

YAUCH DRAIN
Municipality of West Elgin



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YAUCH 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 and extension of parts of the Yauch Municipal Drain serving parts of Lots 9 to 11, Concessions 9 to 11, in the Municipality of West Elgin.

AUTHORIZATION

This report was prepared pursuant to Section 4 and 78 of the Drainage Act. Instructions were received from your Municipality with respect to a motion of Council. The Section 78 work was initiated by a request signed by an affected landowner.

The Section 4 work was petitioned by two affected landowners whose lands contain over 60 percent of the area requiring drainage.

DRAINAGE AREA

The total watershed area as described above contains approximately 121 hectares. The area requiring drainage for the new branch drain is described as the lands located within Lots 9 and 10, Concession 10, located west of the Main Drain and bounded by Marsh Line to the north. These lands contain agricultural land and a residential property.

HISTORY

The Yauch Drain was last reconstructed pursuant to a report submitted by H.H. Todgham, P. Eng. dated October 17, 1979, and consisted of the twinning of the existing Yauch Drain from its outlet at the open drain to its head located on the north side of Marsh Line, at the easterly limits of Lot 10. The work involved tile installation ranging in size from 250mm diameter to 450mm diameter at the outlet and a total length of 1,854 meters. The twinned drain (1962 and 1979) had a capacity to accommodate a rainfall event of approximately 12mm in a 24-hour period.



EXISTING DRAINAGE CONDITIONS

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

- that the requesting landowners, E. Krumm & H. Taylor (Roll No. 30-159), inquired about the replacement of the Main Drain as it is no longer functioning effectively. They indicated that their lands were subject to frequent and prolonged ponding
- that the upstream landowner, 1058492 Ontario Inc. (Roll No. 30-121 & 30-160), indicated that the drain was functioning adequately for their needs
- that landowners D. Ciparis (Roll No. 30-155), and D. & B. Bechard & A. & P. Turner (Roll No. 30-156) inquired as to a branch drain to provide an outlet for their lands to alleviate water problems

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

- that the Drainage Superintendent dug up the existing tile drain in several locations and observed that the drain was full of sediment
- that the existing drain is undersized by current drainage standards
- that the most logical route to replace the existing drain would be in approximately the same location as the existing drains
- given the location of the existing well to the drain in the lands of R. & L. Jones (Roll No. 30-158) it was decided to seek the opinion of a Hydrogeologist, JFM Environmental Limited to investigate the effects of deepening the existing drain near the location of the well. Their analysis indicated the possibility of decreased water production in the well due to the lowering of the invert of the Yauch Drain seems minimal as the existing drains are currently lower than the well water level now

Preliminary design, cost estimates and assessments were prepared, and an informal public meeting was 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 and Branch "A" was 38mm.



DESIGN CONSIDERATIONS (cont'd)

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 the existing Yauch Drain – Main Drain be reconstructed commencing at the open drain on the south side of Thomson Line, running north and north-easterly through the lands of C. & I. Kovacs (Roll No. 30-158-01), R. & L. Jones (Roll No. 30-158), C. & I. Kovacs (Roll No. 30-161), and E. Krumm & H. Taylor (Roll No. 30-159), to its head at the lot line between E. Krumm & H. Taylor and 1058492 Ontario Inc., for a total length of 1505 meters
- that a closed branch drain, to be referred to as Branch 'A', be constructed commencing at the Main Drain in the lands of E. Krumm & H. Taylor (Roll No. 30-159) and travel west through these land and those of D. Ciparis (Roll No. 30-155) to its head just within the lands of D. & B. Bechard & A. & P. Turner (Roll No. 30-156) for a total length of 455 meters
- that catchbasins be installed along the course of the drain to alleviate surface ponding and surface flows
- that the road crossing under Thomson Line be done by open cut and that the exiting surface culvert be replaced
- that all lawn areas disturbed by construction be levelled, top soiled with imported topsoil, and seeded, as part of the restoration
- that clay collars be installed on the lower end of the drain to prevent the stone bedding from acting as a French drain
- that contingency be made to provide any wells adversely affected by the drain construction with supplement water / replacement. It should be noted that the firm of JFM Environmental has been engaged to monitor the wells in the area of the drain before, during, and after construction. It should be noted that a prolonged period of drought could also adversely affect the well
- that the existing 1962 and 1979 Yauch Drains, from the outlet at Sta. 0+000 to Sta. 1+505 be officially abandoned from municipal status pursuant to Section 19 of the Drainage Act

Due to the indications of poor soil conditions our design includes the wrapping of tile joints with geotextile and a crushed stone bedding wrapped with geotextile.



