

**CRABBE DRAIN**  
**Municipality of West Elgin**



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London, Ontario  
May 1, 2020

## **CRABBE DRAIN**

### **Municipality of West Elgin**

To the Mayor and Council of  
the Municipality of West Elgin

Mayor and Council:

We are pleased to present our report on the reconstruction of parts of the Crabbe Municipal Drain serving parts of Lot 21 & 22, Concessions 12 and 13, in the Municipality of West Elgin.

### **AUTHORIZATION**

This report was prepared pursuant to Section 78 of the Drainage Act. Instructions were received from your Municipality with respect to a motion of Council. The work was initiated by a request signed by an affected landowner.

### **HISTORY**

The Crabbe Drain was originally constructed pursuant to a report submitted by H.H. Todgham, P. Eng., dated July 12, 1960 and consisted of the construction of an open and closed drain, commencing at the Bonn open drain and running east, then northeast through Lots 21 and 22 in Concession 12. The work called for approximately 715 meters of open ditch cleanout and 549 meters of 150mm – 300mm diameter tile.

### **EXISTING DRAINAGE CONDITIONS**

A site meeting held with respect to the project and through later discussions, the owners reported the following:

- that the requesting landowner, Larch Lane Farms Ltd. (Roll No. 50-123), indicated their desire to enclose a portion of the existing open drain through their lands

A field investigation and survey were completed. Upon reviewing our findings, we note the following:

- that the existing drain has not been cleaned out in a very long time and is substantially overgrown with trees along the entire course of the open drain



**SPRIET ASSOCIATES**  
engineers & architects

## EXISTING DRAINAGE CONDITIONS (cont'd)

- that the lands would benefit from enclosure due to the increased workability of them
- that the existing drain should be brushed, where possible, to allow the Municipality to maintain the drain

Preliminary design, cost estimates and assessments were prepared, and informal discussions were held to review the findings and preliminary proposals. Further input and requests were provided by the affected owners at that time and at later dates. Based on the proposed design it was decided to proceed with the report.

## DESIGN CONSIDERATIONS

The proposed drain was designed, with respect to capacity, using the Drainage Coefficient method contained in the "DRAINAGE GUIDE FOR ONTARIO", Publication 29 by the Ontario Ministry of Agriculture, Food, and Rural Affairs. The Drainage Coefficient defines a depth of water that can be removed in a 24-hour period and is expressed in millimetres per 24 hours. The coefficient used for the Main Drain was 38mm per 24 hrs.

We would like to point out that there have been indications of sandy soil conditions, but no formal soil investigation has been made.

All of the proposed work has been generally designed and shall be constructed in accordance with the DESIGN AND CONSTRUCTION GUIDELINES FOR WORK UNDER THE DRAINAGE ACT.

## RECOMMENDATIONS

We are therefore recommending the following:

- that a portion of the existing Main Drain be backfilled through the lands of Larch Lane Farms Ltd. (Roll No. 50-123), commencing at the outlet of the existing Main Drain tile downstream for approximately 369 lineal meters
- that the existing short portion of the open drain, downstream from the current outlet, be replaced with a tile drain approximately 77 meters in length
- that the open drain downstream of the new tile outlet be cleaned out and deepened for a length of approximately 150m.
- that downstream of the tile drain a pool and riffle be constructed in accordance with the requirements of the DFO
- that the existing open ditch be brushed where work is being done to allow access to the drain as needed
- that the existing open ditch be backfilled along the course of the new drain in such a manner as to permit overland flows from the upstream lands



## RECOMMENDATIONS (cont'd)

- that the existing open ditch be backfilled along the course of the new drain in such a manner as to permit overland flows from the upstream lands

We have reviewed the existing Schedule of Assessment for the Crabbe Drain and found it them to be out-of-date and unfair due to property splits, changes in land use, the watershed, and drainage conditions. We therefore recommend that a new Maintenance Schedule be included as part of this report for future maintenance purposes.

## ENVIRONMENTAL CONSIDERATIONS AND MITIGATION MEASURES

There are no significant wetlands or sensitive areas within the affected watershed area or along the route of the drains. The proposed construction of the Crabbe Drain includes quarry stone outlet protection and surface inlets which greatly help reduce the overland surface flows and any subsequent erosion. A temporary flow check of silt fencing is to be installed in the ditch downstream of the tile outlet for the duration of the construction.

