

Freeboard Saves Town from Additional Flood Loss



Floodwaters came within two feet of overtopping the levee during September, 2010 flood event.

Black River Falls, WI – Following a devastating flood in 1993, the city of Black River Falls (Jackson County) incorporated a concept known as “freeboard” in reconstructing their levee. With a flood stage of 47 ft., the levee definitely stood the test in September 2010 when water from the Black River rose 20 ft. in a 16-hour period, cresting at 61.4ft., (.2 ft higher than its historical crest of 61.2 ft on June 20, 1993).

Referred to as the “Father’s Day Flood” by residents in Black River Falls, the Great Midwest Flood of 1993 wreaked havoc, caused widespread damage and constituted the most costly and devastating flood to ravage the United States in modern history. Levees were breached, farmland, town, and transportation routes were destroyed, thousands of people were forced to abandon their homes, and 47 people died as a direct result of the flood. In Black River Falls, more than 80 homes located in an area referred to as “The Grove” were affected as an earthen levee was breached. Valued between \$80,000 and \$90,000, the homes sustained an average of \$30,000 each, in damages.

Partly funded by the Federal Emergency Management Agency (FEMA) and the Economic Development Administration (EDA) the city took on a mitigation project to rebuild the levee, which had originally been constructed in the 1930’s, adding a three-foot freeboard.

Freeboard is a factor of safety usually expressed in feet above a flood level for purposes of floodplain management. "Freeboard" tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as wave action, bridge openings, and the hydrological effect of urbanization of the watershed.

At a cost of approximately 5 million dollars, improvements on the 3,565 linear feet levee began January 1994 and were completed January 1997. Black River Falls received funds totaling \$2,014,000 from the Federal Emergency Management Agency (FEMA) to execute a buyout project and to reconstruct the levee along the residential district. FEMA paid for 90 percent of the approved project, with the remainder coming from the state and the city. These grants are made available for both public and private projects.

EDA provided nearly 3 million dollars to construct the portion of the levee along the commercial district.

“In order to reconstruct the levee, we had to purchase property,” said Bill Arndt, City Administrator. “We purchased 20 to 30 ft. of the backyards of the residents along the river (15 to 18 parcels), just the portion that we needed to construct the levee.”

On September 23, 2010, an announcement read: *“The City of Black River Falls has ordered the evacuation of the area of the Grove that is south of Fillmore Street up to 3rd Street. For those in need, a shelter has been established at the Black River Falls United Methodist Church. The Red Cross and Jackson County Public Health will be assisting with the shelter.”* Fearing a repeat of the 1993 flood event, residents in “The Grove” were ordered to evacuate as rising water challenged the levee’s fortitude. Black River received nearly 7 in. of rain over a two-day period. Residents returned to homes the next day only to find them unscathed.



Photo of portion of levee and the Black River after floodwaters receded in September, 2010.

The levee held! Floodwaters came within two feet of overtopping its banks.

Freeboard is not required by National Flood Insurance Program (NFIP) standards, but communities are encouraged to adopt at least a one-foot freeboard to account for the one-foot rise built into the concept of designating a floodway and the encroachment requirements where floodways have not been designated. Freeboard results in significantly lower flood insurance rates due to lower flood risk.