Great Lakes and St. Lawrence Cities Initiative
Municipal Adaptation and Resiliency Service (MARS)

Extreme Weather Event Fact Sheet

Event : Flood
Location : Calgary, Alberta
Date : June 2013

Recent Extreme Weather Event

Although not situated in the Great Lakes and St. Lawrence Region, the City of Calgary is used as an example of what could happen should such an extreme weather event affect a large GLSL city. Calgary experienced the 'perfect storm' of circumstances in the summer of 2013. Starting June 19, 2013 Calgary received 200 plus millimetres (8 in.) of rainfall over 72 hours. The heavy rainfall, combined with winter snow melt from the Rocky Mountains and ground already saturated by rainfall earlier in the month, spawned river flows not seen in almost 100 years and triggered significant flooding of the Bow and the Elbow Rivers. City officials declared a state of local emergency June 20 and residents from 32 communities along the Elbow and Bow rivers were evacuated, affecting about 80,000 people. The Calgary Emergency Management Agency (CEMA) coordinated The City's response out of the Municipal Emergency Operations Centre. During the flood, the Bow River flows peaked at eight times the regular flow, the Elbow River inflow peaked at 12 times the regular rate and outflow before the Glenmore Dam was approximately seven times the normal rate.

Impacts of Extreme Weather Event

Public Health: There were five deaths in Calgary and southern Alberta during the flood. Evacuations in 32 Calgary communities along the Bow and Elbow rivers affected about 80,000 individuals, with about 3,000 people sheltered at emergency reception centres and more than 1,600 people registered within the first day. By June 23, 50,000 people are allowed to return home. About 6,000 homes were flooded. Housing and repairs to damaged homes remains one of the most common areas of concern since the flood.

Public and Private Property: Calgary's central business district was also inundated, remaining inaccessible for several days due to water damage and power outages. About 35,000 electrical metered customers were without power. The city's largest indoor arena, the Scotiabank Saddledome, and Calgary Stampede grounds suffered significant damage as did the Calgary Zoo. The municipal government office complex downtown was flooded and the flagship Bonnybrook waste water treatment plant was swamped and shut down.

Critical Infrastructure: Extensive infrastructure damage was prevalent across the city. A total of 16 light rail transit (LRT) stations were closed, two LRT tunnels were flooded, 38 public transit bus routes were impacted, 22 vehicle and pedestrian bridges and roads were closed, 30 parks across Calgary were flooded and The City identified more than 135 sites of severe riverbank erosion.

Economic Cost of Weather Event: The flood that hit southern Alberta has been deemed the most expensive natural disaster ever in Canada with damage pegged at $5 billion CAD. The damage to municipal government infrastructure in Calgary alone is pegged at $445 million CAD.

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What Changes in Climate Can Calgary Expect?

Calgary can expect to see increases in annual temperatures, changes in precipitation patterns and declining stream flow in the Bow and the Elbow Rivers. In addition, the expected impacts of climate change in the province of Alberta also include an increase in the instances of intense rainfall and extreme weather events, causing flooding.

Municipal Response and Lessons Learned

A corporate-wide debrief was conducted with internal business units facilitated by the Canadian Management Centre. Additionally, a review will be conducted by the Conference Board of Canada early in 2014.

The initial debrief provided insight into one of the most successful responses to a disaster and also identified continued opportunities for improvement including; Business Continuity, Emergency Social Services, Disaster Operations in a Protracted Event, Training & Exercises, and Resiliency.

Recovery is ongoing and will take several years. A core group was established early and began recovery efforts even while emergency response teams were still working in communities. Calling on lessons learned from the 2005 flood, the recovery team implemented a formal project management system that established goals, key performance areas, risk analyses and early benchmarking.

But there are still lessons that have been learned for future recovery initiatives such as setting out programs and processes to manage the large volume of donations and offers of assistance, how to manage the overwhelming community response from volunteers want to assist displaced homeowners, and how to better address and manage the high demand for information from all sectors of society that have come in since the flood waters receded.

For more information on MARS,
visit http://www.glslcities.org/MARS.cfm or
contact Nicola Crawhall, at nicola.crawhall@rogers.com.
Photos: Newinfills.ca (left), CBC (right)
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