We have reviewed the proposed work with the Department of Fisheries and Oceans (File No. 19-HCAA-0087) and they recommend the following mitigation measure be followed in their letter of advice dated January 15, 2020; the existing open drain is to be isolated prior to any backfilling by installing sediment and erosion controls at the bottom end of the work and that work be conducted in dry conditions after July 15<sup>th</sup> of the given year, as well as the creation of a pool and riffle downstream of the enclosure.

We are also recommending that the following erosion and sediment control measures be included as part of our reconstruction proposal to help mitigate any potential adverse impacts of the proposed drainage works on water quality and fishery habitat:

- timing of construction is to be only at times of low or no flow
- a temporary flow check of silt fencing is to be installed for the duration of the construction at the bottom end of the ditch reconstruction
- a cleanout of the ditch bottom only has been specified so that the existing bank vegetation is not disturbed. However, where the existing banks are unstable, or may become unstable, they are to be resloped and seeded as noted on the plans

## SUMMARY OF PROPOSED WORK

The proposed work consists of approximately 150 lineal meters of open ditch reconstruction including quarry stone rip-rap bank protection, pool and riffle, bank seeding, and approximately 446 lineal meters of 300mm (12") to 400mm (16") diameter concrete field tile including related appurtenances.





## SCHEDULES

Four schedules are attached hereto and form part of this report, being Schedule 'A' - Allowances, Schedule 'B' - Cost Estimate, Schedule 'C' - Assessment for Construction, and Schedule 'D' - Assessment for Maintenance.

Schedule 'A' - Allowances. In accordance with Sections 29 and 30 of the Drainage Act, allowances are provided for right-of-way and damages to lands and crops along the route of the drain as defined below.

Schedule 'B' - Cost Estimate. This schedule provides for a detailed cost estimate of the proposed work which is in the amount of \$ 75,500.00. This estimate includes engineering and administrative costs associated with this project.

Schedule 'C' - Assessment for Construction. This schedule outlines the distribution of the total estimated cost of construction over the roads and lands which are involved.

Schedule 'D' - Assessment for Maintenance. In accordance with Section 38 of the Drainage Act, this schedule outlines the distribution of future repair and/or maintenance costs for portions of, or the entire drainage works.

Drawing No. 1, Job No. 219070, and specifications form part of this report. They show and describe in detail the location and extent of the work to be done and the lands which are affected.

## ALLOWANCES

**DAMAGES:** Section 30 of the Drainage Act provides for the compensation to landowners along the drain for damages to lands and crops caused by the construction of the drain. The amount granted is based on \$4,647.00/ha. for open ditch work with excavated material levelled adjacent the drain, and \$3,613.00/ha for closed drain installed with a wheel machine. These base rates are multiplied by the hectares derived from the working widths shown on the plans and the applicable lengths.

**RIGHT-OF-WAY** Section 29 of the Drainage Act provides for an allowance to the owners whose land must be used for the construction, repair, or future maintenance of a drainage works.

For open ditches, the allowance provides for the loss of land due to the construction provided for in the report. The amounts granted are based on the value of the land, and the rate used was \$33,360.00/ha. When any buffer strip is incorporated and/or created, the allowance granted is for any land beyond a 1.8-meter width deemed to have always been part of the drain. For existing open ditches, the right-of-way to provide for the right to enter and restrictions imposed on those lands, is deemed to have already been granted.

## ASSESSMENT DEFINITIONS

In accordance with the Drainage Act, lands that make use of a drainage works are liable for assessment for part of the cost of constructing and maintaining the system. These liabilities are known as benefit, outlet liability and special benefit liability as set out under Sections 22, 23, 24 and 26 of the Act.



## **ASSESSMENT DEFINITIONS (cont'd)**

**BENEFIT** as defined in the Drainage Act means 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 sub-surface water, or any other advantages relating to the betterment of lands, roads, buildings or other structures.

**OUTLET** liability is assessed to lands or roads that may make use of a drainage works as an outlet either directly or indirectly through the medium of any other drainage works or of a swale, ravine, creek or watercourse.

In addition, a Public Utility or Road Authority shall be assessed for and pay all the increased cost to a drainage works due to the construction and operation of the Public Utility or Road Authority. This may be shown as either benefit or special assessment.

## **ASSESSMENT**

A modified "Todgham Method" was used to calculate the assessments shown on Schedule 'C'- Assessment for Construction. This entailed breaking down the costs of the drain into sections along its route. Special Assessments and Special Benefits were then extracted from each section.

