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September 7, 2021

File No. 16-387

Jeff Schmidt, CPA, CGA, B.A.S.
Chief Administrative Officer
Township of Springwater
2231 Nursery Road
Minesing, ON L9X 1A8

RE: SWALEY DRAIN (CONCESSION 11) 2021

Dear Jeff:

I am pleased to submit herein my engineering report under Section 78 of the Drainage Act, RSO 1990 for the Swaley Drain (Concession 11) 2021. We are submitting this electronically.

We understand you will duplicate/circulate this report in order to ensure landowners and agencies, etc. receive it. You could ask agencies if they wish to receive paper or electronic copies.

The report could be distributed as follows:

- ? reports for Township of Springwater Council
- ? reports for Township of Springwater staff
- ? reports for Court of Revision members
- 239 reports for the affected landowners
- 3 reports for the Ministry of Agriculture, Food and Rural Affairs, the Ministry of Northern Development, Mines, Natural Resources and Forestry, and the Nottawasaga Valley Conservation Authority
- 2 reports as extra file copies

The separately enclosed Schedule C is to be included in the mailout or electronic package to each assessed party.

If you wish us to send a paper copy to any agencies, please advise. If you wish us to supply the names of the individuals at each agency who you should mail to, please advise.

We understand this Report will be considered by Council virtually on September 27, 2021 at 6:30 p.m.

Our invoice for preparation and printing of this engineering report will be sent under separate cover.

It has been a pleasure to be of service.

Yours truly,

K. A. Smart, P. Eng.

encl.

cc: Steve Buchanan
Mahesh Ramdeo

FINAL REPORT

SWALEY DRAIN (CONCESSION 11) 2021



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FINAL REPORT

SWALEY DRAIN (CONCESSION 11) 2021

Township of Springwater

1.0 EXECUTIVE SUMMARY

This is a Final Report pursuant to Section 78 of the Drainage Act related to providing an improved outlet for the Swaley Drain as it now exists.

This report follows the submission of a Preliminary Report dated July 21, 2021 and considered by Council on August 4, 2021.

The Preliminary Report recommended that:

- a) The Swaley Drain's outlet as now existing in the flooded waters of the Minesing Wetlands be extended in Concession 11 either 750m on one route or 950m on another route downstream and further into the wetlands where wetland water levels are 470mm \pm (19" \pm) lower and that the work be done by barge methods.
- b) The minimum swath width to be cut through the wetland vegetation be 6m and discussed an option of using a 10m swath width.
- c) In either swath width, a channel of 500m depth be excavated at the floor of the wetland waters in the swath and with a greater depth where work commenced so a barge with its 900mm draft is able to be used.
- d) That a monitoring program of the work done be set up.
- e) The Swaley Drain channel in Concessions 9 & 10 be repaired in the near future by the Drainage Superintendent as a separate project.
- f) Environmental enhancements as agreed to be constructed as part of the work.



The Preliminary Report recommendations were issued on the understanding the Downey Drain channel in Concessions 12 & 13 would be brushed by the Drainage Superintendent as a separate project before or during the work of this project.

This Final Report is prepared such that it will implement all of the recommendations of the Preliminary Report as just described.

With respect to the optional route and swale widths, this Final Report recommends that the 750m route be followed and that the swath width be 9m.

The cost estimate of the project in the Preliminary Report was \$350,000 and this cost is now \$357,000 in this Final Report.

The cost is to be distributed/assessed such that approximately \$127,000± is assessed to/be paid by the roads of the Township of Springwater, \$35,000± is assessed to the two provincial agencies involved with wetland ownerships in Concessions 11 & 12, \$27,000± is assessed to the roads of the County of Simcoe, \$3,500± is assessed to Highway 26, and the remaining \$165,000± is assessed to the adjusted 1298 hectares of lands (excluding roads) in the watershed.

The expected approximate cost per each hectare of land is thus \$127/ha± (\$51/acre±).

Properties which are considered to be “residents” will have one half of this assessment paid by the Township. Those residents who are owners of agricultural properties that have the Farm Tax Rate will be also eligible for a one-third grant on the share not paid by the Township.

Residents’ net costs could therefore be \$25±/acre if not an eligible farm, or \$17±/ac if an eligible farm.

A Schedule C which is a separate attachment shows the estimated net billing to each property and road if the project’s actual final cost was the same as the estimated cost and after eligible deductions as listed are made.

There will be 5 years of monitoring work to be undertaken and there will be separate billings for such in each year. Estimated monitoring costs are \$6,200 per year and will be billed to the affected lands and roads using the same proportioning of the \$357,700 initial cost. There will be no municipal contributions but there will be grant eligibility. The extent of monitoring could vary with final NVCA input but every effort will be made to not increase the total costs.



This Final Report contains, amongst other sections, a section regarding:

- Future maintenance provisions,
- the Engineer's Report on no adverse flooding
- Agency approvals
- What If's
- Grants
- Proceedings

Drawings are included to show and describe the work proposed.

Specifications are also included to direct the Contractor in performance of the work.

Sole sourcing of a Contractor is recommended to expedite the tendering period in hopes of Winter 2021/2022 construction.

The work has to be done in a winter period.

To meet the 2021/2022 construction period and to avoid having to delay for a full year, appeals, if any, and final agency approvals will have to be addressed/resolved expeditiously.

2.0 BACKGROUND

This Final Report follows the virtual Consideration of a Preliminary Report on August 4, 2021.

The Preliminary Report was dated July 21, 2021 and recommended that a needed improvement to the Swaley Drain's existing outlet be constructed by extending¹ the existing outlet downstream further into the Minesing Wetlands, so as to lower the level of the wetland waters that sit year round in the Swaley Drain channel in Concessions 9 & 10.

After consideration of the Preliminary Report, Council directed that the Engineer (K. Smart, P.Eng. of K. Smart Associates Limited (KSAL)) prepare a Final Report based on the Preliminary Report.

¹ The words "extending", "extended" and "extension" are used in various locations in this Report to describe the work to be done downstream of the existing end of the Drain. However, the words "rerouted" or "altered" (and equivalents) should really be used since the Swaley Drain historically existed at least as far downstream as proposed by the work in this report.

Council asked during the Consideration meeting that the Engineer give considerations to ensuring the new swath through the wetlands be close to 10m wide.

Council also requested during the Consideration meeting that every effort be made in preparing the Final Report so that construction could occur in the early portion of the upcoming winter.

The Preliminary Report that was filed is available as a link to this Final Report and is also available for review on the Township of Springwater website www.springwater.ca/swaleydrain, or can be made available to anyone requesting such by contacting the Township.

The Preliminary Report describes the Swaley Drain and its history, the problem(s), the Scoping Report (SR) prepared in advance, the Natural Environment Report (NER), the numerous interactions with the Nottawasaga Valley Conservation Authority (NVCA), the work done for the Preliminary Report and then listed the recommended work and other considerations to be given.

The Preliminary Report recommended in more detail that:

- the Swaley Drain be extended either 950m along its historic route, or 750m along the diagonal route previously initiated sometime in the 1950's/1960's, to provide 450mm of lowering of the standing waters in the existing end of the Swaley Drain²;
- the proposed Downey Drain repair pursuant to Section 74 would proceed as a Drainage Superintendent project in the same construction period;
- the Township initiate a further Drainage Superintendent Section 74 repair of the existing Swaley Drain as soon as the extension work was complete; and
- a monitoring plan of the new work be set out by the Final Report.

² The studies leading up to the Preliminary Report initially described that, along either route, a 10m swath should be cleared of wetland vegetation with a shallow channel then constructed at the floor of the cleared wetland waters. The Preliminary Report then said that the width of the swath and the base channel could be reduced to as low as 6m. The Preliminary Report also said that input at the Consideration meeting re the width of the swath could be made, and that the Engineer would have to make the final decision re swath and base channel width.

3.0 AUTHORITY FOR THIS REPORT

This Swaley Drain project was initiated in accordance with Section 78 of the Drainage Act. A Preliminary Report was requested to be prepared in advance in accordance with Section 10 of the Act.

Section 78 of the Drainage Act authorizes various projects including those necessary to:

- Change the course of an existing drainage works
- Make a new outlet for the whole or any part of an existing drainage works
- Otherwise improve, extend to an outlet, or alter an existing drainage works

The work required to restore, in whole or in part, the historic course and outlet of the downstream portions of the Swaley Drain, where deemed most suitable, is work authorized by Section 78.

4.0 DESCRIPTION OF THE SWALEY DRAIN

The Preliminary Report sets out in detail a description of the Swaley Drain.

A summary of the description only is included here:

- The Swaley Drain consists of a Main Drain and two branch drains. All components are open channels, large enough for a minor storm runoff (desirably a municipal drain channel should serve a 2-year storm event) and deep enough for tile outlets (where not now inundated).
- The total length of the channel work is 14,000± metres (46,000'±).
- The watershed served by the Drain as reported on is 1,684± hectares (4,160± acres).
- The drain was first constructed in accordance with an 1898 Bylaw, was extended by a 1901 Bylaw, and was further extended and enlarged by a 1948 Bylaw. All of these Bylaws are available.
- All the Bylaws referred to adopted Engineer's Reports.
- There is very little other data in Township files regarding the Bylaws or Engineer's Reports at the time other than a few plans. There are no profiles or cross-sections available for any of the Bylaws or Engineering Reports.

- Based on the Bylaws and the plans that do exist, the Swaley Drain would historically/legally include a 150m (500') long cut at the River for the Muskrat Creek, a Main Drain commencing three quarters of the way across Lot 10, Concession 11 and running to the Lot 3-4 Line in Concession 8, and two branch drains, being the Binnie Branch and the Donnelly Branch in Concessions 7 and 8.

5.0 WHAT DATA WAS INCLUDED IN THE PRELIMINARY REPORT

The Preliminary Report is lengthy and contains substantial data regarding the Swaley Drain, its history, its lower end problems, what engineering and environmental studies have been made to date, what considerations were given in making recommendations, the actual recommendations and the preliminary costing.

The Preliminary Report is to be considered part of this Final Report. It may be found on Springwater Township's website.

The Table of Contents of the Preliminary Report is included below to show the data that could be referred to:

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6.0 MILESTONE EVENTS PERTAINING TO THE PRELIMINARY REPORT

The following is a chronological listing of milestone events. Much of what is listed is described in some detail in the Preliminary Report but it is deemed appropriate to include this listing of events herein.

December 2016	Request for Section 78 work submitted to Council
February 2017	Council appoints K. Smart Associates Limited/Kenn Smart, P.Eng. to act on the Section 78 request
February 2017	K. Smart advises a Scoping Study should be first done and Council retains K. Smart to prepare the Scoping Report
February to April 2017	Numerous on-site meetings with landowners and agencies held. A public meeting is conducted for all owners in the Swaley watershed in advance of finishing the Scoping Report
February 2018	Presentation made by K. Smart to NVCA prior to finishing Scoping Report
March 2018	Scoping Study is finished and submitted. It recommends that the Engineer be appointed pursuant to Section 78 but that a Preliminary Report first be prepared and that it include an Environmental Study.
April 2018	Council appoints KSAL (Kenn Smart) to do a Preliminary Report
April 2018	NVCA Staff Report issued as a follow up to presentation at February 2018 Board Meeting.

	This confirmed an Environmental Study was required as part of the Preliminary Report work.
April 2018	RiverStone Environmental Solutions are retained to do an Environmental Study
May 2020	The environmental study entitled the Natural Environment Report (NER) is submitted to NVCA, to the Township and to KSAL
April 2018 to May 2020	K. Smart conducts additional field work, updates Swaley watershed, obtains experienced contractor input, works on preparing the Preliminary Report
July 2020	Initial NVCA Staff Report comments on NER
September 2020	KSAL responds to NVCA Staff Report
November 2020	Further NVCA Staff Report comments re Engineer's comments
February 2021	KSAL responds to further NVCA
March 2021	NVCA Staff respond to KSAL's November 2020 response
April 2021	Virtual Meeting with NVCA Staff, the Township and the Engineer
May 2021	Further presentation by Engineer to NVCA Board. The Board directs staff to work with the Township and Engineer for up to a 950m long extension and to work towards winter of 2021/2022 work.
June 2021	Virtual on-site meeting conducted with owners in area requiring drainage
June 2021	Preliminary Report completed and submitted
July 2021	Consideration of Preliminary Report and Council directs Engineer to prepare Final Report

7.0 WORK DONE SINCE THE PRELIMINARY REPORT CONSIDERATION

1. Further communication occurred between the NVCA, the Township, RiverStone Environmental Solutions (RSES), and the Engineer with respect to the environmental enhancements and monitoring program to provide for in the Final Report.

The results are separately described within the “Recommended Work” section and the attached Specifications.

2. Communication occurred with DFO, MECP and MNDMNR³ re agency concerns/approvals.
2. Staff of the Engineer conducted further survey work along the existing Swaley Drain from its current outlet upstream to Vespra Valley Road. The profiles and cross-sections included within this Report show the results. They are enclosed for information only, since no work is proposed in the existing drain by this Report.
3. Further discussions occurred with respect to construction. Access and staging, the provision of monitoring control points, tendering and timing were amongst the items discussed. The “Recommended Work” section and Specifications reflect the results.
4. This Report including Drawings and Specifications was then prepared.

8.0 MONITORING OF ANY PROJECT ONCE COMPLETED

There has been communication between NVCA and RSES and K. Smart Associates with respect to the need for and the components of a monitoring program. This dialogue initiated in 2020 and has been documented in different sections of the Preliminary Report that was submitted.

The proposal of this Engineer in this Final Report with respect to monitoring is described in detail here.

³ DFO = Department of Fisheries and Oceans, MECP = Ministry of Environment, Conservation and Parks, MNDMNR³ = Ministry of Northern Development, Mines, Natural Resources and Forestry.

a) Re Monitoring of Water Levels

Fixed points are to be established and geodetic elevations are to be set on those points. Then measurements are to be made manually from these points. (The Engineer with Township assistance has been monitoring Swaley levels at various locations in similar fashion already, since 2017.)

A table of past monitoring levels exists and can be issued.

In the table of past water levels downstream, the Bett's Survey of 2013 plus the Engineer's survey of 2019 are included. Bett's survey has data to show wetland levels 750m downstream on the diagonal and these agree closely to that of the Engineer.

With respect to monitoring water levels in the new downstream extension and in the downstream 900m± of the existing drain (downstream of Gilroy tile outlet) the recommendation is to have the excavator drive five steel pipes vertically at the edge of the channel and then to have the Engineer's assistants set geodetic elevations on such, attach staff gauges to each and then monitor (using kayak or equal) water levels. Each pipe will be driven/pushed to depth. Each year the geodetic elevation of each post will be checked if any concern exists that the pipe may have been altered.

With respect to monitoring water levels upstream of the Gilroy tile outlet, the recommended fixed points to be used on the Swaley Drain are/will be

- a) Top of Gilroy tile outlet
- b) Culvert across George Johnston Road
- c) Haight tile outlet
- d) Easterly Camack tile outlet
- e) Culvert across Vespra Valley Road

Monitoring would be done twice per year: at a spring/early summer and at a late summer or autumn time, and for a period of five years.

A table of findings would be prepared and updated by the Engineer's environmental sub-consultant (RSES) using the Engineer's data.

All water levels and bottoms would be recorded by Township personnel with KSAL's assistance.

Should there be a wish by NVCA or others to monitor water levels, etc. more frequently and for more years at some of the tile outlet fixed points and to monitor water levels, etc. less frequently at the remaining locations, this request can be considered. The annual cost comparison would have to be made and as well a total cost analysis may be necessary. It is possible that if the fixed tile outlets only are monitored, such could be more easily done by Township staff and perhaps annual and overall costs of monitoring may not change.

The Engineer considered but does not wish to initiate automatic water level recording (but if others wish to do so at their cost, such would augment the fixed point water level measurements).

Manual methods will be more quickly initiated and will be more easily tabulated.

On-site visits for sediment and bottom levels will be necessary in any case and could not be provided by automatic recorders.

b) Re Sediment Levels

At the time of each visit to secure water level readings, channel bottom/sediment elevations would be secured by measuring from water level down.

This data would be entered into the table/log as well.

c) Re Vegetation Monitoring (Terrestrial Ecological and Aquatic Ecological)

This would be performed by RiverStone using a kayak or equal. It would also be done twice per year. Changes in the vegetation community would be reviewed in terms of species presence and coverage, with an emphasis on changes to invasive species. Drone photography will also be considered to further document conditions. Monitoring locations could again be tied to the pipes placed for water level monitoring. Base data would be noted and established at the time of construction.

d) Further Details

As described, the recommendation is to install monitoring pipes in the new extension and in the existing Swaley Drain. In speaking further to a contractor who may be able to install the work, it was suggested that steel pipe materials are

preferable to wood post materials. Pipes would be more easily placed and would be more durable.

This document therefore recommends that 75mm diameter steel pipes be placed for monitoring purposes. These pipes will be driven a minimum of 1.5m below the channel bottom and would be of such length that they would protrude a minimum of 2m above normal water levels in the wetlands and in the Swaley channel.

It is proposed that these pipes be placed at three locations in the extension: one at the downstream end, one at the mid-point, and then one closer to the junction with the existing Swaley Drain. It is proposed that two further pipes be placed in the existing Swaley channel – one mid length between the extension and the Gilroy tile outlet, and the other at the Gilroy tile outlet.

It is not necessary to place further pipes upstream since monitoring will be possible using the noted existing culverts and tile outlets. Geodetic elevations will be surveyed for each point.

What will happen in the first year, that is the year of construction, is that the pipes will be placed, staff gauges will be secured to the pipes, and then the initial readings of water levels and channel/wetland bottoms would be secured. Also, using the fixed existing features, water levels and bottom elevations would be secured at the five upstream locations.

The fixed points themselves would also be resurveyed if necessary and this data would be entered.

Also in the first year, the terrestrial and aquatic monitoring by RSES would occur along the route of the new extension.

Photography would also be obtained at that time.

After all of the data is secured, the first Report of monitoring would be prepared by RiverStone Environmental Solutions and would be circulated.

The costs of doing the initial work is expected to be in the magnitude of \$7,500. This cost is included in the total cost estimate of this Final Report. This cost would then be billed out as part of the Phase 1 cost.

For the next five years, similar work would be undertaken. It would be proposed that all monitoring locations be visited twice annually. Water levels would be obtained, bottom elevations would be obtained, and again the terrestrial and aquatic monitoring and photography would be obtained.

The costs for each of the ensuing 5 years of monitoring is expected to be in the magnitude of \$6,000 and this cost would be assessed out similar to a maintenance or repair item to the watershed using Schedule B - Schedule of Assessments for Maintenance in this Final Report.

As stated earlier, if there is a request to modify the monitoring (e.g. more frequently and for more years at some locations, and less frequently elsewhere), the impacts on the annual and total costs of monitoring will have to be reconsidered but every effort will be made to not change total costs.

Should in any year the cost of monitoring be lower than estimated, the Municipality would have the option of accumulating monitoring costs to a total amount of \$5,000 before making a billing to the watershed, as per Section 75(3) of the Drainage Act .

9.0 WHAT IS THE RECOMMENDED WORK

9.1 General

The Recommended Work is to be broken down into two phases:

- Phase 1
Phase 1 will involve the access and staging, the new downstream extension construction as to be described, all engineering and studies including work for the Preliminary and Final Reports, the Natural Environment Report and all engineering and studies during construction, the allowances payments, the full administration costs, and the first year of monitoring.

Phase 1 is to be constructed and completed in the early winter when frost is in the ground.

Upon completion of Phase 1:

- The Actual Cost Bylaw will be prepared
- All costs incurred will be assessed prorata to Schedule A

- Billings will then be calculated based on the data in Schedule C using actual costs and using a prorating of Schedule A assessments. Schedule C shows how the Township contribution, the provincial grant and the applicable land allowances apply to some assessments to arrive at the actual billings.
- Sole Sourcing
In order to attempt to have the work constructed in the winter period of 2021/2022, it is recommended that the Municipality sole source the construction of Phase 1 of this project to a recommended contractor with past successful and relevant experience with barge work on municipal drains.
- Phase 2
Phase 2 will involve the annual monitoring to be done. Monitoring is to be done for a period of five (5) years after the initial monitoring at the end of construction. Costs for monitoring will be treated as maintenance costs and will be billed annually, as per Section 75(3) of the Drainage Act.

All monitoring costs will be assessed and billed out in accordance with Schedule B, the Schedule for Future Maintenance. This will be similar to the process for billing calculations done for Phase 1 billings except that Springwater will not be absorbing the residents' share of any of these costs, and there will be no land allowances. The provincial grant for the eligible parties will be applied for and credited to eligible assessments as done in Phase 1.

9.2 Construction Work Recommended in Phase 1

- Access and Staging
It is recommended that access be made off of George Johnston Road along the Gilroy/Doner lane to the gravel parking area in the southwest corner of the yard. At this location, all equipment and any materials will be unloaded from the flatbeds used for transporting and then any assembly (primarily for the barge) may occur.

Then the excavator (probably only one but two if the Contractor so decides) will skid the barge (either assembled or in components) southerly across the field areas of the Gilroy/Doner property to and then westerly and parallel to the spoil berm existing along the north side of the Swaley Drain. At a location upstream of the start of the extension, the access will cross into the

Parker, NVCA and MNDMNR properties as the route along the north side spoil berm is followed.

Any materials brought in and required for environmental enhancements and any “mats” needed for travel by the excavator where the spoil berm may be too soft or unfrozen will be similarly skidded along the access route.

On the Gilroy property where it is parallel to the channel, the access will parallel the most recent and narrow spoil berm but will be northerly and adjacent to it on what is believed to be the wider original levelled spoil. On the Parker, NVCA and MNDMNR properties, the access will be along the wide and only spoil berm that exists.

- Constructing the new Downstream Extension (750m)

Firstly, it should be pointed out that the decision has been made by this Engineer to recommend the 750m diagonal downstream extension rather than the 950m downstream extension (that would follow historic routes more closely).

