The TOWNSHIP of WAINFLEET

THE CORPORATION OF THE TOWNSHIP OF WAINFLEET
SPECIAL MEETING OF COUNCIL AGENDA
OCTOBER 2, 2025 – 5:00 P.M.
COUNCIL CHAMBERS

C15/25

1. Call to Order

2. Land Acknowledgement Statement

3. Disclosures of Interest and the General Nature Thereof

4. Public Meeting

a) Ellsworth Drain Consideration Meeting

5. By-laws

a) By-law No. 036-2025 being a by-law to provide for drainage works in the Township of Wainfleet in the Region of Niagara (Ellsworth Drain) – Provisional Adoption Only.

6. By-law to Confirm the Proceedings of Council

a) By-law No. 037-2025 being a by-law to adopt, ratify and confirm the proceedings of the Council of the Corporation of the Township of Wainfleet its Special Meeting of Council held October 2, 2025

7. Adjournment

DRAINAGE STAFF REPORT **DSR-010/2025**

TO: Mayor Grant & Members of Council

FROM: Mark Jemison, Drainage Superintendent

DATE OF MEETING: October 2, 2025

SUBJECT: Ellsworth Drain Engineering Report Update

RECOMMENDATION(S):

THAT Drainage Staff Report DSR-010/2025 respecting the Ellsworth Drain Report be received; and

THAT a by-law be given two readings to provisionally adopt the Ellsworth Drain Engineer's Report dated August 8, 2025, prepared by RJ Burnside & Associated Limited, under Section 4, Chapter D. 17 of the *Drainage Act, R.S.O. 1990;* and

THAT Staff be directed to advance the Ellsworth Drain to that of the Court of Revision, as per Section 46(1) of the *Drainage Act, R.S.O. 1990;* and

THAT Councillor Anderson, Councillor MacLellan and Councillor Metcalfe representing Haldimand County be appointed as members to the Aldrey Drain Court of Revision and Mayor Grant be appointed as an alternate member to be tentatively scheduled for October 29, 2025, at 4:00 p.m.

EXECUTIVE SUMMARY:

The *Meeting to Consider* provides property owners with an opportunity to ask questions of the engineer or express any concerns over the Engineer's Report related to design or any gross errors. Staff are recommending that the Engineer's report be adopted under a provisional By-law and proceed through the Drainage Act Process.

BACKGROUND:

The site meeting with impacted property owners was held on February 12, 2020. Following survey and design work, two information meetings were held on July 26, 2022 and May 16, 2024. The final report was filed with the Township on August 8, 2025. The Meeting to Consider provides property owners with an opportunity to ask questions of the engineer or express any concerns over the Engineer's Report related to design or any gross errors.

At this meeting, Council will be given a presentation by the Engineer of Record, Ed DeLay, P. Eng., of RJ Burnside, outlining the project.

The property owners who were notified under Section 41(1) & 41(2) of the Drainage Act that choose to attend are to be provided an opportunity to ask questions of the Engineer or any

concerns over the Engineer's Report related to design or any gross errors in the report. Should the Meeting to Consider reveal any errors in the Engineer's Report, Council may refer the report back to the Engineer for reconsideration.

However, under no circumstances is Council to refer the Report back to the Engineer regarding assessments. Concerns related to assessment are a function of the Court of Revision, with said process to occur within 60 days of the original *Meeting to Consider*.

Pending adoption of the provisional By-law, a Court of Revision shall be held as per Section 97 of the Drainage Act to address concerns with assessments. The Court of Revision shall be held on a day not earlier than twenty, but not later than thirty days, from the date the sending of the copies of the provisional by-law to the assessed properties was completed.

OPTIONS/DISCUSSION:

1. Staff be directed to advance the Ellsworth Drain Engineer's Report to that of the Court of Revision as per Section 46(1) of the Drainage Act, R.S.O. 1990. (Recommended)

2. Do not move forward with the Engineer's Report. (Not recommended).

FINANCIAL CONSIDERATIONS:

The engineer has estimated the Township's share of project costs at $ 394,860 out of a total of $1,100,000. The Township previously allocated $220,000 toward this work through the 2022 and 2023 Capital Budgets for the replacement of the road crossings at Zion and Smith Roads. As a result of this, the 2024 year-end reporting for capital project PW.1 had a surplus of approximately $155,000, which was unutilized and remained in reserves. The project costs outlined in this report will be incorporated into the 2025 PW.1 capital project budget and funded by the Infrastructure Reserve.

OTHERS CONSULTED:

☐ Chief Administrative Officer
☒ Clerks
☒ Community & Development Services
☐ Fire
☒ Finance
☒ Communications
☐ Operations
☐ Other:

ATTACHMENTS:

Appendix A – Ellsworth Drain Report – RJ Burnside

Respectfully submitted by,

Mark Jemison
Drainage Superintendent

Approved by,

Mallory Luey
Chief Administrative Officer

APPENDIX “A”

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Engineer's Report
Ellsworth Municipal Drain

Township of Wainfleet
31940 Highway 3
PO Box 40
Wainfleet ON
L0S 1V0

R.J. Burnside & Associates Limited
1266 South Service Road, Suite C2-1
Stoney Creek ON L8E 5R9 CANADA

August 2025
300050664.0000

Disclaimer

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0	Yes	Yes	Fisheries and Oceans Canada (DFO)
0	Yes	Yes	Ontario Ministry of Agriculture, Food & Agribusiness (OMAFA)
0	Yes	Yes	Ministry of the Environment, Conservation and Parks (MECP)

Record of Revisions

Revision	Date	Description
1	February 28, 2025	Draft Submission to the Township of Wainfleet and Reviewing Agencies
2	August 8, 2025	Final Submission to the Township of Wainfleet and Reviewing Agencies

R.J. Burnside & Associates Limited

Report Prepared By:



Edward M. DeLay, M.Eng., P.Eng.
Water Resources Engineer
ED:cvh

050664 Ellsworth Municipal Drain.docx

Executive Summary

Authorization

This report is being prepared in response to an appointment by the Township of Wainfleet, Wainfleet Council, from their September 10, 2019 meeting, to provide an improvement to the existing Ellsworth Municipal Drain in accordance with Section 78 of the Drainage Act, R.S.O. 1990.

Objective and Recommendations

The objective of this report includes the following:

- Determine a drainage solution to alleviate the ponding that currently takes place following storm events and snowmelt within the watershed area.
- Provide an improved legal surface and subsurface drainage outlet for properties within the watershed.
- Enhance the quality of the stormwater leaving the watershed area.

This report recommends the improvement of the existing Ellsworth Municipal Drain between Marr Road (Lot 34, Concession 5, Township of Wainfleet, Niagara Region) and Wainfleet-Dunnville Townline Road (Lot 1, S.F.R. Concession, Geographic Township of Moulton, County of Haldimand). Upstream contributing lands and roads in the County of Haldimand have also been assessed.

Summary of Assessments

A summary of the assessments for this project are listed in Table 1 below.

Table 1: Summary of Assessments

Description	Assessment ($)
Canada Owned Lands	0
Ontario Lands	41,690
Municipal Lands	177,040
Privately Owned Non-Agricultural	134,020
Privately Owned Agricultural – Grantable	380,800
Privately Owned Agricultural – Non-grantable	0
Special Non-Proratable Assessments	366,450
Total Estimated Assessments	**1,100,000**

Acknowledgements

R.J. Burnside & Associates Limited (Burnside) would like to acknowledge the assistance and cooperation of the property owners directly involved with this project, and the Council and Staff from the Township of Wainfleet, in particular Mark Jemison, Drainage Superintendent.

We would also like to thank staff from the Niagara Peninsula Conservation Authority (NPCA), Fisheries and Oceans Canada (DFO), and the Ministry of the Environment, Conservation, and Parks (MECP).

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Nomenclature

General

ac – acre (0.4047 ha)
BSWI – buried surface water inlet
CB – catchbasin
CCTV – closed circuit television
CDT – concrete drain tile
CSP – corrugated steel pipe
c/w – complete with
dia. – diameter
DICB – ditch inlet catchbasin
d/s – downstream
ea. – each
FL – fence line
H – horizontal
ha – hectare (2.471 ac)
HDPE – high density polyethylene
BJB – buried junction box
km – kilometre
LS – lump sum
m – metre
mm – millimetre
m^2 – square metre
m^3 – cubic metre
OB – observation box
o/s – offset
PDT – plastic drainage tubing

Other

CA – Conservation Authority
DFO –Fisheries and Oceans Canada
MECP – Ministry of Environment, Conservation and Parks
MTO – Ministry of Transportation
NRCS – Natural Resources Conservation Service
OMAFA – Ontario Ministry of Agriculture, Food & Agribusiness
OMAFRA – Ontario Ministry of Agriculture, Food and Rural Affairs
SCS – Soil Conservation Service
PL – property line
ROW – right of way
S & I – supply and install
Sta. – station (chainage)
SWI – surface water inlet
SWWSP – smoothwall welded steel pipe
t – tonne (2,205 pounds)
u/s – upstream
V – vertical

1.0 Project Authorization

This report is being prepared in response to an appointment by the Township of Wainfleet Council, from their September 10, 2019 meeting, to provide an improvement to the existing Ellsworth Municipal Drain in accordance with Section 78 of the Drainage Act, R.S.O. 1990.

1.1 Request for Improvement by Owners

Ellsworth Municipal Drain

The request for improvement was submitted by the Township of Wainfleet, to investigate improvements for the existing drain.

1.2 Engineer's Report

The proposed works and costs contained herein are intended to reflect the requirements of the stakeholders and are based on information gathered during field survey, as well as at the property owner meetings and follow up discussions. Details of the proposed work are described in this Report and its appendices.

2.0 Background Information

2.1 Municipal Drain History

Burnside conducted a thorough review of all historical documentation available from the Township of Wainfleet pertaining to this watershed, as well as other drains with abutting watersheds, and this information is summarized in Table 2 below.

Table 2: Watershed Report Summary

Year	Provisions
1956	**Ellsworth Municipal Drain (Open Drain)** • The municipal drain was constructed under the Drainage Act through By-law No. 112 (Township of Wainfleet), under a report by H.H. Todgham, dated May 10, 1956. • This report provided for the construction under the Drainage Act of 6,405 m of channel beginning in Lot 8, Concession SFR (Haldimand County, Geographic Township of Moulton) and outletting in Lot 34, Concession 5 (Township of Wainfleet). Of the 6.4 km of Drain, approximately 3.9 km is located in the Township of Wainfleet.

Year	Provisions
1992	**Ellsworth Municipal Drain (Open Drain, Relocation)** • A report under the Drainage Act by J. Bryon Wiebe, P.Eng. dated July 6, 1992. • This report provided for the relocation of approximately 572 m of channel and the installation of a culvert crossing on the Aarts property (Roll No. 9-167), located immediately upstream of the Highway 3 crossing in the Township of Wainfleet. • **This report was not adopted by Council.**
1927	**Andrew Shauntz Municipal Drain (Open)** • A report by J.R. Scott, Engineer for the Township of Wainfleet under the Ditches and Watercourses Act, dated November 29, 1927. • This report provided for the construction of approximately 1,189 m of channel beginning on Sider Road at Lot 36, Concession 4 and outletting to the Ellsworth Municipal Drain between Lots 34 & 35, Concession 5 (Township of Wainfleet).
1954	**Andrew Shauntz Municipal Drain (Open)** • A report under the Drainage Act by J.R. Scott, P.Eng., dated July 23, 1954. • This report provided for the construction of approximately 1,372 m of channel beginning with an extension into Lot 36, Concession 4 and outletting to the Ellsworth Municipal Drain between Lots 34 and 35, Concession 5 (Township of Wainfleet).
1956	**Fred Buckner Municipal Drain (Open)** • A report under the Drainage Act by H.H. Todgham, dated September 24, 1956, and constructed through By-law No. 18 (Haldimand County, Geographic Township of Moulton). • This report provided for the improvement of the former Fred Buckner Award Ditch, consisting of ap. 2,164 m of channel beginning in Lot 9, Concession 2 Cross and outletting to the Ellsworth Municipal Drain between Lot 1, Concession SFR (Haldimand County, Geographic Township of Moulton).

As described in Table 2, above, the Ellsworth Municipal Drain was originally constructed under a report by H.H. Todgham, dated May 10, 1956. We believe the Ellsworth Municipal Drain and the other municipal drains within its watershed have been maintained since their last reports listed above, however, no additional improvements have been undertaken.

2.2 Existing Conditions

Surface water from the watershed generally flows to the northeast, outletting in Lot 34, Concession 5, into the Big Forks Municipal Drain.

Channel gradients within the drain are very flat (~0.10% or less) and typically controlled by their downstream water level in the Big Forks Municipal Drain. Deadfalls and other obstructions such as beaver dams cause immediate impact accordingly.

The capacity of the existing drainage system has been reviewed and is summarized in Appendix H.

2.3 Contributing Watershed

2.3.1 Watershed Area

The total watershed area contributing to the Ellsworth Municipal Drain is approximately **593.4 ha**.

The watershed area was delineated through the examination of topographic contour mapping data with computer aided drafting (CAD) and geographic information systems (GIS) software, the examination of existing municipal drain reports, and the review of field survey and observations. This watershed area has been included as part of this report.

2.3.2 Land Use

Land use within the watershed area is divided approximately as shown in Table 3.

Table 3: Land Use Summary

Land Use	Affected Area (ha.)	Land Use Area Ratio (%)
Agricultural	361.0	60.7
Bush	180.3	30.3
Sub-Urban Residential	26.1	4.4
Road Right-of-Way (ROW)	22.1	3.7
Commercial/Industrial	3.3	0.6
Water Features	1.9	0.3
Total	**594.6**	**100**

Based on landowner input, no areas have been tile drained into and out of the watershed. Therefore, there are no changes to the overall contributing area.

2.3.3 Surrounding Watersheds

Sub-Watersheds

The proposed the Ellsworth Municipal Drain watershed boundary includes the following contributing drainage systems constructed under the Drainage Act:

- Andrew Shauntz Municipal Drain to the south and east, outletting in Lot 35, Concession 5 (Township of Wainfleet)
- Fred Buckner Municipal Drain to the south and west, outletting in Lot 1, S.F.R. Concession (Haldimand County, Geographic Township of Moulton)

Exterior Watersheds

The proposed the Ellsworth Municipal Drain shares a contiguous watershed boundary with the following drainage systems:

- Big Forks Municipal Drain to the east (Also the outlet for the Ellsworth Municipal Drain).
- South Forks Municipal Drain to the north and west
- North Hutchison Municipal Drain to the west
- McCallum Municipal Drain to the south and east
- East Kelly Municipal Drain to the south and east, including the following contributing drains:
  - North Branch of the East Kelly Municipal Drain
  - Thomas Booker Drain
  - Crow Road – East Kelly Drain
  - North Hutchinson Drain South

Modified Watershed Boundaries

As the watershed boundary was investigated as part of this report, shared boundaries were modified from those shown in the most recent report based on our investigation, including the results of computer simulations and field survey. The surrounding watersheds may not correspond to the revised watershed on individual properties.

The following external watershed boundaries were modified as part of this report:

- McCallum Municipal Drain
- East Kelly Municipal Drain
- North Hutchinson Municipal Drain
- South Forks Municipal Drain

To address these changes to the watershed boundary for the drain mentioned above, the preparation of a letter under Section 65 of the Drainage Act for a subsequent connection / disconnection or a report under Section 76 for an updated maintenance schedule is at the discretion of the Township of Wainfleet.

These options should be pursued when the existing maintenance schedule is no longer fair and equitable for that watershed; however, its development can be cost prohibitive when weighed against savings for maintenance. An alternative measure would be to use the existing schedule until such a time when a report under Section 78 of the Act is required for improvement to the drain and incorporating a new maintenance schedule as part of the project.

2.4 Soils Summary

A soils investigation was performed using AgMaps, an online interactive mapping system developed by the Ontario Ministry of Agriculture, Food, and Agribusiness.

Ontario Soils Survey

The Ontario Soils Survey mapping indicates that the predominant soil types within the watershed area are **Tavistock Loam** in the downstream sections within the Township of Wainfleet, while the upper watershed in the Geographic Township of Moulton is dominated by **Wauseon Loam**.

- **Tavistock Soil (TVK)** – 40 to 100 cm loamy textures over silty clay. Nearly flat to very gently sloping topography. Imperfect to poor natural drainage. Non-stoney.
- **Wauseon Soil (WUS)** – 40 to 100 cm sandy textures over silty clay. Nearly flat topography. Poor natural drainage.

Hydrologic Soil Rating (HSG)

The dominant HSG rating in the watershed is Class C, suggesting lower infiltration rates and higher runoff potential. Class A soils also represent a significant area in the watershed, suggesting higher infiltration rates and lower runoff potential.

Agricultural Capability Rating

Based on the characteristics of the soils and their potential for future agricultural use, the Canada Land Inventory (CLI) provides Soil Capability Classification of Agriculture for lands across the country.

The soils within the watershed area have a typical agricultural capability rating of Class 2, indicating moderate limitations on use for crops, with restrictions for excess water (W) and adverse topography (T).

3.0 On-Site Meeting

The on-site meeting for the Drain was held on February 12, 2020 at the Wainfleet Fire Hall.

Attendees who signed the attendance record at the meeting are listed in Table 4 below.

Table 4: On-Site Meeting Attendees

Name	Position
Stephen Marr	Property Owner
Albert Rumph	Property Owner, 2390364 Ontario Inc.
Lenny Aarts	Property Owner & Wainfleet Drainage Advisory Committee Member
Ken Hessels	Wainfleet Drainage Advisory Committee Member
Troy and Natalie Sider	Property Owner
Jon Armstrong	Property Owner
Mr. Williams	Property Owner
Kevin Gibson	Mayor, Township of Wainfleet
William Coulson	Township of Wainfleet
Sherri Van Vliet	Councillor, Township of Wainfleet
Mark Jemison	Drainage Superintendent, Township of Wainfleet
Richard Nan	Manager of Operations, Township of Wainfleet
Natalie Connell	Burnside
Sid Vander Veen	Burnside

3.1 Summary of On-Site Meeting

The existing drainage conditions were discussed, and Steve Marr expressed interest in the continued maintenance of the Drain.

Issues of erosion and slumping, deepening, and structures were discussed.

As a result of the meeting, it was determined that the primary purpose of this report is to address bank slumping, cleanout, checking structures, investigate deepening, new assessment and maintenance schedules.

3.2 NPCA Meeting

A follow up meeting was held with Jason Culp, Supervisor, Permits and Compliance of NPCA on September 30, 2020 held at the Wainfleet Community Centre.

Table 5: NPCA Meeting Attendees

Name	Position
Jason Culp	Supervisor, Permits and Compliance, NPCA
Mark Jemison	Drainage Superintendent, Township of Wainfleet
Natalie Connell	Burnside
Sid Vander Veen	Burnside

Options were discussed to address channel erosion at the mobile home park, in addition to concerns with existing and proposed crossings. The locations of existing wetlands and the addition of channel buffers were also discussed.

4.0 Preliminary Investigations

4.1 Soils Investigation

None of the property owners indicated adverse subsoil conditions in the area near the proposed drain installation; therefore, no soil investigation was undertaken as part of this project.

4.2 Utilities Investigation

A utilities investigation was undertaken during the design stage to determine possible elevation conflicts prior to the time of construction. The following utilities were located in the area of the proposed drain:

- **Enbridge gas lines** are located on Forks Road, Zion Road, and Smith Road. Special attention to this crossing will be required by Enbridge, who must be on-site during construction.

The Drain has been designed with input from the governing utilities to ensure adequate vertical and horizontal separation between the drain and the utilities of concern.

All public and private utilities shall be located by the Contractor prior to the construction of the proposed drain.

5.0 Design Criteria and Engineering Considerations

The applicable sections of the “A Guide for Engineers Working Under the Drainage Act in Ontario” (Publication 852), and the applicable sections of the “Drainage Guide for Ontario” (Publication 29), both of which were published by the Ontario Ministry of Agriculture, Food, and Rural Affairs, were used to determine and supplement the design considerations for this drain.

5.1 Design Summary

A design summary has been included in Appendix H.

5.2 Design Considerations for Water Quality

The loss of sediment and nutrients from cropped land is a major concern to water quality in Ontario. Therefore, this design has incorporated several features to minimize these impacts including:

- Riffle and sediment basins to control channel gradient and retain water and sediment.
- Vegetated buffer strips act as both a minimum setback distance for agricultural work, as well as a physical barrier for sediment laden runoff entering the channel.
- Rip-rap erosion protection along banks susceptible to erosion to reduce channel degradation.
- Permanent culvert stilling basins to dissipate higher outlet velocities.
- Sediment control structures constructed with filter socks and rock check dams to promote sediment deposition.

Additional details on the water quality features included in this report are provided in Appendix H.

6.0 Environmental and Fisheries Considerations

When a new Engineer's report is prepared that could affect an existing Municipal Drain, natural watercourse, wetland, or other environmental features, a review of the work is required. Subsequent approvals and/or project requirements must be obtained from the applicable agency.

The preparation of this report includes correspondence with the Ministry of the Environment, Conservation and Parks (MECP), the Fisheries and Oceans Canada (DFO), and the Niagara Peninsula Conservation Authority (NPCA), which have been summarized in Appendix G.

7.0 Stakeholder Meetings and Milestones

In addition to the on-site meeting, two meetings were organized with the stakeholders involved with this project. At both meetings, Burnside presented the preliminary proposed design, cost estimate and assessment schedules and gathered input and comments from the stakeholders.

These information meetings with stakeholders are not a requirement under the Drainage Act. Their purpose is to receive feedback regarding the proposed drain and its associated costs prior to the preparation and submission of a final report.

7.1 2390364 Ontario Inc. Property

Following a discussion between Township of Wainfleet and Burnside staff regarding the proximity of a dwelling on the 2390364 Ontario Inc. property to the drain, work was completed by the Drainage Superintendent in November 2020 to address bank erosion through regrading and erosion protection under drain maintenance.

Figure 1: Temporary channel grading and erosion protection



7.2 Information Meeting No. 1

An information meeting for the proposed drain was held on July 26, 2022 at the Firefighters Memorial Community Hall, 31907 Park Street in Wainfleet.

Attendees who signed the attendance record at the meeting are listed below in Table 6.

Table 6: Information Meeting No. 1 Attendees

Name	Position
Stephen Marr	Property Owner
Albert Rumph	2390364 Ontario Inc., 009-173-00
Leo Gao	Address not recorded
Andrew Taylor	Property Owner
Vivian Brown	Property Owner
Holly Travis	Property Owner
Jordan Barker	Address not recorded
John Homan	Address not recorded
Mark Jemison	Drainage Superintendent, Township of Wainfleet
Sid VanderVeen	Burnside
Ed DeLay	Burnside

The proposed design presented for the drain included approximately 3,923 m of channel works. The watershed boundary, estimated costs, design, allowances and assessments were discussed with all meeting attendees.

Following this meeting, the Drainage Superintendent was available to the property owners not in attendance for information on the progress of the project.

7.3 2390364 Ontario Inc. New Property Owner Meeting

An additional meeting regarding the proposed drain was held on May 10, 2024 at the Township of Wainfleet office, located at 31940 Highway 3 in Wainfleet.

The purpose of this meeting was to provide an update to Mr. Petrus, the new owner of the 2390364 Ontario Inc. property and discuss specific requirements for that property to be incorporated prior to the second information meeting.

7.4 Information Meeting No. 2

An additional information meeting for the proposed drain was held on May 16, 2024 at Firefighters Memorial Community Hall, 31907 Park Street in Wainfleet.

The purpose of this meeting was to provide an update to landowners, reviewing agencies, and the NPCA on project progress and design changes.

Attendees who signed the attendance record at the meeting are listed below in Table 7.

Table 7: Information Meeting No. 2 Attendees

Name	Position
G.& P. Robson	Property Owner
Leonard Aarts	Property Owner
Lenny Aarts	Property Owner & Wainfleet Drainage Advisory Committee Member
Ken Hessels	Wainfleet Drainage Advisory Committee Member
Mark Jemison	Drainage Superintendent, Township of Wainfleet
Ed DeLay	Engineer, Burnside
Jacob Rooke	Engineering Assistant, Burnside

The watershed boundary, estimated costs, revised design, allowances and assessments were updated based on the previous information meeting and discussed with all of those in attendance.

Following this meeting, the Drainage Superintendent was available to the property owners not in attendance for information on the progress of the project.

8.0 Proposed Work

In accordance with the Drainage Act, R.S.O. 1990, the details of the proposed work are contained in the appendices of this report and provide complete details of the entire project. This section of the report is intended to provide only a brief description of the work along the course of the proposed drainage system.

8.1 Proposed Work Summary

The Main Drain includes deepening and widening of approximately 3,923 m of existing drain, the realignment of approximately 144 m of existing channel in Lot 39, Concession 4 (Township of Wainfleet), the removal and salvage of one private crossing, and the replacement of the existing Smith and Zion Roads culvert crossings. It also includes the establishment of riparian buffers along the entire work length proposed under this report.

There is no work proposed under this report upstream of Wainfleet – Dunnville Townline Road, however, it is suggested that the upstream section of the Ellsworth Municipal Drain and the Fred Buckner Municipal Drain continue to be investigated by the Drainage Superintendent and to perform bottom cleanout as required under maintenance.

8.1.1 Description of Proposed Work on Each Property

Note: All items described within the above constructed as part of this report, as shown on the drawings in Appendix I, shall form part of the proposed municipal drain and shall be included when completing future maintenance.

8.1.2 Main Drain

J. & T. Armstrong (Roll No. 012-065-00)

- Approximately 271 m of channel deepening and widening, and riparian buffers.
- The repair / replacement of all impacted private tile outlets, including erosion protection.
- Erosion protection for the existing culvert crossing.

D. Breukelman (Roll No. 012-070-00)

- Approximately 592 m of channel deepening and widening, and riparian buffers.
- Removal and salvage of existing culvert.
- The repair / replacement of all impacted private tile outlets, including erosion protection.

S. & D. Marr (Roll No. 012-075-00)

- Approximately 227 m of channel deepening and widening, and riparian buffers.
- The repair / replacement of all impacted private tile outlets, including erosion protection.

Smith Road (Township of Wainfleet)

- Approximately 2 m of channel deepening and widening, and riparian buffers.

- Approximately 20 m of existing concrete bridge removal and installation of 3,300 mm X 2,080 mm CSPA culvert, complete with (c/w) erosion protection.
- One sediment basin and one outlet stilling basin c/w erosion protection.
- The repair / replacement of all impacted private tile outlets, including erosion protection.

S. Schertzing & A. Nannarone (Roll No. 012-082-00), T. & N. Sider (Roll No. 012-083-00)

- Approximately 243 m of channel deepening and widening, and riparian buffers.
- The repair / replacement of all impacted private tile outlets, including erosion protection.

A. Bevan (Roll No. 012-081-00)

- Approximately 462 m of channel deepening and widening, and riparian buffers.
- The repair / replacement of all impacted private tile outlets, including erosion protection.

G. & P. Robson (Roll No. 012-094-01)

- Approximately 318 m of channel deepening and widening, and riparian buffers.
- Erosion protection for the existing culvert crossing.
- The repair / replacement of all impacted private tile outlets, including erosion protection.

A. & S. Taylor (Roll No. 012-090-01)

- Approximately 11 m of channel deepening and widening, and riparian buffers.
- The repair / replacement of all impacted private tile outlets, including erosion protection.

Zion Road (Township of Wainfleet)

- Approximately 2 m of channel deepening and widening, and riparian buffers.
- Approximately 20 m of existing concrete bridge removal and installation of 3,300 mm X 2,080 mm CSPA culvert, c/w erosion protection.
- One sediment basin and one outlet stilling basin c/w erosion protection.
- The repair / replacement of all impacted private tile outlets, including erosion protection.

Ministry of Transportation (Roll No. 012-102-00)

- Approximately 83 m of channel deepening and widening, and riparian buffers.
- The repair / replacement of all impacted private tile outlets, including erosion protection.

- Construction of a riffle structure.

Highway 3 (Forks Road) (Ministry of Transportation)

- Approximately 5 m of channel deepening and widening, and riparian buffers.
- Approximately 25 m of existing concrete bridge to remain.
- One sediment basin and one outlet stilling basin c/w erosion protection.
- The repair / replacement of all impacted private tile outlets, including erosion protection.

J. Wall (Roll No. 009-168-00)

- Approximately 7 m of channel deepening and widening, and riparian buffers.
- The repair / replacement of all impacted private tile outlets, including erosion protection.

L. Aarts (Roll No. 009-167-00)

- Approximately 486 m of channel deepening and widening, and riparian buffers.
- Approximately 144 m of channel realignment.
- The repair / replacement of all impacted private tile outlets, including erosion protection.

2390364 Ontario Inc. (M. Petrus) (Roll No. 009-173-00)

- Approximately 118 m of channel deepening and widening, and riparian buffers.
- Approximately 144 m of channel realignment.
- Approximately 7 m of existing CSP Culvert removal and reinstallation (if required at time of construction).
- One sediment basin and one outlet stilling basin c/w erosion protection.
- The repair / replacement of all impacted private tile outlets, including erosion protection.

Loeffen Farms Ltd. (Roll No. 009-173-01)

- Approximately 77 m of channel deepening and widening, and riparian buffers.
- The repair / replacement of all impacted private tile outlets, including erosion protection.

Hendershot Road (Township of Wainfleet)

- Approximately 2 m of channel deepening and widening, and riparian buffers.
- Approximately 20 m of existing CSP culvert to remain.
- One sediment basin and one outlet stilling basin c/w erosion protection.
- The repair / replacement of all impacted private tile outlets, including erosion protection.

Loeffen Farms Ltd. (Roll No. 009-184-10)

- Approximately 751 m of channel deepening and widening, and riparian buffers.
- The repair / replacement of all impacted private tile outlets, including erosion protection.

Wainfleet – Dunnville Townline Road (Township of Wainfleet / Haldimand County)

- Approximately 2 m of channel deepening and widening, and riparian buffers.
- Approximately 15 m of existing CSP culvert to remain.
- One outlet stilling basin c/w erosion protection.
- The repair / replacement of all impacted private tile outlets, including erosion protection.

8.1.2.1 Drain Abandonment

Section 19 of the Drainage Act states:

> *"The engineer in the report may recommend the abandonment of any drain or part thereof that is no longer useful or that is being supplanted by a new drainage works." R.S.O. 1990, c. D.17, s.19.*

The sections of the existing Ellsworth Municipal Drain proposed to be improved under this report shall be abandoned and cease to have status as a Municipal Drain following the construction of the proposed drainage works, which will now govern those sections of drain as noted.

8.2 General Construction

8.2.1 Appurtenances

Appurtenances associated with the proposed work include but are not limited to the following:

- Stripping, stockpiling, and replacing of topsoil along the channel route.
- Restoration of fence lines disturbed by construction or access routes.
- Removal, stockpiling, and restoration of granular materials at drain crossings.
- Seeding of all disturbed areas; etc.

8.2.2 Damaged Private Tile Outlets and Bank Erosion

The replacement of damaged or poorly functioning tile outlets encountered during the installation of the drain will be included as part of the construction costs and protected against erosion with rip-rap, as approved by the Contract Administrator.

In addition, to protect against channel bank erosion due to water entering from adjacent fields, affected banks shall be armoured with the installation of rip-rap as part of the proposed work.

Private tile outlets are not to be considered part of the drain for future maintenance.

8.3 Working Space and Access Routes

The working space and access routes being provided to the Contractor are described in Appendix F – Special Provisions on the chart entitled “Working Space” and in the drawing set.

The allowances given for this area are further discussed in Appendix A – Allowances.

8.4 Change Orders

If unforeseen circumstances are encountered following the adoption of this report, the Engineer may issue change orders, as required to have the work properly constructed.

9.0 Description of Appendices

9.1 Appendix A – Allowances

In accordance with Section 8(1)(d) of the Drainage Act, this Appendix provides a breakdown of the allowances provided under Sections 29, 30, 31, 32, and 33 of the Act. These sections are:

- Section 29 – Right-of-Way
- Section 30 – Damages
- Section 31 – Existing Drains
- Section 32 – Insufficient Outlet
- Section 33 – Loss of Access

9.2 Appendix B – Project Cost Estimate

In accordance with Section 8(1)(b) of the Drainage Act, this Appendix provides a breakdown of the total estimated cost of the proposed work, including all labour, materials, construction, engineering, administration and allowances.

9.3 Appendix C – Special Assessments

In accordance with Section 8(1)(c) of the Drainage Act, assessments under Sections 24 and 26 are summarized in this Appendix.

9.4 Appendix D – Schedules of Assessment for Construction & Maintenance

In accordance with Section 8(1)(c) of the Drainage Act, these Appendices show the distribution of the total estimated cost over the lands and roads involved and are in accordance with Sections 21, 22, 23, 24 and 26 of the Act.

A description and breakdown of Section 24 – Special Benefit and Section 26 - Special Assessments is shown in Appendix C.

In accordance with Section 38 of the Drainage Act, an assessment schedule for future maintenance of the Drain has been included as the basis on how to divide such costs. Affected lands located upstream of the maintenance shall be determined by the Drainage Superintendent and assessed according to this schedule.

9.5 Appendix E – Standard Drain Specifications

The Standard Drain Specifications have been provided in Appendix E and govern the work described herein.

9.6 Appendix F – Special Provisions

Special Provisions are specific directions for this project and detail requirements not encompassed by Appendix E – Standard Drain Specifications. Special Provisions shall take precedence over Standard Drain Specifications where a conflict between the two documents may exist.

9.7 Appendix G – Agency Correspondence

Project correspondence, recommendations, and requirements from the reviewing agencies are listed in this Appendix.

9.8 Appendix H – Design Summary

This appendix provides a summary of design criteria, standards, hydrologic and hydraulic simulations and analyses, and the results used in the design of the drainage system.

9.9 Appendix I – Drawings

A drawing set is included with this report, consisting of plans, profiles and details pertinent to the construction of the proposed drain.

10.0 Maintenance and Future Considerations

10.1 General

While the Township of Wainfleet will be responsible for the maintenance of the Drain after construction is complete, the sections of the Drainage Act dealing with obstruction of, damage, and injury to a municipal drain, namely Sections 80 and 82, are brought to the attention of the property owners. Under these sections, both the property owners and the Township of Wainfleet have responsibilities to ensure that a municipal drain is properly maintained and kept in good working condition.

The riparian buffers proposed under this report form part of the municipal drain and shall not be modified or damaged in any way following construction (no tillage, spraying, etc.). Any modifications should be reported to the Drainage Superintendent immediately.

Drainage Superintendent

Any areas of washout, settlement, erosion or other disrepair within the proposed municipal drain shall be repaired or maintained as needed by the Drainage Superintendent. Relevant drainage features shall be inspected on a periodic basis by the Drainage Superintendent and cleaned out as required to maintain the efficiency of the structures and to prevent sedimentation or erosion of the channel. These may include:

- Inlet, outlet, and conveyance structures
- Rip-rap erosion protection
- Riparian buffers
- Sediment basins
- Stilling basins, etc.

Landowners

Although the maintenance of the drain must be completed through the Township of Wainfleet, landowners can and should assist with the maintenance activity by:

- Making regular inspections of the Drain and inlet structures.
- Clearing debris from the inlet structures in a timely manner (prior to storm and snowmelt events).

Any problems should be reported to the Drainage Superintendent so that they can take proper action.

10.2 Maintenance Eligibility

Regarding future maintenance works, the responsibility to maintain the municipal drains is described in Table 8.

Table 8: Summary of Maintenance Eligibility

Section	Station Range	Responsibility	Governing Report Year
Andrew Shauntz MD	Entire Drain	Township of Wainfleet	Scott (1954)
Ellsworth Municipal Drain	Outlet (Sta. 0+000) to Townline Road	Township of Wainfleet	Burnside (2025)
Ellsworth Municipal Drain	Townline to u/s extent at Jenny Jump Road	Haldimand County	Todgham (1956)
Fred Buckner MD	Entire Drain	Haldimand County	Todgham (1956)

All proposed works outlined by this report shall be maintained by the Township of Wainfleet in the future except for any new and/or existing private crossings, structures, or tile, and any private tile work, including outlet replacement, erosion protection, connections and / or reconnections.

Landowners may maintain private crossings, private drainage systems, etc. in the drain with the permission of the Drainage Superintendent.

Table 9: Summary of Existing Inline Culvert Status

Crossing Centre Line Station	Crossing Type	Property	Culvert Status	Drain Status
0+203	CSP	Armstrong	To Remain	Private
0+854	CSP	Breukelman	Remove and Salvage	Private
1+101	CSP Arch	Smith Road	Proposed	Private
2+012	CSP	Robson	To Remain	Private
2+162	CSP Arch	Zion Road	Proposed	Private
2+283	Concrete Box Bridge	Forks Road	To Remain	Private
2+967	CSP	2390364 Ontario Inc.	To Remove and Reinstall (if required at time of construction).	Private
3+160	CSP	Hendershot Road	To Remain	Private
3+829	CSP Arch	Townline Road	To Remain	Private

10.3 Maintenance Costs

The Ellsworth Municipal Drain shall be maintained as described in Table 8 at the expense of the upstream lands and roads, as determined by the Drainage Superintendent in accordance with Section 74 of the Drainage Act.

Costs shall be distributed among the upstream property owners using the **Maintenance Assessment Schedule** found in Appendix D and in the same relative portions until such a time as they are varied in accordance with the Drainage Act.

Landowners remain responsible for the cost of any private crossings, private drainage systems, etc.

All work on the below noted ROWs shall form part of the costs, including catchbasins and road crossings.

Township of Wainfleet

The Township of Wainfleet shall be entirely responsible for the maintenance and costs of the Drain located within their ROWs, as follows:

- Smith Road
- Zion Road
- Hendershot Road

Township of Wainfleet & County of Haldimand (Shared)

The Township of Wainfleet and the County of Haldimand shall be entirely responsible for the maintenance and costs of the Drain located within their shared ROW, as follows:

- Wainfleet – Dunnville Townline Road

Ministry of Transportation (MTO)

The MTO shall be entirely responsible for the cost of the maintenance of the Drain located within the ROW, as follows:

- Highway 3 (Forks Road)

10.4 Future Connections / Changes in Land Use

If in the future, another owner requests a subsurface connection or disconnection to the drain, or the land use is changed for a property currently assessed, a new report should be prepared under Section 65(3) for a subsequent connection to or Section 65(4) for a subsequent disconnection from the drainage system in accordance with the Drainage Act, R.S.O. 1990.

The POLS Investments Ltd. Property (Roll No. (012-101-10)) has been assessed for current land use, however the proposed watershed for the development has been included in this report. Future land use changes from the proposed development should be accounted for as noted above.

10.4.1 Open Drains

After construction, new private tile drains may be installed and outlet directly into the proposed drain, provided that each one is installed with a corrugated steel or dual-wall HDPE outlet pipe complete with a rodent grate, sufficient rip-rap erosion protection and is identified along the bank of the drain with a proper outlet marker or sign to the satisfaction of the Drainage Superintendent. It must also be installed with a minimum of 0.3 m (1 ft.) freeboard above the design bottom of the Drain, taking into account typically water levels in the channel.

Any outlets not installed as described above and causing damage or erosion to the drain may be upgraded as described above or removed by the Drainage Superintendent at the expense of the owner responsible for the connection.

Appendix A

Allowances

Appendix A – Allowances

1.0 General

In accordance with Section 8(1)(d) of the Drainage Act ('The Act'), this Appendix provides a breakdown of the allowances provided under Sections 29 to 33 of the Act (if applicable). These sections are:

- Section 29 – Right-of-Way
- Section 30 – Damages
- Section 31 – Existing Drains
- Section 32 – Insufficient Outlet
- Section 33 – Loss of Access

Allowances will be deducted from total assessments in accordance with Section 62(3) of the Act. The land and crop values used for these calculations were determined based on recent land sales and a general understanding of these values within this geographic area and are described in the following sections.

A summary of the allowances provided under each section of the Act is included in this Appendix. Details regarding working space can be found in the Special Provisions.

2.0 Section 29 – Right-of-Way

Section 29 of the Act states:

> *The engineer in the report shall estimate and allow in money to the owner of any land that it is necessary to use,*
>
> *(a) for the construction or improvement of a drainage works;*
> *(b) for the disposal of material removed from drainage works;*
> *(c) as a site for a pumping station to be used in connection with a drainage works; or*
> *(d) as a means of access to any such pumping station, if, in the opinion of the engineer, such right of way is sufficient for the purposes of the drainage works,*
>
> *the value of any such land or the damages, if any, thereto, and shall include such sums in the estimates of the cost of the construction, improvement, repair or maintenance of the drainage works.*

The right-of-way (R.O.W.) is a type of easement along the length of the drain; however, it is not typically registered on the property's title. The associated R.O.W. allowances are typically provided to the properties where a R.O.W. is required for a new open or closed drain (based on actual channel width). A R.O.W. may also be used as access and working space for the Contractor during construction and also for future maintenance work.

The average width of the working R.O.W. or working space allowance provided is typically 10 m to access and maintain the drain in the future. The landowner is also compensated for the area used by the drain itself, such as a new channel, since that area will no longer be usable. A R.O.W. allowance would not be provided for sections of the open drain that are not being realigned, as those allowances would have been given under a previous report.

2.1 Right-Of-Way Value

A base land value of **$42,243** per hectare (i.e., **$17,500** per acre) for workable, agricultural land has been used to calculate the R.O.W. allowances provided in this report. The allowances provided for R.O.W. are varied based on a number of factors which are summarized in Table 1 below.

2.2 Open Drain

2.2.1 Channel Footprint

An allowance for the width of the existing channel has not been given at full value, since allowance for the channel appear to have been paid under the governing 1956 report (as directed by OMAFRA Staff).

2.2.2 Working Space

A R.O.W. (**average width of 7 m**) has been provided along the open drain as a current and future working space for the length of the channel to allow for the deepening and widening of the open drain, topsoil stripping, and placement of spoil. A 1/3 land value was used since the working space may still be used by the landowner.

In some locations, a working space is located on both sides of the channel and R.O.W. allowances have been paid accordingly.

Although allowances for the working space appear to have been paid under the governing 1956 report, they were not specific to the actual allowances paid (as directed by OMAFRA Staff).

2.2.3 Riparian Buffer

A R.O.W. (**average width of 3 m / bank**) has been provided along both banks of the channel as both a setback and as part of the working width. In combination with the working width, this provides a full 10 m on the designated working side of the channel for construction and future maintenance.

2.2.4 Access Routes (AR)

An allowance of **$500** for a R.O.W. **(average 6 m width)** has been provided to the applicable properties for access to the municipal drain **both during construction and in the future** as detailed in the Special Provisions and as shown on the drawings.

This value is based on the limited use of the R.O.W. during construction where a damage allowance is also paid for this area and during future drain maintenance, which is typically performed following the harvest of cash crops when damage allowances no longer apply.

2.2.5 Drain and Land Use Factors

The Drain Factor shown in Table 1 is varied based on the anticipated long-term effects to the land on which the drain is proposed to be located. For example, the drain factor has full value (a factor of 1.0) for the width of a channel or other feature, which would render that land unusable for any other purpose in the future. However, the drain factor decreases to one third (a factor of 0.33) for the working areas on the basis that the land over these portions of the drain will still be useable by the landowners following construction.

The Land Use Factor shown in Table 1 is varied based on the land type that the proposed drain will be located on. For example, the reduction in this factor is on the basis that undeveloped land such as forest/bush (factor of 0.5) would be less valuable than developed agricultural land (factor of 1.0) or residential land (factor of 1.25 to 4.0).

The Net Factor shown in Table 1 is determined by multiplying the drain factor and land use factor together. The net factor is then multiplied by the base land value and the total R.O.W. area to calculate the Section 29 allowance.

2.2.6 Future Maintenance

No permanent buildings, structures, or plantings should be allowed within the R.O.W., to allow for the future maintenance of this drain.