The remainder is then separated into Benefit and Outlet costs. The Benefit cost is distributed to those properties receiving benefit as defined under "Assessment Definitions", with such properties usually being located along or close to the route of the drain. The Outlet Costs are distributed to all properties within the watershed area of that section on an adjusted basis. The areas are adjusted for location along that section, and relative run-off rates. Due to their different relative run-off rates, forested lands have been assessed for outlet at lower rates than cleared lands.

The actual cost of the work involving this report, with the exception of Special Assessments, is to be assessed on a pro-rata basis against the lands and roads liable for assessment for benefit and outlet as shown in detail below and on Schedule 'C' - Assessment for Construction.

The majority of the enclosing and backfilling of the drain is assessed to the benefitting landowners, with the exception of the cost of two cleanouts, which are assessed to all lands within this watershed area. A value of \$5,500.00 has been used for this cost and shall be non-proratable, and can be found in the Assessment Schedule 'C'- Main Drain (Closed Portion)

## **SPECIAL ASSESSMENT**

If any additional work is required to the drainage works due to the existence of buried utilities such as gas pipe lines, communications cables, etc. or if any of the utilities require relocation or repair, then, the extra costs incurred shall be borne by the utility involved in accordance with the provisions of Section 26 of the Drainage Act.





## GRANTS

In accordance with the provisions of Section 85 of the Drainage Act, a grant **may** be available for assessments against privately owned parcels of land which are used for agricultural purposes and eligible for the Farm Property Class Tax rate. Further to this, regarding the closed portion of this project, the proposed theoretical cleanout costs of the project may be eligible for the normal 1/3 grants for the outlet lands. These lands have been assessed for their portion of the theoretical cost of clean-outs of the open ditch. The remaining portion of the drain will be in-eligible for the 1/3 grant. Section 88 of the Drainage Act directs the Municipality to make application for this grant upon certification of completion of this drain. The Municipality will then deduct the grant from the assessments prior to collecting the final assessments.

## MAINTENANCE

Upon completion of construction, all owners are hereby made aware of Sections 80 and 82 of the Drainage Act which forbid the obstruction of or damage or injury to a municipal drain.

After completion, the entire Crabbe Drain, including the existing portions, shall be maintained by the Municipality of West Elgin at the expense of all upstream lands and roads assessed in Schedule 'D' - Assessment for Maintenance and in the same relative proportions until such time as the assessment is changed under the Drainage Act.

The above existing portions of the drain shall be maintained in accordance with the grades and dimensions set out in the plans and specifications contained in the reports submitted by H.H. Todgham, P.Eng., dated July 12, 1960.

Respectfully submitted,

SPRIET ASSOCIATES LONDON LIMITED

JMS:bv



  
J.M. Spriet, P.Eng.



## SCHEDULE 'A' - ALLOWANCES

## CRABBE DRAIN

## Municipality of West Elgin

In accordance with Sections 29 and 30 of the Drainage Act, we determine the allowances payable to owners entitled thereto as follows:

CONCESSION	LOT	ROLL NUMBER (Owner)	Section 29 Right-of-Way	Section 30 Damages	TOTALS
<b>MAIN DRAIN (OPEN PORTION)</b>					
12	Pt. 21	50-117-03 (L. Connolly)	\$ 70.00	\$ 130.00	\$ 200.00
12	Pt. 21	50-117-04 (F. Connolly)	200.00	350.00	550.00
12	Pt. 21 & 22	50-123 (Larch Lane Farms Ltd)	330.00	570.00	900.00
Total Allowances			\$ 600.00	\$ 1,050.00	\$ 1,650.00
<b>TOTAL ALLOWANCES ON THE MAIN DRAIN (OPEN PORTION)</b>					<b>\$ 1,650.00</b>
<b>MAIN DRAIN (CLOSED PORTION)</b>					
12	Pt. 21 & 22	50-123 (Larch Lane Farms Ltd)	\$	\$ 2,000.00	\$ 2,000.00
Total Allowances			\$	\$ 2,000.00	\$ 2,000.00
<b>TOTAL ALLOWANCES ON THE MAIN DRAIN (CLOSED PORTION)</b>					<b>\$ 2,000.00</b>
<b>TOTAL ALLOWANCES ON THE CRABBE DRAIN</b>					<b>\$ 3,650.00</b>