The recommendation re the 750m route has been made considering that:

- a) The disturbance to the wetlands is less
- b) The channel already exists along a diagonal route and 150m± of it would become redundant if the 950m length were pursued.
- c) Construction would be facilitated by just enlarging the existing downstream part of the channel and launching the barge there.
- d) It was felt that both landowners (NVCA and MNDMNR) recognized the advantage of following the diagonal route to minimize wetland disturbance.

It is recommended that at a location on the existing Swaley Drain which is 50m north of the Lot 9/10 Line in Concession 11, the excavator constructs the initial part of the new channel work which will be the initial barge launching pool. This pool area will be excavated to a depth that will ensure there is 800 to 900mm of water in the channel after the lowering occurs, and also to a depth that can provide for some accumulation of possible future upstream sediments. This bottom elevation of the pool will have to be

approximately 1500mm below the existing water level for the barge (so that there is 1000mm after lowering) but will be constructed 200mm even deeper (for additional sediment collection and habitat diversity).

The width used for the barge path and thus the vegetation clearing width is now being recommended to be 9m width. This is greater than the 6m minimum width and lesser than the 10m maximum width considered by the Preliminary Report. The decision to use 9m is based on the fact the desirable barge will be 30 feet and thus 9m wide (a 9m wide barge will not need more than 9m of clearing to travel). Also using a 9m barge allows a larger excavator to be used and a larger excavator can cast removed materials more widely and more thinly than a small excavator sitting on a 6m barge. This will reduce the possibility of future sloughing/running back in. Also constructing a channel at the base of a 9m swath will give the channel a greater resistance to vegetation regrowth than a channel in a 6m swath, and thus help to further reduce the frequency of maintenance.

The barge will be then moved into the new pool area (and assembled if it is skidded in sections) and the excavator will then move onto the barge.

From this point the barge and excavator will work downstream along the new route. GPS methods with the Engineer's assistance will be used to ensure the barge travels along the recommended route.

The excavator and barge will move downstream primarily just removing the wetland vegetation in the 9± metre path of the barge. All materials will be cast equally on each side of the barge. A 3m± wide buffer is to be provided on each side of the barge path where no materials are to be cast.

If any of the 500mm± deep channel at the base of the wetlands downstream of the launching pool has to be excavated then in areas to provide sufficient water depth for the barge on its downstream movement, such will occur as the barge moves downstream.

Once the barge reaches the end point of the 750m work length, the barge will reverse direction and return to its starting point. As it returns, it will then excavate the 500mm deep channel required at the floor of the wetlands area.

All materials are to be cast equally on each side of the barge path, and as thinly as possible, again maintaining the 3m buffer width, all as done for the

excavation of the vegetation as the barge moved out. It is expected what is called a “long reach excavator” will work from the barge and it will have the capability of distributing the materials over a 6m width away from the buffer.

Should it be found at the launching pool area, where extra depths are required, that the soil material excavated contains a significant amount of clay and/or silt suitable for constructing a new spoil berm for future maintenance (like what exists along the existing Swaley), the Engineer may direct that all excavated materials alongside the launching area be distributed in a 6m width adjacent to the buffer so such may be used for future maintenance access, and as a continuation of the existing spoil berm access.

As part of the work for the monitoring program, the excavator on the barge is to place three pipes that can be used for monitoring as it returns to its starting point.

These pipes are to be 6m long, 75mm diameter steel pipes driven into the firm bottom and to such depth that 2m remains above the lowered wetlands level. If the soils are too firm to allow full depth placement, cutting may be necessary.

Once the barge returns, the launching process will be reversed and all equipment and materials will travel and/or be skidded back to the unloading area on the gravel portion of the Gilroy/Doner property.

As the equipment returns to the Gilroy/Doner yard, two further monitoring pipes are to be driven along the water edge of the existing Swaley Drain with similar depths and height.

There the equipment will be reloaded onto flatbeds and will return along the gravel lane to George Johnston Road.

In the spring/early summer when conditions are appropriate, the Township will be asked to assist in restoring any damaged areas on the Gilroy/Doner property and on the Swaley Drain spoil berm used for access.

- *Environmental Enhancements in Phase 1*

At the time of preparing this Final Report, discussions between NVCA, RSES and this Engineer have not yet led to the agreed plan for enhancement. This

Report's cost estimate carries a "budget" of \$20,000 for any enhancements agreed to be placed/created.

The final plan for enhancements will have to be agreed to prior to application for agency permits and prior to the tendering process.

- **Monitoring Work in Phase 1**

During the preparation of the Preliminary Report and this Final Report, base elevations were obtained at most monitoring locations to be used along, and upstream of the start of, the extension work.

Upon completion of the barge work and the driving of the monitoring pipes, the initial monitoring work is to be undertaken.

The work will then involve the securing of staff gauges to the monitoring pipes at all five locations. GPS elevations of each pipe will then be secured. Then water levels are to be recorded from the staff gauges. Then channel bottoms are to be measured below the water level.

At the same time, RiverStone Environmental Solutions (RSES) are to attend on site and note and photograph the terrestrial and aquatic vegetation existing at each monitoring pipe location.

Following this, the initial monitoring report is to be prepared by RSES. The report is to create a table that can be filled out at each following monitoring visit.

The data that is to be entered for the base data in the monitoring report will include the elevations secured by the Engineer prior to construction at all the monitoring locations, and the data secured at the five monitoring pipes shortly after construction. The baseline vegetation data secured by RSES will also be included in the table. The Engineer will also supply water level and bottom elevation data secured prior to and during the Preliminary Report at the end of the extension and will ensure this data is also included on the monitoring table.

Monitoring work has been described in more detail in **Section 8.0** of this Report.

9.3 Work Recommended in Phase 2

- General

The only work to be done in Phase 2 is the remaining monitoring work.

The monitoring work will be done for a period of 5 years, not including the monitoring set up and work in the construction year which has been described as Phase 1 work.

Monitoring is to be done twice in each year: in early summer/spring and then again in late summer/autumn conditions.

Each year, the costs of monitoring may be billed out in that year.

All billings for monitoring are to be in proportion to the assessments in Schedule B, the Schedule for Future Maintenance.

Monitoring work is described in more detail in Section 8.0 of this Report.

As noted in Section 8.0, changes to the monitoring plan as described may occur.

- Specifics

At each of the five monitoring pipe locations, water levels and channel bottom elevations are to be secured. Also at each of the five other monitoring locations, which are namely, the Gilroy tile outlet, the George Johnson Road (GJR) culvert, the tile outlet in the channel just east of GJR, the eastern Camack tile outlet, and the Vespra Valley Road (VVR) culvert, channel bottoms and water levels are to be secured (by measuring from the fixed points). Photography and visual observance of vegetation at the five monitoring pipes is to be secured. Then the Monitoring Report initially prepared at the end of construction is to be updated by RSES and submitted for review.

10.0 COST ESTIMATES OF PHASE 1 AND PHASE 2 WORK

10.1 Drainage Report Cost Estimates in General

Any cost estimate done for a Drainage Act project customarily consists of:

- the fixed cost allowances/payments for right-of-way and land damages necessary to be made to owners of lands having work on their properties,

- the construction cost estimate including labour, materials and equipment costs and including any contingency allowance(s),
- the engineering cost estimate to prepare and process all reports including any sub-consultant report(s) and any Preliminary Report,
- an estimate of the construction supervision and project administration services (normally by the Engineer)
- an estimate of the eligible municipal administration costs which can include allowances for financing, approvals, applications and miscellaneous costs, and which also includes an HST allowance (1.76% on drains as opposed to normal 13%).
- On this project, cost estimates are necessary for the Phase 1 work and also for the annual work in Phase 2.

Appendix 1 to this Final Report has a greater description of the components of a cost estimate included in a Drainage Act Engineering Report.

10.2 Cost Estimate for the Phase 1 Work Recommended by this Final Report

10.2.1 General

This is the cost estimate of the 750m± length of construction downstream of the current Swaley Drain lower end and as described. This cost includes all work to complete the recommended work in Phase 1.

This Final Report Phase 1 cost estimate is very similar to that in the Preliminary Report.

With respect to allowances, such will have to recognize access will be made through the Gilroy, Parker, NVCA and MNDMNR properties and that the 750m± of construction work will occur on the MNDMNR property.

With respect to the construction cost estimate, work by “barge” methods will have to be provided for.

With respect to the engineering cost estimate, all costs set out in this Final Report will be the costs to date and the best estimates of the further agency approval work by the sub-consultant, the best estimate of the engineering work during the tendering, construction and project finalization periods, and

the best estimate of engineering and environmental services during the initial monitoring at the end of construction.

With respect to the administration cost estimate, the further work expected to be involved with environmental approvals will have to be included, together with the estimate for the other described components.

The cost estimate for the recommended work of Phase 1 is therefore set out in more detail as follows:

10.2.2 Allowances

i) General

Sections 29 to 33 of the Drainage Act provide for allowances (compensation) to be made to landowners affected by proposed drain construction. On this project, there are to be only allowances for Section 29 Right-of-Way (R-O-W) and Section 30 (Damages to lands, crops, etc.).

ii) Section 29 – Right of Way (ROW)

Section 29 of the Drainage Act can provide for the payment of allowances to landowners for lands taken to accommodate expanded or new drainage work features on their properties. As well, Section 29 can provide for payment of allowances to compensate private lands to be used for construction and maintenance to and along the drainage works, which is also called a “right-of-way” to and alongside the drainage works for construction and maintenance purposes. Lands used for access are included in the right-of-way calculations.

The calculation of allowances for land taken in the wetlands area in this Report is based on a current land value of \$2,000 per hectare (\$800/ac).

For each 1m of the project with a width of 9m, the allowance would therefore be \$1.80. For the length used (750m) the allowance would be \$1,350.

The calculation of allowances for lands used or ROW alongside the new channel in the wetlands is based on the determination of the principal (allowance) that should be given now, that will generate sufficient interest annually that when accumulated would compensate for the damages resulting from the drain being in place when future maintenance is done. The frequency of entry just for vegetation control is estimated at 10 years.

The width damaged is based on a 20m overall width including disposal area and buffer areas (although buffer areas would not be used). A damage allowance of \$500/ha was used. An interest rate of 3% was used in the calculation.

This would thus generate a rate for ROW at \$3.30± per metre of drain.

As an example of how this applies, for each one (1) lineal metre of maintenance at the 10 year interval, and if a 20m width were affected by movement and disposal, the damages could be: $1 \times 20 \times 500/10,000 = \$1/m$

The allowances given should be such that each year the interest would give \$0.10/m and in 10 years would accumulate to \$1/m. The principal at 3% would thus be $0.1 / 0.03 = \$3.33/m$.

For this 750m length, the allowance for ROW would therefore be \$2,500±.

For the Gilroy/Doner property to be used for access, the ROW allowance given is firstly \$1,500 based on \$300/year for each of the 5 years of monitoring work where a pickup truck or equivalent is needed for access. Then and in addition, based on equipment⁴ entering every 10 years, and based on damages of \$500 every 10 years (one half of the initial Section 30 amount), a principal amount of \$2,000 at 3% would generate at least the \$500 every 10 years. This would mean the ROW allowance to this property should be $\$1,500 + \$2,000 = \$3,500$.

For the 50 to 250m long access on the old spoil berm also needed on the Parker (200m), NVCA (250m) and MNDMNRF (100m) properties every 10 years, the damage each time could be \$15 to \$60 maximum (based on 6m used at \$250/ha) and the minimum principal needed at 3% would be \$50 to \$140 if interest is accumulated each year for 10 years. The amounts used were \$50 minimum to MNDMNRF, and \$150 minimum to NVCA and Parker.

iii) Section 30 (Damages)

Section 30 of the Drainage Act provides for the payment of allowances to landowners where lands of landowners within the working area/right of way are impacted by the construction of the drain. These allowances compensate

⁴ Equipment would be smaller in years 10, 20 and 30 for vegetation removal/harvesting and may be larger equipment in year 40 for some barge work.

the owner for damages caused by the initial construction of the drainage work (eg. damages caused by the construction equipment moving within the working area and by the placement of any excavated materials within a working area). Section 30 allowances are also made for land and crop damages along access and right-of-way (ROW) routes during construction where justified.

Section 30 (Damages) allowances to wetlands and farms on this project are provided in accordance with the rates as shown in the table below.

Land Use	Land Damages
Wetlands	\$500/ha (\$200/ac)
Spoil berms in wetlands	\$250/ha (\$100/ac)
Farm lands (with crops)	\$2,400/ha (\$1,000/ac)
Farm lands (after crops)	\$750/ha (\$300/ac)
Plus lump sums for use of lane and parking areas	

The Section 30 allowances for the new channel on any wetlands property affected would be based on a maximum width of impact of 30m and would thus be \$1.50 per metre. The buffer strips are included in this width although they would not be damaged. Also the disposal casting width used is up to 6m on each side. The barge width used is 9m. For a 750m length, the amount would be \$1,125± and \$1,200 is used.

The Section 30 allowances on the Gilroy/Doner property for the initial construction are calculated as follows:

- Allowance for use of lane	\$ 250
- Allowance for use of parking area	250
- Allowance for travel through fields (1,000m) in winter conditions on a 6m width at \$750/ha	<u>500</u>
TOTAL:	\$ 1,000

The Section 30 allowance on the Parker property for use of the old spoil berm access over a 200m length and a 6m width at \$250/ha would be \$30 and a minimum of \$100 is used.

The Section 30 allowance on the NVCA property for use of the old spoil berm access over a 250m length using numbers as above would be \$50, and a minimum of \$100 is used.

The Section 30 allowance on the MNDMNR property for use of a 50m length of old spoil berm would be \$10 and a \$100 minimum is used.

iv) General

In accordance with Section 62(3) of the Drainage Act RSO 1990, the allowances to be paid and as shown, may be deducted from the final assessment levied. Payment to any owner for allowances would only be made when the allowance is greater than the final net assessment. The allowances are a fixed amount and are not adjusted at the conclusion of construction. Allowances can only be changed if the report is modified prior to adoption of the report by bylaw or in accordance with the paragraph in this report that deals with changing the scope of work after the bylaw is passed.

iv) Table of Allowances

The allowances payable to the owners entitled thereto on this project are therefore as follows:

Table 10.2.2-1 - Allowances

Roll No.	Owner	Section 29		Section 30	TOTAL
		Access	ROW	Damages	
005-192	W. Gilroy & B. Doner		3,500	1,000	4,500
005-195	H. & L. Parker		150	100	250
005-216	MNDMNR*	1,350	2,550	1,300	5,200
005-219	NVCA**		150	100	250
TOTAL ALLOWANCES:		1,350	6,350	2,500	10,200

* Ministry of Northern Development, Mines, Natural Resources and Forestry

** Nottawasaga Valley Conservation Authority

10.2.3 Construction Cost Estimate

The estimated cost of Labour, Equipment and Materials to construct the proposed drain is outlined in detail in Estimated Costs Summary in Table 10.2.7-1. The construction cost estimate is based on costs determined recently from an experienced and relative contractor. Provisional and/or contingency allowance amounts are included, and can be applied against additional work items that may be required due to unexpected field conditions or minor alterations to the project.



10.2.4 Engineering Cost Estimate

Engineering costs for the Report Phase Services include all survey, drafting, option preparations and evaluations, the report preparation and the virtual or live attendance at the Council meetings to consider the report and to conduct the Court of Revision.

The Construction Phase Services may include: preparing tender documents and tender call/invite, review of tenders, attending the pre-construction meeting, periodic construction inspection, assisting in GPS control of the barge, payments, assisting in set up of monitoring pipes, obtaining of initial elevations at monitoring locations, further work by the environmental sub-consultant, final inspection, post-construction follow-up, the final cost analysis, providing assistance to the Municipality during report processing if such is required, and the preparation and submitting of the grant application.

The work by the Environmental Sub-consultant during the construction phase may include initial monitoring of vegetation and other features and the creation of the first monitoring report.

The cost shown for the Report phase work is usually not altered at the conclusion of a project unless the report is referred back or the report is appealed to an appeal body such as the Drainage Tribunal, either of which would result in additional costs. The amount shown for meetings also is an estimate. The final cost for meetings will be based on the actual time required for meetings.

The estimate shown for Construction phase services is based on past experience and assumes good construction conditions and a Contractor who completes the construction in an efficient manner. The estimate also assumes a reasonable assistance being required by the Engineer to assist the Municipality and to attend to post construction finalization. On this project, the estimates related to monitoring work assume a reasonable degree of input, cooperation and assistance from NVCA and the assistance of the Township in the monitoring work. The final cost for the construction phase services will be for the actual time spent during and following drain construction.

Engineering costs are summarized in Table 10.2.7-1.

10.2.5 Estimate of Section 73 Administration (Other) Costs

Section 73(1) of the Drainage Act outlines that the following costs incurred by a municipality can be included in the cost of the drain: “cost of any application, reference or appeal and the cost of temporary financing.” However, Sections 73(2) and 73(3) of the Act state that the cost of services provided by municipal staff and Council to carry out the Act process can not form part of the final cost of the drain.

An estimate of Administration Costs is included to cover the above referenced items from Section 73(1) and primarily provides for interest charges on financing the project until it is completed.

This administration cost estimate may not be adequate to cover legal or engineering costs incurred by or assessed to the municipality should the project be appealed beyond the Court of Revision though such costs normally form part of the final drain cost.

The policy for Provincial Grant purposes indicates that municipal costs for photo-copying and mailing required to carry out the required procedures under the Act can be included in the drain cost estimate.

The estimate for Section 73 costs is included in Table 10.2.7-1.

10.2.6 Harmonized Sales Tax

The Harmonized Sales Tax (HST) will apply to most costs on this project. The Municipality is eligible for a significant refund on HST paid. The resulting net 1.76% HST is summarized in Table 10.2.7-1.

10.2.7 Estimated Cost Summary

The following is therefore the estimated cost summary for all work in Phase 1.

Table 10.2.7-1 – Estimated Cost Summary – Phase 1

Description								Total Cost
ALLOWANCES (From Table 10.2.2-1) (Note: These are “fixed” allowances and therefore are not “estimates”):								10,200
Item	Stations	ISP No.	Description	Unit	Quantity	Unit Price	Cost	
CONSTRUCTION COST ESTIMATE								
i) Main Channel Work								
1		1	Mobilization, demobilization and other general work	L.S.	1	20,000	20,000	
2	000 to 175	2.07	Type I channel work including removal of wetland vegetation over 9m width, excavation of a deep channel with an average depth of 1000 to 1200mm, casting of materials on each side of new channel ⁵ , use of GPS control methods, implementation of required environmental measures	m	175	100	17,500	
3	175 to 750	2.08	Type II channel work including removal of wetland vegetation over 9m width, excavation of 500mm deep channel at floor of wetlands, casting of materials on each side of new channel, use of GPS control methods, implementation of required environmental measures	m	575	60	34,500	
4	Along Access Route	3.0	Supply and placement of 6m long pipes for monitoring purposes along edge of water in existing channel	each	2	750	1,500	
5	000 to 950	3.0	Supply and placement of 6m long pipes/posts for monitoring purposes along edge of barge path in wetlands	each	3	750	2,250	
Sub Total Part i)							75,750	
ii) Provisional Items								
B1	GSP 45.0	4.0	Shot rock riprap	m ²	10	100	1,000	

⁵ Or all on one side to create a maintenance berm if so directed.



Description								Total Cost
B2		5.0	Straw bale dams	each	2	200	400	
B3		6.0	19mm Crusher Stone	tonne	10	30	300	
B4	GSP 22.0	7.0	Granular A	tonne	10	30	300	
B5		8.0	Silt Fences	m	50	10	500	
Sub Total Part ii)							2,500	
iii) Contingency Items								
C1		9.0	Contingency allowance for environmental offsetting measures	L.S.	1	20,000	20,000	
C2			Lump sum contingency allowance	L.S.	1	5,000	5,000	
Sub Total Part iii)							25,000	
TOTAL CONSTRUCTION COST ESTIMATE (Total Parts i to iii):							103,250	103,250
ENGINEERING COSTS ESTIMATE:								
<u>A) Prior to Construction (Studies)</u>								
Preliminary Report (excl. Natural Environment Report)							62,500	
Natural Environment Report							66,300	
Final Report							42,000	
<u>B) During Construction</u>								
Monitoring during construction							7,500	
Supervision & Final Inspection							50,000	
TOTAL ENGINEERING COSTS ESTIMATE:							228,300	\$228,300
SECTION 73 (OTHER) COSTS ESTIMATE (ADMINISTRATION):								
a) Prior to Construction Administration Allowance							5,000	
b) During Construction Administration Allowance							4,950	
TOTAL SECTION 73 (OTHER) COSTS ESTIMATE:							9,950	\$9,950
HST								
a) Prior to Construction HST allowance (1.76%)							3,050	
b) During Construction HST allowance (1.76%)							2,950	
TOTAL HST ESTIMATE:							6,000	\$ 6,000
TOTAL ESTIMATED COST, EXCLUSIVE OF ALLOWANCES:							\$347,500	
TOTAL ESTIMATE WITH ALLOWANCES:							\$357,700	

10.3 Cost Estimate for the Phase 2 Work Recommended by this Final Report

10.3.1 Cost Estimate for Phase 2 Work

This is the cost estimate for the annual monitoring and reporting that is to be done each year for a total of five years after construction is complete. It does not include the monitoring work completed in Phase 1.



This Final Report cost estimate for Phase 2 is very similar to that in the Preliminary Report.

The monitoring work in Phase 2 may be varied from what is described in **Section 8.0** but every effort will be made to keep the total costs of monitoring to the estimate shown herein.

With respect to allowances, there will be no further allowances since an allowance for ROW is paid in Phase 1.

With respect to the construction cost estimate, there will be no construction.

With respect to the engineering cost estimate, the costs set out will be for Phase 2, and the best estimate of engineering and the sub-consultant's environmental services during each year of monitoring and reporting. It is anticipated the majority of the reading of the staff gauges and other points for water levels and the measuring from the water levels to the channel bottom will be done by the Township Drainage Superintendent. An allowance for annual assistance by the Engineer is the Engineer's Work Estimate.

With respect to the administration cost estimate during Phase 2, the minor work expected to be involved with environmental approvals is included, together with the estimate for the other described components.

10.3.2 Allowances

There are no allowances for Phase 2 work.

10.3.3 Construction Cost Estimate

There is no construction work in Phase 2.

