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EXECUTIVE SUMMARY

The Town of Minto experienced a significant rainfall event during the early morning hours of June 23, 2017. The rainfall resulted in widespread flooding throughout the Town of Harriston. A declaration of an emergency was made by Mayor Bridge at 1004 hours on June 23 which lasted for 6 days.

Flood forecasting data from the Maitland Valley Conservation Authority (MVCA) showed that the North Maitland River watershed received precipitation amounts of 110 to 170 mm over a 6 to 8-hour period early Friday morning. Approximately 168 properties were reported to be damaged with current damage estimate being between \$5 to 15 million. Over 21 sections of various municipal roads were closed throughout the event including 3 of the 4 main points of ingress and egress to Harriston.

Minto Fire's Water Rescue team was deployed 8 times to rescue residents from houses. The trailer park was evacuated, as well as homes on George and King Streets. Both trailers in the park were deemed unsafe and residents relocated. Many businesses on Main Street were also affected including: Harriston Legion, Home Hardware Appliance Centre, Davies Antiques, and Scoop-It.

The community and surrounding areas rallied together offering food and water donations to flood victims, as well as equipment and man power to help pump out water wherever needed. The number of organizations and people that offered their services was truly astounding. Minto Fire and Town of Minto staff worked tirelessly throughout the 6 days to not only deal with the immediate flooding but the recovery efforts as well. Efficient actions from staff of the Town of Minto allowed normal municipal operations to resume within 2 to 3 days after the flood waters had receded.

BACKGROUND INFORMATION – SITUATIONAL AWARENESS

The following report summarizes the events, responses and recommendations to the June 23 2017 rainfall event. This event resulted in widespread flooding across the Town of Minto and in particular the urban centre of Harriston.

Record Rainfall Observed

Record rainfall was recorded during the early morning hours of June 23 across most the northern portions of Wellington County including the Town of Minto. Most areas saw well over a 100 mm of rainfall in a matter of hours.

The area had not seen such amounts of rainfall since Hurricane Hazel of 1954. The amount of rainfall came without any significant weather warnings and as such the area was not prepared for the volume of water that entered the water systems. Previous flood response training and emergency management exercises led to an effective response from all Town of Minto staff.

The following is a brief outline of the timelines leading up to the flooding in Harriston.

June 22 – MVCA Duty Officer observed Environment Canada (EC) forecast for overnight and into June 23 showing showers with risk of severe thunderstorms with rainfall amounts between 10mm and 15mm.

June 23 0030 hours - MVCA Duty Officer received a text message alarm for the Lucknow area and rechecked the EC forecast which included an updated message but no significant rainfall amounts were forecast.

June 23 0200 hours - received another text message alarm. At 0230 rainfall amounts were significant enough to issue water safety statements but no significant flooding was anticipated based upon forecast.

June 23 0200 - waste water department sent to Palmerston sewage treatment system to check; Harriston high water level received a 0400 hours and staff were called out to check sewage treatment.

June 23 between 0230 – 0430 hours- watershed had received approximately 70 mm of rainfall (a lot but not enough to anticipate any significant flooding). Warning to the trailers in Harriston was the only intended response action required.

June 23 0415 hours - Water Department received a first alarm call for Palmerston and Harriston

June 23 between 0430 – 0600 hours - one gauge recorded a 175 mm (over 100 mm in an hour)

June 23 0440 - King and Main Streets in Palmerston were flooded

June 23 0537 - CAO was contacted. Water overtopping some roads.

June 23 0615 hours - MVCA contacted Flood Coordinators

Flooding

There were two waves of flooding that impacted Harriston. The first wave was based upon the intense rainfall received in a very short period of time. It took time for the storm sewer system to respond to the volume of water received. Water was reported in areas of Harriston that have never experienced flooding in historical records. Town of Minto Officials fully expected the water to flow typical paths documented in previous less significant floods; but the amount of rainfall in such a short period of time caused the water to pool in low areas of Town. This pooling of water throughout the Town is what triggered the initial response from Town Staff.

The first wave of flood waters began to recede and then the second wave of flooding from the river was observed at around 0800 hours and continued until the river flows peaked at approximately 1800 hours.