Table 1: Section 29 - Right-of-Way Allowance Factors

Scenario No.	Drain Feature	Description	Drain Factor	Land Type	Land Use Factor	Net Factor	Allowance Width (m)	Allowance ($/ha)	Ex. Application
1A	Existing Open Drain	Channel Footprint	0	Agricultural /Rural & Residential	1.00	0	Average TOB Width	0 x Rate	Main Drain
1B	Proposed Open Drain Widening	Channel Footprint	1.00	Agricultural /Rural & Residential	1.00	1.00	Average Additional TOB Width	1.00 x Rate	Main Drain
1C	Proposed Open Drain	Channel Footprint	1.00	Agricultural /Rural & Residential	1.00	1.00	Average TOB Width	1.00 x Rate	Main Drain
2	Existing Open Drain	Working Space	0.33	Agricultural /Rural & Residential	1.00	0.33	10	0.33 x Rate	Main Drain
3	Existing Open Drain	Riparian Buffer	1.00	Agricultural /Rural & Residential	1.00	1.00	6 total (3 m on each side)	1.00 x Rate	Main Drain
4	All	Access Route	0.33	Agricultural /Rural & Residential	1.00	0.33	6	See note[1]	Main Drain

[1] Scenario No. 4 for Access Routes has a value of $500 per instance.

3.0 Section 30 – Damages

Section 30 of the Act states:

> *The engineer shall determine the amount to be paid to persons entitled thereto for damage, if any, to ornamental trees, lawns, fences, lands and crops occasioned by the disposal of material removed from a drainage works and shall include such sums in the estimates of the cost of construction, improvement, repair or maintenance of the drainage works.*

A damage allowance may be generally defined as compensation given to properties affected by the construction of the drain, such as crop loss. It is typically used as a working space for the contractor during construction; however, it does not apply to future maintenance work on the drain. The width of the damage allowance given is typically 10 m to 20 m or larger due to increased activity within the area during the construction of the drain.

Damage Values

A base value of **$2,471** per hectare (**$1,000** per acre) for workable, agricultural land has been applied to the calculation of the damage allowances, as crop damage may be necessary during the construction of this drain. **This value is intended to reflect the input costs from the current cropping season leading to construction.** The following assumptions have been used regarding crop losses for the specified width of the working area:

- Complete crop loss in the year of construction.
- No loss in crop productivity thereafter due to topsoil stripping and replacement.

Minimum Value

A minimum damage allowance of **$200** was given to properties affected by minor construction activities on their properties; an example of this is the placement of a catchbasin on an upstream property line of the drain.

3.1 Open Drain

3.1.1 Channel Footprint

No allowances have been provided for the existing channel. However, the section of channel to be re-located is currently agricultural and will be given damage allowances for the affected area.

3.1.2 Working Space

A working corridor **(average width of 10 m)** has been provided along the open drain as a working space for the length of the channel to allow for deepening and widening of the open drain, topsoil stripping, and placement of spoil.

This includes the width of the buffer on that side if applicable. In areas with a working space on both sides of the channel, this width would be doubled, and those damages have been paid accordingly.

3.1.3 Access Routes (AR)

Access routes have been provided (**average width of 6 m**) as detailed in the Special Provisions and as shown on the drawings. Damage given for **access during construction only,** of **$200** were given to all properties where a construction access may be required to reach the drain from public property.

3.1.4 Restoration

Cropped agricultural areas shall be restored through topsoil stripping and the given damage allowances.

Non-agricultural lands are not typically provided with a damage allowance but are restored to their previous condition or better.

Bush and forested areas shall be brushed and/or cleared and grubbed as required and detailed in the Special Provisions. These areas do not receive a damage allowance since the timber is left for the landowners' use.

Roadways and residential areas are typically restored to their previous condition or better as part of the work completed by the Contractor.

Alternatively, these landowners may have the option to complete the work themselves with the associated costs given as a damage allowance if arranged with the Engineer prior to the completion of the report.

Under this report, landowners with maintained lawns have been given an additional $300 damage allowance. This amount is meant to further assist in the lawn restoration for landowners who are no satisfied with the contractor restoration approved by the contract administrator.

APPENDIX A - ALLOWANCES

PROJECT: Ellsworth MD
DATE : Aug-25

TOWNSHIP: Wainfleet
PROJECT #: 300050664

Con	Lot	Tax	Owner	Roll No.	Right of Way (Sect.29)	Damages (Sect.30)	Totals
5	Pt Lot 34	F	J. & T. Armstrong	(012-065-00)	$ 8,900	$ 480	$ 9,380
5	Pt Lot 34 Pt Lot 35	F	J. & A. Breukelman	(012-070-00)	$ 16,730	$ 760	$ 17,490
5	Pt Lot 35	F	S. & D. Marr	(012-075-00)	$ 8,680	$ 560	$ 9,240
5	Pt Lot 36 Pt Lot 37	F	A. Bevan	(012-081-00)	$ 6,490	$ -	$ 6,490
5	Pt Lot 36	*	S. Schertzing & A. Nannarone	(012-082-00)	$ 4,400	$ 300	$ 4,700
5	Pt Lot 36	*	T. & N. Sider	(012-083-00)	$ 4,400	$ 300	$ 4,700
5	Pt Lot 36 Pt Lot 37	*	R. Deschamps & A. Milot	(012-088-00)	$ 11,150	$ 1,140	$ 12,290
5	Pt Lot 37	*	A. & S. Taylor	(012-090-01)	$ 1,010	$ 300	$ 1,310
5	Pt Lot 37	*	G. & P. Robson	(012-094-01)	$ 13,200	$ 300	$ 13,500
5	Pt Lot 38	*	POLS Investments Ltd.	(012-101-10)	$ 1,460	$ -	$ 1,460
5	Pt Lot 38	*	Transportation Ministry	(012-102-00)	$ -	$ -	$ -
4	Pt Lot 38 Pt Lot 39	F	L. Aarts	(009-167-00)	$ 25,280	$ 1,660	$ 26,940
4	Pt Lot 38	*	J. Wall	(009-168-00)	$ 820	$ 300	$ 1,120
4	Pt Lot 39	*	1515435 Ontario Ltd.	(009-173-00)	$ 7,870	$ -	$ 7,870
4	Pt Lot 39	F	Loeffen Farms Ltd.	(009-173-01)	$ 3,280	$ 190	$ 3,470
4	Pt Lot 40	F	Loeffen Farms Ltd.	(009-184-00)	$ 22,490	$ 2,360	$ 24,850
4	Pt Lot 40 Pt Lot 41	F	L. Shedden	(009-187-00)	$ 2,760	$ -	$ 2,760
				Main Drain	**$ 138,920**	**$ 8,650**	**$ 147,570**
				Total	**$ 138,920**	**$ 8,650**	**$ 147,570**

BURNSIDE

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Appendix B

Project Cost Estimate

Appendix B - Project Cost Estimate

The estimate of the cost of all labour, equipment and material required to construct this project is as

Note **SP** refers to the **Special Provisions** (in Appendix F) to reference for additional details of work.

Item	Description	Approx. Quantity	Cost Estimate	Sub-Total
E.	***Ellsworth Municipal Drain***			
Work on Private Property				
E000	Mobilization. **(SP)**	LS	$ 1,150	
E00	Project Traffic Control. **(SP)**	LS	$ 5,750	
E0	a) Supply and install bio-filter sediment control structures (see accompanying details). **(SP)** *(Sta. 0+000, 1+083, 2+140, 3+144)*	4 ea.	$ 4,600	
	b) Excavation of permanent sediment basin (15 m long, 600 mm bottom width, and 1,000 mm deep). **(SP)** *(Sta. 0+000)*	1 ea.	$ 1,150	
	c) Supply & install of approx. **20 m^2** total OPSS R-50 quarry stone rip-rap erosion protection c/w geotextile underlay. **AND** Supply & install of approx. **10 m^2** total rounded riverstone erosion protection. **(SP)** *(Sta. 0+000)*	1 ea.	$ 2,760	
	Sub-Total			**$ 15,410**
E1	a) Deepening & widening of existing channel (0.3 < 0.6 m depth excavation typ.) (**Ap. 3,325 m^3**). **(SP)** *(Sta. 0+000 to 1+090)*	LS	$ 28,830	
	b) Supply & install channel bank (bend) erosion protection, approx. 450 mm thickness of OPSS R-50 quarry stone rip-rap with geotextile underlay, approx. **15 m^2** per installation. **(SP)** *(Sta. 0+13 & 0+203)*			
	c) Supply & install of approx. **20 m^2** total OPSS R-50 quarry stone rip-rap erosion protection c/w geotextile underlay. **AND** Supply & install of approx. **10 m^2** total rounded riverstone erosion protection. **(SP)** *(Sta. 0+197, 0+203, 0+594, & 1+083)*	4 ea.	$ 11,040	

	c) Brushing within the working R.O.W. (**Ap. 5,500 m^2**). **(SP)** *(Sta. 0+000 to 1+083)*	LS	$ 31,550	
	d) Hydroseeding of **disturbed bank areas** with approved seed mix and matrix, including nurse crop of annual rye grass (**Ap. 3,300 m^2**). **(SP)** *(Sta. 0+000 to 1+083)*	LS	$ 9,410	
	e) Hydroseeding and establishment of **buffer areas** with approved seed mix and matrix, including nurse crop of annual rye grass (**Ap. 6,500 m^2**). **(SP)** *(Sta. 0+000 to 1+083)*	LS	$ 18,800	
	f) Removal and **salvage/dispose** of existing culvert ***(Provisional Item).*** **(SP)** *(Sta. 0+854)*	LS	$ 5,750	
	Sub-Total			**$ 105,380**
E2	a) Deepening & widening of existing channel (0.3 < 0.6 m depth excavation typ.) (**Ap. 2,635 m^3**). **(SP)** *(Sta. 1+112 to 2+146)*	LS	$ 27,350	
	b) Supply & install channel bank (bend) erosion protection, approx. 450 mm thickness of OPSS R-50 quarry stone rip-rap with geotextile underlay, approx. **15 m^2** per installation. **(SP)** *(Sta. 1+112, 1+588, 1+618, 1+785)*	4 ea.	$ 11,040	
	c) Supply & install of approx. **20 m^2** total OPSS R-50 quarry stone rip-rap erosion protection c/w geotextile underlay. **AND** Supply & install of approx. **10 m^2** total rounded riverstone erosion protection. **(SP)** *(Sta. 2+009, 2+016)*	2 ea.	$ 5,520	
	c) Brushing within the working R.O.W. (**Ap. 1,300 m^2**). **(SP)** *(Sta. 1+112 to 2+146)*	LS	$ 7,020	
	d) Lawn restoration including S&I of imported screened topsoil and hydroseeding. (**Ap. 2,600 m^2**). **(SP)** *(Sta. 1+112 to 1+210, Sta. 1+870 to 2+146)*	LS	$ 13,550	
	e) Hydroseeding of **disturbed bank areas** with approved seed mix and matrix, including nurse crop of annual rye grass (**Ap. 3,100 m^2**). **(SP)**			

	(Sta. 1+112 to 2+146)	LS	$ 10,170	
	f) Hydroseeding and establishment of **buffer areas** with approved seed mix and matrix, including nurse crop of annual rye grass (**Ap. 6,200 m^2**). **(SP)** *(Sta. 1+112 to 2+146)*	LS	$ 15,230	
	Sub-Total			**$ 89,880**
E3	a) Deepening & widening of existing channel (0.3 < 0.6 m depth excavation typ.) (**Ap. 80 m^3**). **(SP)** *(Sta. 2+175 to 2+258)*	LS	$ 2,200	
	b) Supply & install a riffle structure as detailed, c/w ap. **30 m^2** total OPSS R-50 quarry stone rip-rap erosion protection c/w geotextile underlay. **AND** Supply & install of approx. **30 m^2** total rounded riverstone erosion protection. **(SP)** *(Sta. 2+248 to 2+258)*	LS	$ 5,750	
	c) Brushing within the working R.O.W. (**Ap. 200 m^2**). **(SP)** *(Sta. 2+175 to 2+258)*	LS	$ 950	
	d) Hydroseeding of **disturbed bank areas** with approved seed mix and matrix, including nurse crop of annual rye grass (**Ap. 250 m^2**). **(SP)** *(Sta. 2+175 to 2+258)*	LS	$ 720	
	e) Hydroseeding and establishment of **buffer areas** with approved seed mix and matrix, including nurse crop of annual rye grass (**Ap. 500 m^2**). **(SP)** *(Sta. 2+175 to 2+258)*	LS	$ 1,430	
	Sub-Total			**$ 11,050**
E4	a) Deepening & widening of existing channel (0.3 < 0.6 m depth excavation typ.) (**Ap. 540 m^3**). **(SP)** *(Sta. 2+297 to 3+149)*	LS	$ 18,400	
	b) Reallignment of existing channel as detailed c/w de-watering. **(SP)** *(Sta. 2+780 to 2+924)*	LS	$ 36,000	
	c) Sediment cleanout of existing culvert ***(Provisional Item).*** **(SP)** *(Sta.2+962 to Sta. 2+974)*	LS	$ 3,450	

	d) Removal and reinstallation of existing culvert ***(Provisional Item).*** **(SP)** *(Sta.2+962 to Sta. 2+974)*	LS	$ 5,750	
	e) Supply & install of approx. **20 m^2** total OPSS R-50 quarry stone rip-rap erosion protection c/w geotextile underlay. **AND** Supply & install of approx. **10 m^2** total rounded riverstone erosion protection. **(SP)** *(Sta. 2+962 & 2+974)*	2 ea.	$ 5,520	
	f) Brushing within the working R.O.W. (**Ap. 1,800 m^2**). **(SP)** *(Sta. 2+297 to 3+149)*	LS	$ 9,810	
	g) Lawn restoration including S&I of imported screened topsoil and hydroseeding. (**Ap. 220 m^2**). **(SP)** *(Sta. 2+297 to 2+327)*	LS	$ 1,090	
	h) Hydroseeding of **disturbed bank areas** with approved seed mix and matrix, including nurse crop of annual rye grass (**Ap. 3,900 m^2**). **(SP)** *(Sta. 2+297 to 3+149)*	LS	$ 10,940	
	i) Hydroseeding and establishment of **buffer areas** with approved seed mix and matrix, including nurse crop of annual rye grass (**Ap. 5,200 m^2**). **(SP)** *(Sta. 2+297 to 3+149)*	LS	$ 14,700	
	Sub-Total			**$ 105,660**
E5	a) Deepening & widening of existing channel (0.3 < 0.6 m depth excavation typ.) (**Ap. 410 m^3**). **(SP)** *(Sta. 3+170 to 3+822)*	LS	$ 17,250	
	b) Brushing within the working R.O.W. (**Ap. 1,350 m^2**). **(SP)** *(Sta. 3+170 to 3+822)*	LS	$ 7,500	
	c) Hydroseeding of **disturbed bank areas** with approved seed mix and matrix, including nurse crop of annual rye grass (**Ap. 2,000 m^2**). **(SP)** *(Sta. 3+170 to 3+822)*	LS	$ 5,620	
	d) Hydroseeding and establishment of **buffer areas** with approved seed mix and matrix, including nurse crop of annual rye grass (**Ap. 4,000 m^2**). **(SP)** *(Sta. 3+170 to 3+822)*	LS	$ 11,250	

	Sub-Total		**$ 41,620**
	Total Estimated Cost of Construction Private Property		**$ 369,000**

Work on Public Property

Work on Smith Road R.O.W. (Township of Wainfleet)

E6	a) Removal and disposal of existing concrete box bridge. ***(Provisional Item)*** **(SP)** *(Sta. 1+090 to 1+112)*	LS	$ 11,500
	b) Supply and install one (1) - 20 m length 3,300 mm span X 2,080 rise CSPA including embedment as detailed. **(SP)** *(Sta. 1+090 to 1+112)*	LS	$ 36,360
	c) R.O.W. restoration for installation of new crossing including imported backfill material as detailed. **(Not including new pavement).** **(SP)** *(Sta. 1+090 to 1+112)*	LS	$ 28,750
	d) Hot mix asphalt pavement patching (2 - 50 mm lifts of HL3) (**Ap. 200 m^2**). **(SP)** *(Sta. 1+090 to 1+112)*	LS	$ 11,500
	e) Construction of one (1) permanent outlet stilling basin (Ap. 10 m long and 600 mm depth) as detailed. **(SP)** *(Sta. 1+090)*	LS	$ 1,150
	f) Supply & install of approx. **30 m^2** total OPSS R-50 quarry stone rip-rap erosion protection c/w geotextile underlay. **AND** Supply & install of approx. **15 m^2** total rounded riverstone erosion protection. **(SP)** *(Sta. 1+090 & 1+112)*	2 ea.	$ 8,280
	g) Construction of one (1) - 10 m long and 1,000 mm deep permanent inlet sediment basin as detailed. **(SP)** *(Sta. 1+112)*	LS	$ 1,150
	h) Hydroseeding of disturbed areas with approved seed mix and matrix, including nurse crop of annual rye grass (**Ap. 100 m^2**). **(SP)** *(Sta. 1+090 to 1+112)*	LS	$ 190

Total Estimated Cost of Construction **Work on Smith Road R.O.W. (Township of Wainfleet)**			**$ 98,880**

Work on Zion Road R.O.W. (Township of Wainfleet)

E7	a) Removal and disposal of existing concrete box bridge. ***(Provisional Item)*** **(SP)** *(Sta. 2+160)*	LS	$ 11,500
	b) Supply and install one (1) - 20 m length 3,300 mm span X 2,080 rise CSPA including embedment as detailed. **(SP)** *(Sta. 2+160)*	LS	$ 36,360
	c) R.O.W. restoration for installation of new crossing including imported backfill material as detailed. **(Not including new pavement).** **(SP)** *(Sta. 2+160)*	LS	$ 28,750
	d) Hot mix asphalt pavement patching (2 - 50 mm lifts of HL3) (**Ap. 200 m^2**). **(SP)** *(Sta. 2+160)*	LS	$ 11,500
	e) Construction of one (1) permanent outlet stilling basin (Ap. 10 m long and 600 mm depth) as detailed. **(SP)** *(Sta. 2+146)*	LS	$ 1,150
	f) Supply & install of approx. **30 m^2** total OPSS R-50 quarry stone rip-rap erosion protection c/w geotextile underlay. **AND** Supply & install of approx. **15 m^2** total rounded riverstone erosion protection. **(SP)** *(Sta. 2+146 & 2+175)*	2 ea.	$ 8,280
	g) Construction of one (1) - 10 m long and 1,000 mm deep permanent inlet sediment basin as detailed. **(SP)** *(Sta. 2+175)*	LS	$ 1,150
	h) Hydroseeding of disturbed areas with approved seed mix and matrix, including nurse crop of annual rye grass (**Ap. 100 m^2**). **(SP)** *(Sta. 2+146 to 2+175)*	LS	$ 250

Total Estimated Cost of Construction **Work on Zion Road R.O.W. (Township of Wainfleet)**		**$ 98,940**

Work on Forks Road R.O.W. (Highway 3) (Ministry of Transportation)

E8	a) Sediment cleanout of existing concrete box bridge ***(Provisional Item).*** **(SP)** *(Sta.2+258 to Sta. 2+297)*		LS	$ 3,450
	b) Construction of one (1) permanent outlet stilling basin (Ap. 10 m long and 600 mm depth) as detailed. **(SP)** *(Sta.2+258)*		LS	$ 1,150
	c) Supply & install of approx. **30 m^2** total OPSS R-50 quarry stone rip-rap erosion protection c/w geotextile underlay. **AND** Supply & install of approx. **15 m^2** total rounded riverstone erosion protection. **(SP)** *(Sta.2+258 & Sta. 2+297)*		2 ea.	$ 8,280
	d) Construction of one (1) - 10 m long and 1,000 mm deep permanent inlet sediment basin as detailed. **(SP)** *(2+297)*		LS	$ 1,150
	e) Hydroseeding of disturbed areas with approved seed mix and matrix, including nurse crop of annual rye grass (**Ap. 100 m^2**). **(SP)** *(Sta.2+258 to Sta. 2+297)*		LS	$ 340

Total Estimated Cost of Construction
Work on Forks Road R.O.W. (Highway 3) (Ministry of Transportation) **$ 14,370**

Work on Hendershot Road R.O.W. (Township of Wainfleet)

E9	a) Sediment cleanout of existing concrete box bridge ***(Provisional Item).*** **(SP)** *(Sta.3+149 to Sta. 3+170)*		LS	$ 3,450
	b) Construction of one (1) permanent outlet stilling basin (Ap. 10 m long and 600 mm depth) as detailed. **(SP)**			

	(Sta.3+149)	LS	$ 1,150	
	c) Supply & install of approx. **30 m^2** total OPSS R-50 quarry stone rip-rap erosion protection c/w geotextile underlay. **AND** Supply & install of approx. **15 m^2** total rounded riverstone erosion protection. **(SP)** *(Sta.3+149 & Sta. 3+170)*	2 ea.	$ 8,280	
	d) Construction of one (1) - 10 m long and 1,000 mm deep permanent inlet sediment basin as detailed. **(SP)** *(Sta. 3+170)*	LS	$ 1,150	
	e) Hydroseeding of disturbed areas with approved seed mix and matrix, including nurse crop of annual rye grass (**Ap. 100 m^2**). **(SP)** *(Sta.3+149 to Sta. 3+170)*	LS	$ 180	
Total Estimated Cost of Construction Work on Hendershot Road R.O.W. (Township of Wainfleet)				**$ 14,210**
Work on Wainfleet Dunnville Townline Road R.O.W. (Shared)				
E10	a) Construction of one (1) permanent outlet stilling basin (Ap. 10 m long and 600 mm depth) as detailed. **(SP)** *(Sta.3+822)*	LS	$ 1,150	
	b) Supply & install of approx. **30 m^2** total OPSS R-50 quarry stone rip-rap erosion protection c/w geotextile underlay. **AND** Supply & install of approx. **15 m^2** total rounded riverstone erosion protection. **(SP)** *(Sta.3+822)*	1 ea.	$ 2,760	
Total Estimated Cost of Construction Work on Wainfleet Dunnville Townline Road R.O.W. (Shared)				**$ 3,910**
Total Estimated Cost of Construction Public Property				**$ 230,310**

F. CONTINGENCIES

C1	Supply and install a 450 mm thickness of OPSS R-50 quarry stone rip-rap erosion protection with geotextile underlay.		
	(SP)	100 m^2	$ 6,900
C2	Supply and install a 600 mm thickness of rounded riverstone erosion protection.		
	(SP)	50 m^2	$ 3,450
C3	Supply and install OPSS 19 mm (3/4") clear crushed stone.		
	(SP)	45 t	$ 1,600
C4	Supply and install OPSS Granular 'B' material.		
	(SP)	45 t	$ 1,040
C5	Supply and install hydroseeding as detailed.		
	(SP)	500 m^2	$ 1,440
C6	Supply and install lawn restoration as detailed.		
	(SP)	500 m^2	$ 2,590
C7	Supply and install 150 mm thickness of imported, screened topsoil.		
	(SP)	500 m^2	$ 5,750
C8	Supply & install new outlet pipes for existing tile drainage systems, outletting into the drain (as approved by the Engineer) c/w erosion protection.		
	(SP)		
	a) 100 mm dia. HDPE outlet pipe	8 ea.	$ 1,840
	b) 150 mm dia. HDPE outlet pipe	8 ea.	$ 1,840
	c) 200 mm dia. HDPE outlet pipe	4 ea.	$ 1,150
	d) 250 mm dia. HDPE outlet pipe	4 ea.	$ 1,380

Total Estimated Cost of Construction	
Contingencies	**$ 28,980**
Total Estimated Cost of Construction	
Ellsworth Municipal Drain	**$ 628,290**

SUMMARY OF COSTS

Total Estimated Cost of Construction		**$ 628,290**	
Allowances to Owners (Sections 29 & 30)		**$ 147,570**	
On-Site Meeting	***$ 4,000***		
Initial Investigation, Preliminay Drawing Preparation, and Attendance at On-Site Meeting.			
Preparation of Report	***$ 146,000***		
Field Survey, Preparation of Preliminary Design and Drawing Set. Information Meetings, Drawing Set, and System Design. Report Preparation including Allowances, Cost Estimates, Construction and Maintenance Assessment Schedules.			
Additional Engineering - Specific Report Costs	***$ 32,000***		
Report Consideration and Procedure, Tendering	***$ 11,000***		
Preparation of Report Copies for Distribution. Preparation for and Attendance at the Consideration of the Report. Preparation and Distribution of ElectronicTender. Attendance at virtual Tender opening and preparation of letter of recommendation for Council.			
Contract Administration	***$ 16,500***		
Pre-construction meeting. Site Reviews During Construction (10 days continuous construction included). Preparation and issue of 3 Payment Certificates (Initial, progress, and final).			
Additional Engineering - Specific CA Costs	***$ 25,500***		
Total Estimated Engineering		**$ 235,000**	
Other Project Costs		**$ 6,500**	
ABCA Review Fee. Utilities Investigation			
Administration and Financing		**$ 82,640**	
Net HST (Construction and Engineering), and Interest Charges.			
Total Estimated Cost			**$ 1,100,000**

Note:
The above summary contains cost estimates only. It is emphasized that these estimates do NOT include costs to defend the Drainage Report and procedures if appeals are filed with the Court of Revision, Ontario Drainage Tribunal and/or the Ontario Drainage Referee. Unless otherwise directed, additional costs to defend the report are typically distributed in a pro rata fashion over the assessments contained in the Construction Assessment Schedule, excluding any Special Assessments.
Also, in addition to the work included in the above estimate, should repairs, replacements, underpinning or other alterations be required for existing bridges, culverts, overflow culverts or any other structure necessary to conduct overflow water, or water in open channels under or across a road allowance, as affected by this drainage work, the work and cost thereof, including any necessary expenses incidental thereto, and if not determined otherwise, shall be the responsibility of and shall be assessed against the authority having control of such road or road allowance.

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Appendix C

Special Assessments

Appendix C — Special Assessments (Section 26) & Special Benefit (Section 24)

A. Special Assessments – Section 26

NOTE: The following Special Assessments are for work affecting roads and utilities as understood at the time this report was prepared. Any additional work required for this project affecting roads, utilities, or otherwise not included herein shall be assessed in the same manner as determined by the Engineer in the final assessments as required.

The Special Assessment for this portion of the work is the increased cost to the proposed drain due to the presence and operation of the road authority / public utility. **A summary of this calculation is presented below, and a copy of the detailed calculation is available upon request.**

Whether or not the **road authority / public utility** elects to do work on their property in accordance with Section 69 of the Act, they shall be assessed the actual cost of the work incurred (**Construction Costs**), minus the actual cost of an equivalent drain (**Equivalent Drain**), plus engineering / administration (**Engineering & Administration**). The resulting amount is assessed to the **road authority / public utility** as a **Special Assessment.**

Pursuant to Section 26 of the Drainage Act the following Special Assessments are made:

A1. Smith Road – Township of Wainfleet

1) Construction Costs	**-**	**2) Equivalent Drain**	**+**	**3) Engineering & Administration**
Item E6: • 20 m of 3,300 mm x 2,080 mm dia. CSPA installed by open cut. • Pavement restoration. • Removal and disposal of ex. crossing. • Sediment and stilling basins installation. • Restoration of the R.O.W., hydroseeding, and erosion protection. • Traffic control.		**Consisting of:** • 20 m of channel deepening and widening.		**Consisting of:** • Additional report engineering for existing crossing analysis and proposed design. • Construction layout and inspection.
$ 100,030	**-**	**$ 460**	**+**	**$ 10,000**
4) Special Assessment = $ 109,570				

A2. Zion Road – Township of Wainfleet

1) Construction Costs	-	2) Equivalent Drain	+	3) Engineering & Administration
Item E7: • 20 m of 3,300 mm x 2,080 mm dia. CSPA installed by open cut. • Pavement restoration. • Removal and disposal of ex. crossing. • Sediment and stilling basins installation. • Restoration of the R.O.W., hydroseeding, and erosion protection. • Traffic control.		**Consisting of:** • 20 m of channel deepening and widening.		**Consisting of:** • Additional report engineering for existing crossing analysis and proposed design. • Construction layout and inspection.
$ 100,090	**-**	**$ 460**	**+**	**$ 10,000**
4) Special Assessment = $ 109,630				

A3. Highway 3 (Forks Road) – Ministry of Transportation (MTO)

1) Construction Costs	-	2) Equivalent Drain	+	3) Engineering & Administration
Item E3b): Channel riffle structure construction. **Item E8**: • Cleanout of existing concrete box bridge. • Sediment and stilling basins installation. • Restoration of the R.O.W., hydroseeding, and erosion protection. • Traffic control.		**Consisting of:** • N/A.		**Consisting of:** • Additional report engineering for existing crossing analysis. • Construction layout and inspection.
$ 21,270	**-**	**$ 0**	**+**	**$ 10,000**
4) Special Assessment = $ 31,270				

A4. Hendershot Road – Township of Wainfleet

1) Construction Costs	-	2) Equivalent Drain	+	3) Engineering & Administration
Item E9: • Cleanout of existing culvert. • Sediment and stilling basins installation. • Restoration of the R.O.W., hydroseeding, and erosion protection. • Traffic control.		**Consisting of:** • N/A.		**Consisting of:** • Additional report engineering for existing crossing analysis. • Construction layout and inspection.
$ 15,360	**-**	**$ 0**	**+**	**$ 5,500**
4) Special Assessment = $ 20,860				

A5. Wainfleet Dunnville Townline Road – Township of Wainfleet

1) Construction Costs	-	2) Equivalent Drain	+	3) Engineering & Administration
Item E10: • Stilling basin installation. • Restoration of the R.O.W., hydroseeding, and erosion protection. • Traffic control.		**Consisting of:** • N/A.		**Consisting of:** • Additional report engineering for existing crossing analysis. • Construction layout and inspection.
$ 2,530	**-**	**$ 0**	**+**	**$ 2,750**
4) Special Assessment = $ 5,280				

A6. Wainfleet Dunnville Townline Road –County of Haldimand

1) Construction Costs	-	2) Equivalent Drain	+	3) Engineering & Administration
Item E10: • Stilling basin installation. • Restoration of the R.O.W., hydroseeding, and erosion protection.		**Consisting of:** • N/A.		**Consisting of:** • Additional report engineering for existing crossing analysis. • Construction layout and inspection.

1) Construction Costs	-	2) Equivalent Drain	+	3) Engineering & Administration
• Traffic control.				
$ 2,530	**-**	**$ 0**	**+**	**$ 2,750**
4) Special Assessment = $ 5,280				

B. Special Benefit – Section 24

A Special Benefit assessment under Section 24 for this work is calculated based on additional and/or specific requirements for a specific property versus others in the contributing watershed.

These costs may include:

- Additional engineering for investigation, review, design, assessment, and/or construction for existing and proposed drainage systems.
- Additional construction costs or items specifically for a specific property.

Pursuant to Section 24 of the Drainage Act the following assessments for Special Benefit are made:

B1. 2390364 Ontario Inc. (Roll No. 009-173-00)

1) Construction Costs	**+**	**2) Engineering & Administration**
Item E4b): • Channel re-alignment, including de-watering, restoration, hydroseeding, and erosion protection. **Items E4c)d)e)**: • Cleanout of existing culvert. • Removal and reinstallation of existing culvert. • Erosion protection.		**Consisting of:** • Additional project correspondence. • Additional report engineering for channel re-alignment design and existing crossing analysis. • Construction layout and inspection.
$ 54,030	**+**	**$ 10,500**
3) Special Benefit = $ 64,530		

B2. J. & T. Armstrong (Roll No. 012-065-00)

1) Construction Costs	**+**	**2) Engineering & Administration**
Item Pt. E1c): • Culvert erosion protection.		**Consisting of:** • Additional report engineering for channel re-alignment design and existing crossing analysis. • Construction layout and inspection.

1) Construction Costs	+	2) Engineering & Administration
$ 5,520	**+**	**$ 2,000**
3) Special Benefit = $ 7,520		

B3. J. & A. Breukelman (Roll No. 012-070-00)

1) Construction Costs	+	2) Engineering & Administration
Item E1f): • Remove and salvage/dispose of existing culvert.		**Consisting of:** • Additional report engineering for channel re-alignment design and existing crossing analysis. • Construction layout and inspection.
$ 5,750	**+**	**$ 2,000**
3) Special Benefit = $ 7,750		

B4. G. & P. Robson (Roll No. 012-094-01)

1) Construction Costs	+	2) Engineering & Administration
Item E2f): • Culvert erosion protection.		**Consisting of:** • Additional report engineering for channel re-alignment design and existing crossing analysis. • Construction layout and inspection.
$ 5,520	**+**	**$ 2,000**
3) Special Benefit = $ 7,520		

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Appendix D

Schedules of Assessments

Appendix D – Schedules of Assessment for Construction & Maintenance

1.0 General

In accordance with Section 8(1)(c) of the Drainage Act, R.S.O. 1990, ('The Act') these Appendices show the distribution of the total estimated cost over the lands and roads involved and are in accordance with the following sections of the Act:

- Section 21 – Engineer to distinguish assessments.
- Section 22 – Assessment for benefit.
- Section 23 – Assessment for outlet.
- Section 24 – Special benefit.
- Section 26 – Special assessment.

More information on assessment and the Drainage Act can be found on the OMAFRA drainage website. Several relevant OMAFRA Factsheets and the AgMaps geographic information portal are also available (http://www.omafra.gov.on.ca/english/landuse/drainage.htm).

2.0 Section 21 – Engineer to distinguish assessments

Section 21 of the Act states:

> *The engineer in the report shall assess for benefit, outlet liability and injuring liability, and shall insert in an assessment schedule, in separate columns, the sums assessed for each opposite each parcel of land and road liable therefor.*

3.0 Sections 22 and 23 – Assessment for Benefit

"Benefit" is defined in Section 1 of the Act as:

> *…the advantages to any lands, roads, buildings or other structures from the construction, improvement, repair or maintenance of a drainage works such as will result in a higher market value or increased crop production or improved appearance or better control of surface or subsurface water, or any other advantages relating to the betterment of lands, roads, buildings or other structures*

"**Assessment for benefit**" - Section 22 of the Act states:

> *Lands, roads, buildings, utilities or other structures that are increased in value or are more easily maintained as a result of the construction, improvement, maintenance or repair of a drainage works may be assessed for benefit.*

4.0 Section 23 – Assessment for Outlet

"**Outlet liability**" is defined in Section 1 of the Act as:

> *…the part of the cost of the construction, improvement or maintenance of a drainage works that is required to provide such outlet or improved outlet*

Section 23 of the Act is made up of four subsections.

"Outlet liability, lands assessed for" - Section 23(1) states:

> *Lands and roads that use a drainage works as an outlet, or for which, when the drainage works is constructed or improved, an improved outlet is provided either directly or indirectly through the medium of any other drainage works or of a swale, ravine, creek, or watercourse, may be assessed for outlet liability.*

"Injuring liability, lands assessed for" - Section 23(2) states:

> *If, from any land or road, water is artificially caused by any means to flow upon and injure any other land or road, the land or road from which the water is caused to flow may be assessed for injuring liability with respect to a drainage works to relieve the injury so caused to such other land or road.*

"Basis of assessment" - Section 23(3) states:

> *The assessment for outlet liability and injuring liability provided for in subsections (1) and (2) shall be based upon the volume and rate of flow of the water artificially caused to flow upon the injured land or road or into the drainage works from the lands and roads liable for such assessments.*

"Certain owners not to count for or against petition" - Section 23(4) states:

> *The owners of the lands and roads made liable to assessment only under subsection (1) or (2) shall neither count for nor against the petition required by section 4 unless within the area therein described.*

5.0 Section 24 – Special Benefit

"Special benefit" is defined in Section 1 of the Act as:

> *…any additional work or feature included in the construction, repair or improvement of a drainage works that has no effect on the functioning of the drainage works*

"Assessment for special benefit" - Section 24 states:

> *The engineer may assess for special benefit any lands for which special benefits have been provided by the drainage works.*

A description and breakdown of the Section 24 - Special Benefit Assessments is shown in Appendix C (If applicable), and included in Appendix D.

6.0 Section 26 – Special Assessment

"Increased cost, how borne" - Section 26 states:

> *In addition to all other sums lawfully assessed against the property of a public utility or road authority under this Act, and despite the fact that the public utility or road authority is not otherwise assessable under this Act, the public utility or road authority shall be assessed for and shall pay all the increase of cost of such drainage works caused by the existence of the works of the public utility or road authority.*

A description and breakdown of the Section 26 - Special Assessments is shown in Appendix C (If applicable), and included in Appendix D.

7.0 Assessments

The assessments have been calculated using the Modified Todgham Method to distribute the project costs throughout the watershed in a fair and equitable manner. **Detailed calculations of these assessments are available to affected landowners upon request.**

Throughout the course of the drain, specific costs were assigned to various landowners. Parts of the costs of items such as catchbasins, berms, etc., were assessed to the lands directly upstream and downstream of the item as a specific cost and/or the entire upstream watershed. The engineering and administration costs have been assessed out over the entire drain.

Affected private lands used for agricultural purposes may be eligible for grant under the Agricultural Drainage Infrastructure Program (ADIP) which is administered through the Ontario Ministry of Agriculture and Food and Rural Affairs (OMAFRA). Confirmation of eligibility for individual properties will be completed by OMAFRA following the grant application made by the Municipality on behalf of the affected landowners.

8.0 Schedules of Assessment for Maintenance

In accordance with Section 38 of the Drainage Act, assessment schedules for future maintenance of the proposed drain have been included as the basis on how to divide such costs. Affected lands located upstream of the maintenance shall be determined by the Drainage Superintendent and assessed according to this schedule.