10.3.4 Engineering Cost Estimate (Annual)

Engineering costs for the Phase 2 services include:

a) The Work by the Engineer (to assist the Municipality)

The surveying where and when necessary of water levels and channel bottoms at the five monitoring pipes and at the 5 upstream locations (Gilroy tile outlet, George Johnston Road, Haight tile outlet, Camack tile outlet, and Vespra Valley Road)

b) The Work by the Environmental Sub-Consultant

The photography and notation of vegetation at the five downstream monitoring pipes and the preparation and submission of an annual monitoring report summarizing the work of the Engineer and the Environmental Soils Consultant.

Engineering costs for each year are summarized in Table 10.3.7-1.

10.3.5 Estimate of Section 73 Administration (Other) Costs

An estimate of Administration Costs is included to cover any financing or application items from Section 73(1).

Section 73 costs are summarized in Table 10.3.7-1.

10.3.6 Harmonized Sales Tax

The Harmonized Sales Tax (HST) will apply to the Phase 2 costs. The Municipality is eligible for a significant refund on HST paid. The resulting net 1.76% HST for each year is included in Table 10.3.7-1.

10.3.7 Estimated Cost Summary

The following is the estimated cost summary for each year’s monitoring work.

Table 10.3.7-1 – Estimated Cost Summary – Phase 2

Description	Total Cost
ANNUAL ENGINEERING COST ESTIMATE:	
Work by Engineer Staff	2,000
Work by Environmental Sub-Consultant	4,000
TOTAL ENGINEERING COSTS ESTIMATE:	6,000
SECTION 73 (OTHER) COSTS ESTIMATE (ADMINISTRATION):	
_____	100
TOTAL SECTION 73 (OTHER) COSTS ESTIMATE:	100
HST	
_____	100
TOTAL HST ESTIMATE:	100
TOTAL ANNUAL ESTIMATED COST FOR MONITORING:	6,200



11.0 ASSESSMENTS

11.1 For Phase 1 Work

11.1.1 General

The Drainage Act requires that the total estimated cost of a Project be assessed to the affected lands and roads under the categories of Benefit (Section 22), Outlet Liability (Section 23), Injuring Liability (Section 23), Special Benefit (Section 24) and/or Special Assessment (Section 26) as applicable. On this project, only assessments for Benefit and Outlet Liability are involved.

11.1.2 Benefit Assessments

The first step in the assessment calculation is to determine the benefit assessment to the parcels that derive benefit from the drain. The definition of benefit in the Drainage Act is as follows:

“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 related to the betterment of lands, roads, buildings or other structures.”

Benefit assessments have been established as a percentage of the total project cost (50%± on this project) and are assessed on the basis the project as finally recommended maintains a minimum market value and maintains a minimum appearance of the wetlands.

11.1.3 Outlet Liability Assessments

After deducting Benefit assessments, the balance of the cost is then assessed as outlet liability on a per hectare basis to all lands and roads in the watershed.

Section 23(1) of the Drainage Act 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.”

As noted, some hectares affected are adjusted prior to calculating the outlet liability. The basis for this adjustment is 1 hectare of cleared agricultural land contributing or being able to contribute both surface and subsurface water to the drain. On this

project, areas which generate greater runoff such as roads are increased by a factor (1.5 for gravel roads and 2.0 for paved roads) and areas which generate lesser runoff such as substantial areas of woodlots (bush) are decreased by a factor of 0.5. Estimates of reductions for bush areas are approximate only and are based on aerial coverage.

11.1.4 Calculating the Benefits

11.1.4.1 Benefits to Wetlands Areas

On this project, it is deemed that by:

- a) Limiting construction to a downstream extension⁶ only of the Swaley Drain; and
- b) Eliminating any work adjacent to the River such as opening up the 150mm (30 rod) long cut through the east River bank (as constructed pursuant to an Engineer's Report in 1901), or by creating a new route to the cut or to the Downey Drain from the historic Muskrat Creek course, or by removing blockages in the River itself,

the wetlands levels will not be lowered over the majority of that part of the wetlands area bounded by the River to the west, the Downey Drain to the north, Willow Creek to the south and the farmlands to the east.

The approximate area of wetland within that perimeter could be 700± ha (see Table 11.1.4.1-1).

Indeed, the wetlands levels in the full area south of the Downey and east of the River could be lowered by up to 300mm if a new connection was made to the Downey to take advantage of the full lowering available. This lowering could eventually translate to a lowering over the full wetlands area described.

Cleaning the River and opening up the historic cut could create the same lowering.

And indeed this Report could have recommended such work in an attempt to lower water levels along the old Muskrat Creek route closer to the levels that

⁶ The word "extension" is used only in relation to the existing termination of the Swaley Drain channel (as previously noted).

existed prior to the development of the wetlands and that existed for much of the Swaley Drain since it was first constructed in 1898.

However, it is estimated that 100± ha of the noted 700± ha will have a graduated lowering with the work of this project. That indicates approximately 600 ha will not be affected (but could have if work near the River had been included). In the 100 ha the lowering will be between 150mm and 300mm in most of the area. Only in the upper part of this area near the Swaley Drain will the lowering be 450mm.

It is therefore deemed that by not lowering the full wetlands area affected, the work creates a benefit to the landowners of the wetlands. These landowners (NVCA and MNDMNRF) acquired the former farmlands to create a wetlands area. To lower water levels in the larger area owned could reduce the market value and appearance, and thus the enjoyment these provincial ownerships have of the wetlands. It is felt that by extending the Swaley Drain downstream only and by eliminating works done near the River can also be deemed a benefit since it has a reduced environmental effect compared to the effects if both study area lengths were worked on as recommended originally by the Scoping Report.

When the MPAC values of the wetland properties are considered, the impact of having the wetlands levels lowered in 600 ha of this area could be significant.

I have elected to make a special benefit of \$35,000 to this 600± ha of wetlands area which is 10%± of the possible total value of the project cost. A higher assessment could perhaps be justified but I have elected to make the assessment for the amount equal to 10%±.

There are various wetlands properties that should share in the Special Benefit as shown by Table 11.1.4.1-1. I have elected to distribute the Special Benefits 10% to MNDMNRF and 90% to NVCA based on data in the table. This means the Benefit to MNDMNRF would be \$3,500 and \$31,500 to NVCA. I have elected to show the Benefit just to two principal property parcels owned by each: for NVCA Parcel 005-219 and for MNDMNRF Parcel 005-216.

Table 11.1.4.1-1 – Table of Approximate Wetlands Areas Affected for Wetland Benefit Assessments

Roll No.	Ownership	± Ha where a Lowering Could Occur if Muskrat end only done	± Ha where a Lowering Could Occur if Swaley end only done	Difference in ± Ha (Ha to Share in Benefit)
008-008	NVCA	440		440
006-210	NVCA	40		40
005-219	NVCA	79	40	39
005-216	MNDMNR	79	60	19
005-215	NVCA	39		39
005-21502	MNDMNR	30		30
	Total:	707	100	607
	USE:	700		600

11.1.4.2 Benefit to Township of Springwater

It is my opinion that construction of the works as proposed will minimize the impact on the wetlands (as noted in **Section 11.1.4.1**) and will better maintain the appearance of the wetlands on a Township wide scale also. Thus the project as finally recommended will not significantly impact the Township’s tourism and recreational attributes associated with the wetlands, and yet will maintain the Township’s agricultural attributes and how the Township is viewed with respect to its agricultural attributes.

To evaluate the true value of the tourism, recreational and agricultural attributes of the Township would be difficult. I believe a benefit assessment to the Township in the magnitude of one-third of the project cost is a low measure of the value of maintaining the attributes described.

The Benefit is justified by establishing a project that will reduce the wetland impacts.



To enact this benefit assessment, I have elected to apply it, in total, to the roads of the Township as shown in the Assessment Schedule.

The value of this Benefit is for one-third \pm of the Estimated Costs and is set at the sum of \$118,850. I originally had the amount of \$120,000 but reduced by \$1,150 so that the total of Benefit Assessments is 50% of the estimated cost. I created a row for all Springwater roads in Schedule A and assessed the amount against the grouped roads.

11.1.4.3 Benefit to the County of Simcoe

Not unlike the deemed value to the Township by preserving the tourism and recreational aspects of the Minesing wetlands, and by preserving a significant agricultural attribute and appearance in this part of the County, it is my opinion that the County of Simcoe similarly benefits by preserving these attributes. It is my opinion the value to the County is much less than that to the Township.

It is my opinion that the benefit to the County should be approximately 25% of the amount to the Township.

The Benefit is justified by establishing a project that will reduce the wetland impacts.

I have elected to make the benefit to the County at \$25,000 and I have applied the assessment to County Road 18.

11.1.5 Special Benefit, Injuring Liability and Special Assessments

With respect to “special benefit assessments”, I believe these are normally made to traversed properties and are to be made if special features that benefit only the traversed properties, without affecting the performance of the drainage works, are included in the project. The only property traversed by the work of this Report is the wetland property owned by MNDMNR and there are no special features. (Some could argue the “benefit” assessments made by not doing a specific work (i.e. work at River) could be considered “special benefit”, but I believe the “benefit” category should be used.)

With respect to upstream properties, I view the lowering of water, that was caused by abnormal circumstances (the development of a wetlands along the historic outlet of the drain), in a channel to be an improved outlet to the watershed as would be

created if the channel were otherwise extended only for an improved outlet. I do not feel there should be benefit assessments to owners/properties other than those listed in **Section 11.1.4** since the work is restoring the outlet that was once there and that was taken away.

In other words, I view the lowering of wetlands waters in the existing channel as a works which will restore (or nearly thereto) the outlet that the Swaley Drain was to provide for its full watershed, as opposed to creating new or additional benefits to properties always traversed by the Swaley Drain.

With respect to “injuring liability” assessments (which are assessments made to relieve owners from liability for injury caused by the flow of drainage waters), I feel outlet liability assessments better represent the assessment that should be made to the upstream watershed.

With respect to “special assessments”, these are assessments that are normally made to roadways, railways, and public utilities for increased costs due to the existence of the facility.

Since there are no roadways, railways or public utilities involved, there are no special assessments.

11.1.6 Calculating the Outlet Liability Assessments

After the benefit assessments as listed above are subtracted from the total project estimate of \$357,700, a sum of \$178,850 remains. This sum is to be assessed as outlet liability against all adjusted hectares in the watershed as shown in Schedule A.

The total adjusted hectarage of lands and roads is 1,409.56 hectares and the approximate (rounded off) rate for outlet liability assessments will be the number arrived at by dividing 1409.56 into 178,850. It is approximately \$127± per hectare (\$51± per acre).

11.1.7 Schedule A – The Assessment Schedule for Construction (Phase 1)

The estimated (and final) cost of the drainage works in this report is to be assessed as shown by Schedule A, Schedule of Assessments for Construction.

In Schedule A each affected parcel of land assessed has been identified by the municipal assessment roll number at the time of the preparation of this report. For

convenience only, each parcel is also identified by the owner name(s) from the last revised assessment roll.

After construction is complete and final costs are known, the assessments for the final costs are to be prorata to the assessments for estimated costs as shown on Schedule A.

Schedule A shows the benefit assessments described and shows the individual outlet liability assessments using the mathematical rates. (The mathematical rates were “rounded off” when set out in **Section 11.1.6** above).

11.1.8 Special Provisions re Assessments to Residents within the Watershed

In 2020, the Township of Springwater enacted a resolution that in effect said the Township will absorb/pay for the residents’ share of the “study” costs of this project.

The components of the “study” costs was first described in the Preliminary Report and for this project with an estimated cost of \$357,700 is for the amount of \$178,850, or 50% of the project cost. Components of the “study” costs are:

- Preliminary report engineering	\$ 62,500
- Natural environment report costs	66,300
- Final report engineering	42,000
- Applicable administration costs	5,000
- Applicable HST on the above	<u>3,050</u>
TOTAL:	\$ 178,850

This represents 50% of the estimated cost of the project. How this affects the final assessments to be made by the Actual Cost Bylaw is shown in Schedule C based on the estimated costs.

Schedule C is a separate attachment to this report and is further discussed in **Section 11.1.10** hereto.

Schedule C has a column to show what 50% (or one half) of the assessments to the “residents” would be. Assessments to the Township, to the County, to the Province or to any agency of the province are not included. This amount to be paid by the Township will be a fixed amount like the allowances and will not be subject to the prorating of the final costs.

The provincial one-third grant available to eligible agricultural properties is to be based on the remaining assessment to the eligible “residents” after the Township contribution is deducted. This is also reflected in Schedule C, the schedule that can be used for the Actual Cost Bylaw.

11.1.9 Timing of Final Assessments of Phase 1

Final assessments are not levied until the work of Phase 1 of this project is certified complete by the Engineer. The final assessments will thus be to the owner of the identified parcel at the time the final cost is levied. Some private lands, as specifically noted, are considered agricultural lands and are believed to be taxed as farm properties, meaning they are eligible for the Farm Property Class Tax Rate (FPCTR). This also qualifies the properties as eligible for the one-third provincial grant on assessments made on Drainage Act projects. This grant scenario is discussed in a separate section hereto.

11.1.10 Schedule C – Estimated Net Assessments/Assessments of Final/Actual Project Costs

After the construction of the drain is certified complete by the Engineer the municipality will determine the total of incurred costs of Phase 1 which will be the final/actual cost of the drain. Final/actual assessments will be determined by prorating/assessing the actual cost of the drain using Schedule A. Schedule C is a separate attachment and is included for information purposes only. This schedule illustrates the prorated assessments from Schedule A and then the estimated net assessments after deducting allowances, eligible provincial grants and eligible Township contributions, if any, from the total prorated assessments of Schedule A. Schedule C will thus be of assistance when preparing the final/actual cost bylaw and grant form. Actual assessments as calculated pursuant to Schedule C will be levied to the owner of the identified parcel at the time the Actual Cost Bylaw is passed. Roll numbers are as per the Municipality's last revised assessment roll. Names are included for convenience.

A schedule like Schedule C is not to be included in a Final Report and it is thus a separate attachment to this Report

11.2 Assessments for Phase 2 Work

11.2.1 General

All assessments for Phase 2 work will be billed in the same fashion that maintenance costs are billed. **Section 12.2** below of this Report discusses in more detail the billing of maintenance costs.

12.0 MAINTENANCE

12.1 General

Section 74 of the Act requires the “Drain”, as outlined in this report, to be maintained by the Municipality.

The “Drain” as set out in this Report for future maintenance⁷ purposes shall consist of the 750m extension including the monitoring posts.

The components of this Report’s “Drain” shall be maintained using the specifications, plans and profiles as contained in this Report.

The 5 years of monitoring work by the Engineer in Phase 2 will be billed out like the billing of maintenance costs.

12.2 Proportioning Maintenance Costs to Affected Lands and Roads

The cost of maintenance to be assessed to the upstream lands and roads pro rata with the assessments in Schedule B – Schedule of Assessments for Future Maintenance.

The Schedule of Assessment for Future Maintenance (Schedule B) mirrors Schedule A. In Schedule B however, only the total assessments are shown. In addition, each assessment is shown as a percentage (%) of the total of the assessments. The percentages shown in Schedule B can be used more easily to determine the share of future maintenance to be levied to a property or road. For example, a \$1,000 drain repair/maintenance will result in a \$50 assessment to a property with a 5% maintenance assessment.

⁷ *The words “maintenance” and “maintenance work” are to be deemed to also include repair or repair work, and minor improvements or minor improvement work, all as set out in the Drainage Act.*

If just a portion of the 750m long Drain is maintained, the dollars and/or percentages shall be used without modification.

Percentages and/or amounts (values) shown for maintenance are not payable at this time; they are provided to determine the share of future maintenance cost.

Any properties eligible for the provincial grant may thus have one-third of their maintenance assessment covered by the provincial grant. It will be necessary to determine/reconfirm grant eligibility at the time of maintenance cost levy.

12.3 Specific Maintenance Provisions

Wherever, and whenever possible, maintenance occurs, the access to be used is that access set up for this construction.

A right-of-way (R-O-W) along the access route and along the 750m extension required as the working width, exists for the Municipality to maintain the drain when there is a need to do such.

The existence of a right-of-way was discussed in the Allowances section of this report. The right-of-way shall remain free of obstructions whenever maintenance requires use of it.

Advance notice to all affected landowners is to be provided and is to be given as early as possible. Damages to fields are to be minimized when used.

The drain is to be reviewed annually for the first five years (during monitoring), and thereafter should be reviewed for maintenance at a minimum of a 3-year frequency.

Excavated materials from any maintenance activity are to be disposed of by casting on each side of the 3m wide buffer strip identified by this Report (or on any new maintenance berm created if possible).

Any areas (road or field) damaged by maintenance are to be restored to conditions existing at the time or to the conditions required by this report, whichever requires the greater extent of restoration.

As is the case for all Municipal Drains, the discharge of anything but clean, unpolluted water into a drain is forbidden by other provincial legislation. Materials such as petroleum products, liquid and granular fertilizers, herbicides, insecticides, fungicides, empty containers/boxes, spoiled produce, domestic and industrial

garbage and waste, human or animal sewage, grey water sewage, scrap machinery can not be stored or placed adjacent to a drain and can not be allowed to enter a drain. Any non-compliance can be reported to the appropriate authorities.

All parties affected by the Swaley Drain (Concession 11) 2021 are encouraged to periodically inspect the drain and report any visible or suspected problems to the Township Drainage Superintendent. Repeated inspection and maintenance of the drain should allow the drain to provide a service for many years.

12.4 Future Parcel and Land use Changes

To ensure maintenance assessments remain equitable, the maintenance assessments provided in this report should be reapportioned under Section 65 of the Drainage Act if and when future severances or amalgamations occur, or if and when new lands are connected (but only with prior approval) to the Swaley Drain or if and when a land-use change occurs that can be accommodated by the existing Drain.

If a future land-use change will cause the Swaley Drain capacity to be exceeded, a report under Section 4 or 78 of the Drainage Act may be required to provide increased capacity or to otherwise address any increased runoff. Such report would be at the expense of the property requiring such Report.

13.0 WILLOW CREEK

The Willow Creek does not factor into the immediate work recommended by this Final Report.

However, this creek is a significant consideration and it is the Engineer's opinion that firstly it should remain separated from the Swaley Drain and that secondly it should be studied in the future in some detail.

Appendix 2 is devoted to the Willow Creek and recommendations are made for a study on it for the betterment of the wetlands, for the betterment of the lands adjacent to Willow Creek and for the long term protection of the Swaley Drain.

The Preliminary Report discussed and issued a recommendation re one tile outlet that exists in the Swaley Drain that serves a small acreage of lands that are actually tributary to the Willow Creek.

14.0 ENGINEER'S REPORT ON NO ADVERSE FLOODING

NVCA Staff have on several occasions requested that an Engineer's Report on Possible Adverse Flooding be prepared.

The specific wording of NVCA is repeated:

A report prepared by a professional engineer confirming that the proposed works will not result in adverse flooding impact to adjacent properties;

This section is thus the Engineer's Report on possible adverse flooding impacts. To study the hydrology component, I first of all calculated what the flows in the Swaley channel would be downstream of George Johnson Road in the existing conditions with the ponded water in the channel. I used the average channel section in the length from just downstream of the Gilroy tile outlet upstream to the Road.

The Rational Method was used to analyze the 2-year, 10-year and a 100-year storm events.

The watershed was taken from Schedule A and the adjusted area of 1,435 ha (3,550 acres) was used. The runoff coefficient used was 0.3. The time of concentration was determined to be 240 minutes (4 hours) and the rainfall intensity values for the 2-year, 10-year and 100-year events were determined to be 7.5mm, 11mm and 17.5mm respectively, using Barrie IDF curves. (Rainfall values were converted to imperial values for the calculations.)

Using these parameters, the flows were calculated as follows:

- 2-year 300± cfs (8.5± cms)
- 10-year 460± cfs (13.0± cms)
- 100-year 730± cfs (20.7± cms)

Note: I did my calculations using imperial numbers but show the metric equivalents where of value.

With respect to the hydraulics, the existing channel has been measured at this location, and at other locations also, recently and it consists on the average of approximately a 30' (9m) top width, a 20' (6m±) bottom width (at top of sediments), a 4.5' (1.4m) depth to sediment, and it sits with 2.2' (0.7m) of ponded water above the sediments. Ponded water widths would average 22' (7m±).

The available flow area is therefore based on the width of the ponded water (22'), the top of bank width (30') and the available depth of 2.2' which gives an end area of 57 ft² (5.3m²±). A channel of this dimension has the capacity using open channel charts of 100± cfs (3.7± cms), with a channel gradient of 0.05%. This would indicate that the capacity of the existing channel is limited to one third of a 2-year storm flow (300 cfs). Any event in excess of this would overflow the channel banks.

Next I examined what the channel capacity would be with the proposed extension works in place. Waters would be lowered by 18" (450mm) in the channel so that the flow area available in the channel would now be a ponded water width of 18'± (5.5m±), a top width of 30' (9m) (no change) and the flow depth would now be 3.7' (1.1m), and with the same gradient the channel capacity would increase to 200± cfs (5.7± cms) or double. This would mean that the channel would still not have the capacity for the 2-year storm event, but it would be much closer and could carry twice the flow existing. Bank overtopping would be significantly reduced.

The above calculations show that any municipal drain flooding would be reduced with the proposed works as opposed to being increased.

Next I analyzed the condition of flooding in the wetlands just downstream of the current Swaley termination. In the existing situation, whenever any flow comes down the Swaley Drain channel, it overflows its banks as the channel approaches the wetlands since the wetlands level is equal to the top of the channel banks near the existing outlet.

If the improvement as proposed is constructed, the wetlands levels will lower adjacent to the Swaley channel by 450mm (18") the same amount as the water levels in the Swaley channel are lowered. This lowering of the wetlands levels would gradually taper to a 0mm lowering at the end of the proposed extension work. However, the lowering of the wetlands will actually allow the Swaley waters additional storage in the wetlands and would therefore reduce water levels in the wetlands from the existing conditions. This would indicate there would be no increased or adverse flooding but rather a reduction in flooding levels.