Municipal and Support Agencies Emergency Response

All Town departments and support agencies including Wellington OPP, OFMEM Field Officers, Guelph Wellington Paramedic Services, Public Health and Christian Aid Ministries worked together to assist residents around the entire municipality and to protect and to continue operation of Town facilities and infrastructure.

On June 23, 2017 at 1004 hours, Mayor Bridge declared an emergency.

Firefighters spent the majority of Friday rerouting traffic around closed roads, and evacuating houses. Minto Fire's Water Rescue team was deployed eight times. On June 24, Firefighters and Christian Aid Ministries provided assistance to residents pumping out basements.

Public Works Staff worked all day on June 23 and into June 22 to by-pass sanitary lift stations, protect water supply, assess roads and manage buildings that were flooded from the event.

Some residents experienced sewage back-up in their homes as a result of the flooding. Areas in the urban centre of Palmerston and Clifford also experienced flooded homes and basements. Two wells were shut down. The Water Department maintained water pressure in the Harrison drinking water system. Water Staff were concerned that monitoring wells may have been comprised by the flood waters. A Boil Water Advisory was issued by Wellington-Dufferin Guelph Public Health at 1800 hours on Friday, June 23, 2017. Many businesses from surrounding areas offered donations of water to affected residents. Ten skids of water were

delivered Saturday June 24 to the Harriston Fire hall. Cases of water were available to residents from Saturday until Tuesday. The boil water advisory was lifted at 1500 hours on Tuesday, June 27, 2017. Town and Public Health Staff worked extra hours to sample water and expedite samples to the lab for testing to ensure a quicker response. Staff continue to sample the municipal drinking water system until the end of July.

Several bridges in the Town were flooded. Many roads were flooded; washouts and culvert damage required extensive repairs to the Town's road system. The Town's Public Works Building on Young Street and the Town's Municipal Office basement were flooded. Town Roads Staff spent June 24 assessing and repairing roads, street cleaning and drying out equipment. All roads were re-opened by 1300 hours on Saturday, June 24th except for a single lane closure on the 8th Line.

Building Staff assessed buildings for structural damage promptly helping to relocate any residents displaced. Administrative staff quickly became a primary source of information (collecting, documenting and disseminating) for the public fielding a multitude of inquiries throughout both days and into the following week.

On Wednesday, June 28, 2017, the emergency declaration was terminated and the flood clean-up process was well underway. Town of Minto staff visited homes handing out flood damage report forms and other pertinent information. Damage estimates and flood data were collected and recorded for future debriefing. MVCA hired a consulting firm to look at the statistic from this flood event. Current indications are the flows were above the 1:100-year flood event.

EMERGENCY OPERATION CENTRE MEETINGS:

The Emergency Operation Centre for the Town of Minto was activated at 0950 hours on June 23, 2017. Members of the Town of Minto Municipal Emergency Control Group met throughout the weekend. In total 7 meetings were held by the Control Group. Five EOC meetings were held on June 23; one on June 24 and one on June 26.

EMERGENCY INFORMATION - EXTERNAL COMMUNICATIONS

The Town was actively communicating with residents during the response. A media release was developed at each EOC meeting and sent out via media outlets, website and social media. Town also set up an inquiry system to track public inquiries. A damage assessment report was created and set up on the Town's website for businesses and residents to complete. Request to residents to complete the form was issued through media releases throughout the weekend and the following week.

The Town of Minto has a well used and well received social media system in place. Social media response was high and analytics indicate it was well used during the flood event by the public. Social media was an invaluable Emergency Information tool during this event.

Social Media Analytics

Over the course of the incident, Social Media was updated hourly on both the Town of Minto and Minto Fire sites.

It proved very beneficial having one person update all municipal sites as information was disseminated consistently and timely.

26 tweets were sent out from June 23 to 28, and 31 Facebook posts.

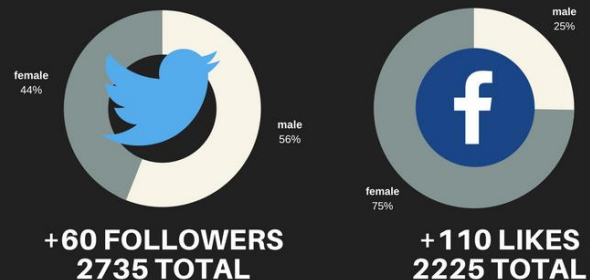
The blog section on the Minto Fire website was updated regularly with all media releases, advisories and safety tips for the Public.

