

31.12'

2008



20'

1851 & 1929



6'4"

Average Height



Cedar River was 20 feet–reached in 1851 and 1929. Most new river records are measured in inches, but on June 13–yes, Friday the 13th–the Cedar River in Cedar Rapids hit an unimaginable new record of 31.12 feet. An “EPIC SURGE,” as headlined by the Cedar Rapids Gazette, sent a three-story-high wall of water over homes, businesses, roads, vehicles, critical infrastructure, and utilities throughout the Cedar Rapids/Iowa City corridor.

ANSWERING THE CALL

The Cedar Rapids Metro area–home to some 180,000 people–was devastated. Nine square miles of the city were impacted, affecting over 18,000 people and 7749 parcels. Fortunately, there was no loss of life related to this catastrophe. More than 300 city facilities were damaged, including City Hall, the Central Fire Station, the Police Station, Public Works facility, the City Bus Terminal, and all but one of the wells that supply water to the two water treatment facilities.

City staff made a gallant attempt to save the well, but as darkness approached, they realized they woefully lacked the resources needed. Utilities Operations Manager Greg Eyerly made a call to KCRG News, asking them to air a request for volunteers to help sandbag the well. Within half an hour, more than a thousand people answered the call–standing shoulder-to-shoulder, many waist-deep in flood waters–to do a bucket brigade with sandbags. In a little over an hour, some ten thousand sandbags had been placed, and the last well was able to provide critical drinking water for the community.

The single public facility that sustained the most damage was the Water Pollution Control Facility (WPCF), a potentially catastrophic loss for the community. The clean water facility was designed and sized to handle high-strength raw industrial waste from multiple grain wet-milling operations and a cardboard recycling facility. The average flow to the plant is 52 million gallons per day (MGD), but organic loading is the population equivalent of 1.8 million people. Not only does WPCF treat the waste stream from Cedar Rapids and the industry located there, but it also serves the Cities of

Marion, Hiawatha, Robins, Palo, and a portion of Linn County. Its going offline–for any amount of time–impacts the citizens of the community and the major industries located there.

It was ominous news, then, when representatives of the Environmental Protection Agency and the Iowa Department of Natural Resources toured WCPF–shortly after the flood waters subsided–and stated that it would take a year for the plant to be back online. But the officials underestimated the determination and tenacity of the staff, consultants, contractors, vendors, and others associated with the facility.



People like Pat Jones, a 28-year WPCF plant operator, who worked long hours day after day at the plant to help get it back online before returning to his own house–which was steeped in several feet of water–to assess and repair the damage before going to bed, or Jeff Visek, who paddled through the plant in a kayak to examine the extent of the destruction, or the contracted dive team that worked tirelessly to repair the 96-inch interceptor gate stem that corkscrewed, the gate having been damaged by flood debris, as other staff fought to close it and isolate the plant from the collection system flow.

MINOR MIRACLES, LESSONS LEARNED

In just 12 days after the crest, WCPF's main lift pump station was dried out and cleaned up, with the motors rewound and baked out. In a much-welcomed minor miracle, the four 500-horsepower pumps were back online, allowing some 700 miles of collection system to be pumped down. For the first time since the event, basements were drained, and people were able to see the true extent of the damage to their homes and businesses. A far cry from the estimated one year: In a mere 42 days after the crest, the plant was operational and meeting its



NPDES permit, with the exception of disinfection, which came shortly thereafter.

While the facility was operational and able to meet permit requirements, much work remained. The multiple hearth incinerator was offline for nine months. Other parts of the solids de-watering and disposal system took a full year to come back online. Equipment would start and unexpectedly stop due to corrosion in the control wiring. Additionally, FEMA project worksheet after project worksheet documented the extent of damage that occurred over the dreadful

three-day period. All told, the initial federal funds apportioned to repair or replace the damage totaled approximately \$82 million.

For the next six years, WPCF underwent permanent repairs. Through the process, several major projects that were federally obligated for funding were de-obligated, even though several of the projects were already under construction. The city was able to successfully appeal many of these de-obligations, but a replacement incinerator that had been initially approved was not in the cards.

In order to prevent another disaster like the 2008 flood, the city was successful in obtaining approximately \$18 million in FEMA and Iowa Department of Homeland Security funding, along with nearly \$4 million in local match-funding for two mitigation projects. The larger of the two is a concrete flood wall/earthen berm/multipurpose pumping station that protects the facility from a flood crest of three feet above the 2008 level while maintaining the ability to treat customers' waste stream. The second is an internal pump station that prevents the plant from flooding its own system, should the plant return stream become inundated.

On a chilly October day in 2014, with the tranquil Cedar River in the background, federal, state, and city officials, along with many plant staff members, cut the ribbon on the new WPCF Flood Protection System. Our customers, our community, and the global market to which its customers provide food and fuel, depend on the Cedar Rapids WPCF to be online and ready for business, day in and day out. As plant manager, I am proud to work alongside these individuals who I know will uphold that promise and guarantee. As devastating as the 2008 flood was for our community, we are all stronger and more resilient than ever before due to the collective hearts and hands of those who live and work here. 💧

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