**CRABBE DRAIN****Municipality of West Elgin**

We have made an estimate of the cost of the proposed work which is outlined in detail as follows:

**MAIN DRAIN (OPEN PORTION)**

Clearing & grubbing of ditch bank (Approx. 150m)	\$ 3,000.00
150 meters of open ditch cleanout	\$ 1,500.00
Construt pool and riffle as per drawings including rip-rap and filter blanket	\$ 2,000.00
Levelling of excavated material	\$ 800.00
Seeding of ditch banks and buffer strips (Approx 500m <sup>2</sup> )	\$ 200.00
Contingencies	\$ 500.00
Allowances under Sections 29 and 30 of the Drainage Act	\$ 1,650.00

**MAIN DRAIN (CLOSED PORTION)**

6 meters of 450mm dia., H.D.P.E. plastic sewer pipe including rodent gate, quarry stone rip-rap protection around pipe and end of ditch (Approximately 6m <sup>3</sup> quarry stone req'd)	
Supply	\$ 600.00
Installation	\$ 1,300.00
Installation of the following concrete field tile installed on crushed stone bedding including supply & installation of geotextile around tile joints (approx. 2200m req'd)	
77 meters of 300mm dia. concrete tile (stub)	\$ 3,000.00
169 meters of 350mm dia. concrete tile	\$ 7,200.00
194 meters of 400mm dia. concrete tile	\$ 8,800.00
Supply of the above listed tile	\$ 9,200.00
Supply & delivery of 19mm crushed stone (Approx. 180 tonnes req'd)	\$ 5,400.00
Backfilling of existing open ditches and grading for overland flow route	\$ 9,000.00
Exposing and locating existing tile drains and utilities	\$ 1,500.00
Tile connection and pre-fabricated fittings	\$ 1,000.00
Tile connections and contingencies	\$ 1,500.00
Allowances under Section 30 of the Drainage Act	\$ 2,000.00

**CRABBE DRAIN**  
**Municipality of West Elgin****ADMINISTRATION**

Interest and Net Harmonized Sales Tax	\$ 1,780.00
Survey, Plan and Final Report	\$ 9,900.00
Expenses	\$ 950.00
Supervision and Final Inspection	\$ <u>2,720.00</u>
<b>TOTAL ESTIMATED COST</b>	<b>\$ <u><u>75,500.00</u></u></b>

CON.	LOT	HECTARES AFFECTED	ROLL No. (OWNER)	BENEFIT	OUTLET	TOTAL
<b>MAIN DRAIN (OPEN PORTION)</b>						
12	W Pt. 21	4.0	50-117-01 (BonneField Farmland Ont	\$	\$	\$
* 12	Pt. 21	1.0	50-117-02 (M. Vandenburg)			
* 12	Pt. 21	0.3	50-117-03 (L. Connolly)	320.00	2.00	322.00
* 12	Pt. 21	0.3	50-117-04 (F. Connolly)	890.00	9.00	899.00
12	NW Pt. 21	0.8	50-118-50 (M. Howard)		38.00	38.00
* 12	Pt. 21	1.5	50-119 (C. Bell)		142.00	142.00
12	Pt. 21 & 22	43.3	50-123 (Larch Lane Farms Ltd)	5,860.00	3,451.00	9,311.00
12	NW Pt. 22	6.1	50-121 (M. & S. Peterne1)		501.00	501.00
* 12	Pt. 22	0.6	50-123-10 (Larch Lane Farms Ltd)		55.00	55.00
13	21	8.1	50-164 (J. & R. Colpaert)		255.00	255.00
13	21	2.0	50-166 (S. & L. KirkPatrick)		63.00	63.00
TOTAL ASSESSMENT ON LANDS				\$ 7,070.00	\$ 4,516.00	\$ 11,586.00
Talbot Line 2.5 County of Elgin				\$	\$ 414.00	\$ 414.00
TOTAL ASSESSMENT ON ROADS				\$	\$ 414.00	\$ 414.00
<b>TOTAL ASSESSMENT ON THE MAIN DRAIN (OPEN PORTION)</b>						<b>\$ 12,000.00</b>
<b>MAIN DRAIN (CLOSED PORTION)</b>						
12	NW Pt. 21	0.8	50-118-50 (M. Howard)		98.00	98.00
12	Pt. 21 & 22	31.0	50-123 (Larch Lane Farms Ltd)		4,107.00	4,107.00
*			50-123 (Larch Lane Farms Ltd)	58,000.00		58,000.00
12	NW Pt. 22	6.1	50-121 (M. & S. Peterne1)		1,295.00	1,295.00
TOTAL ASSESSMENT ON LANDS				\$ 58,000.00	\$ 5,500.00	\$ 63,500.00
<b>TOTAL ASSESSMENT ON THE MAIN DRAIN (CLOSED PORTION)</b>						<b>\$ 63,500.00</b>
<b>TOTAL ASSESSMENT ON THE CRABBE DRAIN</b>						<b>\$ 75,500.00</b>