Minto Fire received 8 5* reviews over the course of the flood with praise from the community for keeping in constant contact with everyone throughout the emergency. On average posts reached 64 000 people on Facebook and 25 000 people on twitter. It also helped the Town to reach major media outlets and decreased the call volume from those media.

#ONFLOOD JUNE '17

SOCIAL MEDIA ANALYTICS

AUDIENCES



64k
AVERAGE
REACH ON
FACEBOOK

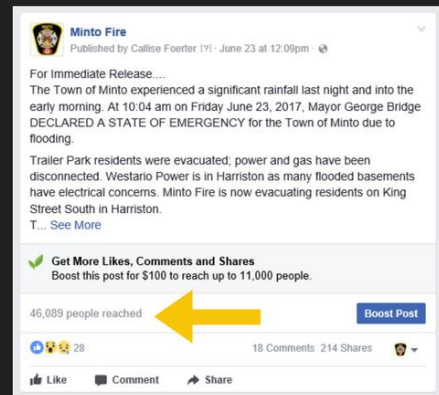
IMPRESSIONS ON
TWITTER

25k

Top Tweet earned 9,132 impressions

Newest #Harriston Flood Update, All roads open, evacuated residents are able to return home except trailer park - goo.gl/GvBHGa

1 retweet 19 replies 9 likes



+8
REVIEWS
★★★★★

DEBRIEF MEETING

The Town of Minto held a meeting to debrief on the record rainfall/flood event on Wednesday July 26, 2017.

The following were in attendance:

Annilene McRobb, Deputy Clerk
Wayne Metzger, Water Foreman
Mike McIssac, Road Foreman
Mark Robertson, Waste Water Foreman
Jeff Winzenried, Water Resource Technician MVCA
Callise Foerter, Fire Administrative Coordinator
Linda Dickson, Emergency Manager/CEMC
Gord Duff, Treasurer
Belinda Wick-Graham, Economic Development
Bill White, CAO/Clerk
Terry Kuipers, CBO
Chris Harrow, Fire Chief
Steve Jackson, MVCA (via conference)

OBSERVATIONS AND RECOMMENDATIONS

The following is a compilation of comments obtain from the debrief meeting.

What Worked Well

A damage report form created and posted on website has been a useful tool. Staff created a spread sheet with information provided on the form regarding damage. Flooding concerns/inquiries received at the Town office were tracked and recorded in spreadsheet using google doc. Staff noted which residents would like a call back and staff followed up on the requests.

The Drone pictures taken by OFMEM Field Officer are valuable and important documentation from the event.

Public Works dash cams in trucks have also provided some pictures and information.

The new rain gauge system installed in the headwaters after the 2008 flood event proved very beneficial as MVCA was able to give Town staff better information on the flooding anticipated.

The Elora Street conduit which was reconstructed in 1998 did not flood in this event and allowed for some flow of traffic including emergency services to continue throughout the response.

The river flood response worked well based on flood training and exercises Town staff and MVCA have undertaken in the past.

Water and Waste Water Departments conducted an exercise scenario on May 18, 2017 based on similar incidents that occurred during the flood. This was very helpful and timely for staff responding to this event.

Lessons Learned

90% of municipalities in Ontario do not have storm sewers capable of accommodating these types of severe rainfall events. Existing systems pre-dated current engineering design standards. Most storm sewers are currently designed for 1:10 year flood events.

These events come quickly and it is understood any future events we will be reacting to in a similar way.

Gained a lot of useful information to determine how the river will react in future.

A detour map around Harriston was created with the assistance of Town Road staff, MTO staff, and Wellington OPP that can be included in the flood response plan.

Social media response was high and well received by the public. It was a useful and effective emergency information response tool. Emergency information was done well.

Having a dedicated Emergency Information Officer (EIO) in the Town worked very well. Need to ensure EIO is at all EOC meetings. Having Town staff take the lead for Emergency Information worked very well. Information was first posted using Fire Department sites and then on Town site. Consistency in messaging was very important. Moving forward, Fire Administrator Coordinator will post all emergency information on both Fire Department and main Town sites.

