



TOWN OF MINTO

DATE: July 26, 2017

REPORT TO: Mayor and Council

FROM: Mike McIsaac, Roads & Drainage Foreman; Bill White
C.A.O. Clerk

SUBJECT: Municipal Drain Update; Watershed Master Plan

STRATEGIC PLAN:

- 9.7 Promote environmentally friendly development through subdivision and site plan control such as naturalized stormwater management, low maintenance landscaping using native species, and energy and water preservation techniques that enhance design and improve the cosmetics of the community.
- 10.0 Support programs that maintain Minto's strong agricultural identity, enhance agricultural work, and protect and restore the natural environment given Minto's location in the heartland of Ontario surrounded by farmland and acknowledging that farming and a healthy natural environment are inextricably linked,

BACKGROUND:

The impact of the June 23, 2017 flash flood on Harriston has been at the forefront of discussion due to the number of homes and businesses damaged and unprecedented rainfall received. Results of the agency debriefing July 26 will be reported to Council and the public in the weeks to come. Based on rainfall amounts and flow data from the watershed, only minor impacts were likely if the rain stopped at 4:00am. In the two hours after 4:00am rainfall was more than double what had previously occurred. This appears to have caused the initial storm sewer backup followed by overland flooding later in the morning.

The Town and the Conservation Authority will reach out to the public with information on the event and the resulting response this fall. Both agencies briefed the Province on the flood and are hopeful it will be designated so that landowners can apply for Disaster Recovery Assistance for Ontarians. The public response to the event has been fantastic as people take action to repair their homes and businesses, and the prospect of Provincial relief of some will keep momentum building.

If designated, the Disaster Recovery Assistance for Ontarians can apply to "the main premises and key equipment and inventory" of small owner operated farms for items not covered by insurance. The kinds of costs covered can include emergency evacuation/relocation, farmland clean-up/restoration and disinfection/disposal, certain equipment, feed, seed and livestock losses. Details are found at this link

<http://www.mah.gov.on.ca/Page13744.aspx> .



The impact of the June 23 rainfall on farmland was dramatic. The wet spring and early summer coupled with unprecedented rain that day caused water flow at a volume that damaged fields, woodlots, streams and drains. Damage is likely in road side catchbasins, hickenbottom drains and other drainage features within 115 consecutively named municipal

drains, and between 30 and 40 named drains. A few farmers have come forward with specific problem areas but a lot of damage may not be seen until fall and spring when crop and grass cover on fields and roadside ditches is clear. The adjacent picture shows a tile inlet which would have originally been at grade in the ditch. Undermining from heavy flows eroded away the ditch bottom so that the inlet is now well above grade so that water will no longer flow into the tile. In addition, water pressure bent the tile upwards inside so that it will need replacement.



The Town's Drainage Engineer Dietrich Engineering advises repairing municipal drains from flood damage will likely be normal maintenance work for which all the assessed owners will be responsible.

This report provides a summary of the status of municipal drains under process through the Drainage Act, and looks at the Maitland Watershed with a view to improved planning to attempt to mitigate flood risk.

COMMENTS:

Some landowners are frustrated that municipal drain work under the Drainage Act was not finished, and are concerned flooding impact on farmland was worsened as a result. Municipal drains are typically designed for 1:2 year storm, so a 1:100 year storm like that experienced June 23 will likely overwhelm and damage these systems whether maintenance work was complete or not. However, this has not been proven by engineering analysis on individual drains. In some cases floodwaters could have flowed over the system and did not damage underlying infrastructure.