Regarding the condition at the River end, initially works were considered to better connect the wetlands along the old Muskrat route either to the River or to the Downey Drain. If a connection as proposed were made, this would then create an opening to the wetlands from the River or from the Downey Drain. There then could be instances where River levels could be elevated with respect to the wetlands levels.

It would be expected that whenever any substantial runoff event would occur, the Swaley waters would be into the wetlands along the old Muskrat route and then would outlet into the River with the better outlet. This would reduce flooding in the wetlands. However, as time continued on in a major runoff event, and the flow from the small watershed of the Swaley Drain diminished, the larger flow coming down the River would increase. This would then introduce temporary flooding into the wetlands until the River levels receded again. This flooding would normally not be problematic since flood levels in the spring would be higher and these are tolerable. However, since there is no connection proposed now to the River, this hypothetical scenario would not be a consideration and any possibility of increased flooding is removed.

15.0 AGENCY APPROVALS

There are four agencies that are considered in this grouping and a discussion regarding the status of each follows.

a) NVCA

On-going dialogue has occurred with the NVCA since the start of the engineering on the Swaley Drain project. The most recent resolution of the NVCA Board in effect approved NVCA staff moving toward the issuance of a permit (Section 28 of Conservation Authorities Act (CAA)) subject to satisfactory approval by staff of 'four details' for the up to 950m± extension proposal described in the Engineer's PowerPoint presentation.

These 'four details' are:

- Detail 1. "An amended Natural Environment Report, as deemed necessary, that examines the environmental impacts and provides recommendations that ensure that the final proposed works are designed in such a manner to avoid, mitigate and where necessary offset environmental impacts to achieve no net loss to the natural heritage system;*
- Detail 2. A report prepared by a professional engineer confirming that the proposed works will not result in adverse flooding impact to adjacent properties;*
- Detail 3. Detailed construction drawings/plans outlining the extent of the works, erosion and sediment control measures, restoration of disturbed areas, and enhancement plantings and habitat creation; and,*

Detail 4. Appropriate landowner permissions and other required Regulatory review and/or approvals (e.g. MECP, MNRF and DFO).

The resolution also indicated that NVCA staff will continue to assist through ongoing discussions with Township staff, Drainage Engineer and other involved qualified professionals.

RiverStone Environmental Solutions and K. Smart Associates have been continuing to dialogue with NVCA since the above Board resolution of May 28, 2021. It is believed that with the data now in this Report, the two significant issues remaining to address prior to receiving final agency approval from NVCA relate to the agreement with respect to monitoring, and also an agreement with respect to the environmental mitigation/enhancement to be implemented.

The monitoring component has been outlined above, and will hopefully be accepted with or without revisions prior to the adoption of this report.

With respect to the mitigation/enhancements, recent dialogue between RSES and NVCA have indicated that enhancements may be possibly addressed by the budget amount/estimate of \$20,000 as shown in the cost estimate. Thoughts are that the enhancement measures could include making additional habitat for specific species, perhaps new turtle habitat. Overdigging the channel in one area has now been included in the cost estimate and this can serve also as an area of environmental enhancement.

Another possibility discussed is to apply the budget amount towards the costs of acquiring/developing new lands for additional wetland areas.

Further dialogue will occur and it is hoped that the enhancement measures/budget can be agreed to prior to the finalization of the processing of this report and then included, if necessary, in the final construction Contract Document to ensure the work will be done as agreed to.

With respect to providing an amendment to the Natural Environment Report, such is unnecessary since agreements as to what is necessary will be done as part of the Engineering and Construction documentation. Such documentation will be in place prior to permit application.

With respect to the Engineer's Report re no adverse flooding, this report is included as **Section 14.0** to this Final Report. Should NVCA require any further data, such can be discussed/resolved prior to permit application.

With respect to the required and noted construction plans, the drawings and specifications enclosed address much of what is requested. Drawings will be prepared of enhancement features once agreed to and will be submitted with permit applications.

With respect to landowner permissions and agency approvals, letters will be requested for submission from the two private landowners: Gilroy/Doner and Parker.

With respect to MNMNR as a landowner, it is possible a permit pursuant to the Public Lands Act may be necessary and it will be supplied prior to permit application if required.

See also **Section 16.0** re Property Owner Communication.

With respect to other agency approvals, see the following sub-sections.

b) Ministry of Environment, Conservation and Parks (MECP)

RSES have had dialogue with representatives of MECP with respect to Species at Risk (SAR) concerns. It appears that MECP concerns would be related to any work if undertaken at what is called the Muskrat Study Area where work would be a new channel from the River or the Downey Drain to the old Muskrat remnants either 500m to the east or south.

Since this work is not being pursued, it is apparent that MECP has no significant concerns with respect to the work. No permits or applications are necessary.

A summary email of discussions with MECP will be made available prior to permit application.

c) Department of Fisheries and Oceans (DFO)

The DFO was on-site in the month of May 2021 to classify the Swaley Drain. DFO was asked to look at the Swaley Drain with respect to the proposed extension work at the same time.

Also in the same period (June/July 2021), a Project Request for Review (PRFR) was submitted to DFO outlining the proposed work and seeking DFO's comments.

DFO has been in contact with RSES and the most recent communication has indicated DFO's response is forthcoming.

Final documentation re DFO will be submitted prior to permit application.

d) Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNR)

This Ministry at one point would have had jurisdiction with respect to Species at Risk (SAR). Indeed initial discussions and input into the Natural Environment Report were from MNRF (as it was then known). This jurisdiction is now transferred to MECP and discussions re Species at Risk are now with MECP. Therefore MNDMNR is no longer the agency to contact re SARS. However, MNDMNR still have environmental interests. Any environmental concerns of MNDMNR will also be provided as made available.

The MNDMNR has now been contacted primarily as a landowner to advise of the proposed work. **Section 16.0** discusses landowners.

16.0 PROPERTY OWNER COMMUNICATIONS

There are four property owners that will be involved by the proposed extension work. Three property owners are only involved with respect to access to the work, whereas the other one property owner is involved with the actual work itself. These property owners and communication with them are as follows:

a) Gilroy/Doner

This property will be used for the main access off of George Johnston Road. This property will be used for the small staging area and will be used as access to the old spoil berm along the channel. A portion of the old spoil berm is also on this property.

This owner is agreeable to having the property used as access.

A confirming email/letter will be submitted prior to permit application.

b) H. Parker

This property has been spoken to at various times. This property will only be used for a portion of the access. This portion would be that part of the old spoil berm along the channel for a length of approximately 200m. This property is also believed to be on-board with respect to access.

A confirming email/letter will be submitted prior to permit application.

c) NVCA

As indicated, NVCA has been communicated with since project inception and it is believed that approval of NVCA as a landowner with respect to access will not be withheld. Approximately 250m of the Swaley channel already exists on NVCA lands. The access berm on the NVCA property to be used already exists.

d) MNDMNRF

Initial discussions with MNDMNRF are described in a previous section with respect to Species at Risk approvals. The Swaley channel already exists over a length of 100m± on the MNDMNRF property (although 50m is substantially filled in). MNRF (as it was then) was also prepared to allow trial test holes/soils work to be undertaken on their property when such was considered in 2019. To date, the discussions with MNDMNRF as a landowner indicate the Ministry recognizes the advantage of following the 750m route, but may require a permit application pursuant to the Public Lands Act. The process for a Lands Act permit is not onerous.

If a permit pursuant to the Public Lands Act is required from MNDMNRF, it will be supplied prior to permit application.

17.0 PROCEEDINGS ON THIS REPORT

The Drainage Act requires that this report be made available to all assessed parties, to all road authorities and public utilities otherwise affected, and to the listed government agencies.

A Consideration date for the Report is to be established and the opportunity for public/agency input is to be created.

After hearing all input and after reviewing the Report, the Municipality is then responsible for either adopting the report as a provisional bylaw (two readings), or referring the Report back to the Engineer for more study or for stopping proceedings on the Report.

If the Report is adopted as a provisional bylaw, a procedure is outlined by the Drainage Act to create and conduct a Court of Revision to hear any appeals on assessments. The Drainage Act also has procedures for appealing other matters to specific bodies.

If there are appeals, all appeals have to be addressed before a third reading is given to the provisional bylaw.

After the third reading, the Act also requires that a further 10 day period pass before construction can start, should any other legal proceedings be initiated.

Also before construction starts, all final agency approvals have to be addressed.

18.0 “WHAT IF’S”

The Preliminary Report discussed two possible “what if” situations that could develop. It is deemed appropriate to include these with the Final Report.

a) What if Final Report is Prepared and Final Approval from an Agency is not Given?

First of all, it should be acknowledged that all best efforts will be made during the Preliminary Report and Final Report processing periods to address concerns to facilitate all final agency approvals.

However, should the situation arise where a final agency approval is withheld in spite of all best efforts and if all proponent parties (Municipality, Engineer, Environmental Sub-Consultant and Legal Advisor) believe the approval should not be withheld, and if all further believe the legal provisions of the Drainage Act can be and should be pursued to obtain the required permission to construct, this legal approach should be considered.

b) What if the Recommended Project is Constructed and the Resulting Lowering of Wetlands Levels in the Swaley Drain Channel is Found not to be Sufficient Either Initially or in the Future?

First of all, parties affected should agree now, at this Report stage, that a lowering of the wetlands levels in the Swaley Drain of 450mm±, as discussed, will be acceptable since such is the lowering to be provided.⁸

Then if at a later time wetland levels rise due to factors associated with nature and/or management of the wetlands⁹ or if landowner farming practices should identify that a greater lowering than discussed here is required, there are only two possible new work items that could be considered:

a) Firstly the possible better connection of the wetlands to the Downey Drain near the historic Muskrat Creek outlet to the River could be reconsidered. The Engineer's study has shown wetlands levels could be potentially lowered here (but only up to 300mm±) if a direct connection to the Downey Drain were made. This area was studied as part of the Report work but has not been included as part of the Recommended Work since:

i) It has been concluded an acceptable lowering can be obtained without doing such

ii) A greater potential of negative environmental impacts is introduced which could involve more costly mitigation, etc.

iii) The successfulness of this drop in wetland water levels at the Downey eventually migrating over the full wetlands area by a similar amount so that at 3 to 4 km upstream at the Swaley Drain an identical further 300mm± lowering occurs, can not be guaranteed and its timing can not be predicted.

iv) Keeping the Downey Drain channel in Concession 13 in good repair should stabilize wetlands water levels.

However, this work area could be re-examined if ever required.

⁸ Unless wetland levels change between now and construction. There has been little change since 2013 when the Betts survey was done.

⁹ The one scenario that could develop over time would be that the wetland vegetation could become more dense and cause increased "choking" of water passage across the wetlands from an east to west direction, thus causing levels to rise in the area of the proposed extension work.

b) Secondly, the “major work” option discussed by the Scoping Report in 2018 could be revisited. This work option would involve barge work similar to what is proposed by this Preliminary Report but over a further 1600m± long downstream route adjacent to the west edge of the wooded area in Lots 7, 8 and 9, Concessions 11 and 12 to connect the Swaley Drain as to be extended now directly to the Downey Drain in Lot 7, Concession 12. When this option was presented to the public and agencies in 2017/2018, the majority, of those who spoke, favoured the lesser work as discussed by the Scoping Report (500m± of work near the River and 300m± of work at the Swaley). Indeed the Scoping Report recommended that only the “lesser work” be pursued by the Engineer. Surveys by the Engineer (and by Betts, OLS in 2013) indicate there is a difference in water levels between the wetlands level where the Swaley is now proposed to be extended and the Downey Drain levels of approximately 1200mm (48”). A wetlands cleared path with a floor channel similar to what is proposed here could certainly provide more lowering but would introduce significant new environmental concerns and would no doubt require enlarging of the Downey Drain channel.

If either of these options a) or b) were to be revisited after the construction of the recommended work in this Final Report, a full new Engineering and Environmental Study process would have to be initiated. The environmental impacts and needed mitigation, enhancement or offsetting would have to be reassessed. The impacts on the Downey Drain channel would have to be studied. The cost benefits of doing the work would also have to be re-evaluated. Either or any of these issues could be prohibitive.

Certainly the “reason” for needing to pursue either option would have to be considered and weighed against environmental impacts and costs. The “reason” could also be a factor in assessing out the costs if any new project were successfully initiated. Specifically if wetland levels rise due to increased density of wetland vegetation, there would be significant reason to pursue Option b) above.

Lastly, the option of providing insufficient outlet allowances in lieu of further construction (as discussed in the Scoping Report) could be re-examined and considered like one of the options described.

19.0 GRANTS

In accordance with the provisions of Section 85 of the Drainage Act and OMAFRA's ADIP policies, a provincial grant not exceeding 1/3 (33-1/3%) may be available on the total of the assessments against privately owned parcels of land which are used for agricultural purposes and are eligible for the Farm Property Class Tax Rate (F.P.C.T.R.). Section 88 of the Drainage Act directs the Township to make application for this possible grant upon certification of completion of the drain provided for in this report. The Township will then apply the grant prorata to the eligible assessments prior to collecting the final assessments. (Assessment amounts which are paid by the Municipal contribution are not eligible for the provincial grant.

If an assessed owner not shown as having the Farm Property Class Tax Rate feels that his or her property should be eligible for this grant calculation, and if the owner can provide proof to the Municipality of this eligibility as noted prior to the final cost levy then the property could have the one-third (33-1/3%) grant applied in the final cost levy against the property. Please be advised that OMAFRA retains the final right to determine eligibility under the grant program, regardless of designation herein.

In accordance with Section 85 of the Drainage Act, a grant not exceeding one third (33-1/3%) may also be available in the future on the assessments against privately owned parcels of land used for agriculture (again as per OMAFRA's ADIP policies), for maintenance and repair (including the monitoring work), if done on the recommendation and supervision of the Drainage Superintendent and using the same eligibility requirements as outlined above.

20.0 BYLAW

This report including schedules, appendices, drawings and specifications, when adopted by bylaw in accordance with the Drainage Act, RSO 1990, will provide the basis for construction and maintenance of this project.

21.0 CHANGES TO DRAIN AFTER BYLAW PASSAGE

Since this drain is to be constructed in accordance with a Bylaw of the Township of Springwater, in most cases changes to the drain cannot be undertaken without a substantial process being followed.

Minor changes which occur during construction, and which do not affect the service of the drain or its approvals, and are approved by the Engineer and the Municipality in accordance with the General Conditions in the report may occur without an amended report. Such changes must occur before final costs are levied.

Other changes would have to be dealt with in accordance with the new amendment to the Drainage Act that came into effect on June 30, 2021. Section 84.1 and a related regulation now provide a process for amending an Engineer's Report that has been adopted by Bylaw. The intent of this new section of the Act and its regulation is to provide a process for amending an Engineer's Report to recognize significant changes required during construction which are approved by the Engineer and consistent with the functionality of the drain.

This amendment reads as follows:

Process to amend an engineer's report

9. *The following steps shall be taken in order to amend an engineer's report referred to in subsection 84.1 (1) of the Act:*

- 1. An engineer shall prepare a supporting document that provides that,
 - i. the design changes to the drainage works are necessary due to unforeseen circumstances encountered during the construction of the drainage works,*
 - ii. the existing approvals for the drainage works allow for the design change to be made without requiring amendment to the approval,*
 - iii. the design changes will not increase the cost of the total project by more than 133 per cent, and*
 - iv. the design changes will not impact the existing drainage capacity.**
- 2. The engineer will prepare a revised design of the drainage works that sets out the changes that are being made to the design.*
- 3. As soon as reasonably possible and before the passing of the by-law that contains the final price, the engineer shall submit the supporting document and the revised design to the council of the municipality in which the drainage works is located.*

Process to approve amendments to engineers report

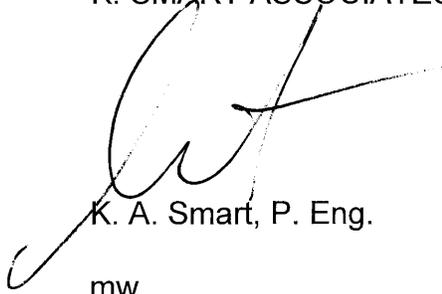
10. *Upon receipt of a revised design and supporting document, the council of the municipality shall,*

- (a) approve the revised design as an addendum to the by-law;*
- (b) assess any additional fees or expenditures of the engineer in accordance with the assessment schedule; and*
- (c) provide notice of the addendum to the by-law to all persons who own property that may be affected by the drainage works.*

It must be pointed out that “changes to the drain” are not expected on this project. However, all new Drainage Reports prepared by the undersigned will now include this section.

All of which is respectfully submitted.

K. SMART ASSOCIATES LIMITED



K. A. Smart, P. Eng.
mw



**SCHEDULE A - SCHEDULE OF ASSESSMENTS
SWALEY DRAIN
Township of Springwater**

FTC	Con	Lot Interval	Roll No.	Owner	Ha Owned	Ha Affected	Ha Affected Adjusted	Benefit	Outlet	Total
	6	1 to 5	002-16300	Simcoe County	398.45	161.92	80.96		10,272	10,272
	7	3 to 8	002-23600	G. & P. Wilson	15.26	1.70	0.85		108	108
	7	3 to 8	002-23601	G. & P. Wilson	0.74	0.35	0.35		44	44
	7	3 to 8	002-23602	E. Wilson	0.86	0.65	0.65		82	82
	7	3 to 8	002-23604	G. & P. Wilson & M. Robitaille	16.06	5.80	2.90		368	368
	7	3 to 8	002-23610	R., M., N., & S. Dunn	0.66	0.66	0.66		84	84
	7	3 to 8	002-23612	S. & M. Pokorny	0.83	0.83	0.83		105	105
	7	3 to 8	002-23613	M. & A. Wilson	0.83	0.83	0.83		105	105
	7	3 to 8	002-23614	L. Wilson	0.83	0.83	0.83		105	105
	7	3 to 8	002-23630	Township of Springwater	1.03	0.02	0.02		3	3
	7	3 to 8	002-23650	M. & K. Blakely	0.83	0.83	0.83		105	105
	7	3 to 8	002-23700	C. & E. Wilson & K. Blakely	36.87	4.00	4.00		508	508
	7	3 to 8	002-23800	Springwater Golf Course Ltd.	48.97	44.50	44.50		5,646	5,646
	7	3 to 8	002-23900	Giulam Developments Limited	25.38	25.38	22.69		2,879	2,879
	7	3 to 8	002-23901	J. & P. Scott	0.81	0.81	0.81		103	103
	7	3 to 8	002-23902	Giulam Developments Limited	0.45	0.45	0.45		57	57
	7	3 to 8	002-23903	D. Bailey	0.81	0.81	0.81		103	103
	7	3 to 8	002-23904	D. Forbes-Harley	0.81	0.81	0.81		103	103
	7	3 to 8	002-23905	W. & B. Hawke	0.81	0.81	0.81		103	103
	7	3 to 8	002-23906	S. & K. Barrett	0.81	0.81	0.81		103	103
	7	3 to 8	002-23907	J. & R. Elzner	0.81	0.81	0.81		103	103
	7	3 to 8	002-23908	M. Fotherby & A. Reilly	0.81	0.81	0.81		103	103
	7	3 to 8	002-23909	B. & R. Sneddon	0.81	0.81	0.81		103	103
	7	3 to 8	002-23910	J. & M. Adams	0.87	0.87	0.87		110	110
	7	3 to 8	002-23911	Township of Springwater	0.21	0.21	0.21		27	27
	7	3 to 8	002-23912	R. & A. Leupolt	0.89	0.89	0.89		113	113
	7	3 to 8	002-23913	T. & C. Anderson	0.39	0.39	0.39		49	49
	7	3 to 8	002-23914	J. Howard	0.82	0.82	0.82		104	104
	7	3 to 8	002-23915	C. Zanelli & I. Gretchanaia	0.82	0.82	0.82		104	104
	7	3 to 8	002-23916	P. Smith	0.80	0.80	0.80		102	102
	7	3 to 8	002-23917	R. & H. Buott	0.75	0.75	0.75		95	95
	7	3 to 8	002-23918	P. & L. Maclean	0.78	0.78	0.78		99	99
	7	3 to 8	002-23919	B. Laframboise & P. & T. Barnicutt	0.78	0.78	0.78		99	99
	7	3 to 8	002-23920	P. & D. Newman	0.79	0.79	0.79		100	100
	7	3 to 8	002-23921	S. & C. Rogers & G. Barnier	0.80	0.80	0.80		102	102
	7	3 to 8	002-23922	G. & P. Oakley	0.80	0.80	0.80		102	102
	7	3 to 8	002-23924	T. Miller & V. Talon	0.34	0.34	0.34		43	43
	7	3 to 8	002-24000	D. Kowarsky & T. Kokkas	29.17	29.17	19.17		2,432	2,432
	7	3 to 8	002-24020	R. Leo & S. Neske	1.16	1.16	1.16		147	147
	7	3 to 8	002-24100	R. & H. Miksis	0.83	0.83	0.83		105	105
	7	3 to 8	002-24101	M. Clarke & S. Millson	0.26	0.26	0.26		33	33
	7	3 to 8	002-24140	N. & M. Ghayess	0.66	0.66	0.66		84	84
	7	3 to 8	002-24144	M. Danilewska	0.68	0.68	0.68		86	86
	7	3 to 8	002-24148	R. Muzlera & W. Gallegos	0.71	0.71	0.71		90	90
	7	3 to 8	002-24152	J. & F. Buttram	0.67	0.67	0.67		85	85
	7	3 to 8	002-24156	L. & S. Pattison	0.69	0.69	0.69		88	88
	7	3 to 8	002-24160	R. & P. Riopelle	0.55	0.55	0.55		70	70
	7	3 to 8	002-24164	M. & T. Alexander	0.41	0.41	0.41		52	52
	7	3 to 8	002-24170	P. & B. Ginn	1.23	1.23	1.23		156	156
	7	3 to 8	002-24172	T. & E. Watson	1.13	1.13	1.13		143	143
	7	3 to 8	002-24176	K. Meredith	0.29	0.29	0.29		37	37
	7	3 to 8	002-24180	J. & P. Orange	0.61	0.61	0.61		77	77
	7	3 to 8	002-24184	T. Carpenter	0.68	0.68	0.68		86	86
	7	3 to 8	002-24188	M. & V. Beleskey	0.69	0.69	0.69		88	88
	7	3 to 8	002-24192	J. Ridley	0.65	0.65	0.65		82	82
F	7	3 to 8	002-24200	Hud Holdings Ltd./Inceptor Holdings Ltd.	30.35	30.35	30.35		3,851	3,851
	7	3 to 8	002-24201	K. Duckworth & S. Brolley	1.39	1.39	1.39		176	176
	7	3 to 8	002-24202	D. & C. Braithwaite	7.71	7.71	7.71		978	978
	7	3 to 8	002-24210	David Braithwaite Ltd.	0.44	0.44	0.44		56	56
F	7	3 to 8	002-24300	B. & S. Camack	19.90	19.90	16.90		2,144	2,144
F	7	3 to 8	002-24400	M. Camack	24.28	24.28	21.79		2,765	2,765
F	7	3 to 8	002-24500	H. & M. Vander Wielen	24.63	24.63	24.63		3,125	3,125
	7	3 to 8	002-24501	T. & A. Carr	16.68	16.68	16.68		2,116	2,116
	7	3 to 8	002-24510	H. Emberley & R. Sanderson	0.37	0.37	0.37		47	47
F	7	3 to 8	003-31600	D. Camack	36.42	25.00	15.00		1,903	1,903
F	7	3 to 8	003-31700	H. & M. Vander Wielen	38.04	36.54	36.54		4,636	4,636
	7	3 to 8	003-32000	L. & T. McKernin	4.04	3.10	1.60		203	203
	7	3 to 8	003-32001	T. Adam & R. Raddadi	36.56	10.00	10.00		1,269	1,269
	8	3 to 10	005-00700	D. & M. Phillips	1.63	0.05	0.05		6	6
F	8	3 to 10	005-00720	R. & T. Bowhey	18.60	16.00	16.00		2,030	2,030
F	8	3 to 10	005-00800	A. & E. Wilson	30.35	13.50	13.50		1,713	1,713
F	8	3 to 10	005-01000	Vespra Valley Farms Ltd. & G. Priest	69.85	54.75	54.75		6,947	6,947
	8	3 to 10	005-01201	J. & K. Phillips	0.55	0.55	0.55		70	70
F	8	3 to 10	005-01300	J. Priest & J. Mawhiney-Priest	19.91	4.90	4.90		622	622
F	8	3 to 10	005-01400	A. Priest	20.23	11.10	11.10		1,408	1,408
F	8	3 to 10	005-01500	Vespa Valley Farms Ltd.	39.91	39.91	39.91		5,064	5,064
	8	3 to 10	005-01501	J. & H. Van Rassel	0.56	0.56	0.56		71	71
F	8	3 to 10	005-01600	H. & M. Vander Wielen	39.65	39.65	39.65		5,031	5,031
	8	3 to 10	005-01604	M. Coultts & H. Whitcombe	0.82	0.82	0.82		104	104
	8	3 to 10	005-01700	G. Priest	0.05	0.05	0.05		6	6
F	8	3 to 10	005-01800	L. & T. Camack	40.47	40.47	40.47		5,135	5,135
F	8	3 to 10	005-01900	J. & J. Priest	20.23	20.23	20.23		2,567	2,567
F	8	3 to 10	005-02000	D. Priest	20.23	20.23	20.23		2,567	2,567
	8	3 to 10	005-02100	K. & S. Ramolla	1.98	1.98	1.98		251	251
	8	3 to 10	005-02101	N. Ngo	9.68	9.68	5.18		657	657