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APPENDIX D1 - ASSESSMENTS for CONSTRUCTION
MAIN DRAIN

FINAL REPORT

PROJECT: Ellsworth MD
DATE : August-25

TOWNSHIP: Wainfleet
PROJECT #: 300050664

Conc. or Plan	Lot or Part	Tax	Owner	Roll No.	WS Plan No.	Affected Area (Ha.)	Benefit Assess't (Sect.22)	Outlet Assess't (Sect.23)	Special Benefit (Sect.24)	Special Assess't (Sect.26)	Total Assessment	*Less* 1/3 Grant	*Less* Allowances	Net Assessment
			Lands											
	TOWNSHIP OF WAINFLEET													
4	Pt Lot 34	F	S. & D. Marr	(009-137-00)		4.20	$ -	$ 720	$ -		$ 720	$ 240	$ -	$ 480
4	Pt Lot 34	*	J. & J. Young	(009-138-00)	46	0.41	$ -	$ 100	$ -		$ 100	$ -	$ -	$ 100
4	Pt Lot 34 Pt Lot 35	F	S. & D. Marr	(009-138-35)		8.97	$ -	$ 1,470	$ -		$ 1,470	$ 490	$ -	$ 980
4	Pt Lot 35	F	G. Pop-Lazic & M. Fleming	(009-139-00)	45	2.77	$ -	$ 510	$ -		$ 510	$ 170	$ -	$ 340
4	Pt Lot 35	*	D. & A. Marr	(009-140-00)	33	1.18	$ -	$ 280	$ -		$ 280	$ -	$ -	$ 280
4	Pt Lot 35	F	S. & D. Marr	(009-140-50)		10.62	$ -	$ 1,740	$ -		$ 1,740	$ 580	$ -	$ 1,160
4	Pt Lot 36 Pt Lot 37	F	A. & A. Sinclair	(009-147-00)		7.08	$ -	$ 940	$ -		$ 940	$ 313	$ -	$ 627
4	Pt Lot 36	F	T. Q. Liu & C. Y. Kan	(009-148-00)		8.51	$ -	$ 1,420	$ -		$ 1,420	$ 473	$ -	$ 947
4	Pt Lot 36	*	J. Collard & D. Scott	(009-149-00)	32	0.14	$ -	$ 50	$ -		$ 50	$ -	$ -	$ 50
4	Pt Lot 36	*	2766453 Ontario Inc.	(009-151-00)		3.93	$ -	$ 1,020	$ -		$ 1,020	$ -	$ -	$ 1,020
4	Pt Lot 36	*	F., L. & J. Feith	(009-151-01)	31	0.68	$ -	$ 380	$ -		$ 380	$ -	$ -	$ 380
4	Pt Lot 36	F	R. & L. Disher	(009-152-00)		4.24	$ -	$ 1,010	$ -		$ 1,010	$ 337	$ -	$ 673
4	Pt Lot 36	*	S. Heitman	(009-153-00)		11.72	$ -	$ 2,890	$ -		$ 2,890	$ -	$ -	$ 2,890
4	Pt Lot 36	*	T. & J. Shoalts	(009-153-01)	29	0.47	$ -	$ 330	$ -		$ 330	$ -	$ -	$ 330
4	Pt Lot 37	F	L. Aarts	(009-154-00)		19.41	$ -	$ 8,660	$ -		$ 8,660	$ 2,887	$ -	$ 5,773
4	Pt Lot 37	*	T. Clapp	(009-154-05)	22	0.41	$ -	$ 280	$ -		$ 280	$ -	$ -	$ 280
4	Pt Lot 37	*	R. B. & D. Heitman	(009-154-06)	21	0.41	$ -	$ 280	$ -		$ 280	$ -	$ -	$ 280
4	Pt Lot 37	*	J. D. & L Kiers	(009-154-07)	20	0.40	$ -	$ 280	$ -		$ 280	$ -	$ -	$ 280
4	Pt Lot 37	*	R. & P. Bruining	(009-155-00)	19	0.21	$ -	$ 170	$ -		$ 170	$ -	$ -	$ 170
4	Pt North Half Lot 37	*	T. Gomes	(009-156-00)	18	0.21	$ -	$ 160	$ -		$ 160	$ -	$ -	$ 160
4	Pt Lot 37	*	S. Medjed & G. Mcpherson	(009-157-00)	17	0.23	$ -	$ 200	$ -		$ 200	$ -	$ -	$ 200
4	Pt Lot 37	*	S. Vinnick	(009-158-00)	16	0.15	$ -	$ 130	$ -		$ 130	$ -	$ -	$ 130
4	Pt Lot 37	*	D. & E. Belfry	(009-159-00)		5.24	$ -	$ 2,710	$ -		$ 2,710	$ -	$ -	$ 2,710
4	Pt Lot 37	*	W. & L. Scace	(009-159-01)		2.21	$ -	$ 750	$ -		$ 750	$ -	$ -	$ 750
4	Pt Lot 38	F	G & B Prentice Farms Ltd.	(009-166-00)		7.20	$ -	$ 4,210	$ -		$ 4,210	$ 1,403	$ -	$ 2,807
4	Pt Lot 38 Pt Lot 39	F	L. Aarts	(009-167-00)		27.54	$ 37,320	$ 12,860	$ -		$ 50,180	$ 16,727	$ 26,940	$ 6,513
4	Pt Lot 38	*	R. Ricker	(009-167-01)	4	0.81	$ -	$ 690	$ -		$ 690	$ -	$ -	$ 690
4	Pt Lot 38	*	M. & B. Rickman	(009-167-25)	9	0.42	$ -	$ 350	$ -		$ 350	$ -	$ -	$ 350
4	Pt Lot 38	*	D. Vonk	(009-167-30)	10	0.41	$ -	$ 350	$ -		$ 350	$ -	$ -	$ 350
4	Pt Lot 38	*	J. Wall	(009-168-00)	15	0.43	$ 850	$ 290	$ -		$ 1,140	$ -	$ 1,120	$ 20
4	Pt Lot 38	*	K. Turnbull & P. Statten	(009-169-00)	8	0.14	$ -	$ 110	$ -		$ 110	$ -	$ -	$ 110
4	Pt Lot 39	*	R. & N. Williams	(009-170-00)	7	0.69	$ -	$ 580	$ -		$ 580	$ -	$ -	$ 580
4	Pt Lot 39	*	J. & H. Donaldson	(009-172-00)	6	0.33	$ -	$ 250	$ -		$ 250	$ -	$ -	$ 250
4	Pt Lot 39	*	1515435 Ontario Ltd.	(009-173-00)		7.87	$ 39,530	$ 3,630	$ 64,530		$ 107,690	$ -	$ 7,870	$ 99,820
4	Pt Lot 39	F	Loeffen Farms Ltd.	(009-173-01)		2.12	$ 12,720	$ 970	$ -		$ 13,690	$ 4,563	$ 3,470	$ 5,657
4	Pt Lot 39	*	S., P. & R. Feddema	(009-178-00)	5	0.19	$ -	$ 100	$ -		$ 100	$ -	$ -	$ 100
4	Pt Lot 39	*	S. High & L. Ricker	(009-179-00)	3	0.39	$ -	$ 180	$ -		$ 180	$ -	$ -	$ 180
4	Pt Lot 39	F	D. & N. Ton	(009-180-00)		6.91	$ -	$ 4,380	$ -		$ 4,380	$ 1,460	$ -	$ 2,920
4	Pt Lot 40	F	Loeffen Farms Ltd.	(009-184-00)		28.76	$ 33,300	$ 17,140	$ -		$ 50,440	$ 16,813	$ 24,850	$ 8,777
4	Pt Lot 40 Pt Lot 41	F	L. Shedden	(009-187-00)		10.67	$ 9,990	$ 3,600	$ -		$ 13,590	$ 4,530	$ 2,760	$ 6,300
5	Pt Lot 34	F	J. & T. Armstrong	(012-065-00)		6.68	$ 13,600	$ -	$ 7,520		$ 21,120	$ 7,040	$ 9,380	$ 4,700
5	Pt Lot 34 Pt Lot 35	F	J. & A. Breukelman	(012-070-00)		21.84	$ 28,590	$ 920	$ 7,750		$ 37,260	$ 12,420	$ 17,490	$ 7,350
5	Pt Lot 350.7	*	B. Robins & D. Brucks	(012-071-00)	44	0.25	$ -	$ 60	$ -		$ 60	$ -	$ -	$ 60
5	Pt Lot 35	*	J. & C. Hannaford	(012-072-00)	43	0.24	$ -	$ 60	$ -		$ 60	$ -	$ -	$ 60
5	Pt Lot 35	*	A. & G. Vander Veen	(012-072-01)	42	0.47	$ -	$ 110	$ -		$ 110	$ -	$ -	$ 110
5	Pt Lot 35	*	G. & L. Pirson	(012-073-00)	41	0.43	$ -	$ 110	$ -		$ 110	$ -	$ -	$ 110
5	Pt Lot 35	*	J. Sider & M. Aarts	(012-074-00)	40	0.49	$ -	$ 150	$ -		$ 150	$ -	$ -	$ 150
5	Pt Lot 35	F	S. & D. Marr	(012-075-00)		8.52	$ 18,620	$ 1,390	$ -		$ 20,010	$ 6,670	$ 9,240	$ 4,100
5	Pt Lot 35	*	R. & C. Oosterhof	(012-075-05)	49	0.41	$ -	$ 170	$ -		$ 170	$ -	$ -	$ 170
5	Pt Lot 35	*	A. Veldhuisen	(012-075-15)	50	0.46	$ -	$ 190	$ -		$ 190	$ -	$ -	$ 190
5	Pt Lot 35	*	K. Johnson	(012-076-01)	39	0.31	$ -	$ 130	$ -		$ 130	$ -	$ -	$ 130
5	Pt Lot 35	F	Hihojo Ltd.	(012-077-00)		4.94	$ -	$ 850	$ -		$ 850	$ 283	$ -	$ 567
5	Pt Lot 36	F	G. & J. Oosterhof	(012-080-00)		5.56	$ -	$ 2,540	$ -		$ 2,540	$ 847	$ -	$ 1,693
5	Pt Lot 36 Pt Lot 37	F	A. Bevan	(012-081-00)		13.00	$ 17,450	$ 3,610	$ -		$ 21,060	$ 7,020	$ 6,490	$ 7,550
5	Pt Lot 36	*	S. Schertzing & A. Nannarone	(012-082-00)	48	1.72	$ 5,820	$ 560	$ -		$ 6,380	$ -	$ 4,700	$ 1,680
5	Pt Lot 36	*	T. & N. Sider	(012-083-00)	47	2.26	$ 5,820	$ 710	$ -		$ 6,530	$ -	$ 4,700	$ 1,830
5	Pt Lot 36	*	E., E. & B. Stryker	(012-083-01)	38	1.12	$ -	$ 530	$ -		$ 530	$ -	$ -	$ 530
5	Pt Lot 36	*	R. & J. Smit	(012-084-00)	36	0.33	$ -	$ 230	$ -		$ 230	$ -	$ -	$ 230
5	Pt Lot 36	*	1422217 Ontario Ltd.	(012-085-00)	35	0.56	$ -	$ 770	$ -		$ 770	$ -	$ -	$ 770
5	Pt Lot 36	*	L. & S. Charlebois	(012-085-02)	34	0.55	$ -	$ 350	$ -		$ 350	$ -	$ -	$ 350
5	Pt Lot 36	*	R. Dean	(012-086-00)	30	0.45	$ -	$ 280	$ -		$ 280	$ -	$ -	$ 280
5	Pt Lot 36	F	H. & G. Farms Inc.	(012-087-00)		5.10	$ -	$ 3,450	$ -		$ 3,450	$ 1,150	$ -	$ 2,300
5	Pt Lot 36	*	G., S. & S. Heitman & P. Da	(012-087-01)	37	0.35	$ -	$ 240	$ -		$ 240	$ -	$ -	$ 240
5	Pt Lot 36 Pt Lot 37	*	R. Deschamps & A. Milot	(012-088-00)		10.47	$ 17,450	$ 2,850	$ -		$ 20,300	$ -	$ 12,290	$ 8,010
5	Pt Lot 37	*	M. & L. Sigurdsson	(012-088-01)	28	0.32	$ -	$ 220	$ -		$ 220	$ -	$ -	$ 220
5	Pt Lot 37	*	M. Brown	(012-088-02)	27	0.41	$ -	$ 280	$ -		$ 280	$ -	$ -	$ 280
5	Pt Lot 37	*	J. Sinke	(012-089-00)	26	0.20	$ -	$ 130	$ -		$ 130	$ -	$ -	$ 130
5	Pt Lot 37	*	H. Travis & J. Campbell	(012-090-00)	25	0.41	$ -	$ 280	$ -		$ 280	$ -	$ -	$ 280
5	Pt Lot 37	*	A. & S. Taylor	(012-090-01)	24	0.41	$ 1,160	$ 170	$ -		$ 1,330	$ -	$ 1,310	$ 20
5	Pt Lot 37	*	Wainfleet Township	(012-091-00)		1.42	$ -	$ 640	$ -		$ 640	$ -	$ -	$ 640
5	Pt Lot 37	*	Wainfleet Township	(012-092-00)	51	0.92	$ -	$ 420	$ -		$ 420	$ -	$ -	$ 420
5	Pt Lot 37	*	N. Idrizi	(012-094-00)		0.05	$ -	$ -	$ -		$ -	$ -	$ -	$ -
5	Pt Lot 37	*	G. & P. Robson	(012-094-01)		4.85	$ 8,130	$ 1,440	$ 7,520		$ 17,090	$ -	$ 13,500	$ 3,590
5	Pt Lot 38	*	M. & A. Pols	(012-101-00)		0.10	$ -	$ 50	$ -		$ 50	$ -	$ -	$ 50
5	Pt Lot 38	*	POLS Investments Ltd.	(012-101-10)		4.44	$ 5,820	$ 840	$ -		$ 6,660	$ -	$ 1,460	$ 5,200
5	Pt Lot 38	*	Transportation Ministry	(012-102-00)	23	0.21	$ 2,910	$ 50	$ -		$ 2,960	$ -	$ -	$ 2,960
5	Pt Lot 38	F	R. & D. Freeman	(012-103-00)		0.29	$ -	$ 110	$ -		$ 110	$ 37	$ -	$ 73
5	Pt Lot 38	*	T. & R. Tourigny	(012-104-00)	14	0.36	$ -	$ 250	$ -		$ 250	$ -	$ -	$ 250
5	Pt Lot 38	*	B., D. & J Kinney	(012-105-00)	13	0.18	$ -	$ 120	$ -		$ 120	$ -	$ -	$ 120
5	Pt Lot 38	*	R. & N. Williams	(012-106-00)	12	0.07	$ -	$ 40	$ -		$ 40	$ -	$ -	$ 40
5	Pt Lot 38	*	S. Lawson & D. Traplin	(012-107-00)	11	0.02	$ -	$ -	$ -		$ -	$ -	$ -	$ -
			LANDS - TOWNSHIP OF WAINFLEET			**289.78**	**$ 259,080**	**$ 101,470**	**$ 87,320**	**$ -**	**$ 447,870**	**$ 86,453**	**$ 147,570**	**$ 213,847**

BURNSIDE

APPENDIX D1 - ASSESSMENTS for CONSTRUCTION
MAIN DRAIN

FINAL REPORT

PROJECT: Ellsworth MD
DATE : August-25

TOWNSHIP: Wainfleet
PROJECT #: 300050664

Conc. or Plan	Lot or Part	Tax	Owner	Roll No.	WS Plan No.	Affected Area (Ha.)	Benefit Assess't (Sect.22)	Outlet Assess't (Sect.23)	Special Benefit (Sect.24)	Special Assess't (Sect.26)	Total Assessment	*Less* 1/3 Grant	*Less* Allowances	Net Assessment
	COUNTY OF HALDIMAND													
SFR	Pt Lot 8	F	H. Werner	(004-071-50)		13.89	$ -	$ 8,980	$ -		$ 8,980	$ 2,993	$ -	$ 5,987
SFR	Pt Lot 7	F	Green Leaf Financial Capital	(004-072-00)		16.89	$ -	$ 8,960	$ -		$ 8,960	$ 2,987	$ -	$ 5,973
SFR	Pt Lot 6	F	A. & A. Traver	(004-073-00)		20.45	$ -	$ 12,040	$ -		$ 12,040	$ 4,013	$ -	$ 8,027
SFR	Pt Lot 6	F	C. & M. Disher	(004-074-00)		6.94	$ -	$ 2,690	$ -		$ 2,690	$ 897	$ -	$ 1,793
SFR	Pt Lot 5	F	C. & M. Disher	(004-075-00)		5.91	$ -	$ 2,300	$ -		$ 2,300	$ 767	$ -	$ 1,533
SFR	Pt Lot 5	F	R. & L. Disher	(004-075-50)		7.40	$ -	$ 2,870	$ -		$ 2,870	$ 957	$ -	$ 1,913
SFR	Pt Lot 5	F	C. & L. Disher	(004-076-00)		12.42	$ -	$ 4,820	$ -		$ 4,820	$ 1,607	$ -	$ 3,213
SFR	Pt Lot 4	*	R. & V. Neudorf	(004-077-00)		3.27	$ -	$ 1,270	$ -		$ 1,270	$ -	$ -	$ 1,270
SFR	Pt Lot 4	*	D. & I. Houser	(004-078-00)		9.79	$ -	$ 3,790	$ -		$ 3,790	$ -	$ -	$ 3,790
SFR	Pt Lot 4	F	G. Lunshof & Sons Farms Ltd.	(004-079-00)		8.81	$ -	$ 5,660	$ -		$ 5,660	$ 1,887	$ -	$ 3,773
SFR	Pt Lot 3	F	G. Lunshof & Sons Farms Ltd.	(004-079-50)		8.11	$ -	$ 4,870	$ -		$ 4,870	$ 1,623	$ -	$ 3,247
SFR	Pt Lot 3	F	G. Lunshof & Sons Farms Ltd.	(004-081-00)		7.86	$ -	$ 5,080	$ -		$ 5,080	$ 1,693	$ -	$ 3,387
SFR	Pt Lot 2	F	A. Douma	(004-087-00)		0.27	$ -	$ 170	$ -		$ 170	$ 57	$ -	$ 113
SFR	Pt Lot 2	F	G. Lunshof & Sons Farms Ltd.	(004-088-00)		18.54	$ -	$ 12,650	$ -		$ 12,650	$ 4,217	$ -	$ 8,433
SFR	Pt Lot 1	F	G. Lunshof & Sons Farms Ltd.	(004-090-00)		20.38	$ -	$ 12,350	$ -		$ 12,350	$ 4,117	$ -	$ 8,233
2	Pt Lot 9	*	T. & C. Lipinski	(004-115-00)		9.11	$ -	$ 3,540	$ -		$ 3,540	$ -	$ -	$ 3,540
2	Pt Lot 9	F	R. Rittenhouse & S. Racz	(004-116-00)		10.37	$ -	$ 6,360	$ -		$ 6,360	$ 2,120	$ -	$ 4,240
2	Pt Lot 9	F	J. Kelly	(004-117-00)		17.65	$ -	$ 10,670	$ -		$ 10,670	$ 3,557	$ -	$ 7,113
2	Pt Lot 9	*	S. & S. McKay	(004-118-00)	2	0.48	$ -	$ 450	$ -		$ 450	$ -	$ -	$ 450
2	Pt Lot 8	*	P. & H. Geerdink	(004-119-00)	1	0.44	$ -	$ 400	$ -		$ 400	$ -	$ -	$ 400
2	Pt Lot 8	F	R. & A. Csanig	(004-120-00)		33.07	$ -	$ 16,660	$ -		$ 16,660	$ 5,553	$ -	$ 11,107
2	Pt Lot 8	*	H. & R. Kelly	(004-121-00)		0.13	$ -	$ 70	$ -		$ 70	$ -	$ -	$ 70
1	Pt Lot 9	F	W. & B. Robson	(004-135-00)		34.59	$ -	$ 17,250	$ -		$ 17,250	$ 5,750	$ -	$ 11,500
1	Pt Lot 8	*	C. Skotniski	(004-136-00)		14.79	$ -	$ 5,740	$ -		$ 5,740	$ -	$ -	$ 5,740
1	Pt Lot 8	F	D. Pedro & A. Arsenio	(004-138-00)		1.22	$ -	$ 470	$ -		$ 470	$ 157	$ -	$ 313
			LANDS - COUNTY OF HALDIMAND			**282.78**	**$ -**	**$ 150,110**	**$ -**	**$ -**	**$ 150,110**	**$ 44,952**	**$ -**	**$ 105,158**
			TOTAL ON LANDS			**572.55**	**$ 259,080**	**$ 251,580**	**$ 87,320**	**$ -**	**$ 597,980**	**$ 131,405**	**$ 147,570**	**$ 319,005**
			Roads											
Cemetery Drive		*	Township of Wainfleet	ROAD		0.62	$ -	$ 860	$ -	$ -	$ 860			$ 860
Flanagan Road		*	Township of Wainfleet	ROAD		1.81	$ -	$ 4,040	$ -	$ -	$ 4,040			$ 4,040
Hendershot Road		*	Township of Wainfleet	ROAD		1.40	$ 22,240	$ 2,920	$ -	$ 20,860	$ 46,020			$ 46,020
Sider Road		*	Township of Wainfleet	ROAD		1.40	$ -	$ 920	$ -	$ -	$ 920			$ 920
Smith Road		*	Township of Wainfleet	ROAD		1.51	$ 40,340	$ 1,010	$ -	$ 109,570	$ 150,920			$ 150,920
Wainfleet Dunnville Townline Road (Wainfleet)		*	Township of Wainfleet	ROAD		0.66	$ 12,530	$ 1,480	$ -	$ 5,280	$ 19,290			$ 19,290
Zion Road		*	Township of Wainfleet	ROAD		0.60	$ 61,450	$ 670	$ -	$ 109,630	$ 171,750			$ 171,750
			ROADS - TOWNSHIP OF WAINFLEET			**8.01**	**$ 136,560**	**$ 11,900**	**$ -**	**$ 245,340**	**$ 393,800**	**$ -**	**$ -**	**$ 393,800**
Forks Road (Hwy 3)		*	Ministry of Transportation	ROAD		5.75	$ 34,360	$ 7,170	$ -	$ 31,270	$ 72,800			$ 72,800
			ROADS - MINISTRY OF TRANSPORTATION			**5.75**	**$ 34,360**	**$ 7,170**	**$ -**	**$ 31,270**	**$ 72,800**	**$ -**	**$ -**	**$ 72,800**
Hutchinson Rd (County Rd 65)		*	Haldimand County	ROAD		1.93	$ -	$ 5,000	$ -	$ -	$ 5,000			$ 5,000
Jenny Jump Road		*	Haldimand County	ROAD		5.74	$ -	$ 11,130	$ -	$ -	$ 11,130			$ 11,130
Wainfleet Dunnville Townline Road (Haldimand)		*	Haldimand County	ROAD		0.66	$ 12,530	$ 1,480	$ -	$ 5,280	$ 19,290			$ 19,290
			ROADS - COUNTY OF HALDIMAND			**8.33**	**$ 12,530**	**$ 17,610**	**$ -**	**$ 5,280**	**$ 35,420**	**$ -**	**$ -**	**$ 35,420**
			TOTAL ON ROADS			**22.09**	**$ 183,450**	**$ 36,680**	**$ -**	**$ 281,890**	**$ 502,020**	**$ -**	**$ -**	**$ 502,020**
			ALL LANDS AND ROADS			**594.64**	**$ 442,530**	**$ 288,260**	**$ 87,320**	**$ 281,890**	**$ 1,100,000**	**$ 131,405**	**$ 147,570**	**$ 821,025**

Notes:

(1) At the time of preparation for this report, properties were grouped based on those with agricultural farm tax class (F) and those without (*), based on ADIP grant eligibility.
(2) It is the responsibility of the landowner to confirm whether their property is eligible for an OMAFRA grant, under ADIP policies as eligibility has not been confirmed as part of the preparation of this report.
(3) The NET Assessment includes the total estimated property assessment, less both applicable ADIP grant and allowances.

BURNSIDE

APPENDIX D2A - ASSESSMENTS for MAINTENANCE
MAIN DRAIN
(Sta. 0+000 to Sta. 0+594)

FINAL REPORT

PROJECT: Ellsworth MD
DATE : August-25

TOWNSHIP: Wainfleet
PROJECT #: 300050664

Conc. or Plan	Lot or Part	Tax	Owner	Roll No.	Affected Area (Ha.)	Equivalent Area (Ha.)	Totals
			Lands				
	TOWNSHIP OF WAINFLEET						
4	Pt Lot 34	F	S. & D. Marr	(009-137-00)	4.20	4.39	0.76%
4	Pt Lot 34	*	J. & J. Young	(009-138-00)	0.41	0.61	0.10%
4	Pt Lot 34 Pt Lot 35	F	S. & D. Marr	(009-138-35)	8.97	8.97	1.47%
4	Pt Lot 35	F	G. Pop-Lazic & M. Fleming	(009-139-00)	2.77	3.12	0.51%
4	Pt Lot 35	*	D. & A. Marr	(009-140-00)	1.18	1.71	0.28%
4	Pt Lot 35	F	S. & D. Marr	(009-140-50)	10.62	10.62	1.74%
4	Pt Lot 36 Pt Lot 37	F	A. & A. Sinclair	(009-147-00)	7.08	4.25	0.69%
4	Pt Lot 36	F	T. Q. Liu & C. Y. Kan	(009-148-00)	8.51	8.70	1.42%
4	Pt Lot 36	*	J. Collard & D. Scott	(009-149-00)	0.14	0.21	0.03%
4	Pt Lot 36	*	2766453 Ontario Inc.	(009-151-00)	3.93	5.64	0.92%
4	Pt Lot 36	*	F., L. & J. Feith	(009-151-01)	0.68	1.02	0.17%
4	Pt Lot 36	F	R. & L. Disher	(009-152-00)	4.24	4.48	0.73%
4	Pt Lot 36	*	S. Heitman	(009-153-00)	11.72	9.29	1.52%
4	Pt Lot 36	*	T. & J. Shoalts	(009-153-01)	0.47	0.71	0.12%
4	Pt Lot 37	F	L. Aarts	(009-154-00)	19.41	18.29	2.99%
4	Pt Lot 37	*	T. Clapp	(009-154-05)	0.41	0.61	0.10%
4	Pt Lot 37	*	R. B. & D. Heitman	(009-154-06)	0.41	0.61	0.10%
4	Pt Lot 37	*	J. D. & L Kiers	(009-154-07)	0.40	0.61	0.10%
4	Pt Lot 37	*	R. & P. Bruining	(009-155-00)	0.21	0.32	0.05%
4	Pt North Half Lot 37	*	T. Gomes	(009-156-00)	0.21	0.31	0.05%
4	Pt Lot 37	*	S. Medjed & G. Mcpherson	(009-157-00)	0.23	0.35	0.06%
4	Pt Lot 37	*	S. Vinnick	(009-158-00)	0.15	0.23	0.04%
4	Pt Lot 37	*	D. & E. Belfry	(009-159-00)	5.24	5.27	0.86%
4	Pt Lot 37	*	W. & L. Scace	(009-159-01)	2.21	1.32	0.22%
4	Pt Lot 38	F	G & B Prentice Farms Ltd.	(009-166-00)	7.20	7.48	1.22%
4	Pt Lot 38 Pt Lot 39	F	L. Aarts	(009-167-00)	27.54	28.05	4.58%
4	Pt Lot 38	*	R. Ricker	(009-167-01)	0.81	1.21	0.20%
4	Pt Lot 38	*	M. & B. Rickman	(009-167-25)	0.42	0.63	0.10%
4	Pt Lot 38	*	D. Vonk	(009-167-30)	0.41	0.62	0.10%
4	Pt Lot 38	*	J. Wall	(009-168-00)	0.43	0.64	0.10%
4	Pt Lot 38	*	K. Turnbull & P. Statten	(009-169-00)	0.14	0.20	0.03%
4	Pt Lot 39	*	R. & N. Williams	(009-170-00)	0.69	1.03	0.17%
4	Pt Lot 39	*	J. & H. Donaldson	(009-172-00)	0.33	0.43	0.07%
4	Pt Lot 39	*	1515435 Ontario Ltd.	(009-173-00)	7.87	7.97	1.30%
4	Pt Lot 39	F	Loeffen Farms Ltd.	(009-173-01)	2.12	2.12	0.35%
4	Pt Lot 39	*	S., P. & R. Feddema	(009-178-00)	0.19	0.19	0.03%
4	Pt Lot 39	*	S. High & L. Ricker	(009-179-00)	0.39	0.31	0.05%
4	Pt Lot 39	F	D. & N. Ton	(009-180-00)	6.91	7.16	1.17%
4	Pt Lot 40	F	Loeffen Farms Ltd.	(009-184-00)	28.76	30.49	4.98%
4	Pt Lot 40 Pt Lot 41	F	L. Shedden	(009-187-00)	10.67	6.40	1.05%
5	Pt Lot 34	F	J. & T. Armstrong	(012-065-00)	6.68	4.96	0.81%
5	Pt Lot 34 Pt Lot 35	F	J. & A. Breukelman	(012-070-00)	21.84	21.32	3.48%
5	Pt Lot 350.7	*	B. Robins & D. Brucks	(012-071-00)	0.25	0.37	0.06%
5	Pt Lot 35	*	J. & C. Hannaford	(012-072-00)	0.24	0.36	0.06%
5	Pt Lot 35	*	A. & G. Vander Veen	(012-072-01)	0.47	0.70	0.11%
5	Pt Lot 35	*	G. & L. Pirson	(012-073-00)	0.43	0.65	0.11%
5	Pt Lot 35	*	J. Sider & M. Aarts	(012-074-00)	0.49	0.74	0.12%
5	Pt Lot 35	F	S. & D. Marr	(012-075-00)	8.52	8.52	1.39%
5	Pt Lot 35	*	R. & C. Oosterhof	(012-075-05)	0.41	0.61	0.10%
5	Pt Lot 35	*	A. Veldhuisen	(012-075-15)	0.46	0.70	0.11%
5	Pt Lot 35	*	K. Johnson	(012-076-01)	0.31	0.46	0.08%
5	Pt Lot 35	F	Hihojo Ltd.	(012-077-00)	4.94	4.94	0.81%
5	Pt Lot 36	F	G. & J. Oosterhof	(012-080-00)	5.56	5.56	0.91%
5	Pt Lot 36 Pt Lot 37	F	A. Bevan	(012-081-00)	13.00	13.08	2.14%
5	Pt Lot 36	*	S. Schertzing & A. Nannarone	(012-082-00)	1.72	2.02	0.33%
5	Pt Lot 36	*	T. & N. Sider	(012-083-00)	2.26	2.59	0.42%
5	Pt Lot 36	*	E., E. & B. Stryker	(012-083-01)	1.12	1.16	0.19%
5	Pt Lot 36	*	R. & J. Smit	(012-084-00)	0.33	0.50	0.08%
5	Pt Lot 36	*	1422217 Ontario Ltd.	(012-085-00)	0.56	1.69	0.28%
5	Pt Lot 36	*	L. & S. Charlebois	(012-085-02)	0.55	0.76	0.12%
5	Pt Lot 36	*	R. Dean	(012-086-00)	0.45	0.63	0.10%
5	Pt Lot 36	F	H. & G. Farms Inc.	(012-087-00)	5.10	7.55	1.23%
5	Pt Lot 36	*	G., S. & S. Heitman & P. Da	(012-087-01)	0.35	0.52	0.09%
5	Pt Lot 36 Pt Lot 37	*	R. Deschamps & A. Milot	(012-088-00)	10.47	10.32	1.69%
5	Pt Lot 37	*	M. & L. Sigurdsson	(012-088-01)	0.32	0.48	0.08%
5	Pt Lot 37	*	M. Brown	(012-088-02)	0.41	0.61	0.10%
5	Pt Lot 37	*	J. Sinke	(012-089-00)	0.20	0.29	0.05%
5	Pt Lot 37	*	H. Travis & J. Campbell	(012-090-00)	0.41	0.62	0.10%
5	Pt Lot 37	*	A. & S. Taylor	(012-090-01)	0.41	0.61	0.10%
5	Pt Lot 37	*	Wainfleet Township	(012-091-00)	1.42	1.42	0.23%
5	Pt Lot 37	*	Wainfleet Township	(012-092-00)	0.92	0.92	0.15%
0	Pt Lot 37	*	N. Idrizi	(012-094-00)	0.05	0.03	0.00%
5	Pt Lot 37	*	G. & P. Robson	(012-094-01)	4.85	5.20	0.85%
5	Pt Lot 38	*	M. & A. Pols	(012-101-00)	0.10	0.10	0.02%
5	Pt Lot 38	*	POLS Investments Ltd.	(012-101-10)	4.44	3.04	0.50%
5	Pt Lot 38	*	Transportation Ministry	(012-102-00)	0.21	0.17	0.03%

5	Pt Lot 38	F	R. & D. Freeman	(012-103-00)	0.29	0.24	0.04%
5	Pt Lot 38	*	T. & R. Tourigny	(012-104-00)	0.36	0.54	0.09%
5	Pt Lot 38	*	B., D. & J Kinney	(012-105-00)	0.18	0.26	0.04%
5	Pt Lot 38	*	R. & N. Williams	(012-106-00)	0.07	0.10	0.02%
0	0	*	S. Lawson & D. Traplin	(012-107-00)	0.02	0.03	0.00%
			LANDS - TOWNSHIP OF WAINFLEET		**289.78**	**291.91**	**47.75%**
	COUNTY OF HALDIMAND						
SFR	Pt Lot 8	F	H. Werner	(004-071-50)	13.89	13.89	2.27%
SFR	Pt Lot 7	F	Green Leaf Financial Capital	(004-072-00)	16.89	13.86	2.27%
SFR	Pt Lot 6	F	A. & A. Traver	(004-073-00)	20.45	18.61	3.04%
SFR	Pt Lot 6	F	C. & M. Disher	(004-074-00)	6.94	4.16	0.68%
SFR	Pt Lot 5	F	C. & M. Disher	(004-075-00)	5.91	3.55	0.58%
SFR	Pt Lot 5	F	R. & L. Disher	(004-075-50)	7.40	4.44	0.73%
SFR	Pt Lot 5	F	C. & L. Disher	(004-076-00)	12.42	7.45	1.22%
SFR	Pt Lot 4	*	R. & V. Neudorf	(004-077-00)	3.27	1.96	0.32%
SFR	Pt Lot 4	*	D. & I. Houser	(004-078-00)	9.79	5.87	0.96%
SFR	Pt Lot 4	F	G. Lunshof & Sons Farms Ltd.	(004-079-00)	8.81	8.75	1.43%
SFR	Pt Lot 3	F	G. Lunshof & Sons Farms Ltd.	(004-079-50)	8.11	7.54	1.23%
SFR	Pt Lot 3	F	G. Lunshof & Sons Farms Ltd.	(004-081-00)	7.86	7.86	1.29%
SFR	Pt Lot 2	F	A. Douma	(004-087-00)	0.27	0.27	0.04%
SFR	Pt Lot 2	F	G. Lunshof & Sons Farms Ltd.	(004-088-00)	18.54	19.57	3.20%
SFR	Pt Lot 1	F	G. Lunshof & Sons Farms Ltd.	(004-090-00)	20.38	19.11	3.12%
2	Pt Lot 9	*	T. & C. Lipinski	(004-115-00)	9.11	5.47	0.89%
2	Pt Lot 9	F	R. Rittenhouse & S. Racz	(004-116-00)	10.37	9.83	1.61%
2	Pt Lot 9	F	J. Kelly	(004-117-00)	17.65	16.52	2.70%
2	Pt Lot 9	*	S. & S. McKay	(004-118-00)	0.48	0.70	0.11%
2	Pt Lot 8	*	P. & H. Geerdink	(004-119-00)	0.44	0.63	0.10%
2	Pt Lot 8	F	R. & A. Csanig	(004-120-00)	33.07	25.77	4.21%
0	0	*	H. & R. Kelly	(004-121-00)	0.13	0.13	0.02%
1	Pt Lot 9	F	W. & B. Robson	(004-135-00)	34.59	26.70	4.36%
1	Pt Lot 8	*	C. Skotniski	(004-136-00)	14.79	8.87	1.45%
1	Pt Lot 8	F	D. Pedro & A. Arsenio	(004-138-00)	1.22	0.73	0.12%
			LANDS - COUNTY OF HALDIMAND		**282.78**	**232.23**	**37.95%**
			TOTAL ON LANDS		**572.55**	**524.13**	**85.70%**
			Roads				
Cemetery Drive		*	Township of Wainfleet	ROAD	0.62	1.87	0.31%
Flanagan Road		*	Township of Wainfleet	ROAD	1.81	7.25	1.18%
Hendershot Road		*	Township of Wainfleet	ROAD	1.40	5.59	0.91%
Sider Road		*	Township of Wainfleet	ROAD	1.40	5.61	0.92%
Smith Road		*	Township of Wainfleet	ROAD	1.51	6.05	0.99%
Wainfleet Dunnville Townline Road (Wainfleet)		*	Township of Wainfleet	ROAD	0.66	2.63	0.43%
Zion Road		*	Township of Wainfleet	ROAD	0.60	2.42	0.39%
			ROADS - TOWNSHIP OF WAINFLEET		**8.01**	**31.42**	**5.13%**
Forks Road (Hwy 3)		*	Ministry of Transportation	ROAD	5.75	28.73	4.69%
			ROADS - MINISTRY OF TRANSPORTATION		**5.75**	**28.73**	**4.69%**
Hutchinson Rd (County Rd 65)		*	Haldimand County	ROAD	1.93	7.73	1.23%
Jenny Jump Road		*	Haldimand County	ROAD	5.74	17.23	2.82%
Wainfleet Dunnville Townline Road (Haldimand)		*	Haldimand County	ROAD	0.66	2.63	0.43%
			ROADS - COUNTY OF HALDIMAND		**8.33**	**27.59**	**4.48%**
			TOTAL ON ROADS		**22.09**	**87.74**	**14.30%**
			ALL LANDS AND ROADS		**594.64**	**611.88**	**100.00%**

Notes: (1) At the time of preparation for this report, properties were grouped based on those with agricultural farm tax class (F) and those without (*), based on ADIP grant eligibility.

(2) It is the responsibility of the landowner to confirm whether their property is eligible for an OMAFRA grant, under ADIP policies as eligibility has not been confirmed as part of the preparation of this report.

BURNSIDE

APPENDIX D2B - ASSESSMENTS for MAINTENANCE
MAIN DRAIN
(Sta. 0+594 to Sta. 1+112)

FINAL REPORT

PROJECT: Ellsworth MD
DATE : August-25

TOWNSHIP: Wainfleet
PROJECT #: 300050664

Conc. or Plan	Lot or Part	Tax	Owner	Roll No.	Affected Area (Ha.)	Equivalent Area (Ha.)	Totals
			Lands				
	TOWNSHIP OF WAINFLEET						
4	Pt Lot 36 Pt Lot 37	F	A. & A. Sinclair	(009-147-00)	0.99	0.59	0.12%
4	Pt Lot 36	*	J. Collard & D. Scott	(009-149-00)	0.02	0.03	0.01%
4	Pt Lot 36	*	2766453 Ontario Inc.	(009-151-00)	0.21	0.31	0.06%
4	Pt Lot 36	*	F., L. & J. Feith	(009-151-01)	0.49	0.74	0.14%
4	Pt Lot 36	F	R. & L. Disher	(009-152-00)	0.65	0.94	0.18%
4	Pt Lot 36	*	S. Heitman	(009-153-00)	4.37	4.66	0.91%
4	Pt Lot 36	*	T. & J. Shoalts	(009-153-01)	0.47	0.71	0.14%
4	Pt Lot 37	F	L. Aarts	(009-154-00)	17.30	16.83	3.30%
4	Pt Lot 37	*	T. Clapp	(009-154-05)	0.41	0.61	0.12%
4	Pt Lot 37	*	R. B. & D. Heitman	(009-154-06)	0.41	0.61	0.12%
4	Pt Lot 37	*	J. D. & L Kiers	(009-154-07)	0.40	0.61	0.12%
4	Pt Lot 37	*	R. & P. Bruining	(009-155-00)	0.21	0.32	0.06%
4	Pt North Half Lot 37	*	T. Gomes	(009-156-00)	0.21	0.31	0.06%
4	Pt Lot 37	*	S. Medjed & G. Mcpherson	(009-157-00)	0.23	0.35	0.07%
4	Pt Lot 37	*	S. Vinnick	(009-158-00)	0.15	0.23	0.04%
4	Pt Lot 37	*	D. & E. Belfry	(009-159-00)	4.47	4.65	0.91%
4	Pt Lot 37	*	W. & L. Scace	(009-159-01)	2.21	1.32	0.26%
4	Pt Lot 38	F	G & B Prentice Farms Ltd.	(009-166-00)	7.20	7.48	1.47%
4	Pt Lot 38 Pt Lot 39	F	L. Aarts	(009-167-00)	27.54	28.05	5.49%
4	Pt Lot 38	*	R. Ricker	(009-167-01)	0.81	1.21	0.24%
4	Pt Lot 38	*	M. & B. Rickman	(009-167-25)	0.42	0.63	0.12%
4	Pt Lot 38	*	D. Vonk	(009-167-30)	0.41	0.62	0.12%
4	Pt Lot 38	*	J. Wall	(009-168-00)	0.43	0.64	0.13%
4	Pt Lot 38	*	K. Turnbull & P. Statten	(009-169-00)	0.14	0.20	0.04%
4	Pt Lot 39	*	R. & N. Williams	(009-170-00)	0.69	1.03	0.20%
4	Pt Lot 39	*	J. & H. Donaldson	(009-172-00)	0.33	0.43	0.08%
4	Pt Lot 39	*	1515435 Ontario Ltd.	(009-173-00)	7.87	7.97	1.56%
4	Pt Lot 39	F	Loeffen Farms Ltd.	(009-173-01)	2.12	2.12	0.41%
4	Pt Lot 39	*	S., P. & R. Feddema	(009-178-00)	0.19	0.19	0.04%
4	Pt Lot 39	*	S. High & L. Ricker	(009-179-00)	0.39	0.31	0.06%
4	Pt Lot 39	F	D. & N. Ton	(009-180-00)	6.91	7.16	1.40%
4	Pt Lot 40	F	Loeffen Farms Ltd.	(009-184-00)	28.76	30.49	5.97%
4	Pt Lot 40 Pt Lot 41	F	L. Shedden	(009-187-00)	10.67	6.40	1.25%
5	Pt Lot 34 Pt Lot 35	F	J. & A. Breukelman	(012-070-00)	5.62	5.62	1.10%
5	Pt Lot 35	*	J. Sider & M. Aarts	(012-074-00)	0.17	0.26	0.05%
5	Pt Lot 35	F	S. & D. Marr	(012-075-00)	8.52	8.52	1.67%
5	Pt Lot 35	*	R. & C. Oosterhof	(012-075-05)	0.41	0.61	0.12%
5	Pt Lot 35	*	A. Veldhuisen	(012-075-15)	0.44	0.66	0.13%
5	Pt Lot 35	*	K. Johnson	(012-076-01)	0.31	0.46	0.09%
5	Pt Lot 35	F	Hihojo Ltd.	(012-077-00)	0.35	0.35	0.07%
5	Pt Lot 36	F	G. & J. Oosterhof	(012-080-00)	5.56	5.56	1.09%
5	Pt Lot 36 Pt Lot 37	F	A. Bevan	(012-081-00)	13.00	13.08	2.56%
5	Pt Lot 36	*	S. Schertzing & A. Nannarone	(012-082-00)	1.72	2.02	0.39%
5	Pt Lot 36	*	T. & N. Sider	(012-083-00)	2.26	2.59	0.51%
5	Pt Lot 36	*	E., E. & B. Stryker	(012-083-01)	1.12	1.16	0.23%
5	Pt Lot 36	*	R. & J. Smit	(012-084-00)	0.33	0.50	0.10%
5	Pt Lot 36	*	1422217 Ontario Ltd.	(012-085-00)	0.56	1.69	0.33%
5	Pt Lot 36	*	L. & S. Charlebois	(012-085-02)	0.55	0.76	0.15%
5	Pt Lot 36	*	R. Dean	(012-086-00)	0.45	0.63	0.12%
5	Pt Lot 36	F	H. & G. Farms Inc.	(012-087-00)	5.10	7.55	1.48%
5	Pt Lot 36	*	G., S. & S. Heitman & P. Da	(012-087-01)	0.35	0.52	0.10%
5	Pt Lot 36 Pt Lot 37	*	R. Deschamps & A. Milot	(012-088-00)	10.47	10.32	2.02%
5	Pt Lot 37	*	M. & L. Sigurdsson	(012-088-01)	0.32	0.48	0.09%
5	Pt Lot 37	*	M. Brown	(012-088-02)	0.41	0.61	0.12%
5	Pt Lot 37	*	J. Sinke	(012-089-00)	0.20	0.29	0.06%
5	Pt Lot 37	*	H. Travis & J. Campbell	(012-090-00)	0.41	0.62	0.12%
5	Pt Lot 37	*	A. & S. Taylor	(012-090-01)	0.41	0.61	0.12%
5	Pt Lot 37	*	Wainfleet Township	(012-091-00)	1.42	1.42	0.28%
5	Pt Lot 37	*	Wainfleet Township	(012-092-00)	0.92	0.92	0.18%
0	Pt Lot 37	*	N. Idrizi	(012-094-00)	0.05	0.03	0.01%
5	Pt Lot 37	*	G. & P. Robson	(012-094-01)	4.85	5.20	1.02%
5	Pt Lot 38	*	M. & A. Pols	(012-101-00)	0.10	0.10	0.02%
5	Pt Lot 38	*	POLS Investments Ltd.	(012-101-10)	4.44	3.04	0.60%
5	Pt Lot 38	*	Transportation Ministry	(012-102-00)	0.21	0.17	0.03%
5	Pt Lot 38	F	R. & D. Freeman	(012-103-00)	0.29	0.24	0.05%
5	Pt Lot 38	*	T. & R. Tourigny	(012-104-00)	0.36	0.54	0.11%
5	Pt Lot 38	*	B., D. & J Kinney	(012-105-00)	0.18	0.26	0.05%
5	Pt Lot 38	*	R. & N. Williams	(012-106-00)	0.07	0.10	0.02%
0	0	*	S. Lawson & D. Traplin	(012-107-00)	0.02	0.03	0.01%
			LANDS - TOWNSHIP OF WAINFLEET		**199.97**	**206.26**	**40.40%**

	COUNTY OF HALDIMAND						
SFR	Pt Lot 8	F	H. Werner	(004-071-50)	13.89	13.89	2.72%
SFR	Pt Lot 7	F	Green Leaf Financial Capital	(004-072-00)	16.89	13.86	2.71%
SFR	Pt Lot 6	F	A. & A. Traver	(004-073-00)	20.45	18.61	3.64%
SFR	Pt Lot 6	F	C. & M. Disher	(004-074-00)	6.94	4.16	0.81%
SFR	Pt Lot 5	F	C. & M. Disher	(004-075-00)	5.91	3.55	0.69%
SFR	Pt Lot 5	F	R. & L. Disher	(004-075-50)	7.40	4.44	0.87%
SFR	Pt Lot 5	F	C. & L. Disher	(004-076-00)	12.42	7.45	1.46%
SFR	Pt Lot 4	*	R. & V. Neudorf	(004-077-00)	3.27	1.96	0.38%
SFR	Pt Lot 4	*	D. & I. Houser	(004-078-00)	9.79	5.87	1.15%
SFR	Pt Lot 4	F	G. Lunshof & Sons Farms Ltd.	(004-079-00)	8.81	8.75	1.71%
SFR	Pt Lot 3	F	G. Lunshof & Sons Farms Ltd.	(004-079-50)	8.11	7.54	1.48%
SFR	Pt Lot 3	F	G. Lunshof & Sons Farms Ltd.	(004-081-00)	7.86	7.86	1.54%
SFR	Pt Lot 2	F	A. Douma	(004-087-00)	0.27	0.27	0.05%
SFR	Pt Lot 2	F	G. Lunshof & Sons Farms Ltd.	(004-088-00)	18.54	19.57	3.83%
SFR	Pt Lot 1	F	G. Lunshof & Sons Farms Ltd.	(004-090-00)	20.38	19.11	3.74%
2	Pt Lot 9	*	T. & C. Lipinski	(004-115-00)	9.11	5.47	1.07%
2	Pt Lot 9	F	R. Rittenhouse & S. Racz	(004-116-00)	10.37	9.83	1.92%
2	Pt Lot 9	F	J. Kelly	(004-117-00)	17.65	16.52	3.23%
2	Pt Lot 9	*	S. & S. McKay	(004-118-00)	0.48	0.70	0.14%
2	Pt Lot 8	*	P. & H. Geerdink	(004-119-00)	0.44	0.63	0.12%
2	Pt Lot 8	F	R. & A. Csanig	(004-120-00)	33.07	25.77	5.04%
0	0	*	H. & R. Kelly	(004-121-00)	0.13	0.13	0.03%
1	Pt Lot 9	F	W. & B. Robson	(004-135-00)	34.59	26.70	5.23%
1	Pt Lot 8	*	C. Skotniski	(004-136-00)	14.79	8.87	1.74%
1	Pt Lot 8	F	D. Pedro & A. Arsenio	(004-138-00)	1.22	0.73	0.14%
				LANDS - COUNTY OF HALDIMAND	**282.78**	**232.23**	**45.44%**
				TOTAL ON LANDS	**482.75**	**438.49**	**85.84%**
			Roads				
Cemetery Drive		*	Township of Wainfleet	ROAD	0.62	1.87	0.37%
Flanagan Road		*	Township of Wainfleet	ROAD	1.81	7.25	1.42%
Hendershot Road		*	Township of Wainfleet	ROAD	1.40	5.59	1.09%
Smith Road		*	Township of Wainfleet	ROAD	1.51	6.05	1.18%
Wainfleet Dunnville Townline Road (Wainfleet)		*	Township of Wainfleet	ROAD	0.66	2.63	0.52%
Zion Road		*	Township of Wainfleet	ROAD	0.60	2.42	0.47%
				ROADS - TOWNSHIP OF WAINFLEET	**6.61**	**25.81**	**5.05%**
Forks Road (Hwy 3)		*	Ministry of Transportation	ROAD	3.79	18.95	3.71%
				ROADS - MINISTRY OF TRANSPORTATION	**3.79**	**18.95**	**3.71%**
Hutchinson Rd (County Rd 65)		*	Haldimand County	ROAD	1.93	7.73	1.51%
Jenny Jump Road		*	Haldimand County	ROAD	5.74	17.23	3.37%
Wainfleet Dunnville Townline Road (Haldimand)		*	Haldimand County	ROAD	0.66	2.63	0.52%
				ROADS - COUNTY OF HALDIMAND	**8.33**	**27.59**	**5.40%**
				TOTAL ON ROADS	**18.73**	**72.35**	**14.16%**
				ALL LANDS AND ROADS	**501.48**	**510.84**	**100.00%**

Notes: (1) At the time of preparation for this report, properties were grouped based on those with agricultural farm tax class (F) and those without (*), based on ADIP grant eligibility.