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 Yauch 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.

SUMMARY OF PROPOSED WORK

The proposed work consists of approximately 1,978 lineal meters of 200mm (8") to 750mm (30") concrete field tile and HDPE sewer pipe 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 \$ 316,500.00. 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. 218131, 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 \$3,613.00/ha. for closed drain. This base rate is multiplied by the hectares derived from the working widths shown on the plans and the applicable lengths.

ALLOWANCES (cont'd)

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 tile drains where the owners will be able to continue to use the land, the allowance provides for the right to enter upon such lands, and at various times for the purpose of inspecting such drain, removing obstructions, and making repairs. Also, the allowance provides for the restrictions imposed on those lands to protect the right-of-way from obstruction or derogation. The amounts granted for right-of-way on tile drains is based on a percentage of the value of the land designated for future maintenance. Therefore, the amounts granted are based on \$6,750.00/ha. through cropped lands. This value is multiplied by the hectares derived from the width granted for future maintenance and the applicable lengths. It should be noted that the 1979 report provided for damages only, and not for right-of-way.

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.

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.

In the event that a well is adversely affected by the drain the cost of remedial work shall be borne by the drain in the same relative proportion as set out in Schedule 'C' – Assessment for Construction.

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.



ASSESSMENT (cont'd)

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. Also, roads and residential properties have been assessed for outlet at higher rates than cleared farmlands.

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, outlet and for special assessments as shown in detail below and on Schedule 'C' - Assessment for Construction. The Special Assessments shall be levied as noted in the Section "Special Assessment".

SPECIAL ASSESSMENT

In accordance with Section 26 of the Drainage Act, a Special Assessment has been made against the Municipality of West Elgin being the increased cost to the drainage work for installing a C.S.P. Surface culvert and a H.D.P.E. pipe (subsurface) across their road allowance on the Main Drain due to the construction and operation of Thomson Line. The Special Assessment shall be made up of the actual cost of this work and both the final and estimated values of the Special Assessment are to be calculated as follows:

Drain	Cost of Work	Less Equivalent Drain Cost (Fixed)	Plus Administration Cost	Plus Interest & Net H.S.T.	Special Assessment
900mm C.S.P. (surface) and 750mm H.D.P.E (sub-surface)	\$14,200.00	\$2,010.00	\$2,800.00	\$370.00	\$15,360.00

The above special assessments shall not apply for future maintenance purposes.

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. 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 Yauch Drain 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.

Special Assessments shall **not** be pro-rated for future maintenance purposes.

Repairs or improvements to any road culvert or bridge or sub-surface road crossing required by the performance of this work and for future repair and/or replacement, shall be the responsibility of the applicable Road Authority, entirely at their cost.

Respectfully submitted,

SPRIET ASSOCIATES LONDON LIMITED

JMS:bv



J.M. Spriet, P.Eng.



