Reconstruction of the Ames, Iowa August 2010 Storm on the Papillion Creek Watershed

Des Moines Register

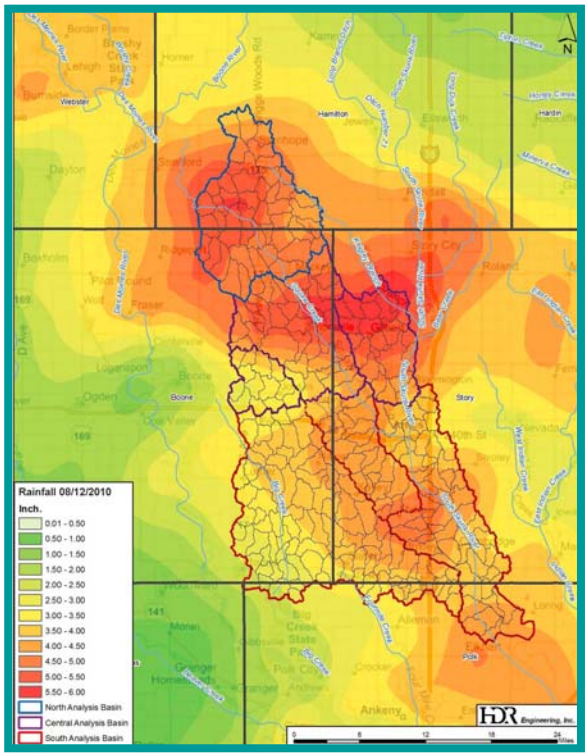
"I-35 reopens as water recedes in Ames; huge clean up to come"

"Hilton Coliseum (Iowa State University) Basketball Court in 8 feet of water"

These were the headlines in Ames, Iowa in August 2010. Could that storm have hit the Omaha metro? How would the Papillion Creek Watershed, which includes Omaha and surrounding communities, respond to a similar rainfall? August 8-10, 2010 three days of rainfall totaling 8 to 9 1/2 inches hit Ames resulting in 1 death, a community of 56,000 residents without drinking water and $30 to $40 million in damages to Iowa State University.

What would the Ames storm look like in the Omaha Metro area?

Meteorologists used rain gage and radar data from the National Weather Service to reconstruct the Ames, Iowa August 2010 storm over the Papillion Creek Watershed. The Papillion Creek Watershed (outlined in the figure on the right) was transposed over the storm event in such a way as to adhere to meteorological principles that are specific to storms that impact our area. The graphic to the right shows the most intense rainfall over the three day period, on August 11, 2010, rainfall totals were 5-6 inches just upstream of Ames. The rainfall distribution was analyzed and reconstructed for the Papillion Creek Watershed. The rainfall data was used to estimate flows that were then modeled using the Papillion Creek topography and geometry to estimate the effect that the Ames storm would have here. Areas predicted to be flooded were mapped and preliminary estimates of damages were conducted. Results are shown on the back of the page.



Ames Rainfall Distribution in Papillion Creek Watershed
Source HDR Engineering, Inc.

Des Moines Register

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Summary of Results

- 1,558 Acres of Commercial/Industrial land inundated
- 393 Acres of Residential land inundated
- 1,430 Acres of Agricultural land inundated
- 1,762 Acres of Civic land inundated
- 977 Acres of Railroad, Roads, and other unclassified areas inundated

Inundated areas used for summary and damage estimates include:

- Big Papillion Creek—Pawnee Road to the confluence with the Little Papillion Creek (15.6 miles)
- Little Papillion Creek—Cunningham Lake to the mouth (10.4 miles)
- West Papillion Creek—Fort Street to the mouth (22 miles)

AP Photo/Des Moines Register
Customers and staff being evacuated from Ames Wal Mart

Estimate of Damages

Preliminary damage estimates were calculated the Federal Emergency Management Agency's HAZUS software in conjunction with reported census data

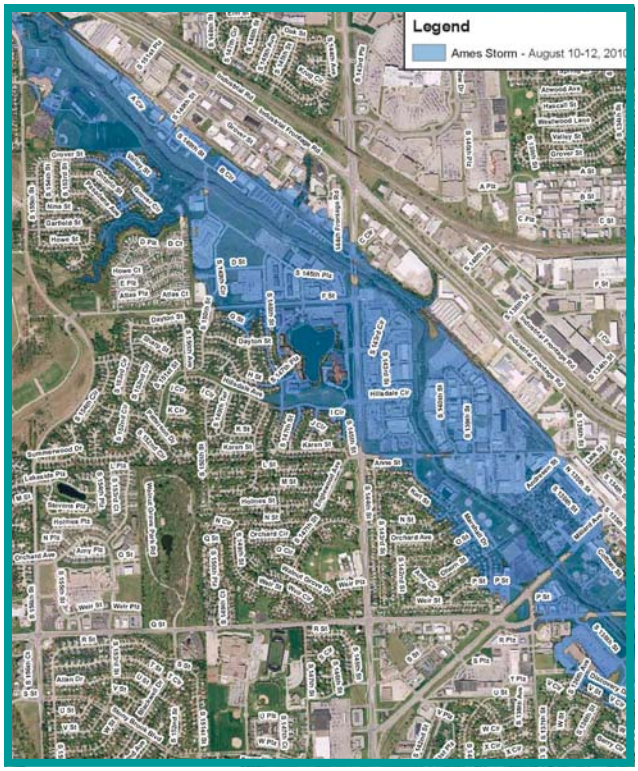
7,132 Displaced people

Building Losses $490,466,000

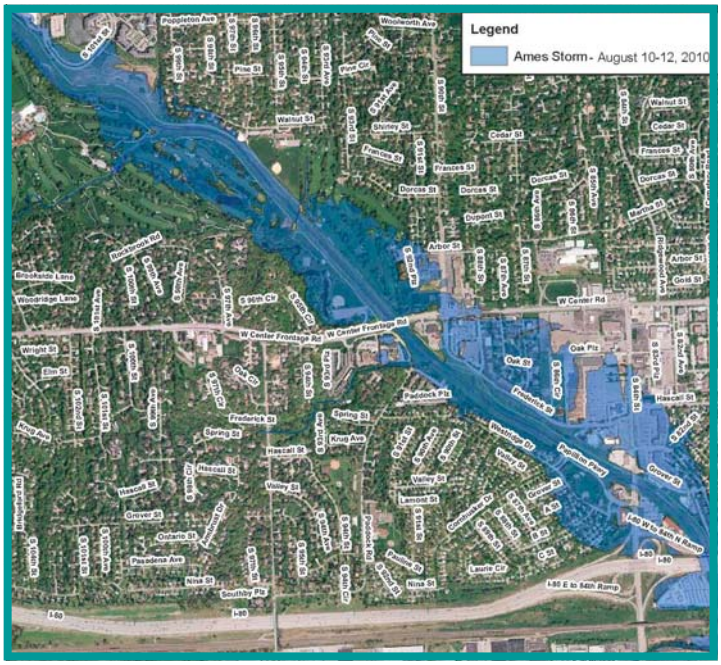
Public Infrastructure damage $189,648,400

Income Losses $5,970,000

Areas of Flood Inundation



Inundation areas on West Papillion Creek near 144th & L Sts



Inundation areas on Big Papillion Creek near 84th & I-80