(2) It is the responsibility of the landowner to confirm whether their property is eligible for an OMAFRA grant, under ADIP policies as eligibility has not been confirmed as part of the preparation of this report.

BURNSIDE

APPENDIX D2C - ASSESSMENTS for MAINTENANCE
MAIN DRAIN
(Sta. 1+112 to Sta. 2+297)

FINAL REPORT

PROJECT: Ellsworth MD
DATE : August-25

TOWNSHIP: Wainfleet
PROJECT #: 300050664

Conc. or Plan	Lot or Part	Tax	Owner	Roll No.	Affected Area (Ha.)	Equivalent Area (Ha.)	Totals
			Lands				
	TOWNSHIP OF WAINFLEET						
4	Pt Lot 36 Pt Lot 37	F	A. & A. Sinclair	(009-147-00)	0.99	0.59	0.12%
4	Pt Lot 36	*	J. Collard & D. Scott	(009-149-00)	0.02	0.03	0.01%
4	Pt Lot 36	*	2766453 Ontario Inc.	(009-151-00)	0.21	0.31	0.06%
4	Pt Lot 36	*	F., L. & J. Feith	(009-151-01)	0.49	0.74	0.15%
4	Pt Lot 36	F	R. & L. Disher	(009-152-00)	0.65	0.94	0.19%
4	Pt Lot 36	*	S. Heitman	(009-153-00)	4.37	4.66	0.96%
4	Pt Lot 36	*	T. & J. Shoalts	(009-153-01)	0.47	0.71	0.15%
4	Pt Lot 37	F	L. Aarts	(009-154-00)	17.30	16.83	3.45%
4	Pt Lot 37	*	T. Clapp	(009-154-05)	0.41	0.61	0.12%
4	Pt Lot 37	*	R. B. & D. Heitman	(009-154-06)	0.41	0.61	0.12%
4	Pt Lot 37	*	J. D. & L Kiers	(009-154-07)	0.40	0.61	0.12%
4	Pt Lot 37	*	R. & P. Bruining	(009-155-00)	0.21	0.32	0.06%
4	Pt North Half Lot 37	*	T. Gomes	(009-156-00)	0.21	0.31	0.06%
4	Pt Lot 37	*	S. Medjed & G. Mcpherson	(009-157-00)	0.23	0.35	0.07%
4	Pt Lot 37	*	S. Vinnick	(009-158-00)	0.15	0.23	0.05%
4	Pt Lot 37	*	D. & E. Belfry	(009-159-00)	4.47	4.65	0.95%
4	Pt Lot 37	*	W. & L. Scace	(009-159-01)	2.21	1.32	0.27%
4	Pt Lot 38	F	G & B Prentice Farms Ltd.	(009-166-00)	7.20	7.48	1.53%
4	Pt Lot 38 Pt Lot 39	F	L. Aarts	(009-167-00)	27.54	28.05	5.75%
4	Pt Lot 38	*	R. Ricker	(009-167-01)	0.81	1.21	0.25%
4	Pt Lot 38	*	M. & B. Rickman	(009-167-25)	0.42	0.63	0.13%
4	Pt Lot 38	*	D. Vonk	(009-167-30)	0.41	0.62	0.13%
4	Pt Lot 38	*	J. Wall	(009-168-00)	0.43	0.64	0.13%
4	Pt Lot 38	*	K. Turnbull & P. Statten	(009-169-00)	0.14	0.20	0.04%
4	Pt Lot 39	*	R. & N. Williams	(009-170-00)	0.69	1.03	0.21%
4	Pt Lot 39	*	J. & H. Donaldson	(009-172-00)	0.33	0.43	0.09%
4	Pt Lot 39	*	1515435 Ontario Ltd.	(009-173-00)	7.87	7.97	1.63%
4	Pt Lot 39	F	Loeffen Farms Ltd.	(009-173-01)	2.12	2.12	0.43%
4	Pt Lot 39	*	S., P. & R. Feddema	(009-178-00)	0.19	0.19	0.04%
4	Pt Lot 39	*	S. High & L. Ricker	(009-179-00)	0.39	0.31	0.06%
4	Pt Lot 39	F	D. & N. Ton	(009-180-00)	6.91	7.16	1.47%
4	Pt Lot 40	F	Loeffen Farms Ltd.	(009-184-00)	28.76	30.49	6.25%
4	Pt Lot 40 Pt Lot 41	F	L. Shedden	(009-187-00)	10.67	6.40	1.31%
5	Pt Lot 36	F	G. & J. Oosterhof	(012-080-00)	5.56	5.56	1.14%
5	Pt Lot 36 Pt Lot 37	F	A. Bevan	(012-081-00)	13.00	13.08	2.68%
5	Pt Lot 36	*	S. Schertzing & A. Nannarone	(012-082-00)	1.72	2.02	0.41%
5	Pt Lot 36	*	T. & N. Sider	(012-083-00)	2.26	2.59	0.53%
5	Pt Lot 36	*	E., E. & B. Stryker	(012-083-01)	1.12	1.16	0.24%
5	Pt Lot 36	*	R. & J. Smit	(012-084-00)	0.33	0.50	0.10%
5	Pt Lot 36	*	1422217 Ontario Ltd.	(012-085-00)	0.56	1.69	0.35%
5	Pt Lot 36	*	L. & S. Charlebois	(012-085-02)	0.55	0.76	0.16%
5	Pt Lot 36	*	R. Dean	(012-086-00)	0.45	0.63	0.13%
5	Pt Lot 36	F	H. & G. Farms Inc.	(012-087-00)	5.10	7.55	1.55%
5	Pt Lot 36	*	G., S. & S. Heitman & P. Da	(012-087-01)	0.35	0.52	0.11%
5	Pt Lot 36 Pt Lot 37	*	R. Deschamps & A. Milot	(012-088-00)	10.47	10.32	2.12%
5	Pt Lot 37	*	M. & L. Sigurdsson	(012-088-01)	0.32	0.48	0.10%
5	Pt Lot 37	*	M. Brown	(012-088-02)	0.41	0.61	0.12%
5	Pt Lot 37	*	J. Sinke	(012-089-00)	0.20	0.29	0.06%
5	Pt Lot 37	*	H. Travis & J. Campbell	(012-090-00)	0.41	0.62	0.13%
5	Pt Lot 37	*	A. & S. Taylor	(012-090-01)	0.41	0.61	0.13%
5	Pt Lot 37	*	Wainfleet Township	(012-091-00)	1.42	1.42	0.29%
5	Pt Lot 37	*	Wainfleet Township	(012-092-00)	0.92	0.92	0.19%
0	Pt Lot 37	*	N. Idrizi	(012-094-00)	0.05	0.03	0.01%
5	Pt Lot 37	*	G. & P. Robson	(012-094-01)	4.85	5.20	1.07%
5	Pt Lot 38	*	M. & A. Pols	(012-101-00)	0.10	0.10	0.02%
5	Pt Lot 38	*	POLS Investments Ltd.	(012-101-10)	4.44	3.04	0.62%
5	Pt Lot 38	*	Transportation Ministry	(012-102-00)	0.21	0.17	0.04%
5	Pt Lot 38	F	R. & D. Freeman	(012-103-00)	0.29	0.24	0.05%
5	Pt Lot 38	*	T. & R. Tourigny	(012-104-00)	0.36	0.54	0.11%
5	Pt Lot 38	*	B., D. & J Kinney	(012-105-00)	0.18	0.26	0.05%
5	Pt Lot 38	*	R. & N. Williams	(012-106-00)	0.07	0.10	0.02%
0	0	*	S. Lawson & D. Traplin	(012-107-00)	0.02	0.03	0.01%
			LANDS - TOWNSHIP OF WAINFLEET		**184.16**	**189.78**	**38.90%**
	COUNTY OF HALDIMAND						
SFR	Pt Lot 8	F	H. Werner	(004-071-50)	13.89	13.89	2.85%
SFR	Pt Lot 7	F	Green Leaf Financial Capital	(004-072-00)	16.89	13.86	2.84%
SFR	Pt Lot 6	F	A. & A. Traver	(004-073-00)	20.45	18.61	3.81%
SFR	Pt Lot 6	F	C. & M. Disher	(004-074-00)	6.94	4.16	0.85%
SFR	Pt Lot 5	F	C. & M. Disher	(004-075-00)	5.91	3.55	0.73%

SFR	Pt Lot 5	F	R. & L. Disher	(004-075-50)	7.40	4.44	0.91%
SFR	Pt Lot 5	F	C. & L. Disher	(004-076-00)	12.42	7.45	1.53%
SFR	Pt Lot 4	*	R. & V. Neudorf	(004-077-00)	3.27	1.96	0.40%
SFR	Pt Lot 4	*	D. & I. Houser	(004-078-00)	9.79	5.87	1.20%
SFR	Pt Lot 4	F	G. Lunshof & Sons Farms Ltd.	(004-079-00)	8.81	8.75	1.79%
SFR	Pt Lot 3	F	G. Lunshof & Sons Farms Ltd.	(004-079-50)	8.11	7.54	1.54%
SFR	Pt Lot 3	F	G. Lunshof & Sons Farms Ltd.	(004-081-00)	7.86	7.86	1.61%
SFR	Pt Lot 2	F	A. Douma	(004-087-00)	0.27	0.27	0.06%
SFR	Pt Lot 2	F	G. Lunshof & Sons Farms Ltd.	(004-088-00)	18.54	19.57	4.01%
SFR	Pt Lot 1	F	G. Lunshof & Sons Farms Ltd.	(004-090-00)	20.38	19.11	3.92%
2	Pt Lot 9	*	T. & C. Lipinski	(004-115-00)	9.11	5.47	1.12%
2	Pt Lot 9	F	R. Rittenhouse & S. Racz	(004-116-00)	10.37	9.83	2.01%
2	Pt Lot 9	F	J. Kelly	(004-117-00)	17.65	16.52	3.39%
2	Pt Lot 9	*	S. & S. McKay	(004-118-00)	0.48	0.70	0.14%
2	Pt Lot 8	*	P. & H. Geerdink	(004-119-00)	0.44	0.63	0.13%
2	Pt Lot 8	F	R. & A. Csanig	(004-120-00)	33.07	25.77	5.28%
0	0	*	H. & R. Kelly	(004-121-00)	0.13	0.13	0.03%
1	Pt Lot 9	F	W. & B. Robson	(004-135-00)	34.59	26.70	5.47%
1	Pt Lot 8	*	C. Skotniski	(004-136-00)	14.79	8.87	1.82%
1	Pt Lot 8	F	D. Pedro & A. Arsenio	(004-138-00)	1.22	0.73	0.15%
			LANDS - COUNTY OF HALDIMAND		**282.78**	**232.23**	**47.59%**
			TOTAL ON LANDS		**466.93**	**422.01**	**86.49%**
			Roads				
Cemetery Drive		*	Township of Wainfleet	ROAD	0.62	1.87	0.38%
Flanagan Road		*	Township of Wainfleet	ROAD	1.81	7.25	1.49%
Hendershot Road		*	Township of Wainfleet	ROAD	1.40	5.59	1.15%
Smith Road		*	Township of Wainfleet	ROAD	0.01	0.05	0.01%
Wainfleet Dunnville Townline Road (Wainfleet)		*	Township of Wainfleet	ROAD	0.66	2.63	0.54%
Zion Road		*	Township of Wainfleet	ROAD	0.60	2.42	0.50%
			ROADS - TOWNSHIP OF WAINFLEET		**5.11**	**19.81**	**4.07%**
Forks Road (Hwy 3)		*	Ministry of Transportation	ROAD	3.68	18.42	3.77%
			ROADS - MINISTRY OF TRANSPORTATION		**3.68**	**18.42**	**3.77%**
Hutchinson Rd (County Rd 65)		*	Haldimand County	ROAD	1.93	7.73	1.60%
Jenny Jump Road		*	Haldimand County	ROAD	5.74	17.23	3.53%
Wainfleet Dunnville Townline Road (Haldimand)		*	Haldimand County	ROAD	0.66	2.63	0.54%
			ROADS - COUNTY OF HALDIMAND		**8.33**	**27.59**	**5.67%**
			TOTAL ON ROADS		**17.13**	**65.82**	**13.51%**
			ALL LANDS AND ROADS		**484.06**	**487.83**	**100.00%**

Notes: (1) At the time of preparation for this report, properties were grouped based on those with agricultural farm tax class (F) and those without (*), based on ADIP grant eligibility.

(2) It is the responsibility of the landowner to confirm whether their property is eligible for an OMAFRA grant, under ADIP policies as eligibility has not been confirmed as part of the preparation of this report.

BURNSIDE

APPENDIX D2D - ASSESSMENTS for MAINTENANCE
MAIN DRAIN
(Sta. 2+297 to Sta. 3+170)

FINAL REPORT

PROJECT: Ellsworth MD
DATE : August-25

TOWNSHIP: Wainfleet
PROJECT #: 300050664

Conc. or Plan	Lot or Part	Tax	Owner	Roll No.	Affected Area (Ha.)	Equivalent Area (Ha.)	Totals
			Lands				
	TOWNSHIP OF WAINFLEET						
4	Pt Lot 36 Pt Lot 37	F	A. & A. Sinclair	(009-147-00)	0.99	0.59	0.15%
4	Pt Lot 37	F	L. Aarts	(009-154-00)	7.42	6.98	1.81%
4	Pt Lot 37	*	R. & P. Bruining	(009-155-00)	0.10	0.15	0.04%
4	Pt North Half Lot 37	*	T. Gomes	(009-156-00)	0.20	0.30	0.08%
4	Pt Lot 37	*	S. Medjed & G. Mcpherson	(009-157-00)	0.23	0.35	0.09%
4	Pt Lot 37	*	S. Vinnick	(009-158-00)	0.15	0.23	0.06%
4	Pt Lot 37	*	D. & E. Belfry	(009-159-00)	4.47	4.65	1.21%
4	Pt Lot 37	*	W. & L. Scace	(009-159-01)	2.21	1.32	0.34%
4	Pt Lot 38	F	G & B Prentice Farms Ltd.	(009-166-00)	7.20	7.48	1.94%
4	Pt Lot 38 Pt Lot 39	F	L. Aarts	(009-167-00)	27.54	28.05	7.27%
4	Pt Lot 38	*	R. Ricker	(009-167-01)	0.81	1.21	0.31%
4	Pt Lot 38	*	M. & B. Rickman	(009-167-25)	0.42	0.63	0.16%
4	Pt Lot 38	*	D. Vonk	(009-167-30)	0.41	0.62	0.16%
4	Pt Lot 38	*	J. Wall	(009-168-00)	0.43	0.64	0.17%
4	Pt Lot 38	*	K. Turnbull & P. Statten	(009-169-00)	0.14	0.20	0.05%
4	Pt Lot 39	*	R. & N. Williams	(009-170-00)	0.69	1.03	0.27%
4	Pt Lot 39	*	J. & H. Donaldson	(009-172-00)	0.33	0.43	0.11%
4	Pt Lot 39	*	1515435 Ontario Ltd.	(009-173-00)	7.87	7.97	2.06%
4	Pt Lot 39	F	Loeffen Farms Ltd.	(009-173-01)	2.12	2.12	0.55%
4	Pt Lot 39	*	S., P. & R. Feddema	(009-178-00)	0.19	0.19	0.05%
4	Pt Lot 39	*	S. High & L. Ricker	(009-179-00)	0.39	0.31	0.08%
4	Pt Lot 39	F	D. & N. Ton	(009-180-00)	6.91	7.16	1.86%
4	Pt Lot 40	F	Loeffen Farms Ltd.	(009-184-00)	28.76	30.49	7.90%
4	Pt Lot 40 Pt Lot 41	F	L. Shedden	(009-187-00)	10.67	6.40	1.66%
5	Pt Lot 38	*	R. & N. Williams	(012-106-00)	0.02	0.03	0.01%
0	0	*	S. Lawson & D. Traplin	(012-107-00)	0.02	0.03	0.01%
			LANDS - TOWNSHIP OF WAINFLEET		**110.66**	**109.57**	**28.40%**
	COUNTY OF HALDIMAND						
SFR	Pt Lot 8	F	H. Werner	(004-071-50)	13.89	13.89	3.60%
SFR	Pt Lot 7	F	Green Leaf Financial Capital	(004-072-00)	16.89	13.86	3.59%
SFR	Pt Lot 6	F	A. & A. Traver	(004-073-00)	20.45	18.61	4.82%
SFR	Pt Lot 6	F	C. & M. Disher	(004-074-00)	6.94	4.16	1.08%
SFR	Pt Lot 5	F	C. & M. Disher	(004-075-00)	5.91	3.55	0.92%
SFR	Pt Lot 5	F	R. & L. Disher	(004-075-50)	7.40	4.44	1.15%
SFR	Pt Lot 5	F	C. & L. Disher	(004-076-00)	12.42	7.45	1.93%
SFR	Pt Lot 4	*	R. & V. Neudorf	(004-077-00)	3.27	1.96	0.51%
SFR	Pt Lot 4	*	D. & I. Houser	(004-078-00)	9.79	5.87	1.52%
SFR	Pt Lot 4	F	G. Lunshof & Sons Farms Ltd.	(004-079-00)	8.81	8.75	2.27%
SFR	Pt Lot 3	F	G. Lunshof & Sons Farms Ltd.	(004-079-50)	8.11	7.54	1.95%
SFR	Pt Lot 3	F	G. Lunshof & Sons Farms Ltd.	(004-081-00)	7.86	7.86	2.04%
SFR	Pt Lot 2	F	A. Douma	(004-087-00)	0.27	0.27	0.07%
SFR	Pt Lot 2	F	G. Lunshof & Sons Farms Ltd.	(004-088-00)	18.54	19.57	5.07%
SFR	Pt Lot 1	F	G. Lunshof & Sons Farms Ltd.	(004-090-00)	20.38	19.11	4.95%
2	Pt Lot 9	*	T. & C. Lipinski	(004-115-00)	9.11	5.47	1.42%
2	Pt Lot 9	F	R. Rittenhouse & S. Racz	(004-116-00)	10.37	9.83	2.55%
2	Pt Lot 9	F	J. Kelly	(004-117-00)	17.65	16.52	4.28%
2	Pt Lot 9	*	S. & S. McKay	(004-118-00)	0.48	0.70	0.18%
2	Pt Lot 8	*	P. & H. Geerdink	(004-119-00)	0.44	0.63	0.16%
2	Pt Lot 8	F	R. & A. Csanig	(004-120-00)	33.07	25.77	6.68%
0	0	*	H. & R. Kelly	(004-121-00)	0.13	0.13	0.03%
1	Pt Lot 9	F	W. & B. Robson	(004-135-00)	34.59	26.70	6.92%
1	Pt Lot 8	*	C. Skotniski	(004-136-00)	14.79	8.87	2.30%
1	Pt Lot 8	F	D. Pedro & A. Arsenio	(004-138-00)	1.22	0.73	0.19%
			LANDS - COUNTY OF HALDIMAND		**282.78**	**232.23**	**60.18%**
			TOTAL ON LANDS		**393.44**	**341.80**	**88.58%**
			Roads				
Flanagan Road		*	Township of Wainfleet	ROAD	1.81	7.25	1.88%
Hendershot Road		*	Township of Wainfleet	ROAD	1.40	5.59	1.45%
Wainfleet Dunnville Townline Road (Wainfleet)		*	Township of Wainfleet	ROAD	0.66	2.63	0.68%
			ROADS - TOWNSHIP OF WAINFLEET		**3.87**	**15.47**	**4.01%**

Forks Road (Hwy 3)	*	Ministry of Transportation	ROAD	0.23	1.14	0.30%
			ROADS - MINISTRY OF TRANSPORTATION	**0.23**	**1.14**	**0.30%**
Hutchinson Rd (County Rd 65)	*	Haldimand County	ROAD	1.93	7.73	1.97%
Jenny Jump Road	*	Haldimand County	ROAD	5.74	17.23	4.46%
Wainfleet Dunnville Townline Road (Haldimand)	*	Haldimand County	ROAD	0.66	2.63	0.68%
			ROADS - COUNTY OF HALDIMAND	**8.33**	**27.59**	**7.11%**
			TOTAL ON ROADS	**12.43**	**44.21**	**11.42%**
			ALL LANDS AND ROADS	**405.87**	**386.01**	**100.00%**

Notes: (1) At the time of preparation for this report, properties were grouped based on those with agricultural farm tax class (F) and those without (*), based on ADIP grant eligibility.
(2) It is the responsibility of the landowner to confirm whether their property is eligible for an OMAFRA grant, under ADIP policies as eligibility has not been confirmed as part of the preparation of this report.

BURNSIDE

APPENDIX D2E - ASSESSMENTS for MAINTENANCE
MAIN DRAIN
(Sta. 3+170 to Sta. 3+836)

FINAL REPORT

PROJECT: Ellsworth MD
DATE : August-25

TOWNSHIP: Wainfleet
PROJECT #: 300050664

Conc. or Plan	Lot or Part	Tax	Owner	Roll No.	Affected Area (Ha.)	Equivalent Area (Ha.)	Totals
			Lands				
	TOWNSHIP OF WAINFLEET						
4	Pt Lot 38 Pt Lot 39	F	L. Aarts	(009-167-00)	0.28	0.28	0.09%
4	Pt Lot 39	F	D. & N. Ton	(009-180-00)	4.07	4.16	1.36%
4	Pt Lot 40	F	Loeffen Farms Ltd.	(009-184-00)	28.76	30.49	9.98%
4	Pt Lot 40 Pt Lot 41	F	L. Shedden	(009-187-00)	10.67	6.40	2.09%
			LANDS - TOWNSHIP OF WAINFLEET		**43.78**	**41.34**	**13.52%**
	COUNTY OF HALDIMAND						
SFR	Pt Lot 8	F	H. Werner	(004-071-50)	13.89	13.89	4.54%
SFR	Pt Lot 7	F	Green Leaf Financial Capital	(004-072-00)	16.89	13.86	4.54%
SFR	Pt Lot 6	F	A. & A. Traver	(004-073-00)	20.45	18.61	6.09%
SFR	Pt Lot 6	F	C. & M. Disher	(004-074-00)	6.94	4.16	1.36%
SFR	Pt Lot 5	F	C. & M. Disher	(004-075-00)	5.91	3.55	1.16%
SFR	Pt Lot 5	F	R. & L. Disher	(004-075-50)	7.40	4.44	1.45%
SFR	Pt Lot 5	F	C. & L. Disher	(004-076-00)	12.42	7.45	2.44%
SFR	Pt Lot 4	*	R. & V. Neudorf	(004-077-00)	3.27	1.96	0.64%
SFR	Pt Lot 4	*	D. & I. Houser	(004-078-00)	9.79	5.87	1.92%
SFR	Pt Lot 4	F	G. Lunshof & Sons Farms Ltd.	(004-079-00)	8.81	8.75	2.86%
SFR	Pt Lot 3	F	G. Lunshof & Sons Farms Ltd.	(004-079-50)	8.11	7.54	2.47%
SFR	Pt Lot 3	F	G. Lunshof & Sons Farms Ltd.	(004-081-00)	7.86	7.86	2.57%
SFR	Pt Lot 2	F	A. Douma	(004-087-00)	0.27	0.27	0.09%
SFR	Pt Lot 2	F	G. Lunshof & Sons Farms Ltd.	(004-088-00)	18.54	19.57	6.40%
SFR	Pt Lot 1	F	G. Lunshof & Sons Farms Ltd.	(004-090-00)	20.38	19.11	6.25%
2	Pt Lot 9	*	T. & C. Lipinski	(004-115-00)	9.11	5.47	1.79%
2	Pt Lot 9	F	R. Rittenhouse & S. Racz	(004-116-00)	10.37	9.83	3.21%
2	Pt Lot 9	F	J. Kelly	(004-117-00)	17.65	16.52	5.40%
2	Pt Lot 9	*	S. & S. McKay	(004-118-00)	0.48	0.70	0.23%
2	Pt Lot 8	*	P. & H. Geerdink	(004-119-00)	0.44	0.63	0.21%
2	Pt Lot 8	F	R. & A. Csanig	(004-120-00)	33.07	25.77	8.43%
0	0	*	H. & R. Kelly	(004-121-00)	0.13	0.13	0.04%
1	Pt Lot 9	F	W. & B. Robson	(004-135-00)	34.59	26.70	8.73%
1	Pt Lot 8	*	C. Skotniski	(004-136-00)	14.79	8.87	2.90%
1	Pt Lot 8	F	D. Pedro & A. Arsenio	(004-138-00)	1.22	0.73	0.24%
			LANDS - COUNTY OF HALDIMAND		**282.78**	**232.23**	**75.96%**
			TOTAL ON LANDS		**326.56**	**273.57**	**89.48%**
			Roads				
Hendershot Road		*	Township of Wainfleet	ROAD	0.47	1.89	0.62%
Wainfleet Dunnville Townline Road (Wainfleet)		*	Township of Wainfleet	ROAD	0.66	2.63	0.86%
			ROADS - TOWNSHIP OF WAINFLEET		**1.13**	**4.52**	**1.48%**
Hutchinson Rd (County Rd 65)		*	Haldimand County	ROAD	1.93	7.73	2.54%
Jenny Jump Road		*	Haldimand County	ROAD	5.74	17.23	5.64%
Wainfleet Dunnville Townline Road (Haldimand)		*	Haldimand County	ROAD	0.66	2.63	0.86%
			ROADS - COUNTY OF HALDIMAND		**8.33**	**27.59**	**9.04%**
			TOTAL ON ROADS		**9.47**	**32.12**	**10.52%**
			ALL LANDS AND ROADS		**336.02**	**305.68**	**100.00%**

Notes:
(1) At the time of preparation for this report, properties were grouped based on those with agricultural farm tax class (F) and those without (*), based on ADIP grant eligibility.
(2) It is the responsibility of the landowner to confirm whether their property is eligible for an OMAFRA grant, under ADIP policies as eligibility has not been confirmed as part of the preparation of this report.

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Appendix E

Standard Drain Specifications

General Drain Specifications 1.0
Specifications for Open Drains 2.0
Specifications for Road Crossing (Open Cut Method) 3.0

Appendix E – General Drain Specifications

1.0 General Drain Specifications

1.1 Scope of Specifications

This specification covers the general conditions governing the construction of a Municipal Drain under the most recent revision of the Drainage Act and amendments. All work shall be done in accordance with current and applicable Ontario Provincial Standard Specifications and Drawings (OPSS and OPSD).

1.2 Benchmarks

Benchmarks shall be set at intervals along the course of the work at locations shown on the accompanying plan and/or profile. The Contractor or landowner shall be held liable for the cost of re-establishing benchmarks destroyed. Attention is drawn to Section 13 of the Drainage Act.

1.3 Stakes/Flags/Markers

Stakes, flags or markers are typically set at intervals throughout the course of the work, at all fences and property lines. The Contractor or landowner shall be held liable for the cost of replacing any stakes removed or destroyed.

1.4 Profile

The Drain is to be excavated or installed to regular gradient lines as shown on the profile(s). These gradients show the bottom of the finished drain (open or closed) and are governed entirely by the benchmarks. In the case of closed drains, the gradient is that of the invert of the tile. The profile(s) shows the approximate depth from the surface of the ground to the invert of the tile or drain bottom at the point where the stations are set and from the average bottom of the open drain as taken at the time of survey. Open drains shall be brought to an even gradient in the bottom to prevent standing water. For closed drains, a variation of 25 mm (unless specified otherwise) from the gradient may be deemed sufficient reason for the work to be rejected and required to be rebuilt.

1.5 Clearing

Clearing means the cutting of all standing trees, brush, bushes and other vegetation to a maximum height of 300 mm above original ground level as well as the removal of felled materials and windfalls. Trees measuring 150 mm or more in diameter shall be felled, delimbed, cut into lengths no longer than 4 m and stacked to the designated side

of the working space. The work shall not damage or disturb the area outside the areas specified in the Contract Documents.

The work shall consist of clearing all areas of earth excavation, earth surfaces to be covered by embankments up to and including 1.2 m in height, and any other areas specified in the Contract Documents.

No trees, brush or bushes are to be left inside the slopes of the Drain, whether they are located within the limits of the excavation or not. Brush cleared in accordance with the above shall be piled in a location and in a manner satisfactory to the Engineer for burning by the Owner. Unless otherwise specified or directed, these piles shall be a minimum of 100 m apart and shall contain only cleared material. All work shall be done in accordance with OPSS 201.

1.6 Close Cut Clearing

Close Cut Clearing means the cutting of all standing trees, stumps, brush, bushes and other vegetation at original ground level and the removal of felled materials and windfalls. Grubbing means the removal of all stumps, roots, embedded logs, debris and secondary growth. Trees measuring 150 mm or more in diameter shall be felled, delimbed, cut into lengths no longer than 4 m and stacked to the designated side of the working space. The work shall not damage or disturb the area outside the areas specified in the Contract Documents.

The work shall consist of close cut clearing all earth surfaces to be covered by embankments greater than 1.2 m in height, and any other areas specified in the Contract Documents.

No trees, stumps, brush or bushes are to be left inside the slopes of the Drain whether they are located within the limits of the excavation or not. Brush cleared in accordance with the above shall be piled in a location and in a manner satisfactory to the Engineer for burning by the Owner. Unless otherwise specified or directed, these piles shall be a minimum of 100 m apart and shall contain only cleared material. All work shall be done in accordance with OPSS 201.

1.7 Brushing

Brushing means the grinding or chipping to ground level of vegetation in the working space under 150 mm in diameter by means of a hydraulic brushing attachment used with an excavator or approved equivalent. This includes grinding or chipping all standing trees, stumps, brush, bushes and other vegetation to original ground level.

Trees measuring 150 mm or more in diameter shall be felled, delimbed, cut into lengths no longer than 4 m and stacked to the designated side of the working space. The work shall not damage or disturb the area outside the areas specified in the Contract Documents. All work shall be done in accordance with OPSS 201.

1.8 Grubbing

Grubbing means the removal of all stumps, roots, embedded logs, debris and secondary growth.

The work shall consist of grubbing all areas of earth excavation, earth surfaces to be covered by embankments up to and including 1.2 m in height and any other areas specified in the Contract Documents.

Grubbing is not required in swamps. Mechanical stump cutters are permitted, provided the entire root structure is removed. Depressions remaining after grubbing shall be backfilled with suitable earth material and compacted to avoid settlement. When clearing has been previously completed by others, all secondary growth, brush and debris shall be removed.

Piled boulders and surface boulders that are not specified in the Contract Documents for removal and lie within areas to be grubbed shall be removed. The work shall not damage or disturb the area outside the areas specified in the Contract Documents. All work shall be done in accordance with OPSS 201.

1.9 Removal of Surface Boulders and Removal of Piled Boulders

Piled Boulders means any cobbles, boulders or rock fragments that have been placed in fence rows or piles.

Rock means rock as defined in OPSS 206.

Surface Boulder means any boulder or rock fragment that measures 200 mm or greater in any one dimension, extends a minimum of 200 mm above original ground and can be removed without excavation.

The work shall consist of the removal of surface boulders and removal of piled boulders within the areas specified in the Contract Documents. Depressions remaining after removal shall be backfilled with suitable earth material and compacted to avoid settlement. The work shall not damage or disturb the area outside the areas specified in the Contract Documents. All work shall be done in accordance with OPSS 201.

1.10 Fences

The Contractor will be permitted to remove fences to the extent necessary to allow the construction of the Drain and to dispose of any excess material according to the specifications. Any such fences shall be carefully handled to cause no unnecessary damage. Unless allowance has been provided, such fences shall be replaced by the Contractor in as good a condition as found. The Contractor shall supply all material necessary to properly reconstruct any fences. The Contractor shall not leave any fence open when he is not at work in the immediate area and shall replace the fence in a timely manner, all to the satisfaction of the Engineer.

1.11 Standing Crops and Livestock

Should a property owner wish to harvest any crop along an access route or within the construction working space as set out in the Engineer's Report, then it shall be the responsibility of the property owner to do so prior to construction. Provisions for the loss of, or damage to, crops along the access route or in the construction area ("Working Space") have been made in the Report and such loss or damage shall not be the liability of the Contractor.

The Contractor shall contain construction operations to the working space and width specified. As long as the construction operations are contained within the specified working space, the Contractor shall not be responsible for damages to crops along the course of the Drain.

It shall be the responsibility of the property owners to keep their livestock clear of the construction area upon receiving 24 hours advance notice by the Contractor. After receiving proper notice, the Owner of the property upon which a drain is being constructed shall be liable for any loss or damage to livestock, the Drain, drain materials or the Contractor's equipment caused by their livestock.

1.12 Notification of Agencies

The Contractor shall notify the appropriate agency before performing any work affecting the land or property of the Ontario Ministry of Transportation (MTO), railway, telephone, pipeline or public utility or regulatory agency. The Contractor shall further agree to perform the work affecting such lands or property in accordance with the specifications and approval/permit of the applicable agency.

1.13 Final Inspections

After substantial completion of the work, but prior to demobilization and final removal of all equipment and materials from the site, the Contractor **must** arrange an on-site **Final** Inspection of the work with the engineer to ensure all aspects of the work have been satisfactorily completed and/or that arrangements have been made to expedite the completion of any outstanding “minor” items or deficiencies. All the work included in the contract, at the time of the Final Inspection, must have the full dimensions and cross-sections called for in the plans and specifications. Notification to the Engineer of this Final Inspection shall be provided at least five days prior and it shall be completed as soon as possible or as soon thereafter as weather conditions permit.

2.0 Specifications for Open Drains

2.1 Geometry

The Drain shall have the full bottom width, at the gradient, specified or shown on the accompanying plan(s), profile(s) and detail sheet(s).

2.2 Alignment

The Drain shall run in straight lines throughout each course except at intersections, where it shall run on a minimum curve of 15 m radius unless otherwise specified. If the work consists of the improvement of an existing open drain, then the centre line of the existing drain may be the centre line of the finished work unless otherwise specified.

2.3 Excavated Material

A clear buffer of at least 3 m shall be left between the top edge of the open drain and the excavated material. Excavated material shall be placed on the side specified or, if not specified, on the lower side of the Drain or on the side opposite trees or fences. No excavated material is to be left in any low runs intended to conduct water into the open drain. It shall be deposited, spread and leveled to a maximum depth of 150 mm, unless specified otherwise and left in a manner such that the lands on which it is spread may be cultivated with adjacent lands by use of ordinary farm machinery. Material excavated in land that is timbered, may be spread to the depth specified or to a maximum depth of 300 mm, whichever is greater. In cultivated areas, the Contractor shall remove stones and boulders on the surface greater than 100 mm diameter from the excavated material and dispose of them in an approved location. Treatment of excavated material shall be to the satisfaction of the Engineer. After the excavated material has been spread and leveled, it shall be seeded as specified.

2.4 Surface Water Inlets

Surface water inlets to the Drain shall be provided through the leveled spoil on each property at obvious natural low runs or at other locations as specified by the Engineer on site at the time of construction. No excavated material shall be left in, or any damage done to a ditch, furrow, pipe, tile or depression that is intended to conduct water into an open drain. The Drain bank at all such inlets shall be riprapped as directed by the Engineer and reimbursed under the appropriate contract item.

2.5 Outlets

During the construction of an open drain, the Contractor shall guard against damaging the outlet of any tributary drain or pipes encountered. The Contactor will be reimbursed for damage to unmarked outlet pipes under the appropriate contract item.

2.6 Access Culverts

All culverts shall be installed with the invert a minimum of 10% of its diameter or as specified below the gradient and the firm bottom of the Drain.

All pipes installed under these specifications shall be carefully bedded to ensure uniform bearing throughout its entire length.

Except where requiring concrete cradle or encasement, all pipes shall be bedded on granular fill as specified or as shown on the contract drawings. Bedding shall be hand placed, tamped and consolidated throughout. Granular fill and bedding shall be gravel or crushed stone having no particles over 20 mm in size, except where otherwise specified.

Concrete cradle and concrete encasement shall be placed as shown on the drawings, and the concrete shall be minimum 25 megapascals (MPa).

From the top of the bedding material to a point 150 mm below the existing grade of the laneway, backfill material shall be clean pit run gravel meeting OPSS Granular B or approved equivalent. The material shall be placed in lifts not to exceed 300 mm in depth and all granular materials shall be compacted to 100% standard proctor maximum dry density (SPMDD) and all subsoil or previously excavated material to 95% SPMDD.

The final 150 mm of the excavation shall be filled with clean crushed gravel conforming to OPSS Granular A specifications. The material shall be placed in lifts not exceeding 150 mm in depth and shall be thoroughly compacted to 100% SPMDD.

2.7 Excavation at Bridge Sites

The excavation at bridge sites shall be to the full depth of the Drain and as nearly as possible the full width of the Drain as specified for the bridge location. The excavation at a bridge site shall be made in a manner to protect the structural integrity of any permanent bridge. A temporary bridge may be carefully removed to allow excavation. The removal of a bridge is to be done in such a manner to cause no damage to the bridge components. Temporary bridges removed to allow excavation shall be replaced in as good a condition as found, so far as material allows. Replacing of such bridges shall be to the satisfaction of the Engineer. The Contractor shall immediately notify the Engineer if it becomes apparent that excavating to a specified gradient will endanger or

underpin any culvert or bridge. The Contractor shall cease excavation at the bridge or culvert site until the Engineer instructs the Contractor to proceed.

2.8 Seeding

Unless indicated otherwise in the Special Provisions, the Contractor shall seed all disturbed areas which includes newly excavated drain banks and leveled spoil (where specified) with the OPSS (MTO) Standard Roadside Seed Mix, consisting of 55% Creeping Red Fescue, 27% Kentucky Bluegrass, 15% Perennial Ryegrass and 3% White Clover, at an application rate of 100 kg/10,000 m^2, plus a nurse crop of Fall Rye Grain or Winter Wheat Grain at an application rate of 60 kg/10,000 m^2, at the end of each working day.

2.9 Temporary Sediment Controls

Unless indicated otherwise in the Special Provisions, the Contractor shall install an approved sediment control measure at the downstream end of the open drain excavation and at any other locations specified. The Contractor shall remove any accumulated sediment at regular intervals or as directed by the Engineer. The Contractor shall then remove these temporary measures, and any accumulated sediment therein, after the new open drain has stabilized and only after authorized by the Engineer or the Drainage Superintendent.

2.10 Permanent Sediment/Stilling Basins

The Contractor shall construct and maintain sediment control or stilling basins as specified in the Special Provisions.

2.11 Rip-Rap and Non-woven Geotextile

Rip-Rap – The Contractor shall supply and install a 450 mm thickness of 150 mm to 300 mm (R-50) diameter quarry stone rip rap with filter cloth underlayment for culvert and pipe outlets. This will include areas of the existing bank where erosion or bank slumping has occurred, as directed on-site by the Engineer. For the area surrounding catchbasins, unless noted otherwise, the contractor shall supply and install a 300 mm thickness of 100 to 150 mm (R-10) diameter quarry stone rip-rap with filter cloth underlayment.

Non-Woven Geotextile - All geotextile used for tile wrapping under these specifications shall be non-woven Terrafix® 200R (or equivalent). All geotextile used under these specifications for heavy duty applications such as under rip-rap surrounding catchbasins, and at tile outlets into drains shall be non-woven Terrafix® 270R (or equivalent)

3.0 Specifications for Road Crossing (open cut method)

3.1 General

When a drainage works crossing of a Road is to be carried out by the open cut method, the following specifications shall apply as well as OPSS 401 and 410. Under these specifications, the Contractor shall supply all labour, equipment and material unless specified otherwise in the Special Provisions.

3.2 Excavated Material

All excavated material removed from the traveled portion of the road and 1.3 m or the full width of the gravel shoulder, whichever is greater, on each side of the traveled portion shall be disposed of off the site by the Contractor in a location approved by the Engineer or the Municipality. No excavated material shall be spread on the right-of-way without the written consent of the Engineer or the Municipality. The excavated material from a trench beyond a point 1.3 m from the traveled portion or beyond the outside edge of the gravel shoulder may be placed in the trench in the case of covered drains.

3.3 Bedding

All pipes installed under these specifications shall be carefully bedded so as to ensure uniform bearing throughout its entire length.

Except where requiring concrete cradle or encasement, all pipes shall be bedded on granular fill as specified or as shown on the contract drawings. Bedding shall be hand placed, tamped and consolidated throughout. Granular fill and bedding shall be gravel or crushed stone having no particles over 20 mm in size, except where otherwise specified.

Concrete cradle and concrete encasement shall be placed as shown on the drawings, and the concrete shall be minimum 25 MPa.

3.4 Backfilling

The material and the method for backfilling the excavated area on the traveled portion of the right-of-way and for 1.3 m or the full shoulder width on each side shall conform to the following specifications, or as directed by the Engineer or Municipality.

From the top of the bedding material to a point 300 mm below the existing grade of the road, backfill material shall be clean pit run gravel meeting OPSS Granular B or approved equivalent. The material shall be placed in lifts not to exceed 300 mm in depth and all granular materials shall be compacted to 100% SPMDD and all subsoil or previously excavated material to 95% SPMDD.

The final 300 mm of the excavation shall be filled with clean crushed gravel conforming to OPSS Granular A specifications. The material shall be placed in lifts not exceeding 150 mm in depth and shall be thoroughly compacted to 100% SPMDD.

3.5 Precast Concrete Structures

The type, location and the elevation of all structures in the right-of-way shall be as specified by the Engineer, and as indicated on the "Structures Table".

3.6 Notice

Before commencing work on any right-of-way, the Contractor shall furnish at least seven days' notice in writing to the Engineer and Road Authority having jurisdiction over said right-of-way. A copy of this notice shall also be sent to the Municipality's Drainage Engineer.

3.7 Maintenance

The Contractor shall maintain the road surface at the road crossing until the Engineer or Road Authority has approved the work. Such maintenance shall include keeping the road surface free from pot-holes and the application of calcium chloride at the rate of two pounds per square metre to the finished surface for the entire width of the excavation.

The Contractor shall give the Engineer or Road Authority four days' notice in writing that the work has been completed, and if the work has been approved, the Contractor will no longer be responsible for maintenance of the said portion of the right-of-way.

3.8 Permits and Traffic

The Contractor shall be responsible for providing the Road Authority at least seven days' notice in writing before commencing any work on any right-of-way. If the crossing is on a right-of-way that requires a Municipal or Provincial Permit, the Contractor shall ensure that the Permit is obtained before any work commences.

The Contractor shall be responsible for providing, erecting, maintaining and removing all signage and traffic control in accordance with the Ontario Traffic Manual (OTM) and the OTM Book 7 Temporary Conditions - Field Edition as noted in Document D of the Tender/Contract.