SCHEDULE 'A' - ALLOWANCES

YAUCH 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
MAIN DRAIN					
10	NW¼ 10	30-159 (E. Krumm & H. Taylor)	\$ 4,500.00	\$ 3,610.00	\$ 8,110.00
10	SW¼ 10	30-161 (C. & I. Kovacs)	2,870.00	2,300.00	5,170.00
10	SE ¼ 9	30-158-01 (C. & I. Kovacs)	1,560.00	1,250.00	2,810.00
10	Pt. 9	30-158 (R. & L. Jones)	1,070.00	860.00	1,930.00
			=====	=====	=====
Total Allowances			\$ 10,000.00	\$ 8,020.00	\$ 18,020.00
			=====	=====	=====
TOTAL ALLOWANCES ON THE MAIN DRAIN					<u><u>\$ 18,020.00</u></u>
BRANCH 'A'					
10	Pt. 9	30-156 (D. & B. Bechard & A. & P. Turner	\$ 40.00	\$ 30.00	\$ 70.00
10	N½ 9	30-155 (D. Ciparis)	1,080.00	870.00	1,950.00
10	NW¼ 10	30-159 (E. Krumm & H. Taylor)	1,950.00	1,570.00	3,520.00
			=====	=====	=====
Total Allowances			\$ 3,070.00	\$ 2,470.00	\$ 5,540.00
			=====	=====	=====
TOTAL ALLOWANCES ON BRANCH 'A'					<u><u>\$ 5,540.00</u></u>
TOTAL ALLOWANCES ON THE YAUCH DRAIN					<u><u>\$ 23,560.00</u></u>

YAUCH 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

Supply and Installation of rodent gate in end of 750mm dia., H.D.P.E. plastic sewer pipe including quarry stone rip-rap protection around pipe and end of ditch
(Approximately 8m³ quarry stone req'd)

Supply \$ 200.00

Installation \$ 1,200.00

Installation of the following concrete field tile, including supply and installation of geotextile around tile joints (approx. 2750m req'd)

10 meters of 250mm dia. H.D.P.E. pipe \$ 600.00

405 meters of 525mm dia. concrete tile \$ 19,000.00

920 meters of 600mm dia. concrete tile \$ 44,600.00

150 meters of 600mm dia. concrete tile (2000-D) \$ 7,400.00

Supply of the above listed tile and pipe \$ 64,000.00

Supply & delivery of 19mm crushed stone (Approx. 600 tonnes req'd) \$ 18,000.00

Strip, stockpile and releve topsoil from tile trench and adjacent working area (4m wide) specified on drawings (approx. 1505m) \$ 7,500.00

Supply and install five 900mm x 1200mm ditch inlet catchbasins, and one including berms, leads, ditching, removal and disposal of existing catchbasins \$ 12,000.00

18 meters of 750 mm dia., H.D.P.E. pipe (subsurface)

16 meters of 900 mm dia., H.D.P.E. pipe (surface)

Supply \$ 7,400.00

Installation under Thompson Line by Open Cut \$ 6,800.00

12 meters of 600 mm dia., H.D.P.E. pipe

Supply \$ 1,300.00

Installation under Laneway by Open Cut \$ 3,000.00

Installation of Clay Collars as noted on Drawings \$ 2,000.00

Restoration of Lawn to original conditions including imported topsoil and seed \$ 2,500.00

Exposing and locating existing tile drains and utilities \$ 2,000.00

Tile connections and contingencies \$ 12,000.00

Allowances under Sections 29 & 30 of the Drainage Act \$ 18,020.00

YAUCH DRAIN**Municipality of West Elgin****BRANCH 'A'**

Installation of the following farm tile by drainage plow	
455 meters of 300mm dia. plastic farm tile with sock	\$ 6,800.00
Supply of the above listed tile	\$ 10,500.00
Strip, stockpile and relevel topsoil from tile trench and adjacent working area (4m wide) specified on drawings (approx. 455m)	\$ 2,300.00
Supply and install one 600mm x 600mm ditch inlet catchbasins, and one 600mm x 600mm standard catchbasin including grates, berms, and ditching	\$ 3,600.00
Exposing and locating existing tile drains and utilities	\$ 600.00
Tile connections and contingencies	\$ 1,200.00
Allowances under Sections 29 & 30 of the Drainage Act	\$ 5,540.00

ADMINISTRATION

Interest and Net Harmonized Sales Tax	\$ 7,010.00
Survey, Plan and Final Report	\$ 38,900.00
Hydrogeological Assessment	\$ 2,500.00
Expenses	\$ 1,990.00
Supervision and Final Inspection	\$ <u>6,040.00</u>
TOTAL ESTIMATED COST	\$ <u><u>316,500.00</u></u>