**SCHEDULE A - SCHEDULE OF ASSESSMENTS
SWALEY DRAIN
Township of Springwater**

FTC	Con	Lot Interval	Roll No.	Owner	Ha Owned	Ha Affected	Ha Affected Adjusted	Benefit	Outlet	Total
F	8	3 to 10	005-02200	H. Vander Wielen	42.33	42.33	42.33		5,371	5,371
F	8	3 to 10	005-02210	H. & M. Vander Wielen	36.92	36.92	36.92		4,685	4,685
	8	3 to 10	005-02300	J. & J. Veenstra	1.51	1.51	1.51		192	192
	8	3 to 10	005-02301	B. Melanson	0.26	0.26	0.26		33	33
	8	3 to 10	005-02320	F. & J. Fernandes	1.91	1.91	1.91		242	242
	8	3 to 10	005-02400	Ministry of Transportation	0.16	0.16	0.16		20	20
	8	3 to 10	005-02500	R. Simpson & J. Hainni-Simpson	8.24	7.20	7.20		914	914
	8	3 to 10	005-02502	P. Sureshkumar & A. Stripling	29.18	29.18	29.18		3,702	3,702
	8	3 to 10	005-02600	R. Burke	4.78	4.78	4.78		607	607
	8	3 to 10	005-02700	E. & D. Smallwood	13.38	13.38	8.38		1,063	1,063
	8	3 to 10	005-02701	J. Priest	0.19	0.19	0.19		24	24
	8	3 to 10	005-02702	D. & S. Mehew	0.15	0.15	0.15		19	19
	8	3 to 10	005-02703	S. Flear	0.15	0.15	0.15		19	19
	8	3 to 10	005-02704	D. & J. MacDonald	0.29	0.29	0.29		37	37
	8	3 to 10	005-02706	G. & T. Johnson & M Pearson	0.29	0.29	0.29		37	37
	8	3 to 10	005-02708	R. & F. Berk	0.29	0.29	0.29		37	37
	8	3 to 10	005-02710	R. & P. Smith	0.68	0.68	0.68		86	86
	8	3 to 10	005-02800	D. & S. Hawman	2.73	2.73	2.73		346	346
	8	3 to 10	005-02801	F. & R. Collins	0.28	0.28	0.28		36	36
	8	3 to 10	005-02802	M. & C. Clemens	0.28	0.28	0.28		36	36
	8	3 to 10	005-02803	W. & L. Partridge	2.05	2.05	2.05		260	260
	8	3 to 10	005-02900	J. & L. Dunlop	0.62	0.62	0.62		79	79
	8	3 to 10	005-03200	W. & H. Carswell	5.78	3.20	3.20		406	406
	8	3 to 10	005-03800	A. & M. Kovacs	4.26	4.26	4.26		541	541
	8	3 to 10	005-03805	W. Hampton Estate	3.71	3.71	3.71		471	471
F	8	3 to 10	005-04000	R. Corriero	10.50	0.20	0.20		25	25
	8	3 to 10	005-04100	M. McCarthy	1.34	1.34	1.34		170	170
F	8	3 to 10	005-04300	B. & M. Mayer	34.69	33.20	33.20		4,213	4,213
	8	3 to 10	005-04310	M. Mayer	1.64	1.64	1.64		208	208
	8	3 to 10	005-04315	D. & J. Bonney	1.23	1.23	1.23		156	156
	8	3 to 10	005-04350	Nottawasaga Valley Conservation Auth.	40.47	2.80	2.80		355	355
F	9	4 to 10	005-05400	Vespa Valley Farms Ltd. & J. & J. Priest	29.31	1.00	1.00		127	127
F	9	4 to 10	005-05900	Vespa Valley Farms Ltd.	33.55	15.00	15.00		1,903	1,903
	9	4 to 10	005-05901	1923061 Ontario Inc.	0.54	0.54	0.54		69	69
	9	4 to 10	005-05902	P. Adams	0.81	0.40	0.40		51	51
	9	4 to 10	005-06301	Bell Canada	0.22	0.22	0.22		28	28
	9	4 to 10	005-06310	G. & B. Nevils	0.40	0.10	0.10		13	13
	9	4 to 10	005-06701	M. Chapman	0.15	0.15	0.15		19	19
	9	4 to 10	005-06800	Township of Springwater	0.63	0.63	0.63		80	80
	9	4 to 10	005-06900	R. Murphy	0.16	0.16	0.16		20	20
	9	4 to 10	005-07600	D. Sage & J. Lester	0.22	0.22	0.22		28	28
	9	4 to 10	005-08700	G. Hayes, J. Hayes, C. Hayes-Louth	0.69	0.69	0.69		88	88
	9	4 to 10	005-08701	C. & S. Rossignol	0.25	0.25	0.25		32	32
	9	4 to 10	005-09000	R. & D. Haley	0.31	0.31	0.31		39	39
	9	4 to 10	005-09001	B. Lequelenec	0.28	0.28	0.28		36	36
	9	4 to 10	005-09002	J. & L. Alphonse	0.29	0.29	0.29		37	37
	9	4 to 10	005-09912	A. Vanderhorst, J. & W. Ploeg	0.19	0.15	0.15		19	19
	9	4 to 10	005-09913	K. Cooper	0.19	0.19	0.19		24	24
	9	4 to 10	005-09914	L. & N. Cooney	0.19	0.19	0.19		24	24
	9	4 to 10	005-09915	T. & D. Cherutti	0.19	0.08	0.08		10	10
	9	4 to 10	005-09916	A. Maynard	0.19	0.19	0.19		24	24
	9	4 to 10	005-09917	D. Camack	0.21	0.21	0.21		27	27
	9	4 to 10	005-09918	M. & F. Martin	0.19	0.19	0.19		24	24
	9	4 to 10	005-09920	S. & J. Swaile	0.19	0.19	0.19		24	24
	9	4 to 10	005-09922	N. & S. Lengyel	0.19	0.19	0.19		24	24
	9	4 to 10	005-09924	M. & S. Miller	0.20	0.20	0.20		25	25
	9	4 to 10	005-09926	S. & K. Smart	0.21	0.21	0.21		27	27
	9	4 to 10	005-09928	T. & J. Parkes	0.22	0.22	0.22		28	28
	9	4 to 10	005-09930	M. & S. Durocher	0.19	0.19	0.19		24	24
	9	4 to 10	005-09932	M. & T. Leo	0.19	0.19	0.19		24	24
	9	4 to 10	005-09934	R. & W. Dinsmore	0.19	0.19	0.19		24	24
	9	4 to 10	005-09936	G. & N. Armstrong	0.19	0.19	0.19		24	24
	9	4 to 10	005-09938	R. & L. Lyte	0.19	0.19	0.19		24	24
	9	4 to 10	005-09940	A. Weir & W. Bileski-Weir	0.19	0.19	0.19		24	24
	9	4 to 10	005-09942	C. & J. Montgomery	0.19	0.19	0.19		24	24
	9	4 to 10	005-09944	J. Degrechie	0.19	0.19	0.19		24	24
	9	4 to 10	005-09946	D. & D. Melton	0.19	0.19	0.19		24	24
	9	4 to 10	005-09948	A. & J. West	0.19	0.19	0.19		24	24
	9	4 to 10	005-09950	G. & B. Daniels	0.19	0.19	0.19		24	24
	9	4 to 10	005-09952	J. Clark & T. Poirier	0.19	0.19	0.19		24	24
	9	4 to 10	005-09954	R. & K. DeBokx	0.19	0.19	0.19		24	24
	9	4 to 10	005-09956	W. & S. Patterson	0.19	0.19	0.19		24	24
	9	4 to 10	005-09958	R. & D. Pratt	0.19	0.19	0.19		24	24
	9	4 to 10	005-09960	J. & R. Walker	0.19	0.19	0.19		24	24
	9	4 to 10	005-09962	M. & N. Abraham	0.19	0.19	0.19		24	24
	9	4 to 10	005-09964	P. & S. Brown	0.18	0.08	0.08		10	10
	9	4 to 10	005-09970	C., M. & A. Van der Velden	0.19	0.08	0.08		10	10
	9	4 to 10	005-09972	J. Carter	0.17	0.10	0.10		13	13
	9	4 to 10	005-09974	M. & K. Bloomfield	0.17	0.15	0.15		19	19
	9	4 to 10	005-09976	B. & C. Miller	0.17	0.17	0.17		22	22
	9	4 to 10	005-09978	J. Netzke & E. Shaw-Netzke	0.19	0.19	0.19		24	24
	9	4 to 10	005-09980	K. Helm	0.19	0.19	0.19		24	24
	9	4 to 10	005-09982	K. & W. Lingenfelter	0.18	0.18	0.18		23	23
	9	4 to 10	005-09984	C. Richardson	0.19	0.19	0.19		24	24
	9	4 to 10	005-09986	G. & C. Harris	0.19	0.19	0.19		24	24

**SCHEDULE A - SCHEDULE OF ASSESSMENTS
SWALEY DRAIN
Township of Springwater**

FTC	Con	Lot Interval	Roll No.	Owner	Ha Owned	Ha Affected	Ha Affected Adjusted	Benefit	Outlet	Total
	9	4 to 10	005-09988	S. & C. Emberley	0.19	0.19	0.19		24	24
	9	4 to 10	005-10008	S. Parsons	0.19	0.10	0.10		13	13
	9	4 to 10	005-10010	T. & E. Neill	0.19	0.19	0.19		24	24
	9	4 to 10	005-10012	S. & L. Dougherty	0.19	0.19	0.19		24	24
	9	4 to 10	005-10014	R. & S. Rowland	0.19	0.19	0.19		24	24
	9	4 to 10	005-10016	K. Urbinati & S. Knowles	0.19	0.19	0.19		24	24
	9	4 to 10	005-10018	L. Ellis & K. Borczyk	0.19	0.19	0.19		24	24
	9	4 to 10	005-10020	Township of Springwater	1.93	1.93	1.93		245	245
	9	4 to 10	005-10400	L. Leuschner & T. Morton-Gundert	0.11	0.05	0.05		6	6
	9	4 to 10	005-10500	S. & M. Imrie	0.09	0.09	0.09		11	11
	9	4 to 10	005-10600	R. Shelp	0.09	0.09	0.09		11	11
	9	4 to 10	005-10700	R. & L. Luoma	0.09	0.09	0.09		11	11
	9	4 to 10	005-10800	J. Dixon & W. Dixon Est.	0.10	0.10	0.10		13	13
	9	4 to 10	005-11900	Simcoe County District School Board	5.59	5.47	5.47		694	694
	9	4 to 10	005-12000	A. Stillman	1.39	1.39	1.39		176	176
	9	4 to 10	005-12001	B. & E. Day	0.42	0.42	0.42		53	53
F	9	4 to 10	005-12002	L. & T. Camack	26.75	26.75	26.75		3,394	3,394
	9	4 to 10	005-12200	D. & G. Adams, H. Adams Est.	0.33	0.33	0.33		42	42
	9	4 to 10	005-12202	Township of Springwater	0.69	0.69	0.69		88	88
	9	4 to 10	005-12205	G. Adams, D. Adams-Lawrence, H. Adams Est	0.20	0.20	0.20		25	25
	9	4 to 10	005-12300	D. Jackson	0.36	0.36	0.36		46	46
	9	4 to 10	005-12550	R. Foster	12.63	12.63	7.63		968	968
	9	4 to 10	005-12600	H. Pohland	2.53	2.53	2.53		321	321
	9	4 to 10	005-12601	V. Kiernan & N. Skelhorn	0.28	0.28	0.28		36	36
F	9	4 to 10	005-12602	M. & J. Price	14.94	14.94	12.15		1,542	1,542
	9	4 to 10	005-12700	G. & C. Adams	29.75	29.75	18.75		2,379	2,379
	9	4 to 10	005-12800	R. Elzner & J. Dubreuil	0.30	0.30	0.30		38	38
	9	4 to 10	005-12900	S. Wall	0.19	0.19	0.19		24	24
	9	4 to 10	005-13000	A. Long	7.76	7.76	7.26		921	921
	9	4 to 10	005-13001	H. & T. Jones	0.33	0.33	0.33		42	42
F	9	4 to 10	005-13100	H. & L. Parker	22.07	22.07	17.07		2,166	2,166
	9	4 to 10	005-13200	B. & S. Bourne	7.70	7.70	5.20		660	660
	9	4 to 10	005-13201	I. & S. McDiarmid	0.25	0.25	0.25		32	32
	9	4 to 10	005-13202	S. & M. Black	0.17	0.17	0.17		22	22
	9	4 to 10	005-13203	D. & K. Dobson	10.61	10.61	6.61		839	839
	9	4 to 10	005-13300	G. McLean	0.35	0.35	0.35		44	44
	9	4 to 10	005-13400	J. Webb	0.57	0.57	0.57		72	72
	9	4 to 10	005-13500	P. Schaefer	1.18	1.18	1.18		150	150
	9	4 to 10	005-13501	K. Byrne	0.62	0.62	0.62		79	79
	9	4 to 10	005-13502	S. Moryoussef	0.70	0.70	0.70		89	89
	9	4 to 10	005-13510	M. Chalmers	21.17	21.17	16.17		2,052	2,052
	9	4 to 10	005-13600	C. Voiko	20.23	20.23	11.29		1,433	1,433
	9	4 to 10	005-13602	S. Whitehouse & M. McArthur	0.52	0.52	0.52		66	66
	9	4 to 10	005-13604	B. & J. Hare	0.44	0.44	0.44		56	56
	9	4 to 10	005-13606	K. & K. Ritchie	0.51	0.51	0.51		65	65
	9	4 to 10	005-13608	L. Conroy	0.32	0.32	0.32		41	41
	9	4 to 10	005-13610	N. & J. Tettmann	0.30	0.30	0.30		38	38
	9	4 to 10	005-13612	D. & R. Lloyd	0.30	0.30	0.30		38	38
	9	4 to 10	005-13614	G. & F. Desanto	0.47	0.47	0.47		60	60
	9	4 to 10	005-13616	G. Priest	4.08	4.08	2.04		259	259
	9	4 to 10	005-13636	A. & S. Mcfarlane	1.18	1.18	1.18		150	150
	9	4 to 10	005-13642	M. & C. Chesterman	0.89	0.89	0.89		113	113
	9	4 to 10	005-13648	J. Bryan & M. Messner	0.29	0.29	0.29		37	37
	9	4 to 10	005-13650	C. & M. Robertson	0.29	0.29	0.29		37	37
	9	4 to 10	005-13652	P. & A. Carreiro	0.30	0.30	0.30		38	38
	9	4 to 10	005-13654	S. Gortmaker & G. Spina	0.32	0.32	0.32		41	41
	9	4 to 10	005-13656	T. & J. Kinden	0.33	0.33	0.33		42	42
	9	4 to 10	005-13658	P. Dana	0.36	0.36	0.36		46	46
	9	4 to 10	005-13660	D. & T. Partridge	0.34	0.34	0.34		43	43
	9	4 to 10	005-13662	K. & A. Tenney & V. Dreimanis	0.33	0.33	0.33		42	42
	9	4 to 10	005-13664	D. & T. Marcoux	0.32	0.32	0.32		41	41
	9	4 to 10	005-13666	K. & V. Odette	0.33	0.33	0.33		42	42
	9	4 to 10	005-13668	M. Kozina & S. Easton	0.31	0.31	0.31		39	39
	9	4 to 10	005-13670	K. & J. Han	0.36	0.36	0.36		46	46
	9	4 to 10	005-13672	J. & S. Dubkowski	0.33	0.33	0.33		42	42
	9	4 to 10	005-13674	K. & P. Meek	0.38	0.38	0.38		48	48
	9	4 to 10	005-13676	A. & D. Naccarato	0.36	0.36	0.36		46	46
	9	4 to 10	005-13678	D. & C. Caruso	0.30	0.30	0.30		38	38
	9	4 to 10	005-13680	S. & S. Collins	0.31	0.31	0.31		39	39
	9	4 to 10	005-13682	E. & R. Bates	0.36	0.36	0.36		46	46
	9	4 to 10	005-13684	S. Seif, T. Seif & D. Haidner-Seif	0.42	0.42	0.42		53	53
	9	4 to 10	005-13686	E. & M. Cherkes	0.42	0.42	0.42		53	53
	9	4 to 10	005-13688	P. & A. Morrison	0.56	0.56	0.56		71	71
	9	4 to 10	005-13690	S. Smith & E. Barnard	0.42	0.42	0.42		53	53
	9	4 to 10	005-13700	Township of Springwater	0.17	0.17	0.17		22	22
	9	4 to 10	005-13750	Township of Springwater	0.60	0.60	0.60		76	76
	9	4 to 10	005-13760	Township of Springwater	0.21	0.21	0.21		27	27
	9	4 to 10	005-13770	D. & G. Adams, D. Adams-Lawrence, H Adams Es	0.01	0.01	0.01		1	1
F	9	4 to 10	005-13800	W. Haight	58.70	33.30	33.30		4,225	4,225
	9	4 to 10	005-13801	D. Levigne & S. Carisse	3.78	3.78	3.78		480	480
	9	4 to 10	005-13802	T. & L. Dungate	16.19	16.19	10.27		1,303	1,303
	9	4 to 10	005-13810	J. Berry	21.48	21.48	21.48		2,725	2,725
	9	4 to 10	005-13900	R. Fisher	18.62	18.62	11.62		1,474	1,474
F	9	4 to 10	005-14000	M. & D. Camack	60.70	30.70	30.70		3,895	3,895
F	10	6 to 10	005-18910	R. Cameron	39.08	1.50	1.50		190	190

**SCHEDULE A - SCHEDULE OF ASSESSMENTS
SWALEY DRAIN
Township of Springwater**

FTC	Con	Lot Interval	Roll No.	Owner	Ha Owned	Ha Affected	Ha Affected Adjusted	Benefit	Outlet	Total
F	10	6 to 10	005-19000	S. McKenna & P. Neals	20.20	8.00	8.00		1,015	1,015
	10	6 to 10	005-19100	D. Haidner-Seif & S. Seif	3.92	3.92	3.92		497	497
F	10	6 to 10	005-19101	W. Haight	16.19	13.00	13.00		1,649	1,649
F	10	6 to 10	005-19200	W. Gilroy & B. Doner	80.68	80.00	70.00		8,882	8,882
F	10	6 to 10	005-19300	D. & D. Sellars	5.73	5.73	5.73		727	727
F	10	6 to 10	005-19400	H. Parker	28.13	17.60	15.60		1,979	1,979
	10	6 to 10	005-19500	H. & L. Parker	40.47	29.60	14.80		1,878	1,878
	11	7 to 11	005-21600	Min. of Northern Development, Mines, Natural Resources and Forestry	79.04	24.00	0.00	3,500	0	3,500
	11	7 to 11	005-21900	Nottawasaga Valley Conservation Auth.	80.94	77.00	0.00	31,500	0	31,500
	11	7 to 11	006-21000	Nottawasaga Valley Conservation Auth.	236.60	15.00	0.00		0	0
	7&8	3 to 9	008-20500	Township of Springwater (Trail)	41.17	8.38	8.38		1,063	1,063
Total on Lands:					2,569.57	1,624.44	1,298.06	35,000	164,702	199,702
Highway 26						14.20	28.40		3,603	3,603
7th Line (Wilson Avenue)						3.70	7.40		939	939
8th Line (Golf Course Road)						6.80	13.60		1,726	1,726
9th Line (Vespra Valley Road)						6.90	13.80		1,751	1,751
10th Line (George Johnston Road)						5.80	11.60	25,000	1,472	26,472
11th Line (Unopened)						2.50	1.25		159	159
Hendrie Road						7.20	12.60		1,599	1,599
Binnie Drive						2.00	4.00		508	508
Pinehurst Lane						1.20	2.40		305	305
Mayer Road						1.30	1.95		247	247
Minesing - Adams Avenue						1.10	2.20		279	279
Minesing - Huron Street						0.80	1.60		203	203
Minesing - Laird Road						0.10	0.20		25	25
Minesing - Stokes Drive						0.90	1.80		228	228
Minesing - Plowright Road						1.30	2.60		330	330
Minesing - Ronald Road						0.80	1.60		203	203
Hindle Lane						3.00	4.50		571	571
All Roads of Springwater in the Watershed as above								118,850	0	118,850
Total on Roads:					0.00	59.60	111.50	143,850	14,148	157,998
TOTAL SWALEY DRAIN:					2,569.57	1,684.04	1,409.56	178,850	178,850	357,700

Notes:

- The above lands marked "F" are currently classified as agricultural according to the OMAFRA and are therefore entitled to a 1/3 grant . Eligibility for the 1/3 grant will be confirmed at the time the final cost is levied.
- Section 21 of the Drainage Act, RSO 1990 requires that assessments be shown opposite each parcel of land and road affected. The affected parcels of land have been identified using the roll number from the last revised assessment roll for the Township. For convenience only, the owners' names as shown by the last revised assessment roll, has also been included.