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Appendix F

Special Provisions

Appendix F – Special Provisions

These **Special Provisions** are specific directions for this project and detail requirements not encompassed by the **Appendix E Standard Drain Specifications.**

Special Provisions shall take precedence over the **Standard Drain Specifications** where a conflict between them may exist.

All work items do not necessarily have an associated Special Provision (SP); accordingly, for those items of the work that do **not** have an SP, please refer to the appropriate **Standard Drain Specification in Appendix E.**

1.0 Standard Drain Specifications

All work for this project shall also be governed by **Appendix E - Standard Drain Specifications.** The Contractor is fully responsible for a reasonable and prudent review of these Standards to have a complete and clear understanding of the scope and character of the work.

2.0 Description & Location

The proposed work on the Ellsworth Municipal Drain is located in the Township of Wainfleet, outletting to the Big Forks Municipal Drain and continuing upstream on Lots 34 to 37, Concession 5 and Lots 38 to 41, Concession 4, ending at the Wainfleet – Dunnville Towline Road. The location of the work is shown in the enclosed plan.

3.0 Agency Project Requirements

Regulatory agencies have provided best management practices and requirements towards the construction of this project which are summarized in Appendix G. These best management practices and requirements form part of this report and the subsequent contract for construction.

4.0 Instructions & Process

4.1 Pre-Construction Meeting

The Contractor **must** arrange an on-site Pre-Construction Meeting with the Engineer, Drainage Superintendent and affected landowners before any equipment or materials are moved onto the site and before any work is commenced on this project.

4.2 Notification of Work

The Contractor shall provide notification of the commencement or re-commencement of construction work to Burnside. Notification shall be a minimum of ten working days prior

to the initiation of the work or a minimum five working days prior to the re-commencement of the work.

Furthermore, the Contractor shall also provide notification of the commencement of in-water work to the DFO, Niagara Peninsula Conservation Authority (NPCA), or any other applicable agency(s) at least ten working days prior to the initiation of the work.

The Contractor shall also provide notification to Enbridge Gas Distribution of the commencement of works near the gas pipeline including any located crossing at the time of construction. At the time of preparation of this report, gas line crossing were located on the following right-of-ways:

- Smith Road (Township of Wainfleet)
- Zion Road (Township of Wainfleet)
- Highway 3 (Forks Road) (Ministry of Transportation)

This notice shall be given in accordance with the document entitled "*Third Party Requirements in the Vicinity of Natural Gas Facilities V3.1 2018" (Enbridge Gas Distribution).*

4.3 Working Space

The area being provided to the Contractor to undertake the work is described herein and on the drawing set. The location and maximum width of the working space is specified on the following table entitled *'Working Space'*.

Notes:

- **An allowance for access has been given to all riparian properties in the proposed work area. If required, the Contractor may also access the ROW through those properties with the prior approval of the Contract Administrator.**
- All access shall be following the access route and/or drain alignment as shown on the accompanying drawing set.
- Excavation material shall be spread within the working space and excess shall be used on-site as possible or removed from the site by the Contractor.
- Additional width has been given in some locations to accommodate topsoil stripping and spoil leveling.
- Stockpiling of materials required for construction shall be limited to the working space provided. This width may be increased if warranted, by the Contract Administrator and at their sole discretion.
- Excess excavation material shall be spread a minimum 2 m away from the proposed channel or be disposed of at an offsite location arranged by the Contractor (if applicable) as directed by the Contract Administrator.
- Channel construction shall be along the specified channel bank or centered on the drain alignment unless otherwise noted.

Channel Station	Section Property	Primary Access Route	Working Side & Working Width
0+000 to 1+090	• J. & T. Armstrong (Roll No. 012-065-00) • J. & A. Breukelman (Roll No. 012-070-00) • S. & D. Marr (Roll No. 012-075-00)	• **AR#1** (Marr Road) • **AR#2** (Smith Road)	• South & East Sides. • 10 m width.
1+112 to 1+355	• T. & N. Sider (Property #47) • S. Schertzing & A. Nannarone (Property #48)	• **AR#2** (Smith Road)	• North & South Sides. • 10 m width - both sides if required by Contractor.
1+355 to 1+819	• A. Bevan (Roll No. 012-081-00) • R. Deschamps & A. Milot (Roll No. 012-088-00)	• **AR#2** (Smith Road) • **AR#3** (Zion Road)	• South Side. • 10 m width.
1+819 to 2+147	• G. & P. Robson (Roll No. 012-094-01) • A. & S. Taylor (Property #24)	• **AR#3** (Zion Road)	**Sta. 1+819 to 2+012** • South Side • 10 m width. **Sta. 2+012 to 2+147** • North & South Sides • 10 m width - both sides if required by Contractor.
2+176 to 2+251	• Pols Enterprises Ltd. (Roll No. 012-101-10) • Ministry of Transportation (Property #23)	• **AR#3** (Zion Road) • **AR#4** (Hwy. 3 / Forks Road)	• North & South Sides • 10 m width - both sides if required by Contractor.
2+297 to 2+674	• L. Aarts (Roll No. 009-167-00) • J.Wall (Property #15)	• **AR#4** (Hwy. 3 / Forks Road) • **AR#5** (Aarts Property)	**Sta. 2+297 to 2+354** • North & South Sides. • 10 m width - both sides if required by Contractor. **Sta. 2+354 to 2+674** • South Side. • 10 m width.
2+674 to 2+935	• L. Aarts (Roll No. 009-167-00) • 2390364 Ontario Inc. (Roll No. 009-173-00)	• **AR#4** (Hwy. 3 / Forks Road) • **AR#5**	• North & South Sides. • 10 m width - both sides if required by Contractor.

Channel Station	Section Property	Primary Access Route	Working Side & Working Width
		(Aarts Property) • **AR#6** (2390364 Ontario) • **AR#7** (Hendershot Road)	• An additional 10 m width has been given on the south side (20 m total south side) to accommodate the re-location).
2+935 to 3+149	• 2390364 Ontario Inc. (Roll No. 009-173-00) • Loeffen Farms Ltd. (Roll No. 009-179-00)	• **AR#6** (2390364 Ontario) • **AR#7** (Hendershot Road)	**Sta. 2+935 to 2+967** • North & South Sides. • 10 m width - both sides if required by Contractor. **Sta. 2+967 to 3+149** • South Side. • 10 m width.
3+171 to 3+821	• Loeffen Farms Ltd. (Roll No. 009-184-00)	• **AR#7** (Hendershot Road) • **AR#8** (Wainfleet – Dunnville Townline Road)	**Sta. 3+171 to 3+474** • North & South Sides. • 10 m width - both sides if required by Contractor. **Sta. 3+474 to 3+821** • South Side. • 10 m width.

4.4 Access Routes

The access routes for construction shall be from public roads to the drain, as specified in the Table '*Working Space'* and on the accompanying drawing set. The Contractor shall confirm these access routes with the Contract Administrator, Drainage Superintendent, and affected landowners prior to commencing any work. The width of the access route(s) on each property shall be a maximum 6 m and any increase of this width shall be at the discretion of the Engineer.

Alternate access routes which may be the preference of the landowner and/or Contractor at the time of construction must be approved by the Contract Administrator prior to use.

4.5 Staging of Construction

This project must be staged in the following order of importance to comply with various requirements of the reviewing agencies and the Contract Administrator:

1. **Species at Risk (SAR), Fisheries & Oceans Canada (DFO), Conservation Authority Requirements** – See summary in **Appendix G**

2. The temporary sediment control structures, permanent sediment basins, and stilling basin shall be installed prior to any other drain construction.

3. Special attention shall be given by the Contractor to the seeding of all disturbed areas within the construction right-of-way. These areas shall have topsoil replaced and seeding provided as soon as possible following construction to encourage vegetation growth and avoid erosion and invasive species growth.

4. **Every effort shall be made by the Contractor to ensure hydroseeding application & timing is completed to maximize growth potential and minimize erosion on all surfaces to be seeded.**

Additional Notes:

- The Contractor shall stage the construction to ensure that the site is left each day with appropriate controls to avoid erosion.
- Any excavated spoil areas shall be protected with silt fence or other measures to avoid erosion during construction, as directed by the Contract Administrator.
- All channel works shall be completed during periods of low or no flow.
- Additional erosion measures shall be paid for as extra items on an as directed basis and shall be considered deficient if not completed immediately.

4.6 Construction of the Work

Any issues during construction with respect to errors or omissions with the design drawings or documents, the constructability of the system, etc., must be brought to the attention of the Contract Administrator immediately. It is expected that a clear communication channel will exist between the Contractor and the Contract Administrator and that any discrepancies relating to the construction of the work will be remedied immediately. Work resulting from failure to seek clarification with the Contract Administrator by the Contractor will be the responsibility of the Contractor to remedy at no extra charge to the project and must be completed to the satisfaction of the Engineer prior to demobilization.

4.7 Liquidated Damages

In addition to GC 8.02.09.01 and supplemental general specifications C.2.3.27 of the Contract documents, any breach of the Contract terms by the Contractor may be subject to daily liquidated damages of $500 at the discretion of the Contract Administrator.

Pertinent examples may include but are not limited to:

- Work outside of the timing windows stated in the Contract.
- Failure to install and/or maintain applicable erosion and sediment controls. This will apply at all times, including prior to and/or while completing other construction activities.
- Failure to reach substantial performance of the construction by the specified and agreed upon (contracted) date without just cause at the discretion of the Contract Administrator.

4.8 Final Inspection

After substantial completion of the work and prior to demobilization and removal of equipment and materials from the site, the Contractor MUST arrange an on-site FINAL inspection of the work with the Engineer. This is to ensure all aspects of the work have been satisfactorily completed and/or that arrangements have been made to expedite the completion of any outstanding minor items or deficiencies. Notification to the Engineer of this Final Inspection shall be provided at least 2 days prior.

4.9 Deficiencies

Deficient items, such as catchbasin markers, grate tabs, rodent grates, tile connections/re-connections, additional rip-rap, etc., shall be remedied by the Contractor during the warranty period and paid at the Contract price. If the Contractor fails to complete the work within a reasonable timeframe in the opinion of the Engineer and/or the Owner, the work shall be completed by a Contractor of the Engineer and Owner's choosing and the cost of the work deducted from the Contract holdback.

4.10 Warranty Period

A one year warranty period (unless otherwise specified) shall apply to this project following substantial completion. **During the warranty period, the Contractor shall repair / replace any failed/failing contract items as determined by the Contract Administrator at no cost.**

Typical items may include but are not limited to:

- Cleanout of any accumulated sediment within the channel and/or sediment basins
- Seeding or fill seeding of disturbed areas
- Replacement of failed pipe sections/ blowouts
- Repair to settlement and eroded areas
- Etc.

5.0 Project Requirements & General Construction

5.1 On-Site and Excess Soil Management

Ontario regulation 406/19 of the Environmental Protection Act shall apply to all excess soil from the project work site. Coordination between the Contractor and Contractor Administrator is encouraged, however, it is the sole responsibility of the Contractor to ensure this regulation is applied.

5.2 Topsoil Stripping

All excavated topsoil shall be stockpiled separately from native subsoil and subsequently replaced over the completed excavation. This shall be included as part of the work under the appropriate item. An extra payment will **not** be made for this stripping, stockpiling and replacing of topsoil.

Excavated topsoil may be moved to another location at the request of the Contract Administrator and paid as an extra or at the request of the Contractor (subject to approval by the Contract Administrator) at no charge.

Channel Work: Unless specified otherwise, prior to completing work in the channel, the Contractor shall strip the existing topsoil from the proposed spoil levelling and channel area within the right-of-way.

5.3 Soils

5.3.1 Soils Summary

The Ontario Soil Survey information found on OMAFRA's AgMaps website indicates that the predominant soil types within the watershed area are as follows:

- Tavistock Loam (TVK) is classified as **HSG 'A':**
  - Located primarily in the Township of Wainfleet watershed.
  - Soil types classified under HSG 'A' soils, typically sandier, have moderate infiltration rates with good drainage, suggesting higher infiltration rates and lower runoff potential.
- Wauseon Loam as **HSG 'C':**
  - Located primarily in the County of Haldimand watersheds.
  - Soil types classified under HSG 'C' soils, typically more clays, have slow infiltration rates with imperfect drainage, suggesting lower infiltration rates and higher runoff potential.

The drainage properties of the soil are discussed in **Appendix H.**

5.3.2 Subsoil Investigation

Adverse subsoil conditions were not indicated in the area near the proposed drain installation by the affected landowners; therefore, **no on-site soils investigation was undertaken as part of this project**. The Contractor shall tender all work described herein on the basis of typical soil conditions as described above.

5.4 Existing Drainage Systems

5.4.1 Existing Municipal Drain

There are no known closed municipal drains within the project watershed.

5.4.2 Private Drainage Systems

The Contractor is advised that at the time of submission of this report, random drainage systems were located in the area of installation for the proposed drainage system.

The location of existing private drainage systems shall be discussed at the Pre-Construction meeting and existing systems affected by the proposed drainage system shall be located by the Contractor and reviewed with the Contract Administrator and affected landowners prior to construction.

5.5 Utilities Investigation

A utilities investigation was undertaken during the design stage of this report. The following utilities were located near the area of the proposed drain:

Enbridge Gas

- Smith Road (Township of Wainfleet)
- Zion Road (Township of Wainfleet)
- Highway 3 (Forks Road) (Ministry of Transportation)

The Contractor shall coordinate the locations of the natural gas pipeline within the right-of-way in accordance with the document entitled Third Party Requirements in the Vicinity of Natural Gas Facilities V3.1 2018 (Enbridge Gas Distribution).

All utilities shall be located by the Contractor prior to the construction of the proposed drain and utilities may require staff on-site during construction.

All costs shall be included in the associated item for accommodation of utility requests or requirements. Specific equipment, such as daylighting with a hydro-vacuum, shall be paid for as an extra item or contingency as contracted, unless previously included in the item.

5.6 Appurtenances

The following general conditions and requirements apply to this project:

5.6.1 General

- Install, maintain and remove any **temporary sediment control measures** as specified and/or directed by the Contract Administrator, Drainage Superintendent or the Conservation Authority.
- Spreading and levelling of **excavated material**, or disposal of all waste material off-site as directed by the Contract Administrator.
- **Restoration** and rehabilitation of all areas disturbed by the contractor to pre-construction conditions or better.

5.6.2 Channel Work:

- **A maximum of 300 mm depth of spoil shall be allowed in the ROW**, in addition to topsoil stripping and replacement, except where low-runs enter the channel and these areas must be maintained to the satisfaction of the Contract Administrator.
- Excess excavated subsoil from the channel excavation shall be loaded and trucked to the designated fill areas (per landowner requests and within the watershed), subject to the approval of the Contract Administrator at the time of construction and paid for as an extra item. Any material required to be removed from the watershed shall be approved by the Contract Administrator and paid as an extra item.
- All in-water work for structure installations shall be in accordance with the accompanying DFO best management practice for culvert installations.

5.7 Rehabilitation and Seeding

All disturbed areas shall be restored to their prior condition or better in the opinion of the Owner and the Contract Administrator unless detailed under another section of these specifications. All work shall be in accordance with OPSS 804 – Construction Specification for Seed and Cover.

Hydroseeding is required on all disturbed surfaces following construction unless specified otherwise. Hand seeding for small areas is at the discretion of the Contract Administrator.

Rehabilitation of disturbed areas shall typically include seeding with the following OPSS (MTO) Standard Roadside Seed Mix, consisting of:

- 55% Creeping Red Fescue.
- 27% Kentucky Bluegrass.
- 15% Perennial Ryegrass.

- 3% White Clover, at an application rate of 100 kg/10,000 m^2.

In addition:

- A nurse crop of Fall Rye Grain or Winter Wheat Grain at an application rate of 60 kg/10,000 m^2.

The Contractor shall place a minimum 150 mm of native topsoil (or screened topsoil as directed where native topsoil is not available) to seed all disturbed areas.

Sufficient growth must be approved by the Contract Administrator prior to payment of the associated item.

5.8 Erosion Protection

All erosion protection shall be as described below unless specified otherwise.

All quarry stone rip-rap (angular) shall be OPSS R-50 quarry stone rip-rap (OPSS MUNI 1004):

- **D_{50} = 210 mm dia.**
- D_{100} = 305 mm dia.
- 450 mm depth c/w geotextile underlay.

All rounded riverstone:

- **D_{50} = 300 mm dia.**
- D_{100} = 600 mm dia.
- 750 mm depth.

Riverstone shall be used for the in-water portion of the work and rip-rap shall be used as bank protection. The larger rocks shall be keyed in as anchor stones at the base of the channel for protection of the structure, as directed by the Engineer.

5.9 Damaged Private Tiles

5.9.1 Open Drains

The replacement of damaged or poorly functioning tile outlets encountered during the installation of the drain **will be included as part of the construction costs and paid as a contingency item,** and protected against erosion with rip-rap, as approved by the Contract Administrator.

In addition, if erosion is noted on channel banks due to water entering from adjacent fields, the bank shall be protected with the installation of rip-rap as part of the proposed work as directed by the Contract Administrator. These repairs shall be completed at the time of construction of the proposed drain and shall be completed as specified for replacement outlet pipes and paid for as a contingency or extra item as contracted.

6.0 Description of Work

The specifications for items as listed here are in addition to and supplement those described in the Estimate of the Cost of Work (Appendix B) and the Standard Drain Specifications (Appendix E).

The numbering of each item may reference the corresponding item in the Estimate of the Cost of Work, however some items apply generally and/or to specific stationing listed with the item.

Items referenced in these Special Provisions typically require unique instructions in addition to the Standard Drain Specifications and will not necessarily cover each item listed in the Estimate of the Costs of Work. Each Item shall be bid as a lump sum price unless otherwise noted.

The staging of construction activities has been outlined above in Section 4.5 and must be followed by the Contractor.

Additional information for the items below may be found above of in the general specifications.

The quantities provided are approximate values intended to aid the Contractor during bidding and for reference only. The Contractor is required to determine final quantities prior to bidding. No extra payment will be made for discrepancies at the discretion of the Contract Administrator.

These specifications apply to (not necessarily limited to) the entire cost estimate.

For the lump sum price bid, unless otherwise noted, the Contractor shall provide the following items:

SP00. Mobilization and De-Mobilization

This item covers the Contractor costs associated with the transportation and/or accommodation (meals and lodging) of labour, equipment, offices, conveniences, temporary facilities, construction plant and other items not required to form part of the permanent works and not covered by other items in the Schedule of Unit Prices. This line item shall only apply to the primary mobilization and demobilization (one mobilization and one de-mobilization) required to fulfill the Contract.

Payment at the Lump Sum price set out in the schedule of unit prices for mobilization and demobilization will be made as follows:

- 50% payable on first Payment Certificate
- 50% payable on Substantial performance Payment Certificate.

Additional mobilization costs will not be paid if the Contractor chooses to leave the site on their own accord following the initial mobilization. However, if at the discretion of the Contract Administrator a situation warrants the Contractor to demobilize from site to complete the remainder of the work at a later date, the costs associated with this may be negotiated with the Contract Administrator and paid as an extra item.

SP0. Seeding

All work shall be per **Section 5.9 – Rehabilitation and Seeding** and in accordance with OPSS.MUNI.804 – Construction Specification for Seed and Cover to the satisfaction of the Contract Administrator.

Location: Hydroseeding is required on all disturbed channel banks and the engineered berm. Hand seeding may be used in all other areas.

Channel Banks: All excavated channel banks may be hydroseeded without topsoil for ease of application.

Buffers: All buffers disturbed by construction works shall have topsoil spread over disturbed areas prior to seeding

Application: Hydroseeding shall be applied to all disturbed areas on the excavated channel banks, including a minimum 1 m width at grade on the channel bank.

Seed Mixture: All seeding work shall include an approved grass mix and matrix, including a nurse crop of annual rye grass as specified. These areas shall be seeded with OPSS (MTO) Standard Roadside Mix and a certificate of seed analysis shall be provided to and approved by the Contract Administrator prior to being applied.

SP1*. Clearing and Grubbing*

Location: Clearing and grubbing shall only be completed as required to facilitate the construction of the drainage system. Work shall also be completed in accordance with the General Specifications in Appendix E.

Any trees within the provided working space ROW which the Contractor requires shall be cleared and grubbed to allow for the construction of the proposed drain. In location where the width of the working ROW shall be minimized as possible, the brushing width shall also be minimized.

SAR Timing Windows: As described above, all work must be in accordance with the agency requirements as decided in this appendix.

Clearing/Brushing: Trees measuring 150 mm dia. or more shall be felled, delimbed, cut into lengths no longer than 4 m, and stacked within the working space ROW to the satisfaction of the Contract Administrator.
Vegetation under 150 mm dia. shall be finished by the Contractor using one of the following three methods:

- Chipped in place by an excavator equipped with a hydraulic brushing attachment.
- Chipped using a woodchipper and piled or spread within the bush ROW.
- Piled and burned in accordance with the Municipality's burning regulations and By-law(s).

The method preferred by the Contractor shall be discussed at the preconstruction meeting and shall be at the discretion of and completed to the satisfaction of the Owner and Contract Administrator.

Grubbing: Tree stumps, boulders, and other vegetative debris shall be grubbed and removed from site to the satisfaction of the Contract Administrator. Burying of grubbed materials shall not be permitted unless permission is given to the Contract Administrator by the landowner.

SP2. *Supply and Install T-Bars and Buffer Signage*

Steel T-bars (or approved equal) shall be installed approximately every 200 m and/or on property lines as directed by the Contract Administrator along the length of the open drain, delineating the 3 m buffer offset from the top of the channel bank. The bars shall each be painted in fluorescent orange (or approved equal) and shall extend a minimum of 1.2 m vertically when installed.

Additionally, aluminum signage approximately 300 mm x 300 mm indicating the buffer limit shall be attached to the T-bar (or approved equal) as detailed.

SP3. Sediment Control Structures

Location: Temporary sediment control structures shall be constructed at the downstream end of the proposed work and the pipe outlet stilling basin as detailed.

Sediment Control Structure: The sediment control structure shall be constructed using three (3) lengths of 300 mm dia. woodchip sediment control socks (FILTREXX SILTSOXX treated for Phosphorus and Nitrogen removal or approved equal) and anchored into each side bank and the channel bottom to control channel baseflows. The socks shall be spaced **approximately 4.0 m** apart from one another, to allow for accumulated sediment cleanout with an excavator.

OPSS R-50 rip-rap shall be used to create check dams at each sock and to additionally anchor the socks (see accompanying drawing detail). Construction shall be to the satisfaction of the Contract Administrator and the Drainage Superintendent.

The sediment control structure shall be left in place for a period of one (1) year following the construction of the drain and after that time, the bio-filters and accumulated sediment shall be removed, and the rip-rap formed into a shallow riffle structure by the Contractor.

In addition to the warranty holdback, an additional $500 shall be held for the structure until it has been removed. If removal does not occur in an acceptable timeframe, as determined by the Engineer, another Contractor shall be retained to complete the work using this holdback.

SP4. *Channel Deepening & Widening*

Location: All required work for the channel construction shall take place within the specified working space.

Channel Dimensions: The channel dimensions shall match those provided in the drawing set for bottom width, minimum depth, and side slopes to the satisfaction of the Contract Administrator and to match the proposed design grades.

Excavation and Spoil Levelling: Where possible and as directed by the Contract Administrator, channel deepening shall commence at the toe of the slope of the far channel bank where the bank slope is carried to the channel bottom elevation. Excavation will be completed in the channel bottom, (the shelf of the two-stage channel will be excavated on the near channel bank, where required) and vegetation on the far channel bank shall remain in place.

The topsoil from the spoil placement area shall first be stripped and spread back over the spoil within the working ROW.

Spreading and levelling of spoil shall be completed within the working ROW to a maximum depth of 150 mm in cropped agricultural areas and 300 mm in bush areas, however the spoil shall not be spread within 2 m from the top of the ditch bank.

The spoil shall then be seeded with an approved grass seed mixture (or approved equal). Spoil may be moved from one section of the ROW to another for spreading subject to approval by the Contract Administrator.

If during construction there is excavated subsoil material deemed unsuitable by the Contract Administrator for spreading in the ROW, it shall be loaded and trucked off-site by the Contractor for disposal (other options may also be approved by the Contract Administrator) and paid for at an additional cost or contingency as contracted.

SP5. *Culvert Sediment Basins (Permanent)*

Location: Permanent sediment basins (approximately 600 mm bottom width, and 1,000 mm deep) shall be constructed as detailed within the proposed channel, upstream of the culvert inlet as shown. The length of the sediment basins shall be as per the drawing set.

Erosion Protection: Rounded riverstone shall be installed at each end of the sediment basin as detailed in the drawing set to mark the basin location for future maintenance.

Maintenance: When necessary, during and at the completion of the project and/or when instructed by the Contract Administrator, the Contractor shall remove and spread any accumulated sediment within the working ROW.

The dug sediment basin shall be left in place permanently following the construction of the drain and thereafter shall be maintained by the Drainage Superintendent.

SP6. ***Culvert Stilling Basin (Permanent)***

Location: A permanent stilling basin (as detailed) shall be constructed as detailed within the existing channel at the culvert outlets as shown.

Riverstone shall be used for the in-water portion of the work and rip-rap shall be used as bank protection. The larger rocks shall be keyed in as anchor stones at the base of the channel for protection of the structure, as directed by the Engineer.

Maintenance: When necessary, during and at the completion of the project and/or when instructed by the Contract Administrator, the Contractor shall remove and spread any accumulated sediment within the working ROW.

SP7. ***Highway No. 3 R.O.W.***

Additional requirements by MTO shall form part of this contract.

The crossing work shall be completed within one (1) working day. All work shall be in accordance with the Encroachment Permit issued by the Ministry of Transportation for any works associated with the road crossing. All work within the right-of-way shall be done in accordance with the Encroachment Permit.

MTO contact information to be added when confirmed at tendering.

SP8. ***Location and Excavation of Gas Main***

All construction activities in the vicinity of the gas pipeline within the right-of-way shall be completed with a representative from Enbridge Gas Distribution present on-site. All construction shall be done in accordance with document entitled Third Party Requirements in the Vicinity of Natural Gas Facilities V3.1 2018 (Enbridge Gas Distribution).

Prior to the commencement of any construction works within 3 m of the natural gas main, the main shall be exposed in the location of the work to ensure no contact is made with the gas main.

One (1) location and daylighting is required at the location of the proposed crossing. Additional exposures of the main may be required by the Enbridge representative, and these shall be paid as an extra.

Additional requirements by Enbridge Staff shall form part of this contract.

Enbridge contact information to be added when confirmed at tendering.

SP9*.* ***Smith Road & Zion Road Crossings***

The Township of Wainfleet Manager of Operations (or their designate) shall be given a minimum **48-hours'** notice of the proposed road crossing date.

Richard Nan
Manager of Operations
Township of Wainfleet
905-899-3022 x234

Email: < rnan@wainfleet.ca>

The road crossing shall be completed within one (1) working day unless approved by the road owner in writing (email approval is acceptable). The Contractor must fully backfill any excavated area on the right-of-way prior to leaving site.

The Contractor will be responsible to maintain one lane of traffic at all times during the construction of the road crossings, closure of the roadway may not be permitted at the discretion of the Road Owner to be confirmed at the pre-construction meeting. The Contractor shall provide all labour, signage, equipment, etc. (as per Ontario Traffic Manual Book 7) to maintain one lane traffic in an appropriate manner.

Traffic Control Plan: A traffic control plan shall be prepared and submitted to the Road Owner and the Contract Administrator by the Contractor a minimum of 10 days prior to the proposed start of construction. *The plan must be approved by the Road Owner and implemented by the Contractor prior to the beginning of the crossing construction.*

Staging: The location of the proposed staging and excavation areas shall be discussed with the Contractor at the pre-construction meeting regarding the existing utilities present.

Utilities: Utility owners shall be advised of the excavation project and accommodated accordingly. All utilities shall be located and daylighted prior to construction commencing.

Enbridge Natural Gas LP (Enbridge) MUST be contacted, and their representative **MUST** be on site prior to any work being completed within 3.0 m of the existing gas main (Subject to Enbridge Gas Distribution regulations).

Restoration of Grassed Areas: The Contractor shall be responsible to restore any disturbed grassed areas within the ROW to pre-construction conditions or better.

Topsoil Stripping: Topsoil shall be stripped for the entire area of the excavation, including a 1 m setback and stockpiled. The topsoil shall be redistributed over the backfilled pit following construction.

Existing Tile: Any existing tile connections within the excavation area shall be reconnected or connected to the new drain at the discretion of the Contract Administrator and shall be installed on a base of 19 mm (3/4 inch) dia. crushed clear stone on native ground along the entire length of the connection.

Note: *Any settlement or impact caused to the road shall be the sole responsibility of the Contractor, per the Standard Drain Specifications (Appendix E). Any voids surrounding the pipe appearing post construction under the warranty period to the Owner shall be included with the cost of this line item. The Owner of the road ROW shall be contacted by the Contractor regarding any issues pertaining to the work on their property, prior to leaving the site. Issues shall be remedied to the satisfaction of the Contract Administrator and the Owner.*

Pipe Installation: The crossing shall be completed using the Open Cut Method, as per the Standard Drain Specifications (Appendix E), and the accompanying details.

Geotechnical Inspection: During construction Burnside will be responsible to contact the geotechnical consultant to provide construction inspection services for the crossing restoration.

The geotechnical consultant will be retained directly by the Township of Wainfleet as part of the drain costs.

The sources of the granular and asphalt materials shall be discussed at the onset of the project (pre-construction meeting) and Burnside shall inform the geotechnical consultant of these locations so that appropriate tests (proctor and Marshall tests) can be completed prior to testing on-site. The Contractor shall complete compaction on all granular material and asphalt as directed and to the satisfaction of the geotechnical consultant and the contract administrator.

Road Subbase and Base Restoration: During excavation any existing granular material shall be salvaged and stockpiled by the Contractor. **All excavated subgrade material excavated shall be removed and disposed of off-site by the Contractor**. To replace the existing subgrade material imported OPSS Granular ‘B’ shall be used for backfill within the pipe trench in addition to the salvaged granular material. The Granular ‘B’ shall be installed in lifts no greater than 300 mm in depth and shall be compacted to a minimum 100% SPDD. There shall be a minimum thickness of 500 mm of new Granular ‘B’ installed underneath the Granular ‘A’ in the road crossing. The backfill material shall be installed with an adequate frost taper as per OPSD 803.031 to a minimum depth of 0.9 m.

A minimum topcoat depth of 150 mm OPSS Granular ‘A’ material shall be used as the granular base for the travelled portion of the roadway and shall be included as part of this item. All granular material shall be compacted to a minimum 100% SPDD. The Contractor will also be responsible to temporarily match and maintain the elevation of

the road up to the asphalt surface ensuring a smooth transition through the open cut until the asphalt work is completed.

Pavement Restoration: All asphalt works, including the saw cut and step joint to the existing asphalt surface are to be as per OPSS.MUNI 310. Restoration of the road surface shall include a hot asphalt patch. The Contractor shall place the following base and surface lifts of asphalt to match the existing surface course asphalt:

- **50 mm base lift of HL3 asphalt.**
- **50 mm surface lift of HL3 asphalt.**

The topcoat of the asphalt shall be installed no later than 1 day after the base coat of the asphalt. Adequate signage (as per Book 7 of the Ontario Traffic Manual) must remain in place in all locations where traffic may be using the road prior to its completion.

The thickness of the existing asphalt shall be confirmed at the time of construction. **The Township of Wainfleet representative shall be contacted immediately after the asphalt thickness is confirmed.**

Based on the observed thicknesses the asphalt design may be adjusted by the owner of the roadway and any increase/reduction of the proposed asphalt thicknesses shall result in an extra / credit which shall be negotiated between the Contractor and the Contract Administrator within one (1) working day.

SECTION C – Contingency Items

This section covers work that may be required for this project. These items shall apply only as and when approved by the Contract Administrator.

C1. R-50 Rip-Rap Erosion Protection (OPSS.MUNI.1004)

For the unit price bid per square metre, the Contractor shall supply and install a 450 mm thickness of R-50 quarry stone rip-rap with geotextile underlay.

These unit prices shall be used for payment for any OPSS R-50 rip-rap installed in addition to those quantities already specified in other items and for credit for any quantities of rip-rap deleted from other items. Additionally, this will include areas of existing channel bank where erosion or bank slumping has occurred, as directed on-site by the Contract Administrator.

C2. Rounded Riverstone

For the unit price bid per m^2, the Contractor shall supply and install a 600 mm thickness of rounded riverstone.

- D_{100} = 600 mm dia.
- D_{50} = 300 mm dia.

These unit prices shall be used for payment for any riverstone installed in addition to those quantities already specified in other items and for credit for any quantities of riverstone deleted from other items.

C3. 19 mm dia. Clear Crushed Stone (OPSS MUNI 1004)

For the unit price bid per tonne, the Contractor shall supply 19 mm (3/4 inch) dia. clear crushed stone. These unit prices shall be used for payment for any 19 mm clear crushed stone installed in addition to those quantities already specified in other items and for credit for any quantities of 19 mm clear crushed stone deleted from other items.

The Contractor shall install the material to the satisfaction of the Contract Administrator.

C4. Granular 'B' Material (OPSS MUNI 1010)

For the unit price bid per tonne, the Contractor shall supply OPSS Granular 'B' material. These unit prices shall be used for payment for any Granular 'B' material installed in addition to those quantities already specified in other items and for credit for any quantities of Granular 'B' deleted from other items.

The Contractor shall install the material to the satisfaction of the Contract Administrator.

C5. Hydroseeding

For the unit price bid per m^2, the Contractor shall supply and install hydroseeding per **SP0**.

C6. Lawn Restoration

For the unit price bid per m^2, the Contractor shall supply and install a min.150 mm depth of imported screened topsoil, hydroseeding, and restoration to produce a lawn similar in quality or better of the existing lawn prior to construction in the opinion of the Contract Administrator based on photographs and prior site visits.

C7. Imported Screened Topsoil

For the unit price bid per m^2, the Contractor shall supply and install a min. 150 mm depth of imported screened topsoil. This contingency shall be used for areas that are proposed to be hydroseeded where a 150 mm depth of topsoil cannot be salvaged from the native soils.

C8. Outlet Pipe Replacement

(Standard Drain Specifications - Sections E.2.2.5 and E.2.3.8)

For the unit price bid the Contractor shall replace the existing outlet pipe for private tile drains encountered during construction. Included in this price shall be all labour equipment and material required to support the replacement, consisting of compacted backfill or clear stone bedding and connection of the tile using a solid 4 m length of dual-wall HDPE pipe (320 kPa) (or approved equal) and including a rodent grate, as detailed.

The unit price bid for this item shall also include erosion protection on the banks and floor of the channel, with approximately 6 m^2 of OPSS R-50 quarry stone rip-rap (450 mm thickness complete with geotextile underlay) as detailed. The construction and installation of the outlet and erosion protection shall be to the satisfaction of the Contract Administrator.

Missed outlet pipes replacements during construction shall be completed by the Contractor during the warranty period and paid at the Contract price. If the Contractor fails to complete the replacement, connection and/or reconnection within a reasonable timeframe in the opinion of the Contract Administrator and/or the Owner, the work shall be completed by a Contractor of the Engineer’s choosing and the cost of the work deducted from the Contract holdback.

BURNSIDE

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Appendix G

Agency Correspondence

Appendix G – Agency Project Requirements and Documents

1.0 General

Regulatory agencies have provided best management practices and requirements towards the construction of this project which are summarized below. These best management practices and requirements form part of this report and the subsequent contract for construction.

2.0 Burnside BEAST Screening

1. Aquatic Habitat

A preliminary desktop investigation for aquatic habitat in the proposed work area was completed in March 2021 using Burnside's Enhanced Aquatic Screening Tool by Matthew Moote, Aquatic Ecologist.

Under this review no spawning species were listed in the Ellsworth Municipal Drain, but several were listed downstream within the Big Forks Municipal Drain, therefore it was recommended this work be completed in low or no flow conditions.

The DFO Species at Risk (SAR) mapping did not show aquatic SAR within the proposed work area.

2. Terrestrial Habitat

A preliminary desktop investigation for Terrestrial habitat in the proposed work area was completed in May and July 2022 using Burnside's Enhanced Aquatic Screening Tool by Sarah Yoshida, Ecologist.

Listed below the potential species and the likelihood that you will encounter them in the project / in what habitats. The list provided includes species from Natural Heritage Information Centre as well as Ontario Breeding Bird Atlas (OBBA) records and Ontario Reptile and Amphibian Atlas (ORAA) data.

a) Forested (Swamp) areas

1) **Acadian Flycatcher (unlikely to be present)** – As an area-sensitive species, Acadian Flycatcher requires large contiguous blocks of mature deciduous forests and / or swamps. It is unlikely that the deciduous swamp communities adjacent to Ellsworth Drain are sufficiently large to support this species. It is more likely that this species is found in the swamp west of the border between Wainfleet and Haldimand County.

2) **SAR bats (Moderate)** – Suitable habitat to support SAR bats may occur along swamp margins and interior forest habitats as well as hedgerows. Deciduous swamps are present within the vicinity of the drain. In Burnside's experience, the potential for high-quality maternal roost trees within the maintained right-of-way of drains is low due to ongoing maintenance practices that prevent the establishment of mature trees.

3) **Red-headed Woodpecker (Moderate)** – Forest edges, requires large, dead, weathered trees or live trees with large dead branches (**to field verify**).

4) **Wood Thrush (Moderate)** – Wood Thrush is ranked as **Special Concern** and as such are not afforded habitat protection under the ESA; however, this species and its active nest receives protection under the federal *Migratory Bird Convention Act* (MBCA).

5) **Black Ash (High)** – Although not identified within NHIC, Black Ash is a commonly occurring species within wetland communities throughout Ontario. As of January 24, 2024, the MECP has released two new regulations, O. Reg. 6/24 and O. Reg. 7/24, that provide a description of protections afforded to Black Ash and its habitat. Per O. Reg. 06/24, only "healthy" individuals with a DBH of 8 cm or greater with a minimum stem height of 1.37 m within a municipality or territorial district identified in Schedule 1 of O. Reg. 6/24 (**to field verify**).

b) Marshes (if present in project limits)

1) **King Rail (unlikely to be present)** – Marsh habitat may be present along the margins of the drain. King Rail are known to breed within shallow cattail marshes / shrubby swales and require thick emergent vegetation. This species is most commonly encountered along the coastal marshes of the Great Lakes and Lake St. Clair and is unlikely to be supported within the Ellsworth Drain.

2) **Blanding's Turtle (unlikely to be present)** – Blading's Turtles are known to occur within a variety of wetland habitats throughout southern and central Ontario. This species requires eutrophic environments with shallow water and soft bottoms and an abundance of emergent and submerged wetland vegetation. In Burnside's experience, municipal drains do not constitute high quality habitat for Blanding's Turtles but may be utilized incidentally as movement corridors. Blanding's Turtles are unlikely to occur within the project limits due to disturbance and limited quantities of suitable habitat present in association with the drain.

c) Agricultural fields

1) **Bobolink / Eastern Meadowlark (unlikely to be present)** – Bobolink and Eastern Meadowlark commonly occur within agricultural landscapes. This species may be supported in sufficiently large (> 2 ha) pasturelands or fallow fields. Agricultural fields planted with corn and soybeans are not considered to be suitable habitats for these species.

d) Along the drain / in the drain

1) **Bank Swallow (unlikely to be present)** – Bank Swallows are well known to nest along vertical or near-vertical faces, including the banks of watercourses. The banks of Ellsworth Drain may support Bank Swallows. If the banks are heavily vegetated or otherwise obscured, or soils consist of heavy clays it is unlikely that this species will be supported.

2) **Snapping Turtle (high)** – Snapping Turtles are known to commonly occur within municipal drains. Although this species is listed as Special Concern, consideration for this species with regards to timing of in-water works should be provided.

e) Box Culverts

1) **Barn Swallow (confirmed present)** – based on a Burnside ecologists review of the culvert, Barn Swallows are confirmed to be nesting within the existing box culverts to be replaced at Zion Road and Smith Road. Barn Swallows were recently downlisted from Threatened to Special Concern and as such, no longer receive habitat protection under the ESA. Barn Swallow and their active nests receive protection under the federal MBCA. Although this species is not listed under Schedule 1 of the MBCA, as Barn Swallow reuse nests year after year, additional mitigation measures must be considered. The nests of species listed under Schedule 1 of the MBCA receive year-round protection due to their high conservation value.

In summary, to mitigate impacts and to remain in compliance with the exemptions for drainage projects O.Reg 242/08, the proponent must take all precautions possible to avoid impacts to SAR and their habitat. In this case, this means that clearing will need to be completed outside of the bird / bat active window **(April 1 – September 30)** and generally avoid or limit clearing wooded areas wherever possible. Erosion and Sediment Controls must also be implemented as deemed appropriate by the drainage engineer. It is also important that any disturbed areas are restored after the work is finished. In the event that any SAR vegetation species are found in the vicinity of the drain, efforts to avoid impacts to this species should be avoided.

3.0 Niagara Peninsula Conservation Authority (NPCA)

The NPCA has been apprised of the project throughout its progression including a meeting held on September 2020, where NPCA staff indicated that their main concern pertained to sediment control during construction.

In response to the NPCA's comments, the following mitigation measures have been provided:

- In-water work shall be done under low flow or dry conditions
- Installation of a sediment control structure and sediment basin at the downstream end of the work
- Installation of sediment basins to deposit sediment upstream and stilling basins to control increased culvert velocities downstream of road crossings
- Erosion protection for all crossings and susceptible channel bends in the work area
- Installation and maintenance of sediment and erosion controls, i.e., silt-fence surrounding stockpiled areas of loose excavated soil

As indicated in the NPCA documents located in this Appendix, all work is to be in accordance with the terms of this permit.

4.0 Ministry of Environment, Conservation and Parks (MECP)

4.1 Species at Risk (SAR)

A review of the Natural Heritage Information Centre (NHIC) mapping tool for species at risk in Ontario (SARO), under the Endangered Species Act (ESA) was conducted by Burnside.

Several SAR were listed under the BEAST screening, however, the presence of Eastern Meadowlark and Bobolink are most likely, therefore our SAR mitigation timing windows are based around them yet are inclusive of all the SAR listed in Section 2.0.

4.2 General Mitigation Measures

- Erosion and sediment control measures, as specified above, must be implemented in advance of project works.
- A site visit to assess the on-site conditions to identify potential SAR bat maternity roost trees, candidate habitat for Red-headed Woodpecker, and Black Ash specimens that receive protection under the ESA. Should the potential to impact any of the above species occur, the Burnside ecology team will prepare a species at risk mitigation plan and register the project with the MECP as well as all additional measures required under Section 29.3 of O. reg 242/08 to ensure compliance with the ESA.

4.3 SAR Mitigation

4.3.1 Eastern Meadowlark and Bobolink

In response the following mitigation measures have been provided:

- Apply no work timing windows for all clearing and grubbing to avoid direct impacts to birds during the core bird breeding window **(Restricted from April 1 to September 15).**
- All disturbed soils within pasture areas are to be reinstated and seeded with Virginia Wild Rye (*Elymus virginicus*) post-construction.

The proposed works will occur primarily within active pastures and active agricultural fields that are primarily used for row crops.

These agricultural fields will remain suitable for agricultural operation after the installation is complete, and therefore the proposed works should not impact potential breeding bird habitat, as vegetation will regenerate prior to the next breeding season. No temporary or permanent impacts to SAR are expected.

4.3.2 SAR Bats, Red Headed Woodpecker

Tree Removal: All tree removal required for the work shall take place outside the bat/bird active window for southern Ontario **(Restricted from April 1 to September 30).**

If suitably large trees to support Red-headed Woodpecker are identified within the vicinity of the drain, measures to avoid impacts to candidate nesting trees will be undertaken where feasible.

5.0 Fisheries & Oceans Canada (DFO)

A review of the DFO channel classification for the proposed municipal drain using the AgMaps mapping tool by OMAFRA was conducted by Burnside.