SCHEDULE 'D' - ASSESSMENT FOR MAINTENANCE

YAUCH DRAIN

Municipality of West Elgin

Job No. 218131

February 14, 2020

CON.	LOT	HECTARES AFFECTED	ROLL No. (OWNER)	PERCENTAGE OF MAINTENANCE COST
MAIN DRAIN				
9	S Pt. 10	17.7	30-119 (Bonfield Farmland Ontario)	15.9 %
9	W Pt. 11	5.7	30-121 (1058492 Ontario Ltd)	5.1
9	E Pt. 11	9.3	30-122 (F. Kadlex & H. White)	4.2
10	Pt. 8 &	9	30-154 (571419 Ontario Ltd)	0.3
10	Pt. 9	2.4	30-158 (R. & L. Jones)	2.8
10	SE ¼	9	30-158-01 (C. & I. Kovacs)	8.8
10	N½	9	30-155 (D. Ciparis)	4.3
10	Pt. 9	0.6	30-156 (D. & B. Bechard & A. & P. Turner)	0.8
10	SW¼	10	30-161 (C. & I. Kovacs)	13.5
10	NW¼	10	30-159 (E. Krumm & H. Taylor)	26.5
10	NE¼	10	30-160 (1058492 Ontario Ltd)	8.9
10	N½	11	30-163 (M. Miller)	1.2
TOTAL ASSESSMENT ON LANDS				92.3 %
Marsh Line				2.1 Municipality of West Elgin
Thomson Line				0.4 Municipality of West Elgin
TOTAL ASSESSMENT ON ROADS				7.7 %
TOTAL ASSESSMENT FOR MAINTENANCE OF THE MAIN DRAIN				<u>100.0 %</u>
BRANCH 'A'				
10	N½	9	30-155 (D. Ciparis)	30.1 %
10	Pt. 9	0.6	30-156 (D. & B. Bechard & A. & P. Turner)	13.7
10	NW¼	10	30-159 (E. Krumm & H. Taylor)	45.2
TOTAL ASSESSMENT ON LANDS				89.0 %
Marsh Line				0.4 Municipality of West Elgin
TOTAL ASSESSMENT ON ROADS				11.0 %
TOTAL ASSESSMENT FOR MAINTENANCE OF BRANCH 'A'				<u>100.0 %</u>

SCHEDULE OF NET ASSESSMENT

YAUCH DRAIN

Municipality of West Elgin

(FOR INFORMATION PURPOSES ONLY)

Job No. 218131

February 14, 2020

* = Non-agricultural

ROLL NUMBER (OWNER)	TOTAL ASSESSMENT	GRANT	ALLOWANCES	APPROX. NET
30-119 (Bonfield Farmland Ontario)	31,647.00	10,549.00		21,098.00
30-121 (1058492 Ontario Ltd)	10,192.00	3,397.00		6,795.00
* 30-122 (F. Kadlex & H. White)	8,314.00			8,314.00
30-154 (571419 Ontario Ltd)	1,141.00	380.00		761.00
* 30-158 (R. & L. Jones)	10,630.00		1,930.00	8,700.00
30-158-01 (C. & I. Kovacs)	28,083.00	9,361.00	2,810.00	15,912.00
30-155 (D. Ciparis)	19,281.00	6,427.00	1,950.00	10,904.00
* 30-156 (D. & B. Bechard & A. & P. Turner)	6,698.00		70.00	6,628.00
30-161 (C. & I. Kovacs)	46,276.00	15,425.00	5,170.00	25,681.00
30-159 (E. Krumm & H. Taylor)	97,498.00	32,499.00	11,630.00	53,369.00
30-160 (1058492 Ontario Ltd)	18,335.00	6,112.00		12,223.00
30-163 (M. Miller)	2,324.00	775.00		1,549.00
Marsh Line	15,729.00			15,729.00
Thomson Line	4,992.00			4,992.00
Special Assessment	15,360.00			15,360.00
TOTALS	\$ 316,500.00	\$ 84,925.00	\$ 23,560.00	\$ 208,015.00