## SCHEDULE 'D' - ASSESSMENT FOR MAINTENANCE

## CRABBE DRAIN

## Municipality of West Elgin

Job No. 219070

May 1, 2020

CON.	LOT	HECTARES AFFECTED	ROLL No. (OWNER)	PERCENTAGE OF MAINTENANCE COST
<b>MAIN DRAIN (OPEN PORTION)</b>				
12	W Pt. 21	4.0	50-117-01 (BonneField Farmland Ont)	4.5 %
12	Pt. 21	1.0	50-117-02 (M. Vandenburg)	22.6
12	Pt. 21	0.3	50-117-03 (L. Connolly)	7.2
12	Pt. 21	0.3	50-117-04 (F. Connolly)	6.2
12	NW Pt. 21	0.8	50-118-50 (M. Howard)	0.4
12	Pt. 21	1.5	50-119 (C. Bell)	1.4
12	Pt. 21 & 22	43.3	50-123 (Larch Lane Farms Ltd)	45.0
12	NW Pt. 22	6.1	50-121 (M. & S. Peterne)	4.9
12	Pt. 22	0.6	50-123-10 (Larch Lane Farms Ltd)	0.6
13	21	8.1	50-164 (J. & R. Colpaert)	2.5
13	21	2.0	50-166 (S. & L. KirkPatrick)	0.6
				=====
TOTAL ASSESSMENT ON LANDS				95.9 %
				=====
Talbot Line		2.5	County of Elgin	4.1 %
				=====
TOTAL ASSESSMENT ON ROADS				4.1 %
				=====
TOTAL ASSESSMENT FOR MAINTENANCE OF THE MAIN DRAIN (OPEN PORTION)				<b>100.0 %</b>
<b>MAIN DRAIN (CLOSED PORTION)</b>				
12	NW Pt. 21	0.8	50-118-50 (M. Howard)	1.0 %
12	Pt. 21 & 22	31.0	50-123 (Larch Lane Farms Ltd)	87.0
12	NW Pt. 22	6.1	50-121 (M. & S. Peterne)	12.0
				=====
TOTAL ASSESSMENT ON LANDS				100.0 %
				=====
TOTAL ASSESSMENT FOR MAINTENANCE OF THE MAIN DRAIN (CLOSED PORTION)				<b>100.0 %</b>

# SCHEDULE OF NET ASSESSMENT

## CRABBE DRAIN

### Municipality of West Elgin

(FOR INFORMATION PURPOSES ONLY)

Job No. 219070

May 1, 2020

\* = Non-agricultural

ROLL NUMBER (OWNER)	TOTAL ASSESSMENT	GRANT	ALLOWANCES	APPROX. NET
50-117-01 (BonneField Farmland Ont)	\$	\$	\$	\$
* 50-117-02 (M. Vandenburg)				
* 50-117-03 (L. Connolly)	322.00		200.00	122.00
* 50-117-04 (F. Connolly)	899.00		550.00	349.00
50-118-50 (M. Howard)	136.00	45.00		91.00
* 50-119 (C. Bell)	142.00			142.00
50-123 (Larch Lane Farms Ltd)	13,418.00	4,473.00	2,900.00	6,045.00
* 50-123 (Larch Lane Farms Ltd)	58,000.00			58,000.00
50-121 (M. & S. Peternel)	1,796.00	599.00		1,197.00
* 50-123-10 (Larch Lane Farms Ltd)	55.00			55.00
50-164 (J. & R. Colpaert)	255.00			255.00
50-166 (S. & L. KirkPatrick)	63.00			63.00
* Talbot Line	\$ 414.00	\$	\$	\$ 414.00
<b>TOTALS</b>	<b>\$ 75,500.00</b>	<b>\$ 5,117.00</b>	<b>\$ 3,650.00</b>	<b>\$ 66,733.00</b>