The proposed work area within the Ellsworth Municipal Drain is currently classified as Class F drain upstream of Smith Road and a Class C drain from Smith Road to the outlet at the Big Forks Municipal Drain by this mapping.

A request for review of the proposed works was submitted to DFO for review (DFO File Number 22-HCAA-01881) and comments were later received in a Letter of Advice (October 2022). DFO indicated that their main concerns pertained to the potential release of sediment into watercourses that could disrupt fish habitat.

As indicated in the DFO Letter of Advice in this Appendix, all work is to be done in accordance with the terms in the Letter of Advice. Relevant mitigation measures are highlighted below and must be followed throughout the project:

- **All in-water work will be conducted outside the restricted timing window (no in-water work from March 15 to July 15)**
- All in-water work will be conducted in low or no flow conditions
- Limit impacts on riparian vegetation; vegetate disturbed surfaces with native species
- Install appropriate and effective erosion and sediment control measures (i.e., sediment traps and check dams) during construction

No Federal Species at Risk has been identified within this drainage area that would require special consideration under the Species at Risk Act (SARA).

6.0 Migratory Birds Convention Act (MBCA)

Habitat to support migratory birds is present throughout the entire length of the drain. The MBCA prohibits the “incidental take” of migratory birds and the disturbance, destruction, or taking of the nest of a migratory bird is prohibited. “Incidental take” is the killing or harming of migratory birds due to actions such as economic development, which are not primarily focused on taking migratory birds.

The following mitigation measures should be implemented:

- All vegetation clearing should be completed outside of the bird active window, as identified in Section 4.0 above. Nesting sweeps are not recommended in the instance except in the case of structures (i.e., culverts).
- Barn Swallow:
  - As Barn Swallows are confirmed to be nesting within the project limits and will return to nesting sites and reuse nests year after year, measures to exclude Barn Swallows and other species of migratory from the box culverts must be taken. As per the Best Management Practices for Excluding Barn Swallows and Chimney Swifts from Buildings and Structures (MNRF, 2017), the recommended method for excluding barn swallows from culverts is by using a framed wire screen with a fabric apron to permit flow through the culvert. As per the prescribed BMP:

    The framed wire screen should be constructed using wire mesh (half inch by half inch by 19 gauge) and pressure treated spruce (two inch by four inch lumber)… Abutting sheets of wire mesh should overlap by at least 100 mm and be tied together at 600 mm centers with galvanized wire. The bottom of the screen should be 50 mm above the water surface or at the elevation at the top of the footing (whichever is higher). The gap between the wire screen and the water surface should be blocked with a fabric apron.

- The installation of the migratory bird exclusion fencing should be completed by March 31 in advance of the April 1 migratory bird nesting window and should remain intact until August 30. The exclusionary measures should be inspected on a regular basis to ensure that they are in good repair, especially after any significant weather event. Any tear or hole in the screening / fabric will allow birds to enter and attempt to nest inside the culvert, potentially resulting in significant delays to the project timelines. Under the federal *Migratory Birds Convention Act* (1994), any active nests with eggs or young cannot be disturbed or removed until the nest is no longer active (i.e., young have left the nest).
- The existing Barn Swallow nests will be removed from the structure prior to the installation of exclusion fencing. The Burnside ecology team will reach out to Canadian Wildlife Services to confirm that a permit to remove the inactive nests is not required.

Fisheries and Oceans Canada | Pêches et Océans Canada

Ontario and Prairie Region
Fish and Fish Habitat Protection Program
867 Lakeshore Road
Burlington, Ontario
L7S 1A1

Région de l'Ontario et des Prairies
Programme de protection du poisson et de son habitat
867 chemin Lakeshore
Burlington, Ontario
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October 5, 2022

Our file *Notre référence*

22-HCAA-01881

Mark Jemison
Township of Wainfleet

Subject: [Drain Realignment and Cleanout, Ellsworth Drain, Class C and F, Township of Wainfleet](22-HCAA-01881) – Implementation of Measures to Avoid and Mitigate the Potential for Prohibited Effects to Fish and Fish Habitat

Dear Bill Mayes:

The Fish and Fish Habitat Protection Program (the Program) of Fisheries and Oceans Canada (DFO) received your proposal on July 13, 2022. We understand that you propose to:

- Deepen approximately 3500m of the existing drain (approximately 1000m of Class C and 2500m of Class F Drain); and
- Realign approximately 390m of existing channel in Lot 39 Concession 4; and
- Full clean out of the remaining channel between Lot 38 Concession 5 and Wainfleet Dunnville Townline road, including Lot 38 Concession 5, ON-3, Lot 38 Concession 4, Lot 39 Concession 4, Hendershot Road, Lot 40 Concession 4 and Lot 41 Concession 4; and
- Removal and replacement of existing culvert crossings

Our review considered the following information:

- Request for Review form and associated documents.

Your proposal has been reviewed to determine whether it is likely to result in:

- the death of fish by means other than fishing and the harmful alteration, disruption or destruction of fish habitat which are prohibited under subsections 34.4(1) and 35(1) of the *Fisheries Act*; and
- effects to listed aquatic species at risk, any part of their critical habitat or the residences of their individuals in a manner which is prohibited under sections 32, 33 and subsection 58(1) of the *Species at Risk Act*.

The aforementioned outcomes are prohibited unless authorized under their respective legislation and regulations.

To avoid and mitigate the potential for prohibited effects to fish and fish habitat (as listed above), we recommend implementing the measures listed below:

- Plan in-water works, undertakings and activities to respect timing windows to protect fish, including their eggs, juveniles, spawning adults and/or the organisms upon which they feed and migrate
    - No in-water work between March 15 – July 15
- Conduct in-water undertakings and activities during periods of low or no flow conditions
- Limit impacts on riparian vegetation to those approved for the work, undertaking or activity
- Immediately stabilize shoreline or banks disturbed by any activity associated with the project, preferably through re-vegetation with native species suitable for the site
- Install effective erosion and sediment control measures, including sediment traps and rock check dams in areas where excavation is required
- Avoid introducing sediments (e.g., silts, clays and sand) in the water
- Do not deposit any deleterious substances in the water course
- Develop and implement a response plan to avoid a spill of deleterious substances

Provided that you incorporate these measures into your plans, the Program is of the view that your proposal is not likely to result in the contravention of the above mentioned prohibitions and requirements.

Should your plans change or if you have omitted some information in your proposal, further review by the Program may be required. Consult our website (http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html) or consult with a qualified environmental consultant to determine if further review may be necessary. It remains your responsibility to remain in compliance with the *Fisheries Act*, and the *Species at Risk Act.*

It is also your *Duty to Notify* DFO if you have caused, or are about to cause, the death of fish by means other than fishing and/or the harmful alteration, disruption or destruction of fish habitat. Such notifications should be directed to (http://www.dfo-mpo.gc.ca/pnw-ppe/contact-eng.html).

We recommend that you notify this office at least 10 days before starting your project and that a copy of this letter be kept on site while the work is in progress. It remains your responsibility to meet all other federal, territorial, provincial and municipal requirements that apply to your proposal.

If you have any questions with the content of this letter, please contact Lucas Coletti at our Burlington office at 905-319-6959, or by email at Lucas.Coletti@dfo-mpo.gc.ca. Please refer to the file number referenced above when corresponding with the Program.

.../3

Yours sincerely,



Lucas Coletti
Biologist, Triage and Planning

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix H

Design Summary

Appendix H – Design Summary

1.0 Introduction

This appendix is intended to provide a summary of the various design tools and techniques featured with this project. In general, each component of the drainage system was designed by evaluating land use and soil characteristics of the watershed area contributing to the component of interest.

1.1 Project Background

The watershed is located near the Village of Winger, Ontario.

Land use within the contributing watershed contains mainly agricultural areas, with smaller areas of bush, and low-density residential.

1.2 Existing Drainage Systems

The watershed is currently serviced by the Ellsworth Municipal Drain as a trapezoidal channel to its outlet. The proposed work on the Ellsworth Municipal Drain is located in the Township of Wainfleet, outletting to the Big Forks Municipal Drain and continuing upstream on Lots 34 to 37, Concession 5 and Lots 38 to 41, Concession 4, ending at the Wainfleet – Dunnville Towline Road. The location of the work is shown in the enclosed plan.

2.0 Design Criteria

2.1 Municipal Drains

The applicable sections of the “A Guide for Engineers Working Under the Drainage Act in Ontario” (Publication 852), and the applicable sections of the “Drainage Guide for Ontario” (Publication 29), both of which were published by the Ontario Ministry of Agriculture, Food, and Rural Affairs (OMAFRA), were used to determine and supplement the design considerations for this drain.

2.1.1 Channel Systems & Structures

The *Guide for Engineers working under the Drainage Act in Ontario* recommends that open municipal drainage systems be designed to convey flows resulting from the 2-Year flood event as a minimum. Periodic flooding due to larger storms or snow melt conditions is considered acceptable for agricultural lands.

The sections of the Ellsworth Municipal Drain channel requiring improvement has been designed according to this guideline as a minimum.

Applicable components of the open drainage system were reviewed to ensure that the design criteria specified in **Table 1** was met.

Table 1: Design Storm Return Period Selection

Component	Design Storm Return Period[1]
Channel - Rural/Agricultural	2 year
Field Crossings	2 to 5 year
Residential or Major Agricultural Crossings	5 to 10 year
Lower-Tier Municipal Road Crossing	5 to 10 year
Upper-Tier Municipal Road Crossing	10 to 25 year

2.2 Culvert Crossings

2.2.1 MTO Crossing (Highway 3)

The analysis of existing and proposed surface culvert designs within the MTO right-of-way were completed in accordance with the Ministry of Transportation's Highway Drainage Design Standards, November 2023.

Given that the culverts drain surface runoff from the roadway and adjacent private lands into a watercourse, the following standards were used:

- WC-1 Design Flows for Natural Watercourse Crossings (Bridges & Culverts)
- WC-3 Scour and Armouring
- WC-7 Culvert Crossings
- WC-12 Fish Passage through Culverts

Highway 3 (Forks Road) was classified as an Rural Arterial road and this standard was applied to upstream surface crossings as well to ensure flow continuity within the system.

It should be noted that these design criteria were not used in the design of the downstream municipal drain system, as periodic flooding of agricultural lands is considered acceptable.

Hydraulic Standard Design Requirements

MTO Drainage Design Standard *WC-1 Design Flows for Natural Watercourse Crossings (Bridges & Culverts) , Table WC1-1* defines the design storm event that determines the Design Flow for the drainage component, while MTO Drainage Design Standard *WC-7*

[1] The Municipality and Conservation Authority may require a design varying from those listed Source: OMAFRA Publication 852 (Table B2-2), dated 2018.

Culvert Crossings defines the minimum freeboard criteria for culverts on a watercourse. These criteria are summarized in **Table 2.**

Table 2: MTO Drainage Criteria for Culverts on a Watercourse[2]

Functional Road Classification	Design Flow (Table WC 1-1)	Scour Analysis Flow (WC-3)	Culvert Criteria (Table WC 7-1)
Rural Arterial	25-YR RP Flow	**115%** of the 100-YR RP Flow	• **Minimum 1.0 m** of freeboard under design flow headwater HGL to edge of traveled lane. • **Check flow headwater** does not exceed edge of travelled lane elevation.
Local Road	10-YR RP Flow	**100%** of the 100-YR RP Flow	• **Minimum 300 mm** of freeboard under design flow headwater HGL to edge of traveled lane. • **No requirements** for check flow headwater elevation.

2.2.2 Road Crossings (Township of Wainfleet)

Crossings were evaluated against the OMAFRA Publication 852 requirements described in **Table 1**, and classified as lower-tier municipal road crossings for this analysis, requiring a minimum 5 to 10 year return period flood to be passed in the design. This standard was applied to upstream surface crossings as well to ensure flow continuity within the system.

Crossings were also analyzed using the MTO design standards for Local Roads per table 2, for comparison.

It should be noted that these design criteria were not used in the design of the downstream municipal drain system, as periodic flooding of agricultural lands is considered acceptable.

2.2.3 Landowner Crossings

The existing crossings were evaluated against the OMAFRA Publication 852 requirements described in Table 1**.**

2.2.4 Surface Culverts

The existing surface culverts serving roads in the watershed were included in the model, however, they are not intended to meet the MTO drainage design requirements

[2] Maximum headwater flood depth (HW/D) ratios are discussed by Table WC 7-2.

(no design RP flood was used). Instead, they act as ‘equilibrium’ culverts, allowing gradual transfer of runoff under the road over time.

When these culverts were installed by the road authority, surface storage was taken into account for practical reasons, requiring a smaller diameter culvert for this application.

3.0 Hydrology

3.1 Hydrological Modelling

PCSWMM was used to create a hydrologic and hydraulic model to simulate effects of various return period design rainfall events on components of the drainage system. PCSWMM software combines hydrologic and hydraulic inputs to provide both outputs simultaneously.

3.1.1 Input Parameters

Input parameters for hydrologic and hydraulic modelling were based on watershed land use gathered from aerial photography, soil reports and mapping, published hydrologic and hydraulic values, among other relevant resources. Topographic information including ground elevations, channel cross sections, and culvert dimensions and invert elevations was collected during the on-site survey.

Hydrologic Soil Group

A soils investigation was performed using AgMaps, an online interactive mapping system developed by the Ontario Ministry of Agriculture, Food, and Agribusiness.

The Ontario Soils Survey mapping indicates that the predominant soil types within the watershed area are **Tavistock Loam** in the downstream sections within the Township of Wainfleet, while the upper watershed in the Geographic Township of Moulton is dominated by **Wauseon Loam**.

Publication 29 – the Drainage Guide for Ontario by OMAFRA classifies soils into Hydrologic Soil Groups (HSG) based on the estimated water intake rate of a soil after wetting, and inversely, the surface runoff rate from that soil per the United States Department of Agriculture (USDA) - *Technical Release 55 (1986)*.

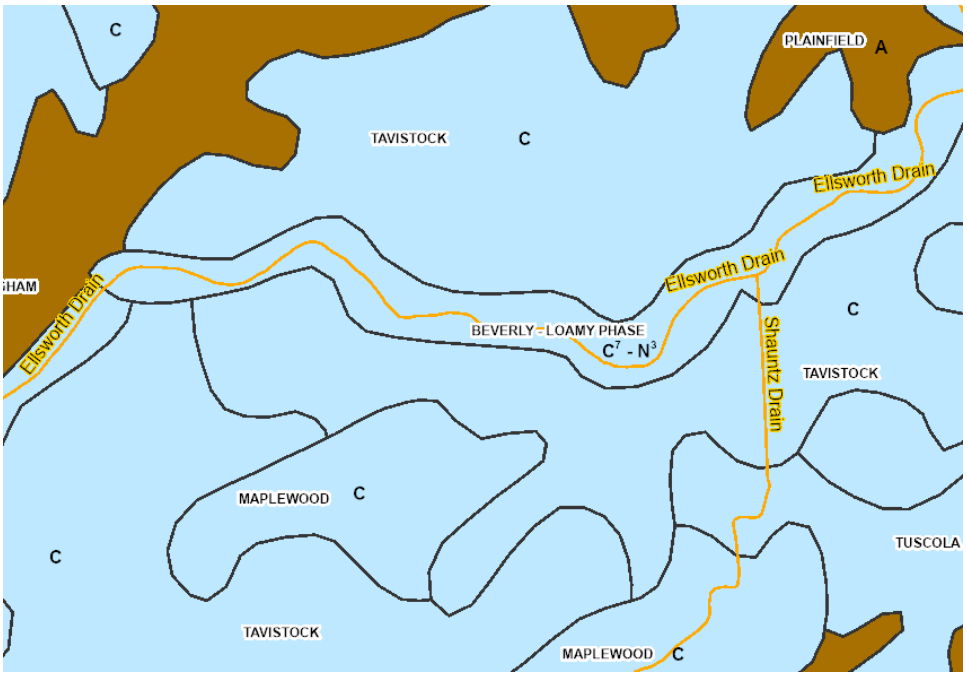
Figure 1: Watershed soil mapping



Source: Ag Maps Website

- Tavistock Loam (TVK) is classified as **HSG 'A':**
  - Located primarily in the Township of Wainfleet watershed.
  - Soil types classified under HSG 'A' soils, typically sandier, have moderate infiltration rates with good drainage, suggesting higher infiltration rates and lower runoff potential.
- Wauseon Loam as **HSG 'C':**
  - Located primarily in the County of Haldimand watersheds.
  - Soil types classified under HSG 'C' soils, typically more clays, have slow infiltration rates with imperfect drainage, suggesting lower infiltration rates and higher runoff potential.

Figure 2: Watershed hydrologic soil group mapping



Source: Ag Maps Website

Surface Runoff and Infiltration

The SCS curve number method was chosen to estimate surface runoff based on its development by the Natural Resources Conservation Service (NRCS) and the United States Department of Agriculture (USDA) for small watersheds as outlined in Technical Release 55 (1986) and the NRCS Engineering Handbook, Part 630.

This method estimates surface runoff based on land use and classifies soils into four hydrologic soil groups (HSG) as described above, with a comprehensive listing of curve numbers for both rural and urban environments and scenarios.

Design Storms

The 24-hour duration SCS Type II rainfall distribution from the Natural Resources Conservation Service (NRCS) was chosen to provide design storms for this simulation.

The SCS Type II storm distributions are applicable to large, rural, and mixed watersheds like the subject site. The 24-hour duration storm was then chosen in this simulation, as it produced the larger and more conservative flow estimates for this watershed than shorter duration storms.

The Ministry of Transportation (MTO) intensity duration frequency (IDF) curve tool was used to develop a local IDF curve for the watershed and determine rainfall amounts and intensities for various return period design events.

The various return periods and corresponding rainfall depths for a 24-hour storm are shown in Table 3.

Table 3: 24-Hour Rainfall Depths for the Project Site near Winger, ON

Rainfall Depth for Design Storm RP (mm)					
2-yr	**5-yr**	**10-Yr**	**25-Yr**	**50-Yr**	**100-Yr**
59.1	78.1	90.8	106.5	118.2	129.9

Source: MTO IDF Lookup Tool (2010 Curve Year) – Location: near Winger, ON. **(Chosen for this project)**

Watershed Storage and System Assumptions

Initial abstractions in hydrology are parameters that represent the cumulative storage of rainfall prior to runoff occurring, which typically include:

- Interception
- Infiltration
- Evaporation
- Surface depression storage

Infiltration and surface depression storage parameters are typically the most sensitive with event-based rainfall-runoff models due to the length of simulation and are represented by published values in this model. Additionally, interception is taken into account through land use and the associated curve number value selected.

As an industry best practice for one-dimensional models, watershed storage is not considered from a hydraulic perspective when simulating the peak flow hydrology for channel and structure design, for example the potential storage area upstream of a road when designing a culvert crossing. As such, the peak flow rates simulated for the watershed may be considerably larger than those observed within the watershed, and this was confirmed anecdotally through stakeholder comments.

All hydrological simulations for design flows (existing conditions) were run assuming a barrier free conduit system, where the peak flow at a given location is unobstructed where all sections of the drainage system were sized as required to accommodate unobstructed flow from all design storm events.

3.1.2 Simulation Results

The 2-year return period design storm was simulated with the PCSWMM model for design purposes, including current land use conditions within the contributing watershed. Additional hydrologic simulation results for return periods not shown are available upon request. Simulations were used to determine the peak flow rates at various points in the watershed, to aid in the design on the component of interest.

Table 4: PCSWMM Hydrologic Simulation Results

Simulated Peak Flow Rate (CMS*)						
Location	**Flood Return Period**					
	2-yr	**5-yr**	**10-yr**	**25-yr**	**50-yr**	**100-yr**
Outlet	2.3	3.9	5.0	6.6	7.8	9.0
Smith Road	2.0	3.3	4.2	5.5	6.5	7.5
Zion Road	1.6	2.7	3.4	4.5	5.4	6.2
Highway 3 (Forks Road)	1.6	2.6	3.4	4.5	5.3	6.2
Hendershot Road	1.3	2.3	2.9	3.9	4.7	5.4
Wainfleet – Dunnville Townline Road	1.2	2.1	2.6	3.6	4.3	5.1

Source: PCSWMM Simulation (***Conversion: 1 CMS = 1,000 L/s)

4.0 Hydraulic Review

4.1 Existing Channel and Structures

A standalone review of the existing open drainage system was not performed for this project due to the overall minor deepening and widening proposed in an area that is currently agricultural. The existing surface and channel crossings were evaluated against the design criteria as described above (OMAFRA Publication 852).

5.0 Hydraulic Design

5.1 Channel System

5.1.1 Channel Design

The capacity of the proposed channel was designed to ensure it could convey a minimum 2-year return period design flood as specified in **Table 1** above. The channel design was performed using Manning's Equation using the design calculator 'Hydraulic Toolbox' by the Federal Highway Administration (FHWA) and PCSWMM simulations.

Table 5: Channel Design Summary - 2-yr RP Design Flood

Section		Average Channel Dimensions		
		Bottom Width (Min.)	**Channel Side Slope**	**Minimum Depth**
Ellsworth MD Outlet	Andrew Shauntz MD Outlet	**600 mm**	**2H:1V Side Slope**	**1.3 m**
Andrew Shauntz MD Outlet	Smith Road	**600 mm**	**2H:1V Side Slope**	**1.2 m**
Smith Road	Zion Road	**600 mm**	**2H:1V Side Slope**	**1.2 m**
Zion Road	Highway 3 (Forks Road)	**600 mm**	**2H:1V Side Slope**	**1.3 m**
Highway 3 (Forks Road)	Hendershot Road	**600 mm**	**2H:1V Side Slope**	**1.2 m**
Hendershot Road	Wainfleet – Dunnville Townline Road	**600 mm**	**2H:1V Side Slope**	**1.2 m**

5.1.2 Channel Hydraulics

Under OMAFRA publication 852, the minimum recommended channel freeboard of 0.1 to 0.3 m was included as part of this design and is summarized in **Table 6** below.

Table 6: Proposed Channel Analysis Summary

Channel Section		2-Yr Peak Flow (CMS)	Avg. Section Gradient (%)	Normal Water Depth (m)	Avg. Channel Depth (m)	*Avg. Channel Freeboard (m)
Section						
Ellsworth MD Outlet	Andrew Shauntz MD Outlet	**2.3**	0.10	1.3	1.8	*+0.5*
Andrew Shauntz MD Outlet	Smith Road	**2.0**	0.10	1.2	2.2	*+1.0*
Smith Road	Zion Road	**1.6**	0.08	1.2	1.8	*+0.6*
Zion Road	Highway 3 (Forks Road)	**1.6**	0.04	1.3	1.8	*+0.5*
Highway 3 (Forks Road)	Hendershot Road	**1.3**	0.04	1.2	1.5	*+0.3*
Hendershot Road	Wainfleet – Dunnville Townline Road	**1.2**	0.04	1.2	1.7	*+0.5*

Note: OMAFRA Pub. 852 recommends a minimum of 0.1 to 0.3 m of channel freeboard to the normal water level.

5.2 Culvert Crossings

Culvert crossings were evaluated for capacity based on the simulated peak flow results for each location as shown in **Table 4** for their existing design standard based on the criteria described in **Table 1**. The hydraulic performance of all crossings was evaluated using the HY-8 culvert analysis software from the FHWA, in addition to the PCSWMM simulations.

5.2.1 MTO Crossing (Highway 3)

A summary of the existing and proposed crossings is shown in **Table 8**.

The simulation results indicate that the existing crossing conveyed the 25-yr flood, with no overtopping and a freeboard of over one metre, satisfying the MTO design criteria.

Additionally, simulated outlet **velocities from the existing culvert were approximately 1.4 m/s** under the 25-yr RP flood. This will be addressed through rip-rap erosion protection and a stilling basin immediately downstream of the culvert.

Table 7 – MTO Structure Comparison

Culvert Scenario	Structure Description	Length (m)	Invert (m)	Edge Travelled Lane (m)	25-YR Flood	
					Headwater Elevation (m)	Freeboard to ETL (m)
1) Forks Road (Highway 3)						
Existing	Ap. 1,650 mm rise X 2,420 mm span Concrete Box Bridge	23	US=174.65 DS=174.60	177.28	176.19	+1.09
Proposed	TO REMAIN					

5.2.2 Road Crossings (Township of Wainfleet)

A summary of the existing and proposed crossings is shown in **Table 8**.

The simulation results indicate that the existing crossings conveyed the 10-yr flood, with no overtopping, satisfying the OMAFA Publication 852 design criteria.

Additionally, simulated outlet **velocities from the existing (culverts to remain) and proposed culverts were approximately 0.7 m/s and 1.0 m/s** under the 10-yr RP flood. Increased outlet velocity will be addressed through rip-rap erosion protection and a stilling basin immediately downstream of each culvert.

Table 8 – Road Structures Comparison

Culvert Scenario	Structure Description	Length (m)	Invert (m)	ETL (m)	10-YR Flood	
					Headwater Elevation (m)	Freeboard to ETL (m)
1) Smith Road						
Existing	1,500 mm rise X 2,900 mm span Concrete Box Bridge	8	US=173.83 DS=173.76	176.38	175.27	+1.11
Proposed	2,080 mm rise X 3,300 mm span CSPA	20	US=173.14 DS=173.12	176.38	175.18	+1.20
2) Zion Road						
Existing	1,700 mm rise X 2,600 mm span Concrete Box Bridge	10	US Soffit= 176.47 DS Soffit= 176.40	177.18	175.99	+1.19
Proposed	2,080 mm rise X 3,300 mm span CSPA	20	US=174.02 DS=174.01	177.18	175.92	+1.26
3) Hendershot Road						
Existing	2,700 mm dia. CSP	18	US=174.42 DS=174.38	177.48	176.73	+0.75
Proposed	TO REMAIN					
4) Wainfleet – Dunnville Townline Road						
Existing	2,150 mm rise X 3,100 mm span CSPA	10	US=175.17 DS=175.18	177.73	176.74	+0.99
Proposed	TO REMAIN					

*CL elevation is higher than surrounding channel banks, resulting in water loss around the crossing.

5.2.3 Landowner Crossings

For a field crossing providing access to rural or agricultural land only, the structure should convey up to the 5-year floods without overtopping of the crossing. This crossing evaluation for design was completed per the OMAFRA guidelines in Publication 852, specifying a 2 to 5-yr RP flood for this crossing type.

Table 9 – Landowner Structures Comparison

Culvert Scenario	Structure Description	Length (m)	Invert (m)	ETL (m)	5-YR Flood	
					Headwater Elevation (m)	Freeboard to ETL (m)
1) Armstrong Property						
Existing	1,800 mm dia. CSP	12	US=172.42 DS=172.42	174.65	174.12	+0.53
Proposed	TO REMAIN					
2) Breukelman Property						
Existing	1,200 mm dia. CSP	9	US=173.44 DS=173.27	175.33	175.47	Overtopping
Proposed	TO REMOVE AND SALVAGE					
3) Robson Property						
Existing	1,600 mm dia. Smoothwall Steel	7	US=174.17 DS=174.03	175.94	175.73	+0.21
Proposed	TO REMAIN					
4) 2390364 Ontario Property						
Existing	1,400 mm dia. CSP	12	US=174.96 DS=174.91	176.66	176.48	+0.18
Proposed	CULVERT INVERT ELEVATIONS TO BE CONFIRMED AT TIME OF CONSTRUCTION. TO BE REMOVED AND REINSTALLED IF CAUSING AN OBSTURCITON TO FLOW.					
**CL elevation is higher than surrounding channel banks, resulting in water loss around the crossing.*						

The simulation results indicate that three of the four existing crossings conveyed the 5-yr flood, with no overtopping, satisfying the OMAFA Publication 852 design criteria. The crossing on the Breukelman property will not pass the design flood and therefore should be removed.

Additionally, simulated outlet **velocities from the existing (to remain) culverts were between approximately 1.7 and 2.8 m/s** under the 5-yr RP flood. This will be addressed through rip-rap erosion protection and/or a stilling basin immediately downstream of the culvert.

Future Crossings

In the future, should these or any new crossings should be re-evaluated when a new crossing is required to determine if an increase in capacity is desired by the landowners. Future replacement or new crossings should be evaluated by a qualified Engineer to determine specific minimum crossing sizing to ensure the crossing does not become an obstruction to the drain.

6.0 Additional Features for Water Quality

6.1 Agency Review

A submission regarding this project has been made to the DFO and MECP regarding species at risk (SAR), and Niagara Peninsula Conservation Authority (NPCA). The CA has timing windows for in-water works concerning erosion and sediment control. These would apply to proposed work in the proposed municipal drain.

6.2 Sediment Control

6.2.1 Sediment Basins

Permanent sediment basins have been included with this design. Using these structures, the frequency of maintenance to the drain should be lowered, and work should be more concentrated to these cleanout areas. Maintenance work should be performed in a timely manner by the Drainage Superintendent to ensure the effectiveness of this approach.

A permanent sediment basin shall be constructed at the downstream end of the channel excavation on the main drain.

The permanent sediment basins were designed to be over-excavated to a specified depth (typically 600 mm to 1,000 mm below invert) to allow water to slow and deposit sediment.

6.2.2 Sediment Control Structure

Immediately downstream of the sediment basin, a rock protected bio-filter sock check dam shall be constructed to further enhance sediment deposition, prior to exiting the construction zone. Both shall be constructed prior to construction commencing and in accordance with the applicable environmental agency regulations and instructions.

Prior to construction, bio-filter socks (or approved equivalent) will be installed in major low runs entering the channel from the side of the drain ROW, as directed by the Engineer. These socks are primarily to treat surface runoff from the adjacent fields prior to the establishment of the vegetative buffer strip.

6.3 Riffle Structures and Permanent Sediment Basins

One riffle structure will be constructed within the channel to enhance both sediment deposition in this location and to enhance water quality. This structure is designed to pool water upstream of the riffle location in areas where the channel gradient and existing drainage systems allow. The permanent sediment basin immediately upstream of the riffle will be over-excavated to a depth of 1 m below the crest of the structure to allow water to slow and deposit sediment.

Although the riffle structure has been designed to function primarily under baseflow conditions to enhance aquatic habitat and increase channel flow diversity, it can safely accommodate periods of increased flow and snowmelt. It has been designed to remain stable under the 100-year flow event by using suitable erosion protection and energy dissipation areas.

Two additional standalone permanent sediment basins shall be constructed along the drain to slow incoming flow in these sections and promote sediment deposition.

Using these structures, the frequency of maintenance to the drain should be lowered, and work should be more concentrated to these cleanout areas. Maintenance work should be performed in a timely manner by the Drainage Superintendent to ensure the effectiveness of this approach.

6.4 Riparian Buffer Strips

A 3 m grassed buffer has been included with this design on both sides of the channel for the entire length of the proposed channel work on the proposed municipal drain. This buffer will serve as both a minimum setback distance for agricultural work, as well as a physical barrier for sediment laden runoff entering the channel.

Vegetated buffer strips along both natural watercourses and open drains are generally accepted as proper land stewardship and a Best Management Practice for the agricultural industry in Ontario and other parts of North America. This concept is supported by such OMAFRA publications as “Best Management Practices – Buffer Strips” and “A Guide for Engineers working under the Drainage Act in Ontario” (Publication 852)”. As part of the improvement to this municipal drain, buffer strips will be established and maintained along the open drain as described and applicable allowances provided accordingly.

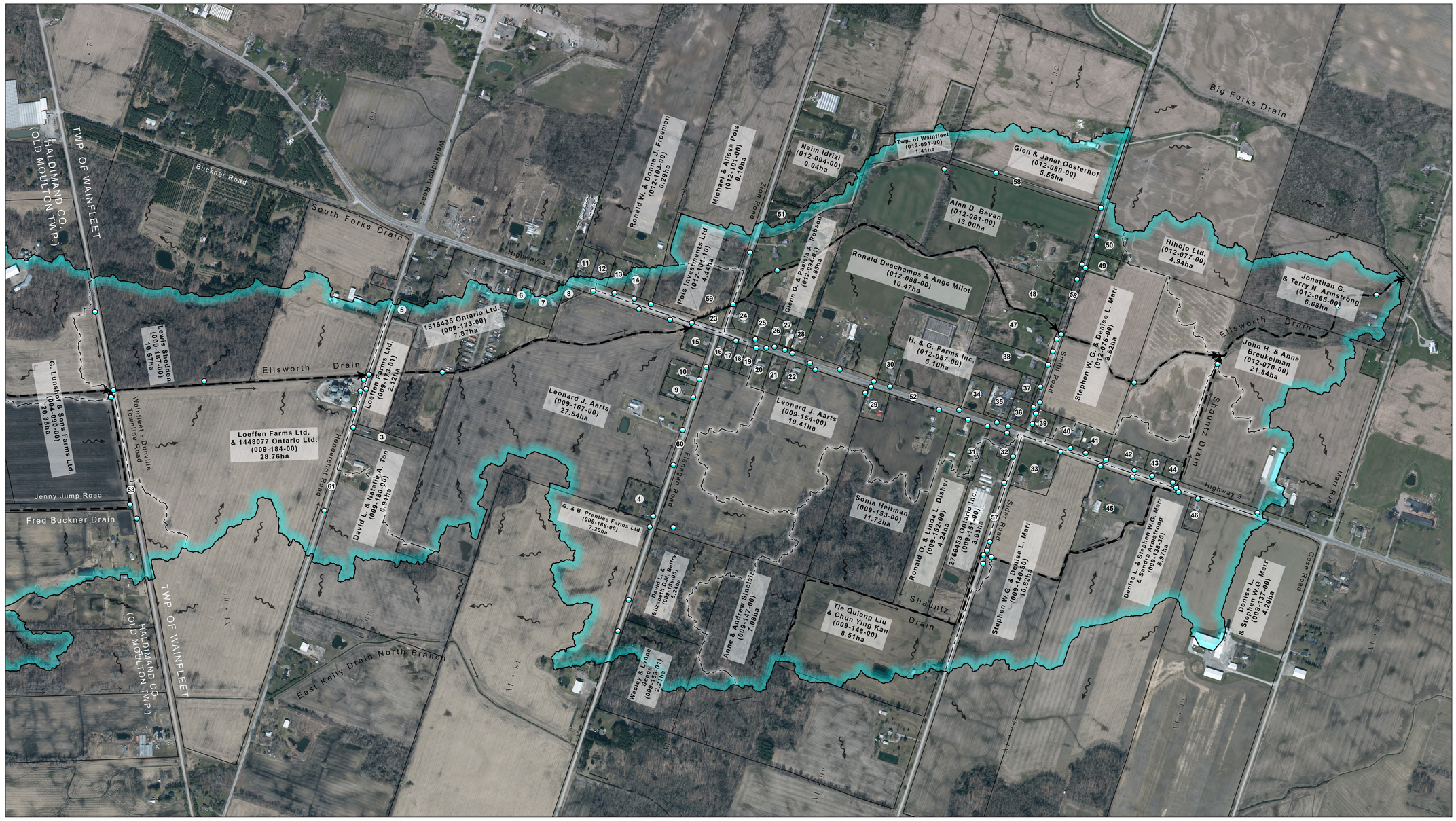
BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix I

Drawings

Watershed and Ownership Plan	1 of 1
Enlarged Plan 1	1 of 12
Enlarged Plan 2	2 of 12
Enlarged Plan 3	3 of 12
Enlarged Plan 4	4 of 12
Drain Profile 1	5 of 12
Drain Profile 2	6 of 12
Crossing Details	7 of 12
Realignment Detail 1	8 of 12
Detail 2	9 of 12
Detail 3	10 of 12
Detail 4	11 of 12
Detail 5	12 of 12



Key Number	Roll Number	Owners	Area Within Watershed
1	004-119-00	Hans & Paula L. Geerdink	0.44 ha
2	004-118-00	Samuel W. & Sandra McKay	0.48 ha
3	009-179-00	Steven High & Linda Ricker	0.39 ha
4	009-167-01	Raymond Ricker	0.81 ha
5	009-178-00	Sarah E. Feddema & Peter W. & Rhonda C. Feddema	0.19 ha
6	009-172-00	Jean M. & Hugh E. Donaldson	0.33 ha
7	009-170-00	Randall B. & Noreen E. Williams	0.69 ha
8	009-169-00	Kiet Turnbull & Paisley Statten	0.14 ha
9	009-167-25	Maria R. & Bradley C. Rickman	0.42 ha
10	009-167-30	David J. Vonk	0.41 ha
11	012-107-00	Sheila M. Lawson & David C. Traplin	0.02 ha
12	012-106-00	Randall B. & Noreen E. Williams	0.07 ha
13	012-105-00	Brian F. & Darlene A. Kinney & Jenny L. Kinney	0.17 ha
14	012-104-00	Theadora F. & Roland J. Tourigny	0.36 ha
15	009-168-00	Jacob Wall	0.43 ha
16	009-158-00	Suzanne Vinnick	0.15 ha
17	009-157-00	Sandra Medjed & Gary W. McPherson	0.23 ha
18	009-156-00	Terrance G. Gomes	0.21 ha
19	009-155-00	Robert J. & Kathryn Strohak	0.21 ha
20	009-154-07	John W. & Deborah C. Kiers & Leanne C. Kiers	0.40 ha
21	009-154-06	Randall D. & Bonnie J. Heitman & Dale R. Heitman	0.40 ha
22	009-154-05	Timothy A. Clapp	0.41 ha
23	012-102-00	Ministry of Transportation	0.21 ha
24	012-090-01	Andrew J. & Sherry A. Taylor	0.41 ha
25	012-090-00	Holly L. Travis & John Campbell	0.41 ha
26	012-089-00	Jacob D. Sinke	0.20 ha
27	012-088-02	Michael G. Brown	0.41 ha
28	012-088-01	Jordan & Amy Barker	0.32 ha
29	009-153-01	Timothy L. & Judy J. Shoalts	0.47 ha
30	012-086-00	Rodney S. Dean	0.45 ha
31	009-151-01	Ferdinand & Lori I. Feith & Joseph N. Feith	0.68 ha
32	009-149-00	Jeremy W. Collard & Danielle M. Scott	0.14 ha
33	009-140-00	Dwight J. Marr & Allison J. Marr	1.18 ha
34	012-085-02	Leonard Charlebois & Penny L. Stayzer	0.55 ha
35	012-085-00	1422217 Ontario Ltd.	0.56 ha
36	012-084-00	Roger J. & Jodi J. Smit	0.33 ha
37	012-087-01	Gary R. & Stephanie B. Heitman & Stephanie D. Heitman & Pierre D.M. Da	0.35 ha
38	012-083-01	Evert & Elizabeth Stryker & Brent Stryker	1.12 ha
39	012-076-01	Kelly D. & Delroy Johnson	0.31 ha
40	012-074-00	Sider, Jordan William & Aarts Melissa Diane	0.49 ha
41	012-073-00	George A. & Linda A. Pirson	0.43 ha
42	012-072-01	Anno J. & Geertruida Vander Veen & 1448077 Ontario Ltd.	0.47 ha
43	012-072-00	Justin D. & Cassandra A. Hannaford	0.24 ha
44	012-071-00	Brian G. Robins & Dagmar Brucks	0.25 ha
45	009-139-00	Gabriella Pop-Lazic & Markita C. Fleming	2.77 ha
46	009-138-00	Jeffrey S. & Jody L. Young	0.41 ha
47	012-083-00	Troy P. & Natalie D. Sider	2.25 ha
48	012-082-00	Sara Schertzing & Anthony Nannarone	1.72 ha
49	012-075-05	Ryan P. & Cindy L. Oosterhof	0.41 ha
50	012-075-15	Arnold Veldhuizen	0.46 ha
51	012-092-00	Township of Wainfleet	0.92 ha
52	Road Allowance	MTO (Highway 3)	5.75 ha
53	Road Allowance	Haldimand County (WD Townline)	1.32 ha
54	Road Allowance	Haldimand County (Jenny Jump Rd.)	5.74 ha
55	Road Allowance	Haldimand County (Hutchinson Rd.)	1.93 ha
56	Road Allowance	Twp. of Wainfleet (Smith Rd.)	1.51 ha
57	Road Allowance	Twp. of Wainfleet (Sider Rd.)	1.40 ha
58	Road Allowance	Twp. of Wainfleet (Cemetary Dr.)	0.62 ha
59	Road Allowance	Twp. of Wainfleet (Zion Rd.)	0.60 ha
60	Road Allowance	Twp. of Wainfleet (Flanagan Rd.)	1.81 ha
61	Road Allowance	Twp. of Wainfleet (Hendershot Rd.)	1.40 ha

Jack & Jill Hillier (001-234-56) 16.20 ha — Owner, Assessment Roll Number, Area in Hectares within Watershed

- Inlet Structure (Existing | Proposed)
- Outlet Structure (Existing | Proposed)
- Culvert (Existing | Proposed)
- Watershed Boundary
- Sub-Watershed Boundary
- Parcel Boundary
- Open Drain: Existing
- Closed Drain: Existing
- Open Drain: Proposed
- Closed Drain: Proposed
- Open Drain: Exterior Drainage Area
- Closed Drain: Exterior Drainage Area
- Overland / Low Run Direction of Flow
- Ditch Direction of Flow

Notes:

1. This drawing is the exclusive property of R.J. Burnside & Associates Limited. The reproduction of any part without prior written consent is strictly prohibited.
2. The contractor shall verify all dimensions, levels, and datums on site and report any discrepancies or omissions to this office prior to construction.
3. This drawing is meant to be read and understood in conjunction with all other plans and documents applicable to this project.
4. All property lines are approximate and for information purposes only.
5. Imagery reflects ground conditions in 2020.
6. Watersheds were delineated using a LiDAR derived digital terrain model reflecting ground conditions in 2021.
7. This drawing was made using information provided from:
   a. Regional Municipality of Niagara
   b. Land Information Ontario
   c. Township of Wainfleet
   d. Haldimand County

No.	Issue/Revision	Date	Auth.
1	Final Report	Aug. 2025	E.D.
2	-	-	-
3	-	-	-
4	-	-	-

Datum: North American 1983
Coord. System: NAD 1983 UTM Zone 17N
Projection: Transverse Mercator
Central Meridian: 81°00.00'W
False Easting: 500,000m | False Northing: 0m
Page Orientation: -21° | Scale Factor: 0.99960

Grid North

0 100 200 300 400
Metres

BURNSIDE

Client: TWP. OF WAINFLEET

Map Title: ELLSWORTH DRAIN
WATERSHED AND OWNERSHIP PLAN

Drawn	Checked	Date	Drawing No.
PS	ED	2025/08/07	1/1
Scale: H 1:5,000		Project No.: 300050661	

File Path: C:\GIS\Projects\300050661\300050661.aprx Print Date: 2025/08/07 Time: 03:27 PM

N

LOT 41

LOT 40

LOT 39

1515435 ONTARIO LTD.
(009-173-00)
7.87 ha

LOEFFEN FARMS LTD.
1448077 ONTARIO LTD.
(009-184-00)
28.76 ha

L. SHEDDEN
(009-187-00)
10.67 ha

LOEFFEN FARMS LTD.
1448077 ONTARIO LTD.
(009-173-01)
2.12 ha

D. & N. TON
(009-180-00)
6.91 ha

G. LUNSHOF & SONS FARMS LTD.
(004-090-00)
20.38 ha

LOEFFEN FARMS LTD.
1448077 ONTARIO LTD.
(009-184-00)
28.76 ha

5

3

CON. 4

SFR CON.