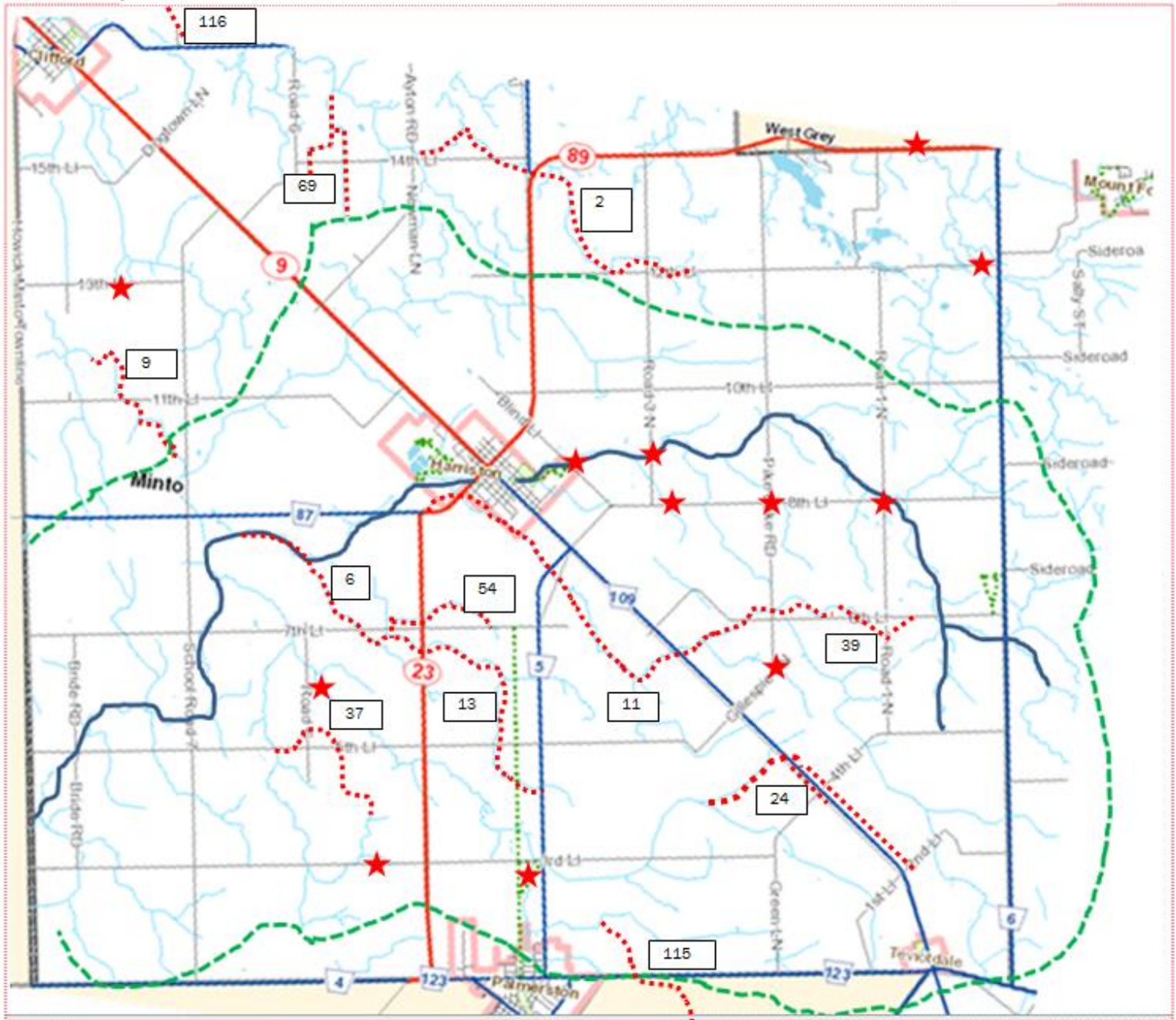
The Drainage Act is one of the oldest laws in Ontario. Municipal Drains are not owned by the Town, but are owned by landowners' subject of a drain assessment. When maintenance or repairs are needed, the Drainage Act is designed to bring this forward in a fair way allowing input by owners who pay for the work. Agencies like the Conservation Authority and Department of Fisheries also have permit and approvals processes to be followed. The Town is required to follow procedures set in the Act, and to abide by the advice of its Engineer. The following summarizes the status of current active municipal drains in Minto:

- Drain 11 (Dredge Creek and Maitland River south of Harriston) was submitted in November 2011 by Harold Fisher. There have been numerous on-site meetings and meetings at the Town office over the years. This is a Section 4 Drainage Act approval as there is no municipal drain technically serving upper stream landowners. Dietrich Engineering has been assessing this design for many months because it involves the main channel of the Maitland River to achieve a proper outlet for the area. The Conservation Authority, Ministry of Natural Resources and Department of Fisheries all have issues to be addressed during this work. Staff met with Dietrich Engineering and the Conservation Authority on flooding and drainage issues in Minto July 14. For Drain 11 we set a process by which the engineer's report will be available this fall. In light of the recent flood, agencies are cooperating with Dietrich and the Town to see if work can be added, outside the municipal drain requirements, to improve the downstream flooding situation for Harriston. This has been a long on-going issue, but is very complex due to rules surrounding work in the Maitland River.
- Drain 24 (CR 109 2nd Line to 4th Line and beyond) petition submitted March 2012, Dietrich hired as engineer; Work still pending
- Drain 69 (13th and 14th Concessions; from Ayton Road to Road 6 North) is subject to a Section 78 drain upgrade starting in 2014. The engineer's report was completed and design prepared and presented to property owners in January of 2016 but some property owners had issue with amounts assessed to them, and the design was modified to try to resolve this. Issues have come forward from the Department of Fisheries and Ministry of Natural Resources regarding the red sided dace minnow which is an endangered species. Dietrich Engineering plans to have a revised report and assessment schedule ready for this fall for circulation to affected owners, agencies, and then approval by Council if there are no concerns. It is the Town's hope this work will be ready to go ahead between July and September of 2018.
- Drain 39 (6th Line at Road 1N) went to Council May 3, 2016 when Dietrich Engineering was engaged to prepare the required report under the Drainage Act.
- Drain 116 (Part Lot 23, Concession 18) started with complaint letter August 2015 then formal petition in September 2016; went through the entire court of revision process in 2016 with work tendered last fall and to be completed this year. The process under the Act took about two years.
- Drain 2 (Road 3 North, 12th Line to 12th Line, Ayton Road) went to Council September 6, 2016 when Dietrich Engineering was again engaged to prepare the engineer's report.
- Drains 37 (5th Line and Road 6) and 115 (CR 123 Concession 1 Lots 16, 17 & North Perth) went to Council with revised assessment January 24, 2017; work is now done
- Drains 6, 13 and 54 (County Road 5 to School Road 7; 7th Line to County Road 87) were subject to an on-site meeting March 17, 2017 and a meeting at the Town office May 19, 2017 both of which were well attended by various landowners. At the June 6, 2017 Council meeting Dietrich Engineering was appointed to deal with this Section 78 drain upgrade. The next step is the engineer's report which we expect to see this fall. Under

Drainage Act procedures this report will be circulated to assessed landowners before it goes to Council.

