

Grand River Conservation Authority

Report number: GM-12-22-106

Date: December 16, 2022

To: Members of the Grand River Conservation Authority

Subject: Grand River Watershed Flood Warning System

Recommendation:

THAT Report Number GM-12-22-106 – Grand River Watershed Flood Warning System be received as information.

Summary:

A pre-winter Flood Coordinator's meeting was held on November 22, 2022. The program included a review of the flood fan-out system test, as well as a discussion on the roles of the GRCA, Police and municipal Flood Coordinators. Presentations relating to the GRCA flood warning system, current flood message fan-out procedures, explanation of GRCA reservoirs and dikes, dam safety maturity index and communication of flood messages to the public were delivered. A guest speaker, Mark Robinson from the Weather Network delivered a presentation on severe weather in the Grand River watershed and beyond. The meeting wrapped up with the current watershed conditions outlook heading into the winter of 2023. Current long range forecasts suggest warm temperatures to continue in winter and potentially a greater chance of lake effect snow and possibly more mid-winter melts. Municipal Flood Coordinators, Municipal Police, Ontario Provincial Police, Environment Canada, Province of Ontario and GRCA staff attended the meeting. The Grand River Flood Warning booklet is being updated and will be mailed out in early January 2023 to all municipalities, police services and other agencies that participate in the Grand River flood warning system. One reason for initiating a pre-winter meeting is to ensure all contact information is up to date heading into the winter season to be as prepared and organized as possible.

Report:

Flooding has long been a major concern to residents of the Grand River Watershed. Severe widespread rain, extreme localized rain, rapid snowmelt, ice jam flooding and Lake Erie surges are primary causes of flooding in the Grand River Watershed. While most major river floods occur in March and April, serious flooding can still occur any month of the year. It is anticipated that the frequency and severity of flood events will increase as a result of climate change. The Grand River Conservation Authority has undertaken a major program of flood control through the construction of reservoirs and dike systems. While these reservoirs and flood protection works play a significant role in managing floods, they do not eliminate the possibility of flooding.

The primary responsibility for managing a flood emergency rests with the municipality, through its emergency plan. The Grand River Conservation Authority has the following roles during a flood emergency:

- a) Monitoring watershed and weather conditions to predict flooding;
- b) Operating dams and reservoirs to reduce the effects of flooding; and
- c) Issuing flood warning messages.

In the event of a flood, it is important that watershed residents and emergency response personnel be warned in sufficient time to take appropriate action to reduce flood damages and

the threat of loss of life. The Grand River Conservation Authority has developed a “fan-out” flood warning system to provide timely flood warnings and information to municipal officials and watershed residents.

The normal 2022 Flood Coordinator’s meeting was held on February 23, 2022. This meeting was delivered as a virtual meeting using Microsoft Teams software. An in-person meeting was not possible as a result of the COVID-19 restrictions. A second pre-winter Flood Coordinators meeting was delivered as a virtual meeting using Microsoft Teams software on Tuesday November 22, 2022. The purpose of the pre-winter meeting is to ensure contact information is up to date heading into the winter season. In recent years, 2018 and 2020 significant floods occurred during the winter season, highlighting the importance of preparedness heading into the winter season. It’s an example of pragmatic adaptation to climate change. There appears to be a trend to more frequent and severe mid-winter floods, this trend is most likely linked to climate change.

A pre-winter Flood Coordinator’s meeting was held on November 22, 2022. The program included presentations related to a review of the flood fan-out system test, a discussion on the role of the GRCA, Police and Municipal Flood Coordinators, GRCA dams and dikes, communication of flood messages to the public and long range weather forecast for winter 2023. These presentations helped provide context and information to new personnel not familiar with the flood warning system and provided an update to personnel that have previously been involved.

A presentation on GRCA's Dam Management Program, including an explanation of GRCA dams and dikes; review of the Emergency Preparedness Plans for GRCA Dams; explanation of the Dam Safety Maturity Matrix and Evaluation of GRCA's Dam Management program completed in 2022 was delivered, along with the recommendations for future work. Priorities have been identified to continue to deliver this important program to the current standard and outline areas for improvement.

A presentation was delivered highlighting the importance of effective flood communications during floods, reviewing GRCA’s roles and responsibilities and media. Decline in traditional media coverage and increased public engagement and expectations through social media have been considered in GRCA flood communications. Municipal Community Emergency Management Coordinators (CEMCs), police and first responders are GRCA’s primary audience and receive direct communication of key flood action or warning messages. Custom communication tools have been developed for several flood damage centers to better provide municipal staff with flooding information such as West Montrose App for Woolwich Township staff or flood brochures for communities such as Ayr, Drayton, New Hamburg and West Montrose. In addition supplementary communication of flood action or warning messages are provided to municipal staff and public through media outlets, GRCA social media channels and GRCA website.

A guest speaker, Mark Robinson, meteorologist with the Weather Network, delivered a presentation about severe weather events and consequent flooding in south west Ontario. Data suggests the frequency of extreme events occurrence is increasing in southern Ontario. Thunderstorms are a good indicator for potential flooding and recent data shows High Precipitation thunderstorms are increasing. Some examples included the July 2013 extreme storm event in Toronto resulting in significant amount of damages and recent lake effect snow in Buffalo area. In summary, the potential consequences of climate change include increases in the frequency and magnitude of severe precipitation events and consequent flooding.

A total of 135 attendees participated in the November 22, 2022 virtual Flood Warning Emergency Planning meeting. Participants included members of the following organizations and agencies: Flood Coordinators and Police from watershed, municipalities, Ontario Provincial

Police, Environment Canada, Province of Ontario and GRCA staff. The following table compares the attendances at the 2021 and 2022 meetings.