THE REGIONAL MUNICIPALITY OF NIAGARA
TOWNSHIP OF WAINFLEET

COUNTY OF HALDIMAND
(GEOGRAPHIC TOWNSHIP OF MOULTON)

STA. 3+171 - W. ROW

STA. 3+149 - E. ROW

STA. 3+072 PL

STA. 2+935 PL

STA. 3+474 PL

STA. 3+821 - NE. ROW

STA. 3+836 - SW. ROW

REALIGNMENT

STA. 3+160
CL HENDERSHOT ROAD CROSSING

STA. 2+967
1515435 ONTARIO LTD. PROPERTY CROSSING

STA. 3+829
CL WAINFLEET DUNNVILLE TOWNLINE ROAD CROSSING

AR # 6

AR # 7

AR # 8

BM # 6
ELEV=177.061

BM # 7
ELEV=177.391

BRUSHING

WAINFLEET DUNNVILLE TOWNLINE ROAD
0.66 ha

HENDERSHOT ROAD
1.40 ha

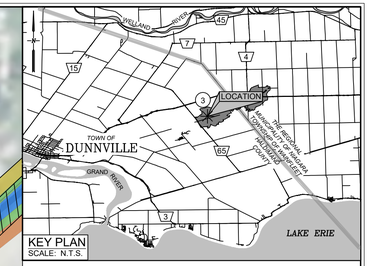
FRED BUCKNER DRAIN

LOT 1

LOT 9

LOT 40

LOT 39



KEY PLAN
SCALE: N.T.S.

KEY NUMBER	ROLL NUMBER	OWNERS NAMES	AREA WITHIN WATERSHED (ha)
1	004-119-00	P. & H. GEERDINK	0.44
2	004-118-00	S. & S. McKAY	0.48
3	009-179-00	S. HIGH & L. RICKER	0.39
4	009-167-01	R. RICKER	0.81
5	009-178-00	S., P. & R. FEDDEMA	0.19
6	009-172-00	J. & H. DONALDSON	0.33
7	009-170-00	R. & N. WILLIAMS	0.69
8	009-169-00	K. TURNBULL & P. STATTEN	0.14
9	009-167-25	M. & B. RICKMAN	0.42
10	009-167-30	D. VONK	0.41
11	012-107-00	S. LAWSON & D. TRAPLIN	0.02
12	012-106-00	R. & N. WILLIAMS	0.07
13	012-105-00	B., D. & J. KINNEY	0.18
14	012-104-00	T. & R. TOURIGNY	0.36
15	009-168-00	J. WALL	0.43
16	009-158-00	S. VINNICK	0.15
17	009-157-00	S. MEDJED & G. McPHERSON	0.23
18	009-156-00	T. GOMES	0.21
19	009-155-00	R. & P. BRUINING	0.21
20	009-154-07	J., D. & L. KIERS	0.40
21	009-154-06	R., B. & D. HEITMAN	0.41
22	009-154-05	T. CLAPP	0.41
23	012-102-00	MINISTRY OF TRANSPORATION	0.21
24	012-090-01	A. & S. TAYLOR	0.41
25	012-090-00	H. TRAVIS & J. CAMPBELL	0.41
26	012-089-00	J. SINKE	0.20
27	012-088-02	M. BROWN	0.41
28	012-088-01	M. & L. SIGURDSSON	0.32
29	009-153-01	T. & J. SHOALTS	0.47
30	012-086-00	R. DEAN	0.45
31	009-151-01	F., J. & L. FEITH	0.68
32	009-149-00	J. COLLARD & D. SCOTT	0.14
33	009-140-00	D. & A. MARR	1.18
34	012-085-02	L. & S. CHARLEBOIS	0.55
35	012-085-00	1422217 ONTARIO LIMITED	0.56
36	012-084-00	R. & J. SMIT	0.33
37	012-087-01	G., S. & S., HEITMAN & P. DA	0.35
38	012-083-01	E., E. & B. STRYKER	1.12
39	012-076-01	K. JOHNSON	0.31
40	012-074-00	J. SIDER & M. AARTS	0.49
41	012-073-00	G. & L. PIRSON	0.43
42	012-072-01	A. & G. VANDER VEEN	0.47
43	012-072-00	J. & C. HANNAFORD	0.24
44	012-071-00	B. ROBINS & D. BRUCKS	0.25
45	009-139-00	G. POP-LAZIC & M. FLEMING	2.77
46	009-138-00	J. & J. YOUNG	0.41
47	012-083-00	T. & N. SIDER	2.26
48	012-082-00	S. SCHERTZING & A. NANNARONE	1.72
49	012-075-05	R. & C. OOSTERHOF	0.41
50	012-075-15	A. VELDHUISEN	0.46
51	012-092-00	TOWNSHIP OF WAINFLEET	0.92

LEGEND

- WATERSHED BOUNDARY
- SUB WATERSHED BOUNDARY
- PROPOSED CHANNEL ROUTE
- EXISTING CHANNEL ROUTE
- STATION 0+000
- ASSESSMENT ROLL NUMBER 00-000-00
- LANDOWNER J. & J. SMITH
- AREA IN WATERSHED (2.57ha.)
- 3m BUFFER
- 7m WORKING SPACE
- SECONDARY WORKING SPACE
- DRAIN AREA
- DRAIN CROSSING
- BENCHMARK (BM # 1 ELEV=0)
- ACCESS ROUTE (AR # 0)
- CULVERT

BENCHMARKS

BENCHMARK #1 ELEVATION = 174.99m
TOP OF FIRST BOLT ON UPSTREAM SIDE OF EX. CSP CULVERT AT STA. -0+024

BENCHMARK #2 ELEVATION = 174.24m
TOP OF FIRST RIB ON UPSTREAM SIDE OF EX. CSP CULVERT AT STA. 0+208

BENCHMARK #3 ELEVATION = 174.62m
NAIL ON NORTH FACE OF 400mm DIAMETER TREE OFFSET 15m SOUTH OF STA. 0+446

BENCHMARK #4 ELEVATION = 176.19m
TOP MIDDLE ON DOWNSTREAM SIDE OF EX. CONCRETE BOX CULVERT AT STA. 1+095

BENCHMARK #5 ELEVATION = 176.54m
TOP MIDDLE ON UPSTREAM SIDE OF EX. CONCRETE BOX CULVERT AT STA. 2+294

BENCHMARK #6 ELEVATION = 177.06m
NAIL IN EAST FACE OF HYDRO POLE ALONG HENDERSHOT ROAD AT STA. 3+182

BENCHMARK #7 ELEVATION = 177.39m
TOP OF FIRST RIB ON UPSTREAM SIDE OF EX. CSP CULVERT AT STA. 3+834

Notes
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2. The contractor shall verify all dimensions, levels, and datums on site and report any discrepancies or omissions to this office prior to construction.
3. This drawing is to be read and understood in conjunction with all other plans and documents applicable to this project.

NOT FOR CONSTRUCTION

No.	Issue / Revision	Date	Auth.
1	INFORMATION MEETING	JULY 2022	EMD
2	INFORMATION MEETING #2	MAY 2024	EMD
3	DRAFT REPORT	FEB 2025	EMD
4	FINAL REPORT	AUG 2025	EMD

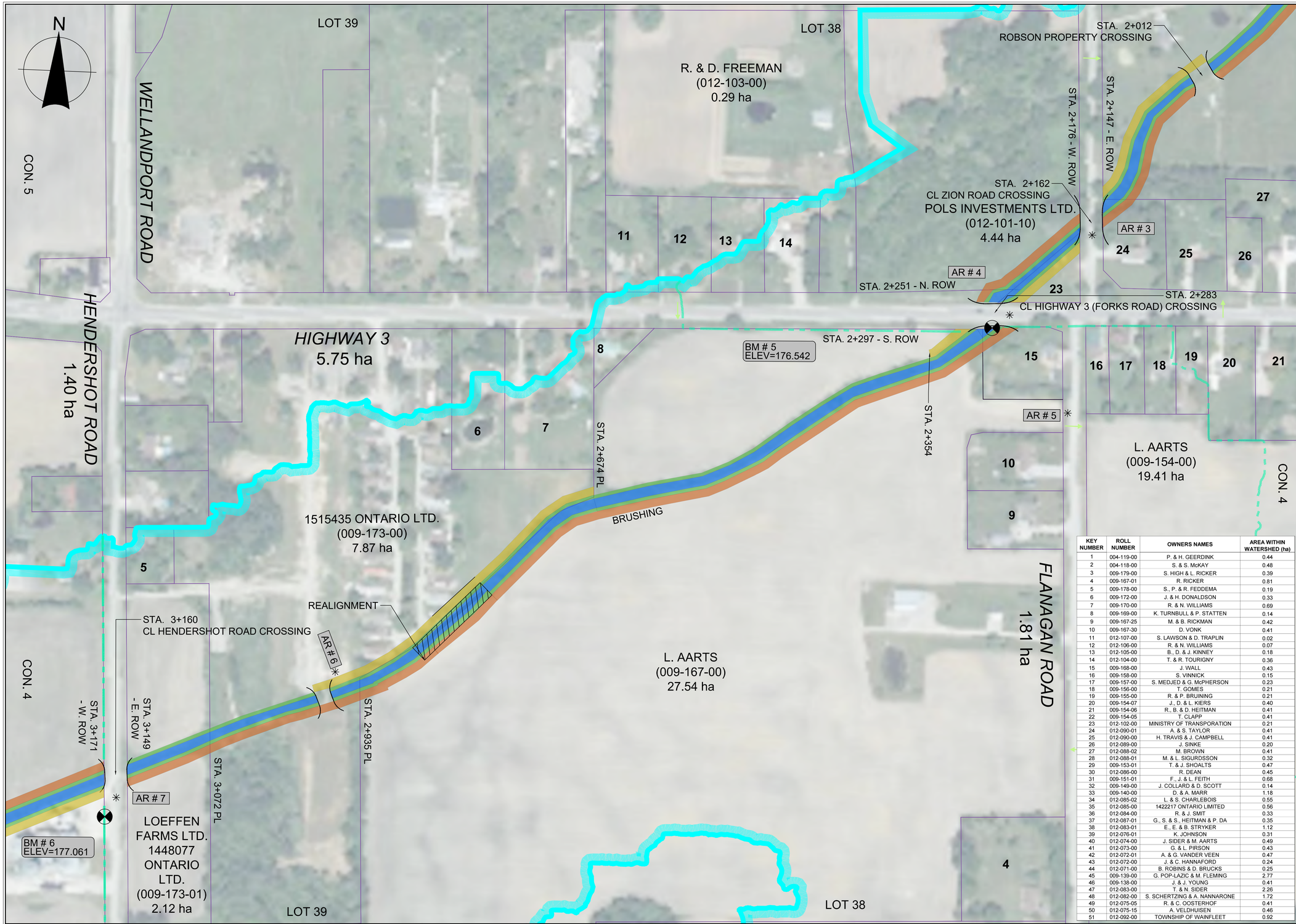
BURNSIDE
R.J. Burnside & Associates Limited
35 Perry Street
Woodstock, Ontario, N4S 3C4
telephone (519) 271-5111
fax (519) 271-3790
web www.rjburnside.com

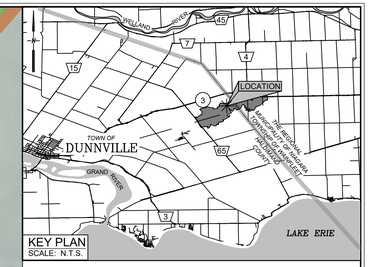
Client
TOWNSHIP OF WAINFLEET
31940 HIGHWAY # 3, P.O. BOX 40
WAINFLEET, ON
L0S 1V0

Drawing Title
ELLSWORTH MUNICIPAL DRAIN IMPROVEMENT PROJECT
ENLARGED PLAN 1

Drawn	Checked	Designed	Checked	Date	Drawing No.
MC	EMD	JR	EMD	AUG 2025	1OF12
Project No.		Contract No.		Revision No.	
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1:1,500					

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LEGEND

- WATERSHED BOUNDARY
- SUB WATERSHED BOUNDARY
- PROPOSED CHANNEL ROUTE
- EXISTING CHANNEL ROUTE
- STATION 0+000
- ASSESSMENT ROLL NUMBER 00-000-00
- LANDOWNER J. & J. SMITH
- AREA IN WATERSHED (2.57ha.)
- 3m BUFFER
- 7m WORKING SPACE
- SECONDARY WORKING SPACE
- DRAIN AREA
- DRAIN CROSSING
- BENCHMARK BM # 1 ELEV=0
- ACCESS ROUTE AR # 0
- CULVERT

BENCHMARKS

BENCHMARK #1 ELEVATION = 174.99m
TOP OF FIRST BOLT ON UPSTREAM SIDE OF EX. CSP CULVERT AT STA. -0+024

BENCHMARK #2 ELEVATION = 174.24m
TOP OF FIRST RIB ON UPSTREAM SIDE OF EX. CSP CULVERT AT STA. 0+208

BENCHMARK #3 ELEVATION = 174.62m
NAIL ON NORTH FACE OF 400mm DIAMETER TREE OFFSET 15m SOUTH OF STA. 0+446

BENCHMARK #4 ELEVATION = 176.19m
TOP MIDDLE ON DOWNSTREAM SIDE OF EX. CONCRETE BOX CULVERT AT STA. 1+095

BENCHMARK #5 ELEVATION = 176.54m
TOP MIDDLE ON UPSTREAM SIDE OF EX. CONCRETE BOX CULVERT AT STA. 2+294

BENCHMARK #6 ELEVATION = 177.06m
NAIL IN EAST FACE OF HYDRO POLE ALONG HENDERSHOT ROAD AT STA. 3+182

BENCHMARK #7 ELEVATION = 177.39m
TOP OF FIRST RIB ON UPSTREAM SIDE OF EX. CSP CULVERT AT STA. 3+834

KEY NUMBER	ROLL NUMBER	OWNERS NAMES	AREA WITHIN WATERSHED (ha)
1	004-119-00	P. & H. GEERDINK	0.44
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4	009-167-01	R. RICKER	0.81
5	009-178-00	S., P. & R. FEDDEMA	0.19
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7	009-170-00	R. & N. WILLIAMS	0.69
8	009-169-00	K. TURNBULL & P. STATTEN	0.14
9	009-167-25	M. & B. RICKMAN	0.42
10	009-167-30	D. VONK	0.41
11	012-107-00	S. LAWSON & D. TRAPLIN	0.02
12	012-106-00	R. & N. WILLIAMS	0.07
13	012-105-00	B., D. & J. KINNEY	0.18
14	012-104-00	T. & R. TOURIGNY	0.36
15	009-168-00	J. WALL	0.43
16	009-158-00	S. VINNICK	0.15
17	009-157-00	S. MEDJED & G. McPHERSON	0.23
18	009-156-00	T. GOMES	0.21
19	009-155-00	R. & P. BRUINING	0.21
20	009-154-07	J., D. & L. KIERS	0.40
21	009-154-06	R., B. & D. HEITMAN	0.41
22	009-154-05	T. CLAPP	0.41
23	012-102-00	MINISTRY OF TRANSPORATION	0.21
24	012-090-01	A. & S. TAYLOR	0.41
25	012-090-00	H. TRAVIS & J. CAMPBELL	0.41
26	012-089-00	J. SINKE	0.20
27	012-088-02	M. BROWN	0.41
28	012-088-01	M. & L. SIGURDSSON	0.32
29	009-153-01	T. & J. SHOALTS	0.47
30	012-086-00	R. DEAN	0.45
31	009-151-01	F., J. & L. FEITH	0.68
32	009-149-00	J. COLLARD & D. SCOTT	0.14
33	009-140-00	D. & A. MARR	1.18
34	012-085-02	L. & S. CHARLEBOIS	0.55
35	012-085-00	1422217 ONTARIO LIMITED	0.56
36	012-084-00	R. & J. SMIT	0.33
37	012-087-01	G., S. & S., HEITMAN & P. DA	0.35
38	012-083-01	E., E. & B. STRYKER	1.12
39	012-076-01	K. JOHNSON	0.31
40	012-074-00	J. SIDER & M. AARTS	0.49
41	012-073-00	G. & L. PIRSON	0.43
42	012-072-01	A. & G. VANDER VEEN	0.47
43	012-072-00	J. & C. HANNAFORD	0.24
44	012-071-00	B. ROBINS & D. BRUCKS	0.25
45	009-139-00	G. POP-LAZIC & M. FLEMING	2.77
46	009-138-00	J. & J. YOUNG	0.41
47	012-083-00	T. & N. SIDER	2.26
48	012-082-00	S. SCHERTZING & A. NANNARONE	1.72
49	012-075-05	R. & C. OOSTERHOF	0.41
50	012-075-15	A. VELDHUISEN	0.46
51	012-092-00	TOWNSHIP OF WAINFLEET	0.92

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No.	Issue / Revision	Date	Auth.
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2	INFORMATION MEETING #2	MAY 2024	EMD
3	DRAFT REPORT	FEB 2025	EMD
4	FINAL REPORT	AUG 2025	EMD

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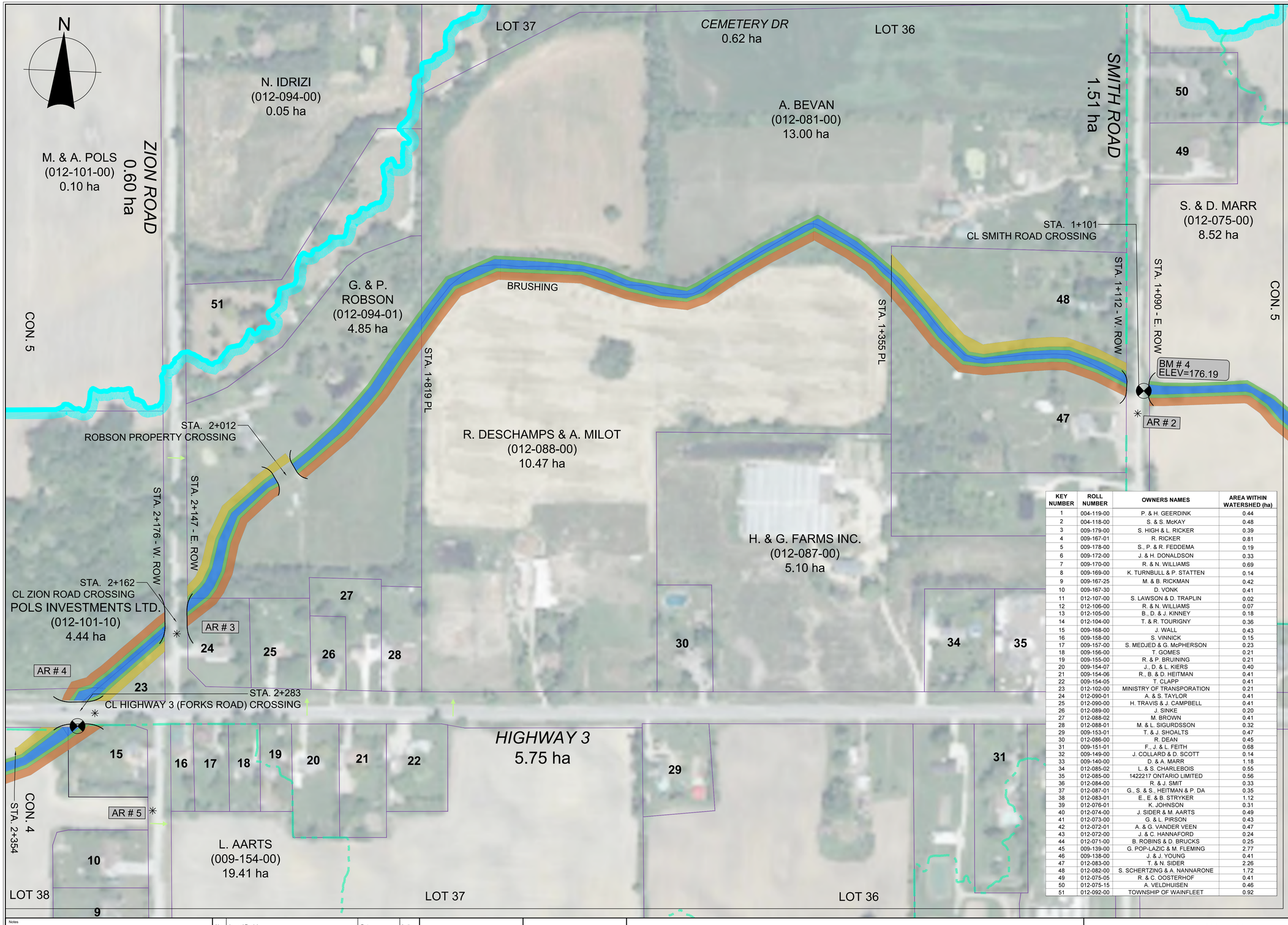
R.J. Burnside & Associates Limited
35 Perry Street
Woodstock, Ontario, N4S 3C4
telephone (519) 271-5111
fax (519) 271-3790
web www.rjburnside.com

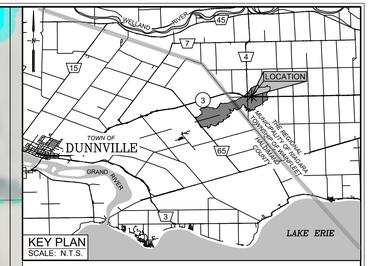
Client
TOWNSHIP OF WAINFLEET
31940 HIGHWAY # 3, P.O. BOX 40
WAINFLEET, ON
L0S 1V0

Drawing Title
ELLSWORTH MUNICIPAL DRAIN IMPROVEMENT PROJECT
ENLARGED PLAN 2

Drawn	Checked	Designed	Checked	Date	Drawing No.
MC	EMD	JR	EMD	AUG 2025	2OF12
Project No.		Contract No.		Revision No.	
300050664.0000				4	
Scale	1:1,500	0 30 60 90m			

File: \\cambr01\projects\Projects\300050664 | Ellsworth Drain Improvement Project\03_Production\Drawings\Report 2\ENLARGED PLAN 2.dwg, Date/Time: August 27, 2025 - 3:36 PM





LEGEND

- WATERSHED BOUNDARY
- SUB WATERSHED BOUNDARY
- PROPOSED CHANNEL ROUTE
- EXISTING CHANNEL ROUTE
- STATION — 0+000
- ASSESSMENT ROLL NUMBER — 00-000-00
- LANDOWNER — J. & J. SMITH
- AREA IN WATERSHED — (2.57ha.)
- 3m BUFFER
- 7m WORKING SPACE
- SECONDARY WORKING SPACE
- DRAIN AREA
- DRAIN CROSSING
- BENCHMARK — BM # 1 ELEV=0
- ACCESS ROUTE — AR # 0
- CULVERT

BENCHMARKS

BENCHMARK #1 ELEVATION = 174.99m
TOP OF FIRST BOLT ON UPSTREAM SIDE OF EX. CSP CULVERT AT STA. -0+024

BENCHMARK #2 ELEVATION = 174.24m
TOP OF FIRST RIB ON UPSTREAM SIDE OF EX. CSP CULVERT AT STA. 0+208

BENCHMARK #3 ELEVATION = 174.62m
NAIL ON NORTH FACE OF 400mm DIAMETER TREE OFFSET 15m SOUTH OF STA. 0+446

BENCHMARK #4 ELEVATION = 176.19m
TOP MIDDLE ON DOWNSTREAM SIDE OF EX. CONCRETE BOX CULVERT AT STA. 1+095

BENCHMARK #5 ELEVATION = 176.54m
TOP MIDDLE ON UPSTREAM SIDE OF EX. CONCRETE BOX CULVERT AT STA. 2+294

BENCHMARK #6 ELEVATION = 177.06m
NAIL IN EAST FACE OF HYDRO POLE ALONG HENDERSHOT ROAD AT STA. 3+182

BENCHMARK #7 ELEVATION = 177.39m
TOP OF FIRST RIB ON UPSTREAM SIDE OF EX. CSP CULVERT AT STA. 3+834

KEY NUMBER	ROLL NUMBER	OWNERS NAMES	AREA WITHIN WATERSHED (ha)
1	004-119-00	P. & H. GEERDINK	0.44
2	004-118-00	S. & S. McKAY	0.48
3	009-179-00	S. HIGH & L. RICKER	0.39
4	009-167-01	R. RICKER	0.81
5	009-178-00	S., P. & R. FEDDEMA	0.19
6	009-172-00	J. & H. DONALDSON	0.33
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51	012-092-00	TOWNSHIP OF WAINFLEET	0.92

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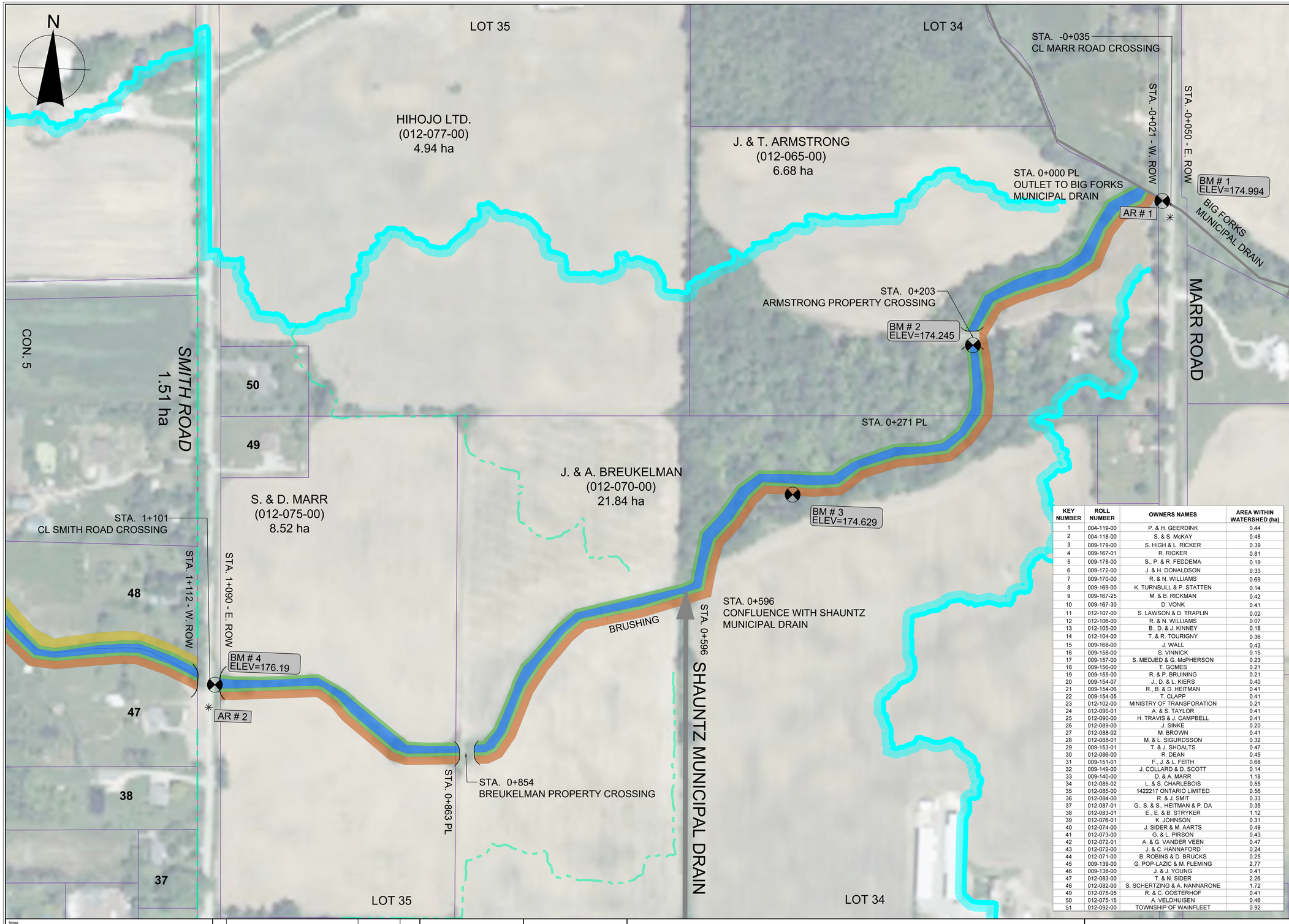
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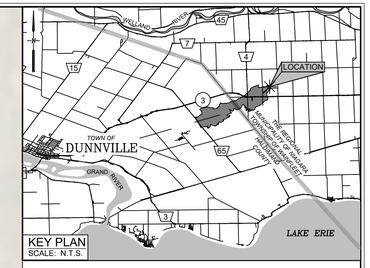
Client
TOWNSHIP OF WAINFLEET
31940 HIGHWAY # 3, P.O. BOX 40
WAINFLEET, ON
L0S 1V0

Drawing Title
ELLSWORTH MUNICIPAL DRAIN IMPROVEMENT PROJECT
ENLARGED PLAN 3

Drawn	Checked	Designed	Checked	Date	Drawing No.
MC	EMD	JR	EMD	AUG 2025	3OF12
Project No.		Contract No.		Revision No.	
300050664.0000				4	
Scale	0 30 60 90m				
1:1,500					

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LEGEND

- WATERSHED BOUNDARY
- SUB WATERSHED BOUNDARY
- PROPOSED CHANNEL ROUTE
- EXISTING CHANNEL ROUTE
- STATION 0+000
- ASSESSMENT ROLL NUMBER 00-000-00
- LANDOWNER J. & J. SMITH
- AREA IN WATERSHED (2.57ha.)
- 3m BUFFER
- 7m WORKING SPACE
- SECONDARY WORKING SPACE
- DRAIN AREA
- DRAIN CROSSING
- BENCHMARK (BM # 1 ELEV=0)
- ACCESS ROUTE (AR # 0)
- CULVERT

BENCHMARKS

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TOP OF FIRST BOLT ON UPSTREAM SIDE OF EX. CSP CULVERT AT STA. -0+024

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BENCHMARK #3 ELEVATION = 174.62m
NAIL ON NORTH FACE OF 400mm DIAMETER TREE OFFSET 15m SOUTH OF STA. 0+446

BENCHMARK #4 ELEVATION = 176.19m
TOP MIDDLE ON DOWNSTREAM SIDE OF EX. CONCRETE BOX CULVERT AT STA. 1+095

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1	INFORMATION MEETING	JULY 2022	EMD
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3	DRAFT REPORT	FEB 2025	EMD
4	FINAL REPORT	AUG 2025	EMD


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telephone (519) 271-5111
fax (519) 271-3790
web www.rjburnside.com

Client
TOWNSHIP OF WAINFLEET
31940 HIGHWAY # 3, P.O. BOX 40
WAINFLEET, ON
L0S 1V0

Drawing Title
ELLSWORTH MUNICIPAL DRAIN
IMPROVEMENT PROJECT
ENLARGED PLAN 4

Drawn	Checked	Designed	Checked	Date	Drawing No.
MC	EMD	JR	EMD	AUG 2025	4OF12
Project No. 300050664.0000		Contract No.		Revision No. 4	
Scale 1:1,500					

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Client
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31940 HIGHWAY # 3, P.O. BOX 40
WAINFLEET, ON
L0S 1V0

Drawing Title
ELLSWORTH MUNICIPAL DRAIN IMPROVEMENT PROJECT
PROFILE 1

Drawn	Checked	Designed	Checked	Date	Drawing No.
MC	EMD	JR	EMD	AUG 2025	5OF12
Project No. 300050664.0000		Contract No.		Revision No. 4	
Scale 1:2,500	0 50 100 150m				

File: \\winny\shared work areas\050664 - Ellsworth Drain Improvement Project\03_Production\Dwg\050664 PROFILES AND DETAIL 2.dwg Date Plotted: August 7, 2025 - 6:11 PM

EX. DEPTH OF CHANNEL	1.48	1.58	1.59	1.36	1.39	1.36	1.80	2.21	1.55	1.70	1.90	1.99	1.83	1.82	1.89	2.02	2.90	2.05	1.79	2.08	2.03	1.83	1.76	1.67	1.69	1.99	1.72	1.52	1.55	1.58	1.59	1.50	1.36	1.38	2.14	1.75	2.09	1.97	1.43
DEPTH OF EXCAVATION	0.08	0.11	0.13	0.23	0.23	0.26	0.33	0.29	0.37	0.48	0.38	0.32	0.35	0.40	0.46	0.32	0.30	0.37	0.49	0.41	0.44	0.32	0.33	0.21	0.28	0.33	0.32	0.33	0.26	0.31	0.36	0.32	0.34	0.34	0.01	0.33	0.23	0.22	0.04

LAND OWNER: 012-094-01 G. & P. ROBSON | 012-081-00 A. BEVAN | 012-082-00 S. SCHERTZING & A. NANNARONE, 012-083-00 T. & N. SIDER | 012-075-00 S. & D. MARR | 012-070-00 J. & A. BREUKELMAN | 012-065-00 J. & T. ARMSTRONG

LOT & CON: LOT 37, CONC 5 | LOT 36, CONC 5 | LOT 35, CONC 5 | LOT 34, CONC 5



DESC. OF WORK: PR. CHANNEL DEEPENING AND WIDENING | BIG FORKS MUNICIPAL DRAIN

LENGTH & GRADIENT: 191m @0.04% | 1197m @0.10%

STATION: 1+900, 1+817, 1+800, 1+700, 1+600, 1+500, 1+400, 1+300, 1+200, 1+118, 1+112, 1+100, 1+090, 1+083, 1+000, 0+900, 0+800, 0+700, 0+600, 0+500, 0+400, 0+300, 0+209, 0+200, 0+197, 0+100, 0+000, -0+010

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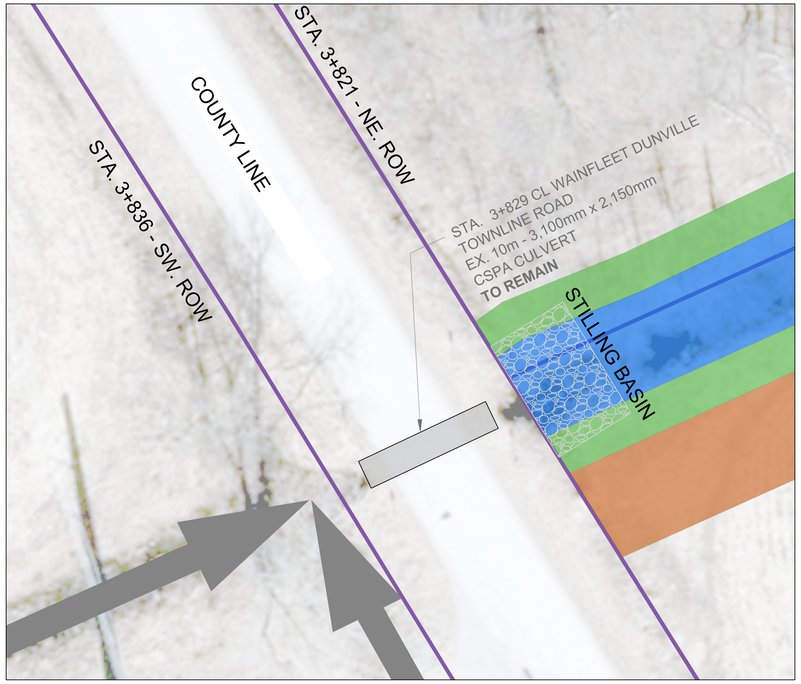
Drawing Title
ELLSWORTH MUNICIPAL DRAIN IMPROVEMENT PROJECT
PROFILE 2

Drawn	Checked	Designed	Checked	Date	Drawing No.
MC	EMD	JR	EMD	AUG 2025	6OF12

Project No. 300050664.0000 | Contract No. | Revision No. 4

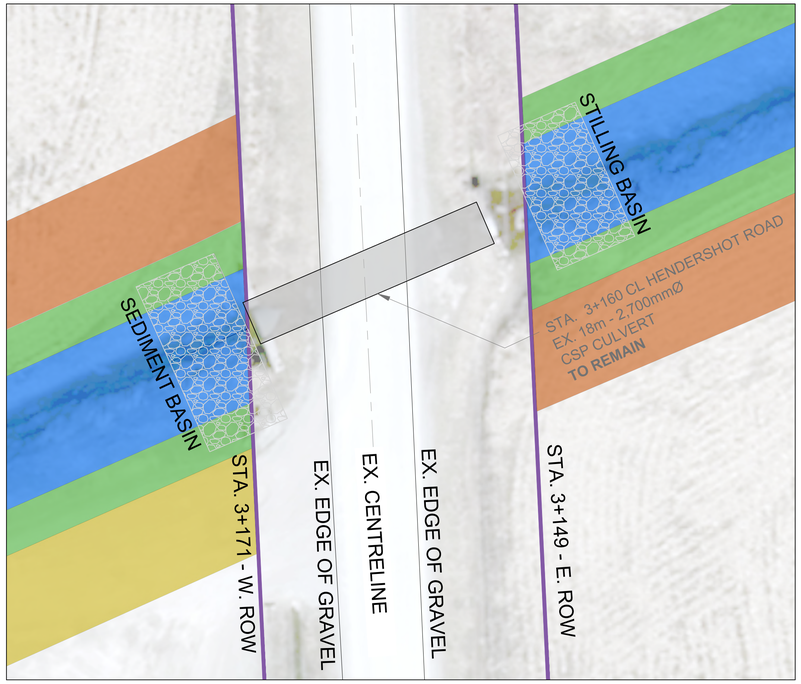
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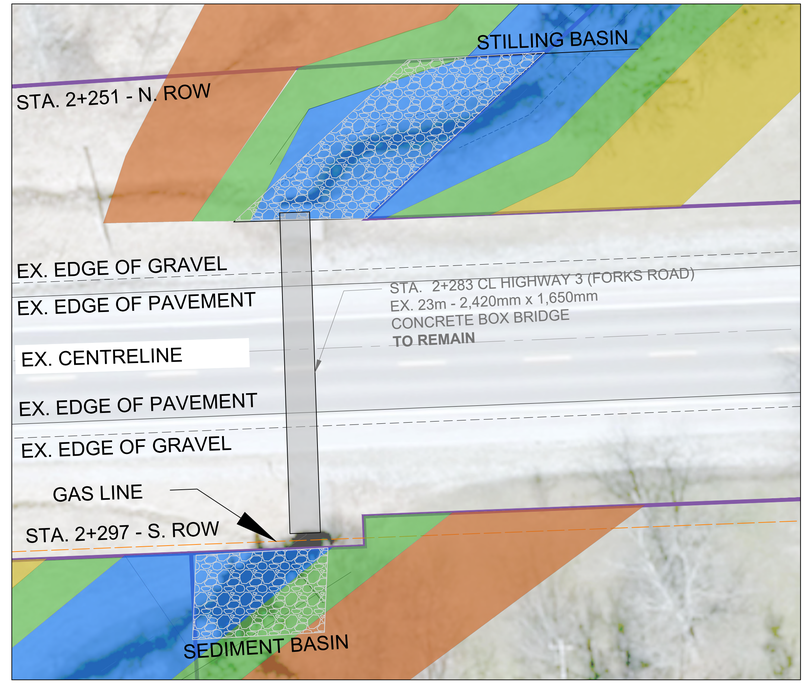
WAINFLEET DUNVILLE TOWNLINE ROAD CROSSING

SCALE = 1:200



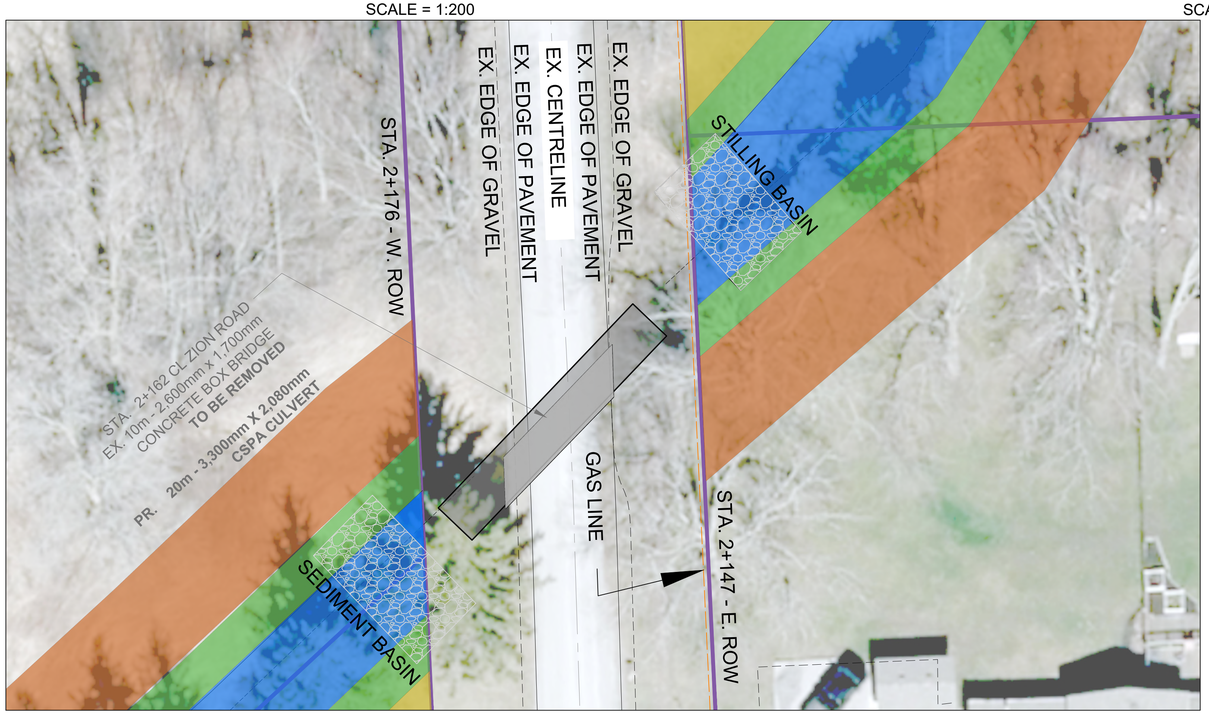
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SCALE = 1:200



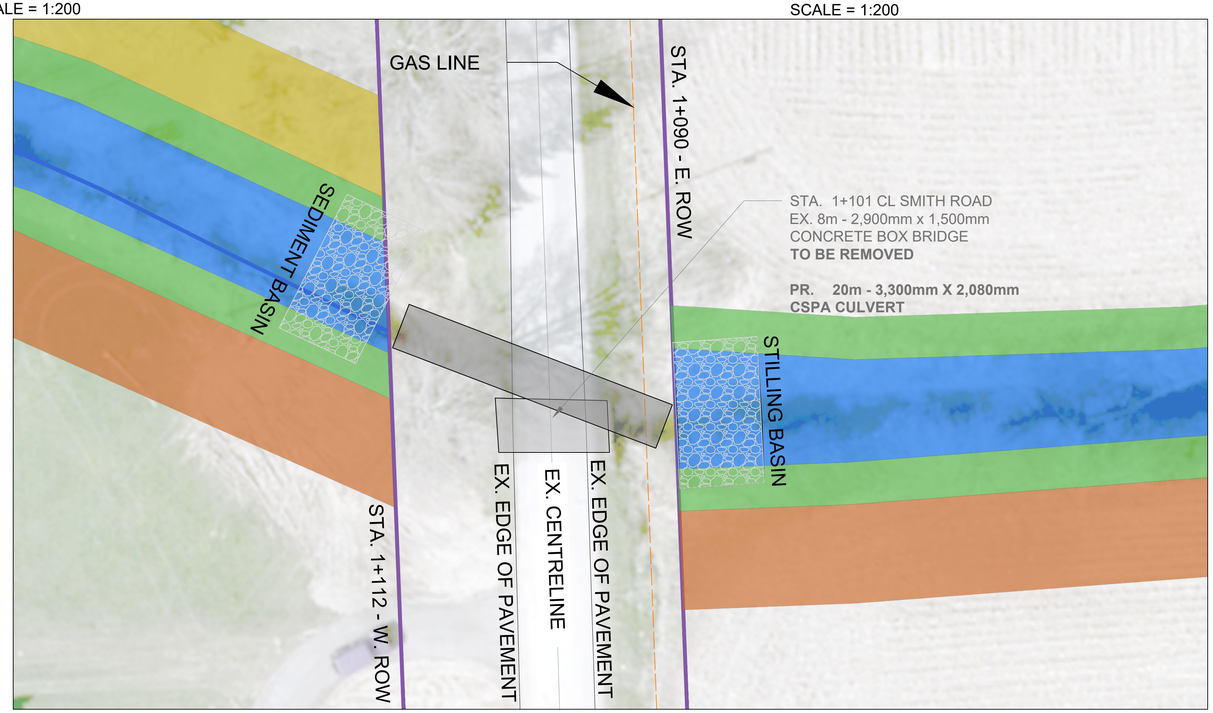
HWY 3 ROAD CROSSING

SCALE = 1:200



ZION ROAD CROSSING

SCALE = 1:200



SMITH ROAD CROSSING

SCALE = 1:200

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No.	Issue / Revision	Date	Auth.
1	INFORMATION MEETING	7/1/2022	EMD
2	INFORMATION MEETING #2	MAY 2024	EMD
3	DRAFT REPORT	FEB 2025	EMD
4	FINAL REPORT	AUG 2025	EMD