- Drain 9 (School Road 7 to Lot 39 Concession 11) went to Council May 2, 2017 when Dietrich Engineering was again engaged to prepare the engineer's report.

Preliminary calculations are that about 27,725 acres of land are contributing to the water flows of this section of the Maitland River, approximately 9,500 acres of this is Wellington North. The map below shows the Maitland River watershed and the approximate location of each of the drains noted above with formal processes underway or just completed. Other locations known to have flood damage are shown as stars.



There are nearly 115 municipal drains within rural boundaries and 24 active or recently completed Drainage Act procedures underway. Flood damage could take some time to move through Drainage Act procedures and to complete repairs under the act.

The Town should clarify with the Province whether the cost for flood repairs to municipal drains for farmers would be eligible under the Disaster Recovery Assistance for Ontarians. If there is major damage to municipal drains, the Town and the County would be assessed significant cost for municipal drain maintenance as the road authority. It is not clear whether this would be eligible under Provincial relief programs for municipalities.

Watershed Planning

With the possibility of damage in many drains it is an opportune time to assess the North Maitland Watershed to look at rural flood retention options that might help reduce flooding in Harriston. For example perhaps a municipal drain could be re-designed or a road or bridge structure altered to store water upstream of Harriston during a flood. This would protect the urban area, while ensuring farming can continue and/or is compensated if damage occurs. The National Disaster Mitigation Program may be a potential source of funding for this kind of study, including any capital work the study would identify.

The NDMP is a 5-year, \$200 million federal program intended to reduce the impact of natural disasters on Canadians by focusing investment on significant recurring flood risk and cost, and advancing work to facilitate private residential insurance for overland flooding,

Under the program, the federal government funds up to 50 per cent of the costs of eligible flood mitigation projects in four streams:

1. Risk Assessments
2. Flood Mapping
3. Mitigation Planning
4. Investments in Non-structural and Small Scale Structural Mitigation Projects

By assessing the North Maitland River Watershed in Minto and Wellington North a watershed management plan could involve all four elements of the program.

The Province can apply to the federal government for this funding, but Ontario “welcomes proposals from municipalities and conservation authorities”. A North Maitland Watershed Plan would include flood plain mapping in Harriston (and now perhaps the entire watershed), and projects that might be completed upstream and downstream of Harriston to mitigate flooding. Some of these projects will tie into municipal drains.

There are six current municipal drain projects that feed into the Maitland, including Drain 11 and Drain 6 south of Harriston that could include work within the flood plain, beyond that normally required for a drain, to possibly help water flow out of the urban area quicker.

FINANCIAL CONSIDERATIONS:

The 2017 budget includes \$32,000 for flood plain mapping for Harriston. In 2014 the Town spent over \$20,000 on additional flood monitoring equipment in the Maitland Watershed so that there was better data to feed into the eventual flood plain model. Having the added monitoring in place produced a tremendous amount of data from June 23 that can be fed into the flood plain model.

Triton Engineering finished survey field work in 2016 to tie in with new Provincial aerial mapping released in 2016 (SWOOP) to create an accurate base map to apply the flood plain model. Test modelling earlier this year by the Conservation Authority found discrepancies between the SWOOP mapping and the infield survey work. Unfortunately this means the flood plain model would have to include a large margin of error producing a flood line on base maps that is still not accurate.

Before the June 23 flood, Triton obtained quotes on aerial photography, including lidar scanning, to produce an accurate base map to tie in the survey work and then apply flood modelling. The flood lines will be very accurate because they calibrate with in field survey work and now data from the actual storm. To assist with a North Maitland Watershed Plan it is a suggested quote is obtained to include the entire Maitland within Minto limits. The new aerial photography with lidar, expanded modelling and the North Maitland Watershed Plan all may be eligible under the National Disaster Mitigation Program.

The total ballpark cost for all the aerial photography, modelling and watershed plan could be in the range of \$120,000 to \$150,000.

RECOMMENDATION:

That Council receives the Road and Drainage Foreman and C.A.O. Clerk's July 26, 2017 report Municipal Drain Update; Watershed Master Plan and approves an application to the Province for Flood Mapping with lidar scanning, Mitigation Planning analysis within the North Maitland River Watershed under the National Disaster Mitigation Program subject to Council receiving a terms of reference and approximate costing for the Master Plan before submission.

Mike McIsaac Roads & Drainage Foreman

Bill White C.A.O. Clerk