Table 1 Attendance for 2021 and 2022 Municipal Flood Coordinators Meetings

Agencies Represented	2022 Nov. Attendance	2022 Feb. Attendance	2021 Dec. Attendance	2021 Feb. Attendance
Municipal Flood Coordinators	56	47	65	61
Municipal Police	4	3	2	6
Ontario Provincial Police	3	1	3	1
Provincial Ministries	10	4	6	2
Water Survey – Environment Canada	5	1	3	0
Other Conservation Authority staff	13	6	12	10
News Media	1	0	0	0
GRCA Staff	38	36	44	38
Other	5	2	3	4
Total Persons in Attendance	135	100	138	122

To ensure a strong communications link, the Flood Warning System was tested twice this year. This year's test was run on February 15, 2022 and a second new test was run on November 15, 2022. All municipalities received the message and all but 2 confirmed receipt of the test message. All police services received the message. Follow-ups were made with those municipalities that did not confirm receipt of the test message.

The Flood Warning System "Booklet" has been updated to reflect changes brought forth as a result of the Flood Warning Test and the Flood Coordinator's meeting and will be issued in early January 2023 to the following:

- a) Clerks of all municipalities in the Watershed including Regional and County Governments;
- b) Members of the Grand River Conservation Authority;
- c) Police Services listed as part of the flood message fan-out system;
- d) Radio and Television stations in the watershed;
- e) Daily and weekly newspapers in the watershed;
- f) Authority operating personnel; and
- g) Provincial and Federal Agencies listed in the Flood Warning System Booklet.

Financial Implications:

Not Applicable.

Other Department Considerations:

Not Applicable.

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Figure 1 Map of Upper Tier Municipalities Receipt and Confirmat of Flood Test Message

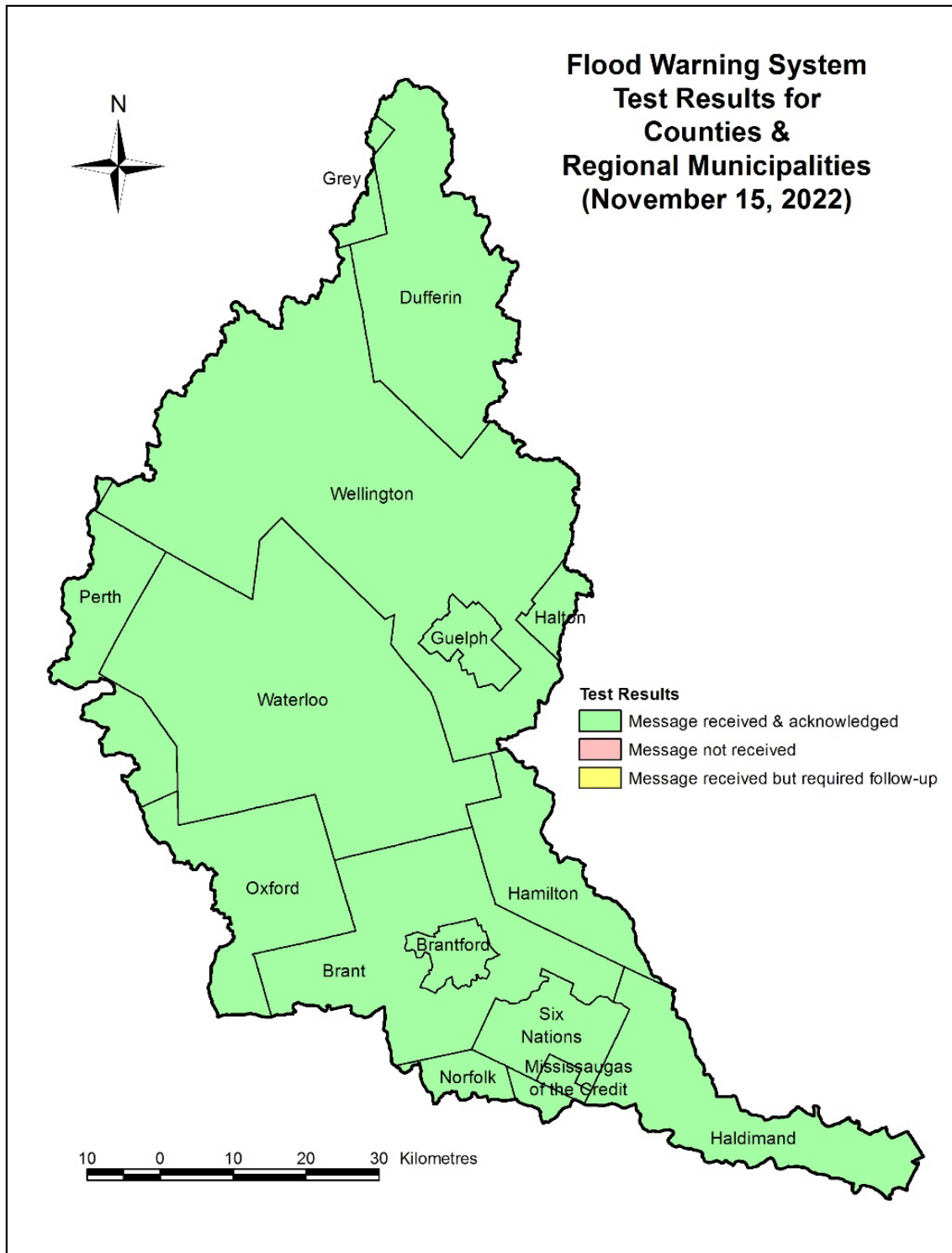


Figure 2 Map of Lower Tier Municipalities Receipt and Confirmat of Flood Test Message