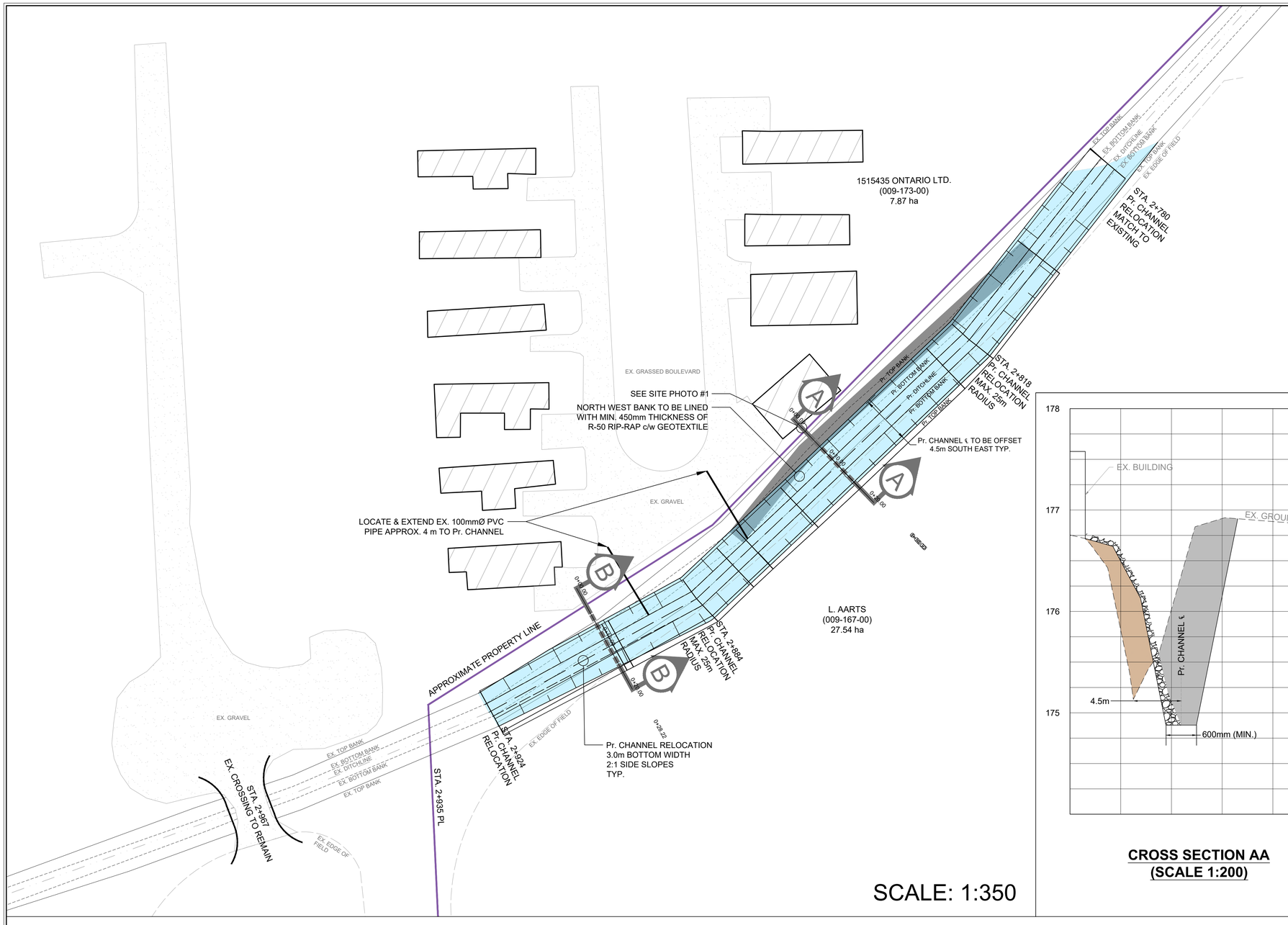
R.J. Burnside & Associates Limited
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fax (519) 271-3790
web www.rjburnside.com

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WAINFLEET, ON
L0S 1V0

Drawing Title
ELLSWORTH MUNICIPAL DRAIN IMPROVEMENT PROJECT
CROSSING DETAILS

Drawn	Checked	Designed	Checked	Date	Drawing No.
MC	EMD	JR	EMD	AUG 2025	**7OF12**
Project No. 300050664.0000		Contract No.		Revision No. 4	
Scale AS SHOWN					

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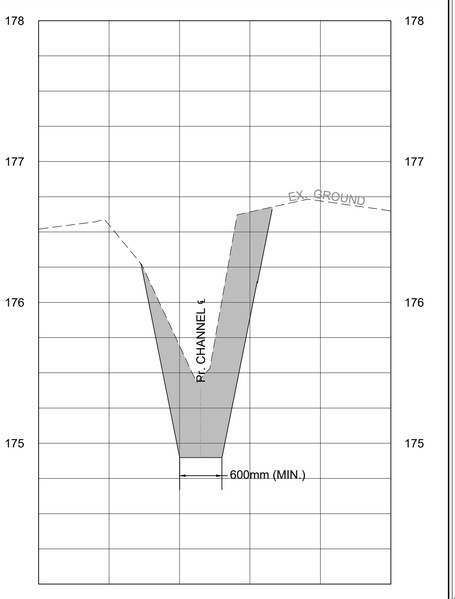


SCALE: 1:350



SITE PHOTO #1:
PROXIMITY OF EXISTING BUILDING TO ELLSWORTH MUNICIPAL DRAIN
(AS OBSERVED FROM NORTH BANK, LOOKING WEST)
APRIL 16, 2020 (RJB)

CROSS SECTION AA
(SCALE 1:200)



CROSS SECTION BB
(SCALE 1:200)

REALIGNMENT DETAIL

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3	DRAFT REPORT	FEB 2025	EMD
4	FINAL REPORT	AUG 2025	EMD

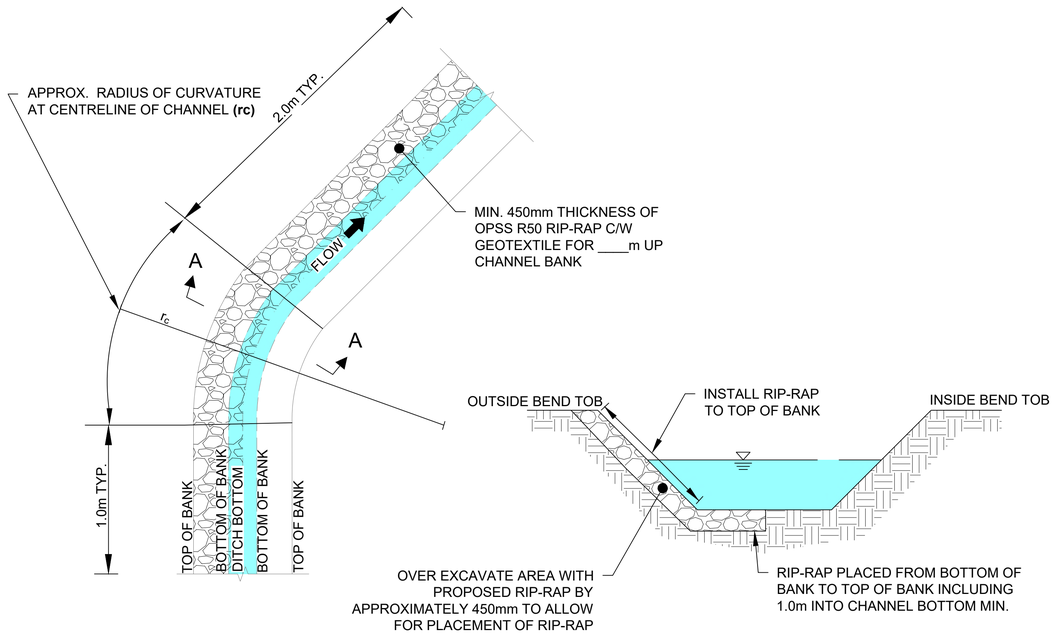
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Drawing Title
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REALIGNMENT DETAIL

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Project No. 300050664.0000		Contract No.		Revision No. 4	
Scale					

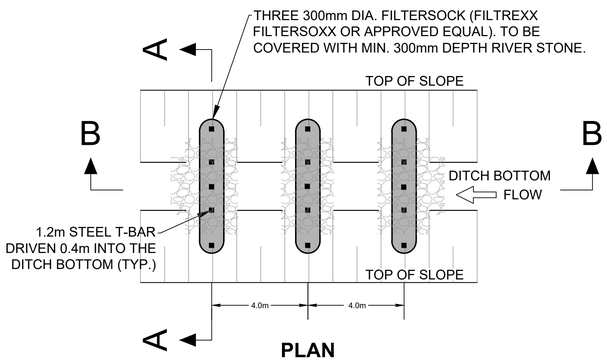
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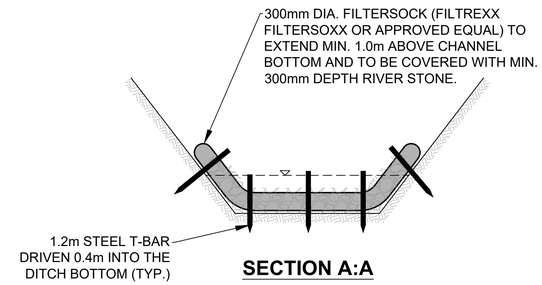
PLAN **SECTION A-A**

TYPICAL RIP-RAP ARMOURING ALONG CHANNEL BEND DETAIL

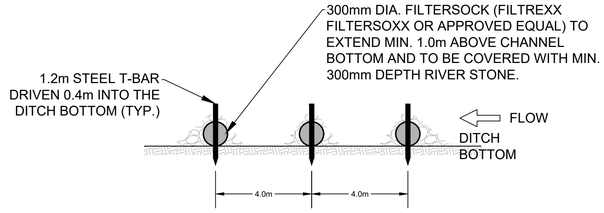
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PLAN



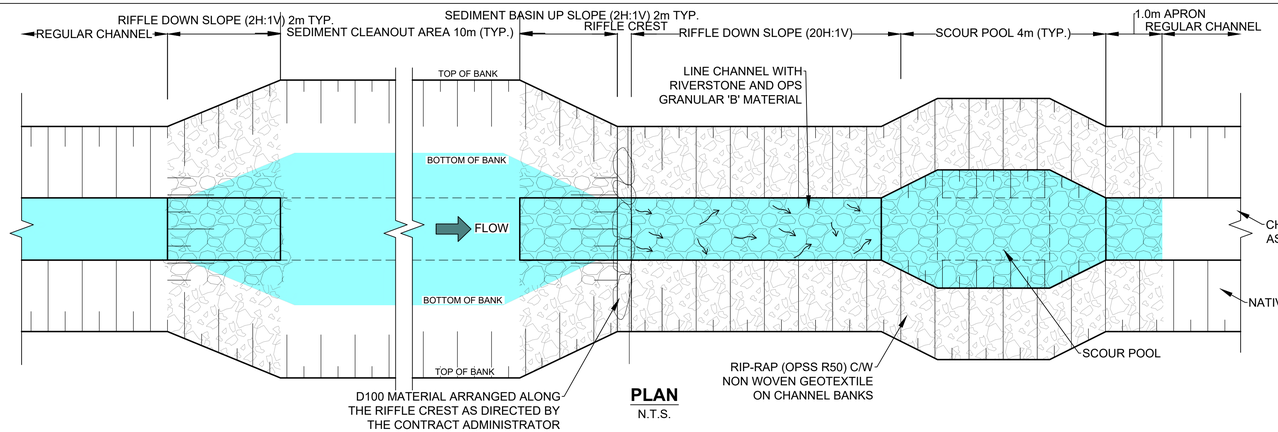
SECTION A:A



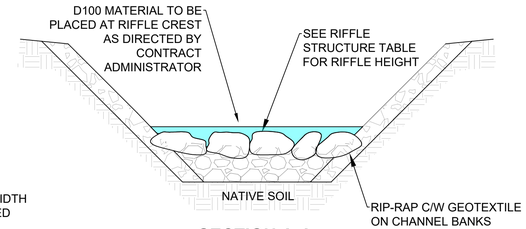
SECTION B:B

SEDIMENT CONTROL STRUCTURE

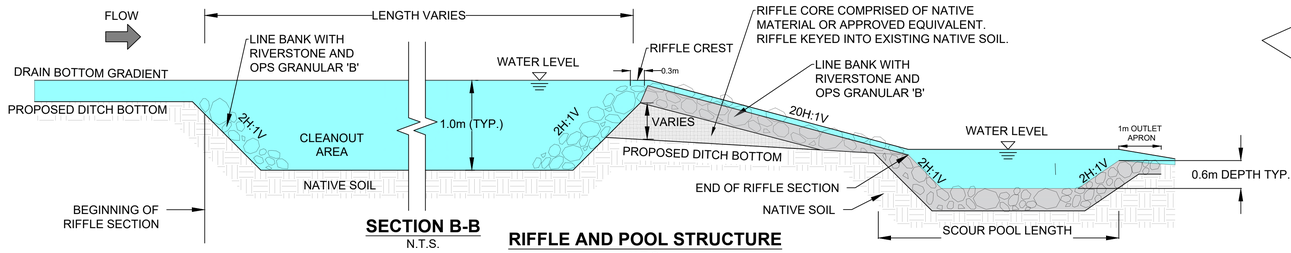
N.T.S.



PLAN
N.T.S.



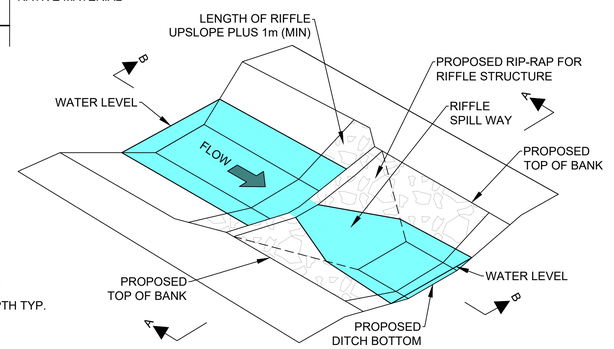
SECTION A-A - RIFFLE CREST
N.T.S.



SECTION B-B
N.T.S.

RIFFLE AND POOL STRUCTURE

N.T.S.



ISOMETRIC VIEW
N.T.S.

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WAINFLEET, ON
L0S 1V0

Drawing Title
ELLSWORTH MUNICIPAL DRAIN IMPROVEMENT PROJECT
DETAIL

Drawn	Checked	Designed	Checked	Date	Drawing No.
MC	EMD	JR	EMD	AUG 2025	**9OF12**
Project No. 300050864.0000		Contract No.		Revision No. 4	
Scale					

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EXISTING CROSSING SUMMARY

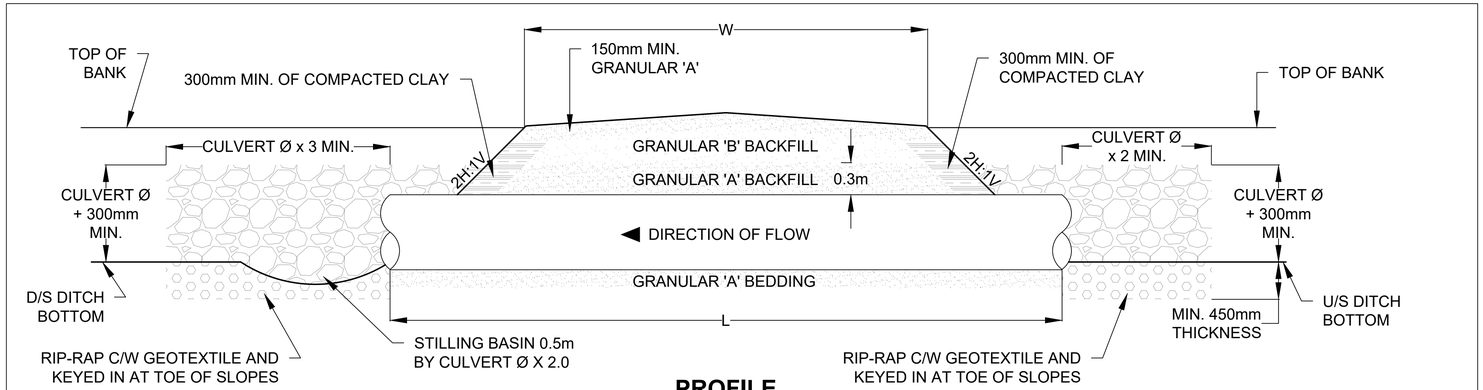
No.	CL STATION (m)	CROSSING NAME	LENGTH (m)	DIMENSIONS (mm)	# BARRELS	MATERIAL	DRIVING WIDTH	PROPERTY	CONDITION	NOTES
1	-0+035	MARR ROAD CULVERT (BIG FORKS DRAIN)	20.7	4,700 SPAN x 3,100 RISE	1	STEEL PLATE ARCH	5.8m	MARR ROAD	GOOD	DOWNSTREAM OF ELLSWORTH MD
2	0+203	PRIVATE CROSSING	12.2	1,800	1	CSP	4.0m (Estimated from Aerial)	ARMSTRONG PROPERTY	GOOD	NEWER CROSSING.
3	0+854	PRIVATE CROSSING	9.4	1,200	1	CONCRETE AND CSP SECTIONS	3.0m (Estimated from Aerial)	BREUKELMAN PROPERTY	POOR	CROSSING HAS SINKHOLE, WATER LEVEL VERY HIGH ON CULVERT.
4	1+099	SMITH ROAD BRIDGE	9.0	2,900 SPAN x 1,500 RISE	1	CONCRETE BRIDGE	5.0	SMITH ROAD	FAIR/POOR	
5	2+012	PRIVATE CROSSING	7.0	1,600	1	SMOOTH STEEL	2.5m (Estimated from Aerial)	ROBSON PROPERTY	POOR	TO REMAIN.
6	2+162	ZION ROAD BRIDGE	10.0	2,600 SPAN x 1,700 RISE	1	CONCRETE BRIDGE	6.5m	ZION ROAD	FAIR/POOR	
7	2+263	HIGHWAY 3 BRIDGE	23.0	2,420 SPAN x 1,650 RISE	1	CONCRETE BRIDGE	8.5m	HIGHWAY 3	GOOD	
8	2+967	PRIVATE CROSSING	12.0	1,400	1	CSP	3.0m (Estimated from Aerial)	1515435 ONTRAIO LTD. PROPERTY	GOOD	PERCHED CULVERT.
9	3+161	HENDERSHOT ROAD CULVERT	18.0	2,700	1	CSP	6.8m	HENDERSHOT ROAD	GOOD	
10	3+829	WAINFLEET DUNVILLE TOWNLINE ROAD	10.0	3,100 SPAN x 2,150 RISE	1	CSPA	6.0m	TOWNLINE ROAD	GOOD	

PROPOSED STRUCTURE SUMMARY

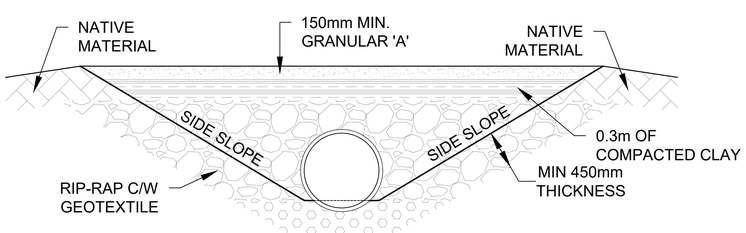
No.	CL STATION (m)	CROSSING NAME	DIMENSIONS (mm)	MATERIAL	LENGTH (m)	NOTES
3	0+854	PRIVATE CROSSING	1,200	CSPA	9.4	TO BE REMOVED AND SALVAGED
4	1+099	SMITH ROAD BRIDGE	3,300 SPAN x 2080 RISE	CSPA	20.0	3.5mm thickness, 125 mm X 25 mm corrugations.
6	2+162	ZION ROAD	3,300 SPAN x 2080 RISE	CSPA	20.0	3.5mm thickness, 125 mm X 25 mm corrugations.
8	2+967	PRIVATE CROSSING	1,400	CSP	12.0	ELEVATIONS TO BE CONFIRMED AT TIME OF CONSTRUCTION. CULVERT TO BE REMOVED AND REINSTALLED IF OBSTRUCTING FLOW.

CHANNEL SUMMARY

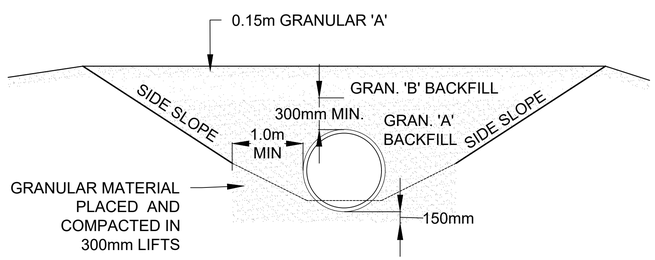
Sta. (m)	Sta. (m)	BOTTOM WIDTH (MIN.) (mm)	SIDE SLOPE (_H:1V) (dim.)	WORKING SIDE	LAND USE	NOTES
0+000	2+176	600	2	S	AGRI./BUSH	
2+176	2+251	600	2	N	AGRI./BUSH	
2+297	3+149	600	2	S	AGRI./BUSH	
3+171	3+471	600	2	N	AGRI./BUSH	
3+474	3+821	600	2	S	AGRI./BUSH	



PROFILE
N.T.S.



ELEVATION
N.T.S.



SECTION
N.T.S.

CULVERT REPLACEMENT DETAIL
N.T.S.

CHANNEL NOTES:

1. ALL CHANNEL WORKS SHALL BE IN ACCORDANCE WITH THE PROVIDED TABLE, PROFILE, AND SPECIFICATIONS.
2. ALL CHANNEL WORKS SHALL CONFORM TO THE GENERAL SPECIFICATIONS.
3. ALL CHANNEL WORKS AND EXCAVATIONS SHALL CONFORM TO THE GOVERNING OPSS AND OPSD.
4. ACCESS TO THE CHANNEL AND WORKING SPACE SHALL BE EXECUTED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
5. SPOIL SHALL BE SPREAD ON THE DESIGNATED CHANNEL BANK, A MINIMUM OF 2m FROM THE TOP OF THE BANK, UNLESS OTHERWISE DIRECTED BY THE ENGINEER IN THE SPECIAL PROVISIONS OR AT THE TIME OF CONSTRUCTION.
6. ALL FUNCTIONING OUTLET PIPES AFFECTED BY THE EXCAVATION SHALL HAVE RIP-RAP EROSION PROTECTION (MINIMUM 2m²) PLACED BELOW THE OUTLET.
7. ALL WORKING OUTLET PIPES DAMAGED DURING THE EXCAVATION SHALL BE REPLACED SECURELY WITH CORRUGATED STEEL PIPE (CSP) OR HIGH DENSITY POLYETHYLENE (HDPE) TO THE SATISFACTION OF THE ENGINEER.
8. ALL WORKING OUTLET PIPES SHALL HAVE A RODENT GRATE.

CULVERT NOTES:

1. TO BE INSTALLED ON WELL COMPACTED GRANULAR "A" TO FINISHED GRADE AND RIP-RAP AS SHOWN.
2. NO RIP-RAP IS REQUIRED ON VEGETATED DITCH SIDESLOPES THAT ARE UNDISTURBED BY CONSTRUCTION.
3. CULVERTS SHALL BE INSTALLED WITH THE INVERT BURIED AS SPECIFIED IN SPECIAL PROVISIONS.
4. ALL RIP-RAP MUST BE INSTALLED ON APPROVED GEOTEXTILE.
5. ALL RIP-RAP MUST BE 200mm TO 400mm IN SIZE AND 500mm DEEP.
6. ALL SIDE SLOPES FOR CULVERT CROSSINGS SHALL BE 1H:1V FROM LANE/ROAD EDGE TO DITCH BOTTOM.
7. FOR RIP-RAP PROTECTION END TREATMENTS, THE LENGTH OF THE RIP-RAP SHOULD BE EXTENDED THREE (3) TIMES THE DIAMETER OF THE CULVERT ON THE DOWNSTREAM END AND TWO (2) TIMES THE DIAMETER OF THE CULVERT ON THE UPSTREAM END.
8. FOR RIP-RAP PROTECTION END TREATMENTS, THE HEIGHT OF THE RIP-RAP SHALL BE INSTALLED 0.3m ABOVE THE TOP OF THE CULVERT ON THE DOWNSTREAM AND UPSTREAM ENDS.

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3	DRAFT REPORT	FEB 2025	EMD
4	FINAL REPORT	AUG 2025	EMD

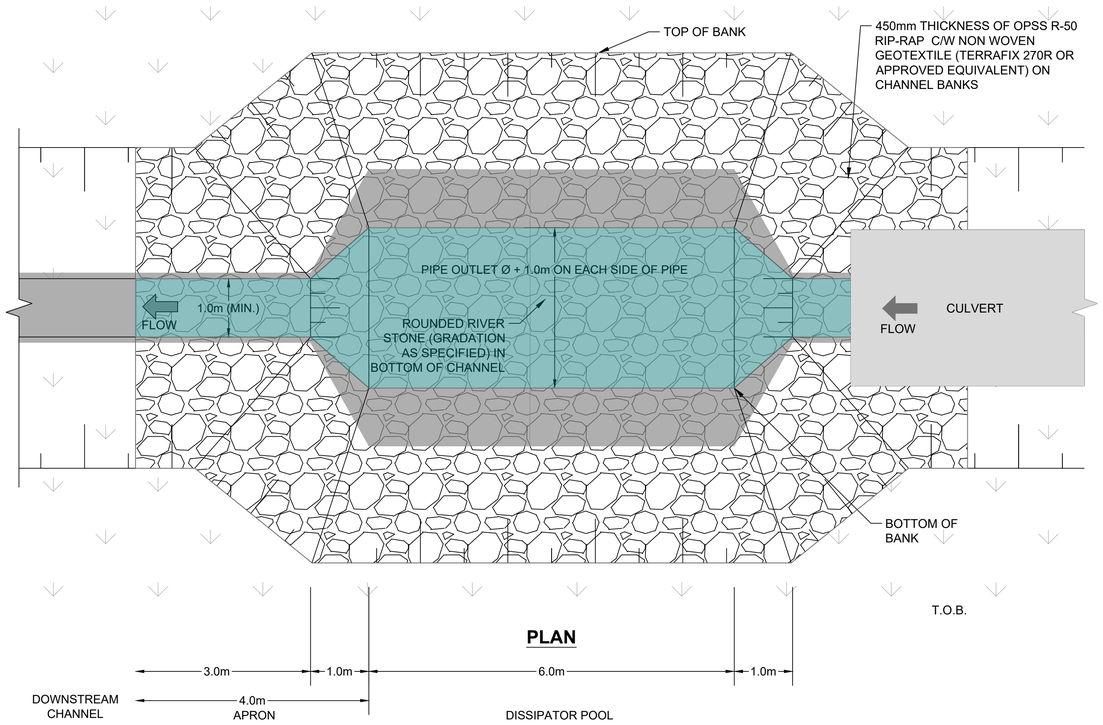
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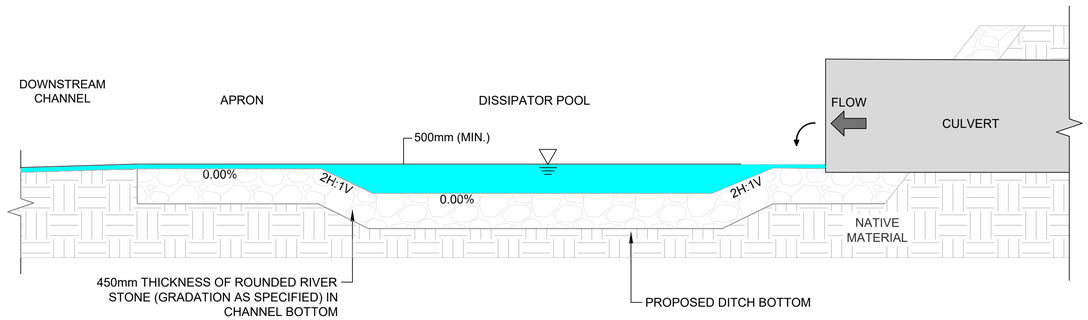
Drawing Title
ELLSWORTH MUNICIPAL DRAIN IMPROVEMENT PROJECT
DETAIL 3

Drawn	Checked	Designed	Checked	Date	Drawing No.
MC	EMD	JR	EMD	AUG 2025	10OF12
Project No. 300050664.0000		Contract No.		Revision No. 4	
Scale NOT TO SCALE					

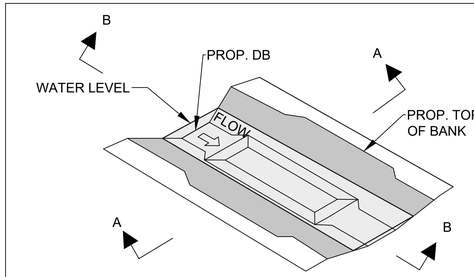
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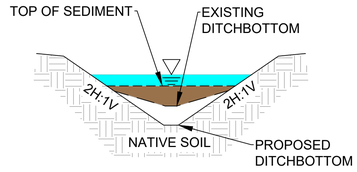
PLAN



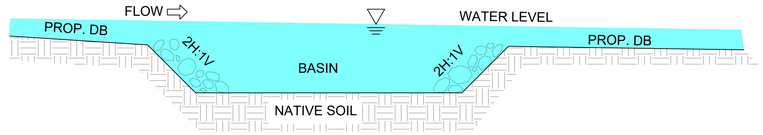
CULVERT OUTLET - STILLING BASIN DETAIL
N.T.S



ISOMETRIC VIEW
N.T.S.



SECTION A-A
N.T.S.



SECTION B-B
N.T.S.

SEDIMENT BASIN DETAIL
N.T.S.

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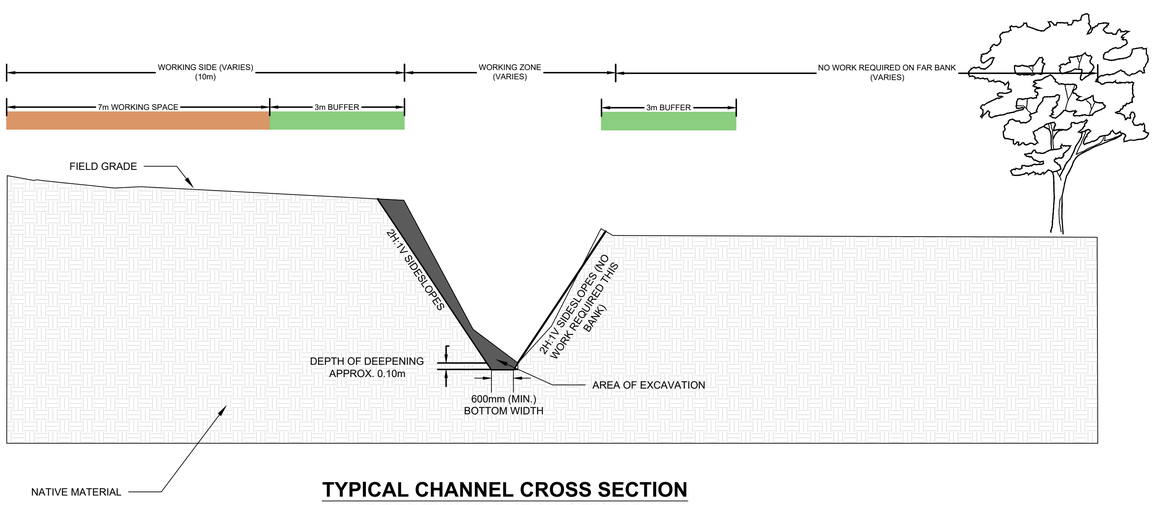
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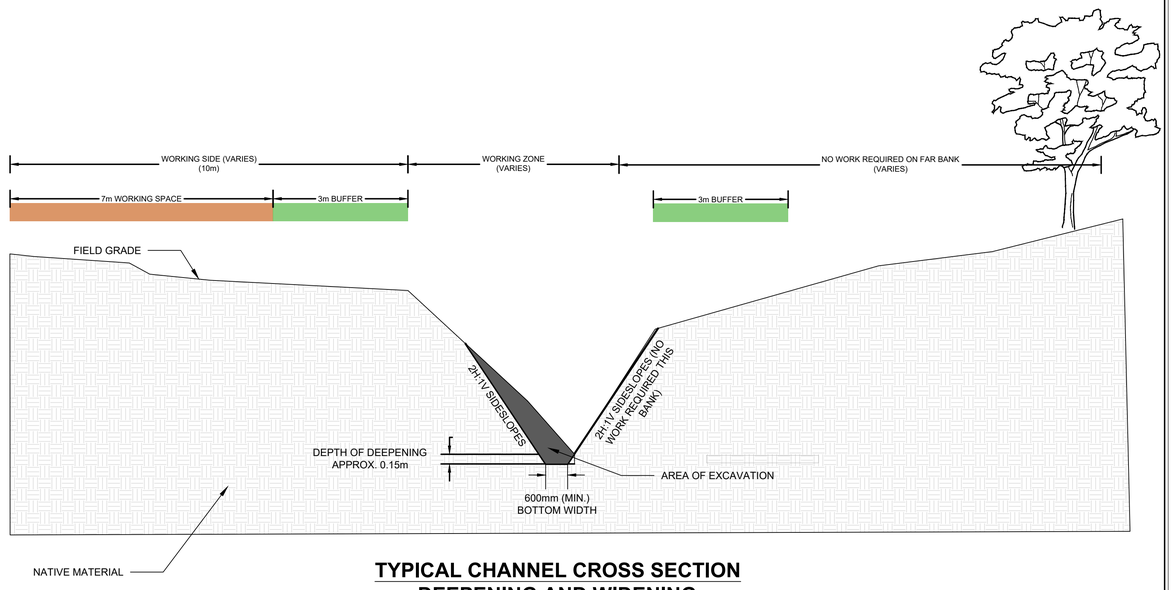
Drawing Title
ELLSWORTH MUNICIPAL DRAIN IMPROVEMENT PROJECT
DETAIL 4

Drawn	Checked	Designed	Checked	Date	Drawing No.
MC	EMD	JR	EMD	AUG 2025	**11OF12**
Project No. 300050664.0000		Contract No.		Revision No. 4	
Scale NOT TO SCALE					

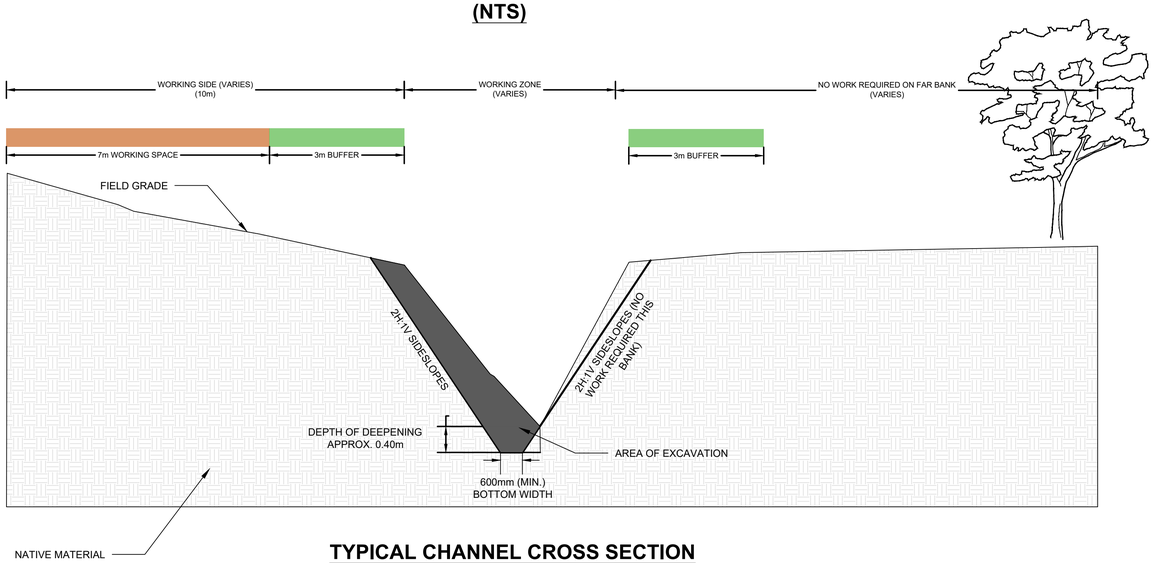
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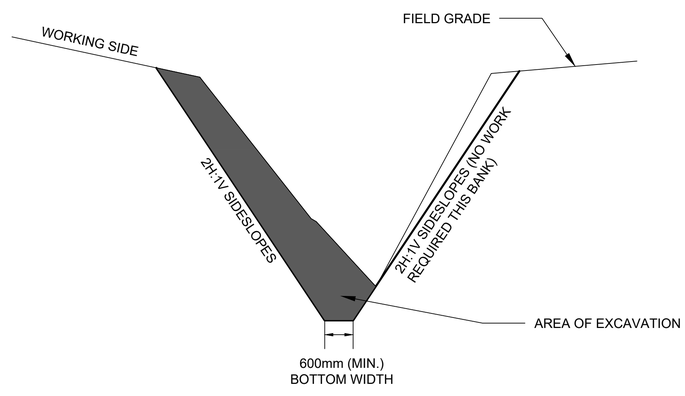
TYPICAL CHANNEL CROSS SECTION
DEEPENING AND WIDENING
(STA. 2+258 TO 3+822)
(WORKING SIDE VARIES)
(NTS)



TYPICAL CHANNEL CROSS SECTION
DEEPENING AND WIDENING
(STA. 1+900 TO 2+258)
(WORKING SIDE VARIES)
(NTS)



TYPICAL CHANNEL CROSS SECTION
DEEPENING AND WIDENING
(STA. 0+000 TO 1+900)
(WORKING SIDE VARIES)
(NTS)



TYPICAL CHANNEL CROSS SECTION
DETAIL

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1	INFORMATION MEETING	JULY 2022	EMD
2	INFORMATION MEETING #2	MAY 2024	EMD
3	DRAFT REPORT	FEB 2025	EMD
4	FINAL REPORT	AUG 2025	EMD

BURNSIDE
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Client
TOWNSHIP OF WAINFLEET
31940 HIGHWAY # 3, P.O. BOX 40
WAINFLEET, ON
L0S 1V0

Drawing Title
ELLSWORTH MUNICIPAL DRAIN IMPROVEMENT PROJECT
DETAIL

Drawn	Checked	Designed	Checked	Date	Drawing No.
MC	EMD	JR	EMD	AUG 2025	**12OF12**
Project No.		Contract No.		Revision No.	
300050664.0000				4	
Scale					

C:\Users\mcleod\Burns Mcdonnell\Documents - 1 Network Data\Improvement Projects\1 Woodstock\Ongoing\2024 DESIGN\300050664.0000 ELLSWORTH MUNICIPAL DRAIN IMPROVEMENT PROJECT\Dwg\Detail Sheets\Detail Sheets August 7 2025 - 3:43 PM

THE CORPORATION OF THE TOWNSHIP OF WAINFLEET

BY-LAW NO. 036-2025

Being a by-law to provide for drainage works in the Township of Wainfleet in the Region of Niagara.

WHEREAS the Council of the Township of Wainfleet has procured a report under Section 78 of the Drainage Act for the improvement of the Ellsworth Drain;

AND WHEREAS the report dated August 8, 2025, has been authored by Edward M. DeLay, M.Eng., P.Eng., R.J. Burnside & Associates Limited and the attached report forms part of this by-law;

AND WHEREAS the estimated total cost of the drainage works is $1,100,000.00;

AND WHEREAS $394,860.00 is the amount to be contributed by the Township of Wainfleet for the drainage works;

AND WHEREAS the Council is of the opinion that drainage of the area is desirable;

NOW THEREFORE the Council of the Corporation of the Township of Wainfleet pursuant to the Drainage Act **HEREBY ENACTS AS FOLLOWS**:

1. The attached report is adopted and the drainage works is authorized and shall be completed as specified in the report.

2. The Corporation of the Township of Wainfleet may borrow on the credit of the corporation the amount of $1,100,000.00, being the amount necessary for the improvement of the drainage works. This project will not be debentured.

3. This By-law comes into force on the passing thereof and may be cited at the "Ellsworth Drain Improvement By-law".

BY-LAW READ A FIRST TIME THIS 2ND DAY OF OCTOBER, 2025.

BY-LAW READ A SECOND TIME THIS 2ND DAY OF OCTOBER, 2025.

PROVISIONALLY ADOPTED THIS 2ND DAY OF OCTOBER, 2025.

_____

B. Grant, MAYOR

_____

A. Chrastina, CLERK

BY-LAW READ A THIRD TIME AND FINALLY ENACTED THIS _____DAY OF

_____.

_____

Brian Grant, MAYOR

_____

A. Chrastina, CLERK

I, Amber Chrastina, Clerk of the Corporation of the Township of Wainfleet certify that the above By-law was duly passed by the Council of the Corporation and is a true copy thereof.

_____

A. Chrastina, CLERK

THE CORPORATION OF THE TOWNSHIP OF WAINFLEET

BY-LAW NO. 037-2025

Being a by-law to adopt, ratify and confirm the proceedings of the Council of the Corporation of the Township of Wainfleet its Special Meeting of Council held October 2, 2025

WHEREAS Subsection 5 (1) of the *Municipal Act*, *2001*, S.O. 2001, Chapter M.25, as amended, provides that the powers of a municipal corporation are to be exercised by its Council;

AND WHEREAS section 5 (3) of the *Municipal Act 2001,* S.O. 2001, Chapter M.25, as amended, provides that, except if otherwise authorized, the powers of Council shall be exercised by by-law;

AND WHEREAS it is deemed desirable and expedient that the actions of the Council as herein set forth be adopted, ratified and confirmed by by-law;

NOW THEREFORE the Council of the Corporation of the Township of Wainfleet **HEREBY ENACTS AS FOLLOWS:**

1. (a) The actions of the Council at its Special Meeting of Council held October 2, 2025 including all resolutions or motions approved, are hereby adopted, ratified and confirmed as if they were expressly embodied in this by-law.

   (b) The above-mentioned actions shall not include:

   (i) any actions required by law to be taken by resolution, or

   (ii) any actions for which prior Ontario Municipal Board approval is required, until such approval is obtained.

2. The Mayor and proper officials of the Corporation of the Township of Wainfleet are hereby authorized and directed to do all things necessary to give effect to the above-mentioned actions and to obtain approvals where required.

3. Unless otherwise provided, the Mayor and Clerk are hereby authorized and directed to execute and the Clerk to affix the seal of the corporation of the Township of Wainfleet to all documents necessary to give effect to the above-mentioned actions.

4. This by-law shall come into force on the day upon which it is passed.

BY-LAW READ AND PASSED THIS 2ND DAY OF OCTOBER, 2025

B. Grant, MAYOR

A. Chrastina, CLERK