**SCHEDULE B - SCHEDULE OF ASSESSMENTS
FOR FUTURE MAINTENANCE
SWALEY DRAIN, Township of Springwater**

FTC	Con	Lot Interval	Roll No.	Owner	TOTAL \$	TOTAL %
	6	1 to 5	002-16300	Simcoe County	10,272	2.87
	7	3 to 8	002-23600	G. & P. Wilson	108	0.03
	7	3 to 8	002-23601	G. & P. Wilson	44	0.01
	7	3 to 8	002-23602	E. Wilson	82	0.02
	7	3 to 8	002-23604	G. & P. Wilson & M. Robitaille	368	0.10
	7	3 to 8	002-23610	R., M., N., & S. Dunn	84	0.02
	7	3 to 8	002-23612	S. & M. Pokorny	105	0.03
	7	3 to 8	002-23613	M. & A. Wilson	105	0.03
	7	3 to 8	002-23614	L. Wilson	105	0.03
	7	3 to 8	002-23630	Township of Springwater	3	0.00
	7	3 to 8	002-23650	M. & K. Blakely	105	0.03
	7	3 to 8	002-23700	C. & E. Wilson & K. Blakely	508	0.14
	7	3 to 8	002-23800	Springwater Golf Course Ltd.	5,646	1.58
	7	3 to 8	002-23900	Giulam Developments Limited	2,879	0.80
	7	3 to 8	002-23901	J. & P. Scott	103	0.03
	7	3 to 8	002-23902	Giulam Developments Limited	57	0.02
	7	3 to 8	002-23903	D. Bailey	103	0.03
	7	3 to 8	002-23904	D. Forbes-Harley	103	0.03
	7	3 to 8	002-23905	W. & B. Hawke	103	0.03
	7	3 to 8	002-23906	S. & K. Barrett	103	0.03
	7	3 to 8	002-23907	J. & R. Elzner	103	0.03
	7	3 to 8	002-23908	M. Fotherby & A. Reilly	103	0.03
	7	3 to 8	002-23909	B. & R. Sneddon	103	0.03
	7	3 to 8	002-23910	J. & M. Adams	110	0.03
	7	3 to 8	002-23911	Township of Springwater	27	0.01
	7	3 to 8	002-23912	R. & A. Leupolt	113	0.03
	7	3 to 8	002-23913	T. & C. Anderson	49	0.01
	7	3 to 8	002-23914	J. Howard	104	0.03
	7	3 to 8	002-23915	C. Zanelli & I. Gretchanaia	104	0.03
	7	3 to 8	002-23916	P. Smith	102	0.03
	7	3 to 8	002-23917	R. & H. Buott	95	0.03
	7	3 to 8	002-23918	P. & L. Maclean	99	0.03
	7	3 to 8	002-23919	B. Laframboise & P. & T. Barnicutt	99	0.03
	7	3 to 8	002-23920	P. & D. Newman	100	0.03
	7	3 to 8	002-23921	S. & C. Rogers & G. Barnier	102	0.03
	7	3 to 8	002-23922	G. & P. Oakley	102	0.03
	7	3 to 8	002-23924	T. Miller & V. Talon	43	0.01
	7	3 to 8	002-24000	D. Kowarsky & T. Kokkas	2,432	0.68
	7	3 to 8	002-24020	R. Leo & S. Neske	147	0.04
	7	3 to 8	002-24100	R. & H. Miksis	105	0.03
	7	3 to 8	002-24101	M. Clarke & S. Millson	33	0.01
	7	3 to 8	002-24140	N. & M. Ghayess	84	0.02
	7	3 to 8	002-24144	M. Danilewska	86	0.02
	7	3 to 8	002-24148	R. Muzlera & W. Gallegos	90	0.03
	7	3 to 8	002-24152	J. & F. Buttram	85	0.02
	7	3 to 8	002-24156	L. & S. Pattison	88	0.02
	7	3 to 8	002-24160	R. & P. Riopelle	70	0.02
	7	3 to 8	002-24164	M. & T. Alexander	52	0.01
	7	3 to 8	002-24170	P. & B. Ginn	156	0.04
	7	3 to 8	002-24172	T. & E. Watson	143	0.04
	7	3 to 8	002-24176	K. Meredith	37	0.01
	7	3 to 8	002-24180	J. & P. Orange	77	0.02
	7	3 to 8	002-24184	T. Carpenter	86	0.02
	7	3 to 8	002-24188	M. & V. Beleskey	88	0.02
	7	3 to 8	002-24192	J. Ridley	82	0.02
*	7	3 to 8	002-24200	Hud Holdings Ltd./Inceptor Holdings Ltd.	3,851	1.08
	7	3 to 8	002-24201	K. Duckworth & S. Brolley	176	0.05
	7	3 to 8	002-24202	D. & C. Braithwaite	978	0.27
	7	3 to 8	002-24210	David Braithwaite Ltd.	56	0.02
*	7	3 to 8	002-24300	B. & S. Camack	2,144	0.60
*	7	3 to 8	002-24400	M. Camack	2,765	0.77

**SCHEDULE B - SCHEDULE OF ASSESSMENTS
FOR FUTURE MAINTENANCE
SWALEY DRAIN, Township of Springwater**

FTC	Con	Lot Interval	Roll No.	Owner	TOTAL \$	TOTAL %
*	7	3 to 8	002-24500	H. & M. Vander Wielen	3,125	0.87
	7	3 to 8	002-24501	T. & A. Carr	2,116	0.59
	7	3 to 8	002-24510	H. Emberley & R. Sanderson	47	0.01
*	7	3 to 8	003-31600	D. Camack	1,903	0.53
*	7	3 to 8	003-31700	H. & M. Vander Wielen	4,636	1.30
	7	3 to 8	003-32000	L. & T. McKernin	203	0.06
	7	3 to 8	003-32001	T. Adam & R. Raddadi	1,269	0.35
	8	3 to 10	005-00700	D. & M. Phillips	6	0.00
*	8	3 to 10	005-00720	R. & T. Bowhey	2,030	0.57
*	8	3 to 10	005-00800	A. & E. Wilson	1,713	0.48
*	8	3 to 10	005-01000	Vespra Valley Farms Ltd. & G. Priest	6,947	1.94
	8	3 to 10	005-01201	J. & K. Phillips	70	0.02
*	8	3 to 10	005-01300	J. Priest & J. Mawhiney-Priest	622	0.17
*	8	3 to 10	005-01400	A. Priest	1,408	0.39
*	8	3 to 10	005-01500	Vespa Valley Farms Ltd.	5,064	1.42
	8	3 to 10	005-01501	J. & H. Van Rassel	71	0.02
*	8	3 to 10	005-01600	H. & M. Vander Wielen	5,031	1.41
	8	3 to 10	005-01604	M. Coutts & H. Whitcombe	104	0.03
	8	3 to 10	005-01700	G. Priest	6	0.00
*	8	3 to 10	005-01800	L. & T. Camack	5,135	1.44
*	8	3 to 10	005-01900	J. & J. Priest	2,567	0.72
*	8	3 to 10	005-02000	D. Priest	2,567	0.72
	8	3 to 10	005-02100	K. & S. Ramolla	251	0.07
	8	3 to 10	005-02101	N. Ngo	657	0.18
*	8	3 to 10	005-02200	H. Vander Wielen	5,371	1.50
*	8	3 to 10	005-02210	H. & M. Vander Wielen	4,685	1.31
	8	3 to 10	005-02300	J. & J. Veenstra	192	0.05
	8	3 to 10	005-02301	B. Melanson	33	0.01
	8	3 to 10	005-02320	F. & J. Fernandes	242	0.07
	8	3 to 10	005-02400	Ministry of Transportation	20	0.01
	8	3 to 10	005-02500	R. Simpson & J. Hainni-Simpson	914	0.26
	8	3 to 10	005-02502	P. Sureshkumar & A. Stripling	3,702	1.03
	8	3 to 10	005-02600	R. Burke	607	0.17
	8	3 to 10	005-02700	E. & D. Smallwood	1,063	0.30
	8	3 to 10	005-02701	J. Priest	24	0.01
	8	3 to 10	005-02702	D. & S. Mehew	19	0.01
	8	3 to 10	005-02703	S. Flear	19	0.01
	8	3 to 10	005-02704	D. & J. MacDonald	37	0.01
	8	3 to 10	005-02706	G. & T. Johnson & M Pearson	37	0.01
	8	3 to 10	005-02708	R. & F. Berk	37	0.01
	8	3 to 10	005-02710	R. & P. Smith	86	0.02
	8	3 to 10	005-02800	D. & S. Hawman	346	0.10
	8	3 to 10	005-02801	F. & R. Collins	36	0.01
	8	3 to 10	005-02802	M. & C. Clemens	36	0.01
	8	3 to 10	005-02803	W. & L. Partridge	260	0.07
	8	3 to 10	005-02900	J. & L. Dunlop	79	0.02
	8	3 to 10	005-03200	W. & H. Carswell	406	0.11
	8	3 to 10	005-03800	A. & M. Kovacs	541	0.15
	8	3 to 10	005-03805	W. Hampton Estate	471	0.13
*	8	3 to 10	005-04000	R. Corriero	25	0.01
	8	3 to 10	005-04100	M. McCarthy	170	0.05
*	8	3 to 10	005-04300	B. & M. Mayer	4,213	1.18
	8	3 to 10	005-04310	M. Mayer	208	0.06
	8	3 to 10	005-04315	D. & J. Bonney	156	0.04
	8	3 to 10	005-04350	Nottawasaga Valley Conservation Auth.	355	0.10
*	9	4 to 10	005-05400	Vespa Valley Farms Ltd. & J. & J. Priest	127	0.04
*	9	4 to 10	005-05900	Vespa Valley Farms Ltd.	1,903	0.53
	9	4 to 10	005-05901	1923061 Ontario Inc.	69	0.02
	9	4 to 10	005-05902	P. Adams	51	0.01
	9	4 to 10	005-06301	Bell Canada	28	0.01
	9	4 to 10	005-06310	G. & B. Nevils	13	0.00

**SCHEDULE B - SCHEDULE OF ASSESSMENTS
FOR FUTURE MAINTENANCE
SWALEY DRAIN, Township of Springwater**

FTC	Con	Lot Interval	Roll No.	Owner	TOTAL \$	TOTAL %
	9	4 to 10	005-06701	M. Chapman	19	0.01
	9	4 to 10	005-06800	Township of Springwater	80	0.02
	9	4 to 10	005-06900	R. Murphy	20	0.01
	9	4 to 10	005-07600	D. Sage & J. Lester	28	0.01
	9	4 to 10	005-08700	G. Hayes, J. Hayes, C. Hayes-Louth	88	0.02
	9	4 to 10	005-08701	C. & S. Rossignol	32	0.01
	9	4 to 10	005-09000	R. & D. Haley	39	0.01
	9	4 to 10	005-09001	B. Lequelenec	36	0.01
	9	4 to 10	005-09002	J. & L. Alphonse	37	0.01
	9	4 to 10	005-09912	A. Vanderhorst, J. & W. Ploeg	19	0.01
	9	4 to 10	005-09913	K. Cooper	24	0.01
	9	4 to 10	005-09914	L. & N. Cooney	24	0.01
	9	4 to 10	005-09915	T. & D. Cherutti	10	0.00
	9	4 to 10	005-09916	A. Maynard	24	0.01
	9	4 to 10	005-09917	D. Camack	27	0.01
	9	4 to 10	005-09918	M. & F. Martin	24	0.01
	9	4 to 10	005-09920	S. & J. Swaile	24	0.01
	9	4 to 10	005-09922	N. & S. Lengyel	24	0.01
	9	4 to 10	005-09924	M. & S. Miller	25	0.01
	9	4 to 10	005-09926	S. & K. Smart	27	0.01
	9	4 to 10	005-09928	T. & J. Parkes	28	0.01
	9	4 to 10	005-09930	M. & S. Durocher	24	0.01
	9	4 to 10	005-09932	M. & T. Leo	24	0.01
	9	4 to 10	005-09934	R. & W. Dinsmore	24	0.01
	9	4 to 10	005-09936	G. & N. Armstrong	24	0.01
	9	4 to 10	005-09938	R. & L. Lyte	24	0.01
	9	4 to 10	005-09940	A. Weir & W. Bileski-Weir	24	0.01
	9	4 to 10	005-09942	C. & J. Montgomery	24	0.01
	9	4 to 10	005-09944	J. Degrechie	24	0.01
	9	4 to 10	005-09946	D. & D. Melton	24	0.01
	9	4 to 10	005-09948	A. & J. West	24	0.01
	9	4 to 10	005-09950	G. & B. Daniels	24	0.01
	9	4 to 10	005-09952	J. Clark & T. Poirier	24	0.01
	9	4 to 10	005-09954	R. & K. DeBokx	24	0.01
	9	4 to 10	005-09956	W. & S. Patterson	24	0.01
	9	4 to 10	005-09958	R. & D. Pratt	24	0.01
	9	4 to 10	005-09960	J. & R. Walker	24	0.01
	9	4 to 10	005-09962	M. & N. Abraham	24	0.01
	9	4 to 10	005-09964	P. & S. Brown	10	0.00
	9	4 to 10	005-09970	C., M. & A. Van der Velden	10	0.00
	9	4 to 10	005-09972	J. Carter	13	0.00
	9	4 to 10	005-09974	M. & K. Bloomfield	19	0.01
	9	4 to 10	005-09976	B. & C. Miller	22	0.01
	9	4 to 10	005-09978	J. Netzke & E. Shaw-Netzke	24	0.01
	9	4 to 10	005-09980	K. Helm	24	0.01
	9	4 to 10	005-09982	K. & W. Lingenfelter	23	0.01
	9	4 to 10	005-09984	C. Richardson	24	0.01
	9	4 to 10	005-09986	G. & C. Harris	24	0.01
	9	4 to 10	005-09988	S. & C. Emberley	24	0.01
	9	4 to 10	005-10008	S. Parsons	13	0.00
	9	4 to 10	005-10010	T. & E. Neill	24	0.01
	9	4 to 10	005-10012	S. & L. Dougherty	24	0.01
	9	4 to 10	005-10014	R. & S. Rowland	24	0.01
	9	4 to 10	005-10016	K. Urbinati & S. Knowles	24	0.01
	9	4 to 10	005-10018	L. Ellis & K. Borczyk	24	0.01
	9	4 to 10	005-10020	Township of Springwater	245	0.07
	9	4 to 10	005-10400	L. Leuschner & T. Morton-Gundert	6	0.00
	9	4 to 10	005-10500	S. & M. Imrie	11	0.00
	9	4 to 10	005-10600	R. Shelp	11	0.00
	9	4 to 10	005-10700	R. & L. Luoma	11	0.00
	9	4 to 10	005-10800	J. Dixon & W. Dixon Est.	13	0.00

**SCHEDULE B - SCHEDULE OF ASSESSMENTS
FOR FUTURE MAINTENANCE
SWALEY DRAIN, Township of Springwater**

FTC	Con	Lot Interval	Roll No.	Owner	TOTAL \$	TOTAL %
	9	4 to 10	005-11900	Simcoe County District School Board	694	0.19
	9	4 to 10	005-12000	A. Stillman	176	0.05
	9	4 to 10	005-12001	B. & E. Day	53	0.01
*	9	4 to 10	005-12002	L. & T. Camack	3,394	0.95
	9	4 to 10	005-12200	D. & G. Adams, H. Adams Est.	42	0.01
	9	4 to 10	005-12202	Township of Springwater	88	0.02
	9	4 to 10	005-12205	G. Adams, D. Adams-Lawrence, H. Adams Est	25	0.01
	9	4 to 10	005-12300	D. Jackson	46	0.01
	9	4 to 10	005-12550	R. Foster	968	0.27
	9	4 to 10	005-12600	H. Pohland	321	0.09
	9	4 to 10	005-12601	V. Kiernan & N. Skelhorn	36	0.01
*	9	4 to 10	005-12602	M. & J. Price	1,542	0.43
	9	4 to 10	005-12700	G. & C. Adams	2,379	0.67
	9	4 to 10	005-12800	R. Elzner & J. Dubreuil	38	0.01
	9	4 to 10	005-12900	S. Wall	24	0.01
	9	4 to 10	005-13000	A. Long	921	0.26
	9	4 to 10	005-13001	H. & T. Jones	42	0.01
*	9	4 to 10	005-13100	H. & L. Parker	2,166	0.61
	9	4 to 10	005-13200	B. & S. Bourne	660	0.18
	9	4 to 10	005-13201	I. & S. McDiarmid	32	0.01
	9	4 to 10	005-13202	S. & M. Black	22	0.01
	9	4 to 10	005-13203	D. & K. Dobson	839	0.23
	9	4 to 10	005-13300	G. McLean	44	0.01
	9	4 to 10	005-13400	J. Webb	72	0.02
	9	4 to 10	005-13500	P. Schaefer	150	0.04
	9	4 to 10	005-13501	K. Byrne	79	0.02
	9	4 to 10	005-13502	S. Moryoussef	89	0.02
	9	4 to 10	005-13510	M. Chalmers	2,052	0.57
	9	4 to 10	005-13600	C. Voiko	1,433	0.40
	9	4 to 10	005-13602	S. Whitehouse & M. McArthur	66	0.02
	9	4 to 10	005-13604	B. & J. Hare	56	0.02
	9	4 to 10	005-13606	K. & K. Ritchie	65	0.02
	9	4 to 10	005-13608	L. Conroy	41	0.01
	9	4 to 10	005-13610	N. & J. Tettmann	38	0.01
	9	4 to 10	005-13612	D. & R. Lloyd	38	0.01
	9	4 to 10	005-13614	G. & F. Desanto	60	0.02
	9	4 to 10	005-13616	G. Priest	259	0.07
	9	4 to 10	005-13636	A. & S. Mcfarlane	150	0.04
	9	4 to 10	005-13642	M. & C. Chesterman	113	0.03
	9	4 to 10	005-13648	J. Bryan & M. Messner	37	0.01
	9	4 to 10	005-13650	C. & M. Robertson	37	0.01
	9	4 to 10	005-13652	P. & A. Carreiro	38	0.01
	9	4 to 10	005-13654	S. Gortmaker & G. Spina	41	0.01
	9	4 to 10	005-13656	T. & J. Kinden	42	0.01
	9	4 to 10	005-13658	P. Dana	46	0.01
	9	4 to 10	005-13660	D. & T. Partridge	43	0.01
	9	4 to 10	005-13662	K. & A. Tenney & V. Dreimanis	42	0.01
	9	4 to 10	005-13664	D. & T. Marcoux	41	0.01
	9	4 to 10	005-13666	K. & V. Odette	42	0.01
	9	4 to 10	005-13668	M. Kozina & S. Easton	39	0.01
	9	4 to 10	005-13670	K. & J. Han	46	0.01
	9	4 to 10	005-13672	J. & S. Dubkowski	42	0.01
	9	4 to 10	005-13674	K. & P. Meek	48	0.01
	9	4 to 10	005-13676	A. & D. Naccarato	46	0.01
	9	4 to 10	005-13678	D. & C. Caruso	38	0.01
	9	4 to 10	005-13680	S. & S. Collins	39	0.01
	9	4 to 10	005-13682	E. & R. Bates	46	0.01
	9	4 to 10	005-13684	S. Seif, T. Seif & D. Haidner-Seif	53	0.01
	9	4 to 10	005-13686	E. & M. Cherkes	53	0.01
	9	4 to 10	005-13688	P. & A. Morrison	71	0.02
	9	4 to 10	005-13690	S. Smith & E. Barnard	53	0.01