Staff conducted two door-to-door pamphlet drop offs; one Friday night regarding Boil Water Advisory and then again Saturday night. There was some confusion regarding the Boil Water Advisory – thought it was to be a precautionary advisory and then went to mandatory Boil Water Advisory. Generally, staff found residents very appreciative and receptive of the response efforts to the flood.

Municipal Water System was not impacted by the flood waters as indicated by ongoing testing. Boil Advisory was a public safety measures. It was noted that better messaging is needed with respect to the potential health risks of the flood waters themselves. Will work with Public Health for appropriate messaging and safety precautions.

Confirmed that the Fire Department need to be the lead response agency in flood events.

RECOMMENDATIONS

Water and Waste Water Department Recommendations

Monitoring wells should be raised and located above the identified flood levels. SCADA equipment was been relocated and will stay at current location. Municipal Water System was not impacted by the flood waters as indicated by ongoing testing. Boil Water Advisory was a public safety measure. Raising the monitoring wells will ensure minimal future risk to the Municipal Drinking Water System.

To help reduce potential flooding experienced during first flood wave, the Town should look at surface water mitigation measures as roads are reconstructed in Harriston and other urban areas. This could include backflow prevention devices on storm sewers, local surface water diversions or on street storage areas that prevent water from flooding adjacent homes.

Suggestion to conduct a municipal Back flow prevention program for buildings in the regional flood plain. Note that this may solve sewage flooding in basements but will not prevent overland flooding. The Town's Engineers are looking at back flow prevention on the sewer system.

Watershed Drainage Mitigation Recommendations

The North Ward drain has two outlets that fill up very quickly in normal heavy rains as the outlets are soon below water when the Maitland River rises during minor such events. As development of the Schickedanz subdivision proceeds the Town should investigate the option of diverting storm water through this site if possible, and possibly removing the old rail line barrier if it helps surface water flow out of this part of Harriston.

Recommend a Watershed Master Plan to look at ways to control/retain flows from flood events to ease the affects on the urban centre of Harriston. A Staff report went to Council on August 1 to authorize a study be undertaken. Council supported the report from Staff.

Provincial air photography completed in 2016 is not accurate nor detailed enough for the Watershed Master Plan study which will look at the flooding process and ways to mitigate the affects of flooding in the Town. Funding request will include project to fly watershed to provide more detailed air photography. An application to the National Disaster Mitigation Program (NDMP) will be completed by staff to support the updated flood mapping for the Town.

Emergency Response Plan Amendments

Revise the Emergency Response Plan to have OPP, GWPS, Public Health and MVCA as support agencies to the response. MVCA to communicate with Operation Chief in the Flood event. Found that the EOC worked very well with small numbers of Town staff/representatives

(Command). Noted that we need to ensure staffing to provide Planning Section support during these types of events.

Emergency Operation Centre Recommendations

Need another location for our EOC in a flood other than a Fire Station, and in a flood event the basement of the Town office should be reconsidered due to access concerns as surrounding streets were flooded. In addition, the basement location was not available due to storm sewer backup from the parking area.

Upgrade EOC to include teleconference pod. Town has a conference call system in place but a suitable conference pod would be beneficial.

Need to look for a location that can be used as a rest station for all site response staff. EOC logistics can then provide food/water refreshment to that specific location. This will be updated in the Flood Response Plan.

Emergency Information Recommendations

Create a frequently asked questions flood form.

Improve internal communications with all staff. Need to ensure all staff receive media releases. Use Town BBM group for quick information burst.

MVCA

Flood forecast for MVCA worked very well. Conservation Authority staff are looking at ways to build redundancies in case something does go wrong to have a more robust system in place to provide good warning system for municipalities.

Data from rain gauges is sent to MVCA office and then sent by text messages to CA staff. Recommend that Town's Flood Coordinator would benefit if they could receive the text messaging alerts first hand. MVCA will investigate this further.

It is recommended that the Conservation Authority and Town, supported by the County, hold a public information session this fall to present information on the event, the response and the aftermath, and to obtain feedback from the public on the nature of the overall response, and the actions that are being taken in the future.