**SCHEDULE B - SCHEDULE OF ASSESSMENTS
FOR FUTURE MAINTENANCE
SWALEY DRAIN, Township of Springwater**

FTC	Con	Lot Interval	Roll No.	Owner	TOTAL \$	TOTAL %
	9	4 to 10	005-13700	Township of Springwater	22	0.01
	9	4 to 10	005-13750	Township of Springwater	76	0.02
	9	4 to 10	005-13760	Township of Springwater	27	0.01
	9	4 to 10	005-13770	D. & G. Adams, D. Adams-Lawrence, H Adams Est	1	0.00
*	9	4 to 10	005-13800	W. Haight	4,225	1.18
	9	4 to 10	005-13801	D. Levigne & S. Carisse	480	0.13
	9	4 to 10	005-13802	T. & L. Dungate	1,303	0.36
	9	4 to 10	005-13810	J. Berry	2,725	0.76
	9	4 to 10	005-13900	R. Fisher	1,474	0.41
*	9	4 to 10	005-14000	M. & D. Camack	3,895	1.09
*	10	6 to 10	005-18910	R. Cameron	190	0.05
*	10	6 to 10	005-19000	S. McKenna & P. Neals	1,015	0.28
	10	6 to 10	005-19100	D. Haidner-Seif & S. Seif	497	0.14
*	10	6 to 10	005-19101	W. Haight	1,649	0.46
*	10	6 to 10	005-19200	W. Gilroy & B. Doner	8,882	2.48
*	10	6 to 10	005-19300	D. & D. Sellars	727	0.20
*	10	6 to 10	005-19400	H. Parker	1,979	0.55
	10	6 to 10	005-19500	H. & L. Parker	1,878	0.53
	11	7 to 11	005-21600	Min. of Northern Development, Mines, Natural Resources and Forestry	3,500	0.98
	11	7 to 11	005-21900	Nottawasaga Valley Conservation Auth.	31,500	8.81
	11	7 to 11	006-21000	Nottawasaga Valley Conservation Auth.	0	0.00
	7&8	3 to 9	008-20500	Township of Springwater (Trail)	1,063	0.30
Total on Lands:					199,702	55.85
				Highway 26	3,603	1.01
				7th Line (Wilson Avenue)	939	0.26
				8th Line (Golf Course Road)	1,726	0.48
				9th Line (Vespra Valley Road)	1,751	0.49
				10th Line (George Johnston Road)	26,472	7.29
				11th Line (Unopened)	159	0.04
				Hendrie Road	1,599	0.45
				Binnie Drive	508	0.14
				Pinehurst Lane	305	0.09
				Mayer Road	247	0.07
				Minesing - Adams Avenue	279	0.08
				Minesing - Huron Street	203	0.06
				Minesing - Laird Road	25	0.01
				Minesing - Stokes Drive	228	0.06
				Minesing - Plowright Road	330	0.09
				Minesing - Ronald Road	203	0.06
				Hindle Lane	571	0.16
				All Roads of Springwater in the Watershed as above	118,850	33.23
Total on Roads:					157,998	44.07
TOTAL SWALEY DRAIN:					357,700	99.92

Notes:

- The above lands marked "F" are currently classified as agricultural according to the OMAFRA and are therefore entitled to a 1/3 grant . Eligibility for the 1/3 grant will be confirmed at the time the final cost is levied.
- Section 21 of the Drainage Act, RSO 1990 requires that assessments be shown opposite each parcel of land and road affected. The affected parcels of land have been identified using the roll number from the last revised assessment roll for the Township. For convenience only, the owners' names as shown by the last revised assessment roll, has also been included.
- All lands shown above are in the Town of Bradford West Gwillimbury

APPENDIX 1

COMPONENTS OF AN ENGINEERING REPORT'S COST ESTIMATE

APPENDIX 1

COMPONENTS OF AN ENGINEERING REPORT'S COST ESTIMATE

a) Allowances (Pursuant to the Drainage Act)

- i) Section 29 of the Drainage Act can provide for the payment of allowances to private landowners for lands taken to accommodate expanded or new drainage work features on their properties. As well, Section 29 can provide for payment of allowances to compensate private lands to be used for construction and maintenance access to the drainage works, and/or for a right-of-way alongside the drainage works for construction and maintenance purposes.
- ii) Section 30 of the Drainage Act provides for the payment of allowances to landowners where lands and/or crops of private landowners are impacted by the construction of the drain. These allowances compensate the owner for damages caused by the construction of the drainage work (eg. damages caused by the construction equipment moving within the R-O-W and by the placement of any excavated spoil within or beyond the R-O-W). Section 30 allowances are also made for land and crop damages along access and right-of-way (ROW) routes during construction.

Allowances shown in a Report are normally only paid out or deducted from the final assessment levied once construction is complete. A net payment to an owner would only be made when an allowance(s) is/are greater than the final net assessment. The allowances are a fixed amount and can not be adjusted at the conclusion of construction. Allowances can only be changed if a report is modified prior to its adoption following Drainage Act procedures.

The Drainage Act also does provide for allowances for other purposes but such are not applicable to this project.

b) Construction Cost Estimate

The estimated cost of Labour, Equipment and Materials to construct a proposed drain has to be set out. Normally a construction cost estimate is based on recent costs for comparable work. Cost estimates for provisional items can also be included. A lump sum contingency amount can be included to apply to additional work that may be required due to unexpected field conditions or minor alterations to the project.

c) Engineering Cost Estimate

Engineering cost estimates for the Report Phase are to include all estimated or actual report preparation costs. Allowances for attending the required Council meetings to consider report and to conduct the Court of Revision are to be included in the cost estimate.

Engineering estimates for the Construction Phase services may include: preparing tender documents and the tender call, review of tenders, attending a pre-construction meeting, periodic construction inspection, contractor payments, final inspection, post-construction follow-up, final cost analyses, providing assistance to the Municipality during report processing if and as required, and preparing and signing provincial grant applications.

The Construction Phase services of the Engineer may also include costs to assist the Municipality in processing the work of the Report through to finalization.

The cost shown for report preparation is usually not altered at the conclusion of a project unless a report is referred back or a report is appealed to an Appeal body such as the Drainage Tribunal, either of which would result in additional costs. Also any amount shown for meetings is an estimate. The final cost will be based on the actual time required for meetings.

The estimate shown for construction phase services is based on past experience, assumes good construction conditions and a Contractor who completes the construction in an efficient manner, and assumes a reasonable assistance being required by the Engineer in post construction project finalization, and in assistance to the Municipalities. The final cost for the construction phase services will vary as per the actual time spent after the report adoption and/or during and following drain construction.

d) Estimate of Section 73 Administration (Other) Costs

Section 73(1) of the Drainage Act outlines that the following costs incurred by a municipality can be included in the cost of the drain: “cost of any application, reference or appeal and the cost of temporary financing.” However, Sections 73(2) and 73(3) of the Act state that the cost of services

provided by municipal staff and Council to carry out the Act process can not form part of the final cost of the drain.

An estimate of Administration Costs is included to cover the above referenced items from Section 73(1) and primarily provides for interest charges on financing the project until it is completed.

This administration cost estimate may not be adequate to cover legal or engineering costs incurred by or assessed to the municipality should the project be appealed beyond the Court of Revision though such costs normally form part of the final drain cost.

The policy for Provincial Grant purposes indicates that municipal costs for photo-copying and mailing required to carry out the required procedures under the Act can be included in the drain cost estimate.

e) Harmonized Sales Tax

The Harmonized Sales Tax (HST) will apply to most costs on this project.

The Municipality is eligible however for a significant refund on HST paid. The resulting net 1.76% HST is included in the cost estimate in this report.

In a Preliminary Report, the components of the cost estimate do not have to set out in detail but the cost estimate provided should recognize the components.

APPENDIX 2

WILLOW CREEK

APPENDIX 2

WILLOW CREEK

Willow Creek was discussed in the Scoping Report and it was noted that it is a creek with a watershed of approximately 30,700± ha (76,000± acres). It commences in Barrie upstream of Little Lake and continues downstream to the River. It has been channelized by man in the area of George Johnston Road significantly. **Drawing 7** shows the route and watershed of Willow Creek.

Aerials available from 1954 and from 1989 indicate that it was channelized downstream of George Johnston Road sometime prior to 1954 and then channelized further upstream and downstream between 1954 and 1989 so that from a point 1,000m upstream of the road to a point 2,000m downstream of George Johnston Road the channel is man-made. The aerials also show that Black Creek a small creek south of, but close to, Willow Creek has also been improved by man.

Aerials in 1954 do not show such, but those in 1989 do show a channel on Lot 10, Concession 10 that commences in the Swaley and continues close to the Willow. It is understood during the Hurricane Hazel event the Willow broke through its banks and discharged into this channel and thus ran to the Swaley. This breach was later filled in adjacent to the Willow.

The Willow as noted has a similar gradient as the old Muskrat channel but since it traverses a much longer route than from the River to George Johnston Road, it has a much higher channel bottom at George Johnston Road. Indeed, Willow Creek waters are 700mm higher than Swaley Drain waters at this road. The Willow is only 80m separated from the Swaley Drain at George Johnston Road as well.

A variety of concerns with Willow Creek have been expressed by different parties at the on-site meetings conducted re the Swaley Drain.

- A strong concern is that the Willow levels at George Johnston Road are causing long periods of farm field¹ inundation in the Spring and after heavy runoffs at other times.
- One concern is that the Willow has potential of breaching its banks and discharging into the Swaley Drain further upstream in Concession 8.

¹ *Immediately south of the Creek and immediately east of the road.*

- Another significant concern with the Willow is the downstream impact in the Minesing Wetlands due to the significant amount of sediments it carries.
- Any works to reduce the sediment loading of the Willow can only benefit the Minesing Wetlands.
- Concerns have also been expressed re the possible increase of drainage into the Willow upstream in the area of the upstream urban lands.
- Other concerns/requests are that the Willow channel be annually inspected and kept free of blockages and sediments from the George Johnston Road down to the River.

It is this writer's opinion that it would be desirable to ensure that the Willow does not have the ability to enter the Swaley/Muskrat area again because of the concerns with the sediments that it carries. It is this writer's opinion that the Willow should be improved upstream of George Johnston Road to both reduce the possibility that it could enter into the Swaley but also to better protect the Minesing wetlands. Works should be undertaken on it upstream to control the sediment load that it carries.

Any works to study the Willow Creek should also identify if any improvements should be undertaken across and downstream of George Johnston Road towards the River. If the man-made channel components of the Willow were inspected, it may be concluded that it would be desirable to remove sediments from such to give the wetlands a cushion from future sediment loading if no other works of improvement were done. The capacity of the components of the Willow Creek should also be examined to determine if and where flow restrictions exist (other than from just sediments). If any works resulted from such examinations, the extent of flooding in the upstream side of George Johnston Road might be reduced.

Discussions with NVCA staff indicates the Authority would be very reluctant to have any works of improvement undertaken on the Willow downstream of where it has already been altered by man (Lot 12, Concession 11). But it is this Engineer's belief that NVCA recognizes there is a need to study the Willow Creek if a method and means could be found to do such.

The costs to study the Willow Creek will be substantially high. Nevertheless, it would be desirable if some method(s) could be found to fund a study of Willow Creek for the betterment of the Minesing wetlands, the Swaley Drain and other lands adjacent to the Willow Creek.

If it were desired to initiate, at the local level, a study on the Willow, the Engineer suggests that the following is a process that could be considered:

a) Initially undertake a Project Scoping Study

- This study could be initiated, it is suggested, by a coalition of NVCA and the Township without recourse to the Drainage Act.
- It would be necessary to pre-identify the terms of reference for such a study. E.g.:
 - To determine characteristics of the existing Willow.
 - To determine concerns re the Willow.
 - To determine sources of sedimentation in the Willow.
 - To determine possible means of controlling sediments.
 - To determine any changes in flows in Willow and possible means of controlling such if increases have occurred.
 - To determine what works should be undertaken on the Willow across the Minesing wetlands to minimize damage to the wetlands by construction but also to maximize the use of the Willow through the wetlands and to maximize the other attributes of the wetlands.
 - To determine the mechanism for undertaking improvements and for ensuring such can be maintained.
- After a Terms of Reference was prepared, the costs to undertake a study should be learned.
- To finance a Project Scoping Study perhaps a consortium involving the three levels of government plus the County plus the land developers should be created to share the costs since the costs will be high.
- The Scoping Study should strongly examine the possible benefits of having Willow Creek designated as a Drain under the Drainage Act for reasons not to create a new drain but to identify how an existing channel should be better looked after. A drain report could identify the costs and distribution of the costs of works to address existing and future sediments, to address any man-made deficiencies in capacity, and to maintain the channel in the future to the extent necessary through the wetlands and to the extent necessary upstream of the wetlands.
- To identify the method and specifications for any maintenance
- To identify how a works could be initiated under the Drainage Act.

b) Preparing a Report on the Willow Creek Through the Drainage Act

- It is suggested the most difficult step in initiating a project under the Act would be the initiation itself.
- A “petition” as defined by the Act would be necessary and if a Scoping Study were prepared, this petitioning process could be discussed.
- A petition has to be submitted by affected landowners (or road authorities if drainage is required for roads).

- At this time the Engineer suggests that since the greatest benefits of controlling or managing the Willow to minimize downstream impacts would be the NVCA and MNRF lands in the wetlands, a petition by NVCA and MNRF for their lands should be considered.
- This would normally go against the thinking of or reasons for Drainage Act petitions since customarily new drainage construction works are anticipated. However, in the Willow project the Drainage Act would be used not to construct a new works but to better manage an existing works (the Willow Creek).
- Indeed, ownership of all lands along the Willow could be reviewed and it could be determined if other parties upstream of the Minesing Wetlands, e.g. Municipal road Authorities, landowners, the province and/or the County for their roads and any lands owned should also be a party to any petition.
- The Engineer sees great advantages in having the Willow Creek designated as a Drain to minimize its negative impacts and to maximize its possible positive impacts.
- The use of the Act, if a “petition” could be obtained would greatly facilitate the study on the Willow.
- In advance and as noted, the Project Scoping process could be effectively used to determine/confirm that a petition and a process under the Act should/could be initiated.
- If any report were ultimately prepared, the report could designate how the costs involved (initial and in the future) could be distributed. A Drainage Act Report could provide for sharing of costs to minimize individual property assessments by use of Block Assessments to urban areas, by use of Road Assessments to Road Authorities and by use of Special Benefit Assessments where Special Benefits result.

If the large study as outlined can not be initiated in the near future, a means with approvals should be sought to examine and address the Willow now for deficiencies in capacity and channel stability in the area of the Swaley Drain and Minesing Wetlands.

The Specifications are to consist of:

Appendix E - Supplemental Conditions (SC's)

Appendix F - General Special Provisions (GSP's)

Appendix G - Item Special Provisions (ISP's)

Appendix H – Standard KSAL Specifications

Appendix I – Drawings Index

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SC 1.0 General Terms

1.01 Standard Conditions

The General Conditions of this contract are OPSS MUNI Form 100 – MTO General Conditions of Contract. Such apply except where amended or replaced by these Supplemental Conditions or by any of the General Special Provisions.

1.02 No Indemnities from the Owner

Notwithstanding anything else in the Contract, any express or implied reference to the Owner providing an indemnity or any other form of indebtedness or contingent liability that would directly or indirectly increase the indebtedness or contingent liabilities of the Owner beyond the obligation to pay the Contract Price in respect of Deliverables accepted by the Owner, whether at the time of entering into the Contract or at any time during the Contract, shall be void and of no legal effect.

1.03 Entire Contract

The Contract embodies the entire agreement between the parties with regard to the provision of the Deliverables and supersedes any prior understanding or agreement, collateral, oral or otherwise with respect to the provision of the Deliverables, existing between the parties at the commencement of the Contract.

1.04 Severability

If any term or condition of the Contract, or the application thereof to the parties or to any Persons or circumstances, is to any extent invalid or unenforceable, the remainder of the Contract, and the application of such term or condition to the parties, Persons or circumstances other than those to which it is held invalid or unenforceable, shall not be affected thereby.

1.05 Failure to Enforce Not a Waiver

Any failure by the Owner to insist in one or more instances upon strict performance by the Contractor of any of the terms or conditions of the Contract shall not be construed as a waiver by the Owner of its right to require strict performance of any such terms or conditions, and the obligations of the Contractor with respect to such performance shall continue in full force and effect.

1.06 Changes by Written Amendment Only

Any changes to the Contract shall be by written amendment signed by the parties. No changes shall be effective or shall be carried out in the absence of such an amendment. Any such written changes shall be included in the definition of Contract.

1.07 Force Majeure

Neither party shall be liable for damages caused by delay or failure to perform its obligations under the Contract where such delay or failure is caused by an event beyond its reasonable control. The parties agree that an event shall not be considered beyond one's reasonable control if a reasonable business person applying due diligence in the

same or similar circumstances under the same or similar obligations as those contained in the Contract would have put in place contingency plans to either materially mitigate or negate the effects of such event. Without limiting the generality of the foregoing, the parties agree that force majeure events shall include natural disasters and acts of war, insurrection and terrorism but shall not include shortages or delays relating to supplies or services. If a party seeks to excuse itself from its obligations under this Contract due to a force majeure event, that party shall immediately notify the other party of the delay or non-performance, the reason for such delay or non-performance and the anticipated period of delay or non-performance. If the anticipated or actual delay or non-performance exceeds fifteen (15) Business Days, the other party may immediately terminate the Contract by giving notice of termination and such termination shall be in addition to the other rights and remedies of the terminating party under the Contract, at law or in equity.

1.08 Notices by Prescribed Means

Notices shall be in writing and shall be delivered by postage-prepaid envelope, personal delivery or email and shall be addressed to, respectively, the Contract Administrator and the Contractor Representative. Notices shall be deemed to have been given: (a) in the case of postage-prepaid envelope, five (5) Business Days after such notice is mailed; or (b) in the case of personal delivery or email one (1) Business Day after such notice is received by the other party. In the event of a postal disruption, notices must be given by personal delivery or by email. Unless the parties expressly agree in writing to additional methods of notice, notices may only be provided by the methods contemplated in this paragraph.

1.09 Governing Law

The Contract shall be governed by and construed in accordance with the laws of the Province of Ontario and the federal laws of Canada applicable therein.

SC 2.0 Nature of Relationship

2.01 Contractor's Power to Contract

The Contractor represents and warrants that it has the full right and power to enter into the Contract and there is no agreement with any other Person which would in any way interfere with the rights of the Owner under this Contract.

2.02 Representatives May Bind the Parties

The parties represent that their respective representatives have the authority to legally bind them to the extent permissible by the Requirements of Law.

2.03 Not a Partner, Agent or Employee

The Contractor shall have no power or authority to bind the Owner or to assume or create any obligation or responsibility, express or implied, on behalf of the Owner. The Contractor shall not hold itself out as an agent, partner or employee of the Owner. Nothing in the Contract shall have the effect of creating an employment, partnership or agency relationship between the Owner and the Contractor (or any of the Contractor's directors, officers, employees, agents, partners, affiliates, volunteers or subcontractors).

The Contractor acknowledges and agrees that the Owner is not hiring an employee(s) to perform the Deliverables under the Contract. As such, the Owner reserves the right to terminate the Contract if all appeals have been exhausted and the Contractor is determined by any board, court or tribunal of competent jurisdiction to be an employee.

Any and all monies paid to the Contractor shall be returned regardless of the extent of work that has been completed to that point, and all material and documents associated with the Contract, as well as Owner property, shall be returned to the Owner. The Contractor acknowledges and agrees that any work completed to the date when the appeal process has been completed, and an unfavourable determination is made, will be provided to the Owner for free and without any expectation of compensation. The risk associated with completing any work while there is an appeal process underway is entirely born by the Contractor.

2.04 Responsibility of Contractor

The Contractor agrees that it is liable for the acts and omissions of its directors, officers, employees, agents, partners, affiliates, volunteers and subcontractors. This paragraph is in addition to any and all of the Contractor's liabilities under the Contract and under the general application of law. The Contractor shall advise these individuals and entities of their obligations under the Contract and shall ensure their compliance with the applicable terms of the Contract. In addition to any other liabilities of the Contractor pursuant to the Contract or otherwise at law or in equity, the Contractor shall be liable for all damages, costs, expenses, losses, claims or actions arising from any breach of the Contract resulting from the actions of the above mentioned individuals and entities This paragraph shall survive the termination or expiry of this Contract.

2.05 Subcontracting or Assignment

Unless provided for in the Contract, the Contractor shall not subcontract or assign the whole or any part of the Contract or any monies due under it without the prior written consent of the Owner. Such consent shall be in the sole discretion of the Owner and subject to the terms and conditions that may be imposed by the Owner.

Every Contract entered into by the Contractor with a subcontractor shall adopt all of the terms and conditions of this Contract as far as applicable to those parts of the Deliverables provided by the subcontractor.

The Contractor agrees that to the extent that specific subcontractors are named in the Contract as being responsible for the provision of the Deliverables, only those subcontractors shall provide the Deliverables under the Contract. The Contractor shall not replace or substitute any of the subcontractors named in the Contract without the prior written approval of the Owner, which may not arbitrarily or unreasonably be withheld. Should the Contractor require the substitution or replacement of any of the subcontractors named in the Contract, it is understood and agreed that any proposed replacement must possess similar or greater qualifications than the subcontractor named in the Contract. The Contractor shall not claim fees for any replacement subcontractor greater than the Contract Price established under the Contract.

Nothing contained in the Contract shall create a Contractual relationship between any subcontractor or its directors, officers, employees, agents, partners, affiliates or volunteers and the Owner.

2.06 Duty to Disclose Change of Control

In the event that the Contractor undergoes a change in control the Contractor shall immediately disclose such change in control to the Owner and shall comply with any terms and conditions subsequently prescribed by the Owner resulting from the disclosure.

2.07 Conflict of Interest

The Contractor shall: (a) avoid any Conflict of Interest in the performance of its Contractual obligations; (b) disclose to the Owner without delay any actual or potential Conflict of Interest that arises during the performance of its Contractual obligations; and (c) comply with any requirements prescribed by the Owner to resolve any Conflict of Interest. In addition to all other Contractual rights or rights available at law or in equity, the Owner may immediately terminate the Contract upon giving notice to the Contractor where: (a) the Contractor fails to disclose an actual or potential Conflict of Interest; (b) the Contractor fails to comply with any requirements prescribed by the Owner to resolve a Conflict of Interest; or (c) the Contractor's Conflict of Interest cannot be resolved to the satisfaction of the Owner. This paragraph shall survive any termination or expiry of the Contract.

2.08 Contract Binding

The Contract can be enforced by and is binding upon the parties and their successors, executors, administrators and their permitted assigns.

SC 3.0 Performance by Contractor

3.01 Commencement of Performance

The Contractor shall commence performance upon receipt of written instructions from the Owner.

3.02 Contractor's Warranty

The Contractor hereby represents and warrants that the Deliverables (i) shall be provided fully and diligently in a professional and competent manner by persons qualified and skilled in their occupations; and (ii) shall be free from defects in material, workmanship and design, suitable for the purposes intended, in compliance with all applicable specifications and free from liens or encumbrance on title; and furthermore that all Deliverables shall be provided in accordance with: (a) the Contract; (b) Industry Standards; and (c) Requirements of Law. If any of the Deliverables, in the opinion of the Owner, are inadequately provided or require corrections, the Contractor shall forthwith make the necessary corrections at its own expense as specified by the Owner in a rectification notice.

3.03 Guaranteed Maintenance and Warranty

Upon completion of the Deliverables, the Contractor shall maintain these Deliverables for a warranty period of twelve (12) months after the date of the substantial completion for Stage 8 work to the satisfaction of the Owner.

The Contractor shall correct any imperfections due to material or Workmanship following issuance of any Substantial Completion. The decision of the Owner as to the nature and cause of any imperfections and the necessity for the type of repair shall be final. If the Contractor fails to comply with the direction from the Owner within five (5) Calendar Days or immediately in the case of an emergency the Owner may proceed under the bonding provided or if it is holding a Letter of Credit, Money Order, Certified Cheque, or Bank Draft/Cheque, it may draw upon it and complete the required Deliverables at the Contractor's expense.

The warranty given pursuant to this section shall not limit extended warranties on any items of equipment or material called for elsewhere in the Contract.

The Contractor shall, to the extent permitted by the manufacturer and/or supplier, assign to the Owner the benefit of any warranty by any manufacturers and/or suppliers in addition to the warranty as mentioned above.

3.04 Occupational Health and Safety

The Contractor shall:

- (a) be the designated "constructor", as defined in the *Occupational Health and Safety Act* ("OHSA"), for the work site and shall fulfill the responsibilities of the position under the OHSA, related statutes and regulations;
- (b) comply with the OHSA and ensure that all persons assigned to perform the Deliverables under the Contract adhere to the OHSA and all applicable statutes and regulations; and
- (c) give immediate notice by telephone or personal communication to the Owner as to any damage or injury, or threat of damage or injury, to persons or property during the performance of the services contemplated by this Contract.

The Contractor's failure to comply with any of the above requirements shall be cause for either immediate termination or suspension of the Contract until the deficiency, in the opinion of the Owner and/or Workplace Safety and Insurance Board ("WSIB") is rectified at no cost to the Owner.

The Contractor acknowledges and agrees that any damages or fines that may be assessed against the Owner by reason of a breach or breaches of the OHSA by the Contractor or any of its subcontractors shall entitle the Owner to set off the damages so assessed against any monies that the Owner may from time to time owe the Contractor under this Contract or any other Contract whatsoever.

3.05 Hazardous Materials

The Contractor shall provide a list of all controlled hazardous materials or products containing hazardous materials, all physical agents or devices or equipment producing or omitting physical agent and any substance, compound, product or physical agent that is deemed to be or contains a designated substance in accordance with the Workplace

Hazardous Materials Information System 2015 (WHMIS 2015) as defined under the Occupational Health and Safety Act and shall provide appropriate Material Health and Safety Data Sheets for these substances used for the performance of the required Deliverables, all prior to the performance of said Deliverables.

The Contractor shall follow Workplace Hazardous Materials Information Systems 2015 (WHMIS 2015) requirements and ensure all employees are given required training and support.

The Contractor shall have a clearly defined safety plan/rescue plan for its workers involved in hazardous activities. This plan shall include, but not be limited to, procedures for entering a confined space on the work site.

The Contractor shall have a Health & Safety Policy including a written Lock-out procedure.

3.06 Designated Personnel

Prior to commencing the Deliverables, the Contractor shall identify to the Owner the designated work site supervisor, the designated health and safety representative, any subcontractors, and any additional personnel representing the Contractor, along with their respective roles and responsibilities in the performance of the Deliverables.

3.07 Protection of Deliverables and Property

The Contractor shall observe all of the Owner's procedures with regard to the security of the facility where the Deliverables is performed and shall adequately protect the Deliverables, property, and premises of the Owner. The Contractor shall be responsible for any damages due to any act or omission of the Contractor's employees, agents, Contractors, subcontractors and those others for whom the Contractor is responsible.

3.08 Risk of Loss or Damage

The Contractor shall bear all risk of loss or damage from any cause, which may occur to any part or portion of the Deliverables, until the Deliverables have been completely accepted by the Owner in writing. If any loss or damage occurs to the Deliverables before the Owner accepts the Deliverables in writing, the Contractor shall immediately repair or re-execute any damaged part of the Deliverables at the Contractor's expense.

3.09 Licenses and Permits

The Contractor shall obtain and hold throughout the term of the Contract any and all permits, approvals, and licenses required by any municipal, provincial, or federal government or authority having jurisdiction over the whole, or any part of, the Deliverables to be performed by the Contractor pursuant to the Contract. The Contractor shall provide the Owner with copies upon request.

3.10 Licensed Trades

The Contractor shall employ and shall ensure that all subcontractors are employ licensed trades in good standing with the Ontario College of Trades, where applicable and required.

3.11 Contractor's Obligations to Subcontractors

The Contractor shall comply with the *Construction Lien Act* and other applicable statute and regulation, and discharge its lawful obligations to its subcontractors. The Contractor shall satisfy any claims against the Contractor or the Owner by its subcontractors. The issuance of the final payment shall not be construed as a representation that the Owner has made any examination to ascertain:

- (a) how and for what purpose the Contractor has used the monies paid to the Contractor in accordance with the terms of the Contract; or
- (b) whether the Contractor has discharged the obligations imposed on the Contractor by the *Construction Lien Act*, the *Occupational Health and Safety Act*, or other applicable statute or regulation, noncompliance with which may render the Owner personally liable for the Contractor's default.

3.12 Co-operation of the Contractor

The Owner may perform, or retain or permit others to perform other work on or near the work site and may permit provincial agencies and others to do work on or near the work site during the Contractor's performance of the Deliverables. The Contractor shall conduct and schedule the performance of the Deliverables and co-operate with those other parties so as to cause as little interference as possible with any such other work being carried out.

The Contractor shall allow access to the work site on demand to representatives of the Owner.

3.13 Specifications and Materials

The Contractor shall carefully study and compare all specifications, Drawings, and other instructions relating to the performance of the Deliverables and comply with the requirements of the Contract. The Contractor shall not substitute any supplies or materials where a specific brand or model has been specified in the Contract without first obtaining written approval from the Owner.

3.14 Condition of Site

The Contractor shall confine all work to the site. The Contractor shall keep the site free from accumulations of waste material or rubbish caused by the Contractor's activities during the performance of the Deliverables and shall remove all rubbish from the site and the vicinity upon the completion of the Deliverables.

3.15 Accessibility for Ontarians with Disabilities (AODA)

The Contractor shall comply with the provisions of the *Accessibility for Ontarians with Disabilities Act*, 2005 and all of its regulations, as amended. The Contractor shall ensure that its employees, agents, volunteers and representatives receive any applicable training as required on the AODA and its regulations.

3.16 Shipment of Goods

To the extent that the Deliverables includes the shipment of goods to the Owner, all such goods shall be Delivered Duty Paid (DDP) (Incoterms 2010) to the Owner's place of business or such other location as may be specified in the Contract. No transportation or

delivery charges of any kind, including, without limitation, packing, boxing, storage, cartage or customs brokerage charges, shall be paid by the Owner, unless specifically agreed by the Owner in writing. The goods will be suitably packed in such a manner as will ensure their safe transportation undamaged to their destination. The goods will remain at the risk of the Contractor until the goods are received by the Owner. Receipt of the goods at the Owner's location does not constitute acceptance of the goods by the Owner. The goods are subject to the Owner's inspection and acceptance within a reasonable period of time after delivery. If any of the goods, in the opinion of the Owner, are inadequately provided or require corrections, the Contractor shall make the necessary corrections at its own expense as specified by the Owner in a rectification notice.

3.17 Use and Access Restrictions

The Contractor acknowledges that unless it obtains specific written preauthorization from the Owner, any access to or use of the Owner property, technology or information that is not necessary for the performance of its Contractual obligations with the Owner is strictly prohibited. The Contractor further acknowledges that the Owner may monitor the Contractor to ensure compliance with this paragraph. This paragraph is in addition to and shall not limit any other obligation or restriction placed upon the Contractor.

3.18 Notification by Contractor to the Owner

The Contractor shall advise the Owner promptly of: (a) any contradictions, discrepancies or errors found or noted in the Contract; (b) supplementary details, instructions or directions that do not correspond with those contained in the Contract; and (c) any omissions or other faults that become evident and should be corrected in order to perform the Deliverables in accordance with the Contract and Requirements of Law.

3.19 Performance Monitoring

The Contractor understands that its performance shall be monitored and that their overall performance shall be a major consideration for future Contracts with the Owner. The frequency and detail of ongoing performance monitoring shall be dependent upon the nature of the Deliverables.

3.20 Lost Production Days

The Owner shall review all claims of lost production prior to the Contractor ceasing Deliverables. Expenditures claimed under lost production shall be per OPS 127 and shall not include any overhead and profit. In the event of a dispute between the Owner and Contractor, the process shall follow the Owner's Alternative Dispute Resolution.

3.21 Time

Time is of the essence.

3.22 Rights and Obligations Not Limited

The express rights and remedies of the Owner and obligations of the Contractor set out in the Contract are in addition to and shall not limit any other rights and remedies available to the Owner or any other obligations of the Contractor at law or in equity.

SC 4.0 Payment and Audit

4.01 Payment According to Contract Price

The Owner shall, subject to the Contractor's compliance with the provisions of the Contract, pay the Contractor for the Deliverables provided at the Contract Price established under the Contract.

4.02 Estimated Quantities and Provisional Items

The Owner reserves the right to increase or decrease the estimated quantities set out in the ITT and will adjust the Contract amount accordingly based on the unit price or lump sum price, whichever is applicable. The Owner will only pay the Contractor for the actual quantity used based on the unit price or lump sum price. The Contractor acknowledges that this may result in the payment being less than their Total Bid Price for the Contract and the Contractor shall not claim extra payment for loss of anticipated profits.

4.03 Owner's Payment Terms

Unless the parties expressly set out an alternative billing and payment process, the following process shall govern:

- a) All payments shall be made in net 30 days.
- b) All payments shall be made in Canadian funds.
- c) The Contractor shall provide the Owner with a monthly billing statement no later than ten (10) Business Days after the end of each month and that billing statement shall include: (i) the reference number assigned to this Contractor by the Owner; (ii) a brief description of the work provided for the relevant month; and (iii) taxes, if payable by the Owner, identified as separate items.
- d) Each billing statement is subject to the approval of the Owner before any payment is released and payment shall be made within thirty (30) Business Days of such approval.
- e) Payment shall be by electronic fund transfer and the Contractor shall provide the Owner with the necessary banking information to enable electronic fund transfer payments.
- f) Where the work is subject to the Construction Lien Act all payments under this Contract shall be subject to the holdback and other provisions of the Construction Lien Act.
- g) The work is also subject to a 2% Maintenance Security Hold Back which is in addition to the statutory 10% holdback.

No payment by the Owner shall constitute an acceptance of any portion of the Deliverables which is not in accordance with the requirements of this Contract.

4.04 Construction Lien Act Hold Back

In accordance with the Construction Lien Act prior to release of the hold back the Contractor shall submit to the Owner the following documents:

- a) Workplace Safety and Insurance Board Certificate of Clearance dated after the commencement of the 60-day Lien period;
- b) a Standard Statutory Declaration; and
- c) proof of publication of certification of substantial performance of Contract under Section 32 of the Construction Lien Act, R.S.O., 1990 C., 30, (as amended).

Upon receipt of the above documents, expiration of the 45-day lien period and confirmation that the Contract is free of liens or unsettled claims, the 10% lien hold back shall be released.

Notwithstanding the above, the Owner may retain a portion of the hold back as assurance for the rectification of any outstanding deficiencies.

4.05 Maintenance Security Hold Back Release

The 2% maintenance security shall be reduced at the end of the warranty period, provided that there are no outstanding maintenance and warranty issues.

4.06 Payment of Taxes and Duties

Unless otherwise stated, the Contractor shall pay all applicable taxes, including excise taxes incurred by or on the Contractor's behalf with respect to the Contract.

4.07 Withholding Tax

The Owner shall withhold any applicable withholding tax from amounts due and owing to the Contractor under the Contract and shall remit it to the appropriate government in accordance with applicable tax laws. This paragraph shall survive any termination or expiry of the Contract.

4.08 Interest on Late Payment

If a payment is in arrears through no fault of the Contractor, the interest charged by the Contractor, if any, for any late payment shall not exceed the Bank of Canada's prime rate, in effect on the date that the payment went into arrears.

4.09 Release of Bid Securities (if any)

Bid securities of all bidders will be released upon the execution of the Form of Agreement with the successful bidder.

4.10 Release of Contract Securities

- a) Where the contract security is a certified cheque, Bank Draft/Cheque or irrevocable letter of credit, the security will be reduced to a value of \$50,000 during the maintenance period. This will be in addition to the statutory 2% maintenance warranty holdback.
- b) Contract securities in the form of bonds will be released at the end of the warranty period.

4.11 Document Retention and Audit

For seven (7) years after the completion or termination of the Contract, the Contractor shall maintain all necessary records to substantiate (a) all charges and payments under the Contract and (b) that the Deliverables was provided in accordance with the Contract and with Requirements of Law. During the Contract, and for seven (7) years after the expiration or termination of the Contract, the Contractor shall permit and assist the Owner in conducting audits of the operations of the Contractor to verify (a) and (b) above. The Owner shall provide the Contractor with at least ten (10) Business Days prior notice of its requirement for such audit. The Contractor's obligations under this paragraph shall survive any termination or expiry of the Contract.

SC 5.0 Confidentiality

5.01 Confidentiality and Promotion Restrictions

Any publicity or publications related to the Contract shall be at the sole discretion of the Owner. The Owner may, in its sole discretion, acknowledge the Deliverables provided by the Contractor in any such publicity or publication. The Contractor shall not make use of its association with the Owner without the prior written consent of the Owner. Without limiting the generality of this paragraph, the Contractor shall not, among other things, at any time directly or indirectly communicate with the media in relation to the Contract unless it has first obtained the express written authorization to do so by the Owner.

5.02 Owner Confidential Information

During and following the term of the Contract, the Contractor shall: (a) keep all Owner Confidential Information confidential and secure; (b) limit the disclosure of Owner Confidential Information to only those of its directors, officers, employees, agents, partners, affiliates, volunteers or subcontractors who have a need to know it for the purpose of providing the Deliverables and who have been specifically authorized to have such disclosure; (c) not directly or indirectly disclose, destroy, exploit or use any Owner Confidential Information (except for the purpose of providing the Deliverables, or except if required by order of a court or tribunal), without first obtaining: (i) the written consent of the Owner and (ii) in respect of any Owner Confidential Information about any third-party, the written consent of such third-party; (d) provide Owner Confidential Information to the Owner on demand; and (e) return all Owner Confidential Information to the Owner before the expiration or termination of the Contract, with no copy or portion kept by the Contractor.

5.03 Restrictions on Copying

The Contractor shall not copy any Owner Confidential Information, in whole or in part, unless copying is essential for the provision of the Deliverables. On each copy made by the Contractor, the Contractor must reproduce all notices which appear on the original.

5.04 Notice of Breach

The Contractor shall notify the Owner promptly upon the discovery of loss, unauthorized disclosure, unauthorized access or unauthorized use of Owner Confidential Information.

5.05 Injunctive and Other Relief

The Contractor acknowledges that breach of any provisions of this Article may cause irreparable harm to the Owner or to any third-party to whom the Owner owes a duty of confidence, and that the injury to the Owner or to any third-party may be difficult to calculate and inadequately compensable in damages. The Contractor agrees that the Owner is entitled to obtain injunctive relief (without proving any damage sustained by it or by any third-party) or any other remedy against any actual or potential breach of the provisions of this Article.

5.06 Notice and Protective Order

If the Contractor or any of its directors, officers, employees, agents, partners, affiliates, volunteers or subcontractors become legally compelled to disclose any Owner Confidential Information, the Contractor will provide the Owner with prompt notice to that effect in order to allow the Owner to seek one or more protective orders or other appropriate remedies to prevent or limit such disclosure, and it shall co-operate with the Owner and its legal counsel to the fullest extent. If such protective orders or other remedies are not obtained, the Contractor will disclose only that portion of Owner Confidential Information which the Contractor is legally compelled to disclose, only to such person or persons to which the Contractor is legally compelled to disclose, and the Contractor shall provide notice to each such recipient (in co-operation with legal counsel for the Owner) that such Owner Confidential Information is confidential and subject to non-disclosure on terms and conditions equal to those contained in the Contract and, if possible, shall obtain each recipient's written agreement to receive and use such Owner Confidential Information subject to those terms and conditions.

5.07 MFIPPA Records and Compliance

The Contractor and the Owner acknowledge and agree that MFIPPA applies to and governs all Records and may require the disclosure of such Records to third parties. Furthermore, the Contractor agrees (a) to keep Records secure; (b) to provide Records to the Owner within seven (7) Calendar Days of being directed to do so by the Owner for any reason including an access request or privacy issue; (c) not to access any Personal Information unless the Owner determines, in its sole discretion, that access is permitted under MFIPPA and is necessary in order to provide the Deliverables; (d) not to directly or indirectly use, collect, disclose or destroy any Personal Information for any purposes that are not authorized by the Owner; (e) to ensure the security and integrity of Personal Information and keep it in a physically secure and separate location safe from loss, alteration, destruction or intermingling with other records and databases and to implement, use and maintain the most appropriate products, tools, measures and procedures to do so; (f) to restrict access to Personal Information to those of its directors, officers, employees, agents, partners, affiliates, volunteers or subcontractors who have a need to know it for the purpose of providing the Deliverables and who have been specifically authorized by an Owner representative to have such access for the purpose of providing the Deliverables; (g) to implement other specific security measures that in the reasonable opinion of the Owner would improve the adequacy and effectiveness of the Contractor's measures to ensure the security and integrity of Personal Information and Records generally; and (h) that any confidential information supplied to the Owner may be disclosed by the Owner where it is obligated to do so under MFIPPA, by an order of a

court or tribunal or pursuant to a legal proceeding and the provisions of this paragraph shall prevail over any inconsistent provisions in the Contract.

5.08 Survival

The provisions of this section shall survive any termination or expiry of the Contract.

SC 6.0 Intellectual Property

6.01 Owner Intellectual Property

The Contractor agrees that all Intellectual Property and every other right, title and interest in and to all concepts, techniques, ideas, information and materials, however recorded, (including images and data) provided by the Owner to the Contractor shall remain the sole property of the Owner at all times.

6.02 No Use of the Owner Insignia

The Contractor shall not use any insignia or logo of the Owner except where required to provide the Deliverables, and only if it has received the prior written permission of the Owner to do so.

6.03 Ownership of Intellectual Property

The Owner shall be the sole Owner of any Newly Created Intellectual Property. The Contractor irrevocably assigns to and in favour of the Owner and the Owner accepts every right, title and interest in and to all Newly Created Intellectual Property in the Deliverables, immediately following the creation thereof, for all time and irrevocably waives in favour of the Owner all rights of integrity and other moral rights to all Newly Created Intellectual Property in the Deliverables, immediately following the creation thereof, for all time. To the extent that any of the Deliverables include, in whole or in part, the Contractor's Intellectual Property, the Contractor grants to the Owner a licence to use that Contractor Intellectual Property in the manner contemplated in this Article, the total consideration for which shall be payment of the Contract Price to the Contractor by the Owner.

6.04 Contractor's Grant of License

For those parts of the Deliverables that are Contractor Intellectual Property, the Contractor grants to the Owner a perpetual, world-wide, non-exclusive, irrevocable, transferable, royalty free, fully paid up right and license: (a) to use, modify, reproduce and distribute, in any form, those Deliverables; and (b) to authorize other Persons, including agents, Contractors or sub-Contractors, to do any of the former on behalf of the Owner.

6.05 No Restrictive Material in Deliverables

The Contractor shall not incorporate into any Deliverables anything that would restrict the right of the Owner to modify, further develop or otherwise use the Deliverables in any way that the Owner deems necessary, or that would prevent the Owner from entering into any Contract with any Contractor other than the Contractor for the modification, further development of or other use of the Deliverables.

6.06 Third-Party Intellectual Property

The Contractor represents and warrants that the provision of the Deliverables shall not infringe or induce the infringement of any Third-Party Intellectual Property rights. The Contractor further represents and warrants that it has obtained assurances with respect to any Contractor Intellectual Property and Third-Party Intellectual Property that any rights of integrity or any other moral rights associated therewith have been waived.

6.07 Survival

The obligations contained in this section shall survive the termination or expiry of the Contract.

SC 7.0 Indemnities and Insurance

7.01 Contractor Indemnity

The Contractor hereby agrees to indemnify and hold harmless the Indemnified Parties from and against any and all liability, loss, costs, damages and expenses (including legal, expert and Contractor fees), causes of action, actions, claims, demands, lawsuits or other proceedings, (collectively, "Claims"), by whomever made, sustained, incurred, brought or prosecuted, including for breaches of confidentiality or privacy or Intellectual Property rights or for third party bodily injury (including death), personal injury and property damage, in any way based upon, occasioned by or attributable to anything done or omitted to be done by the Contractor, its subcontractors or their respective directors, officers, agents, employees, partners, affiliates, volunteers or independent Contractors in the course of performance of the Contractor's obligations under, or otherwise in connection with, the Contract. The Contractor further agrees to indemnify and hold harmless the Indemnified Parties for any incidental, indirect, special or consequential damages, or any loss of use, revenue or profit, by any person, entity or organization, including, without limitation, the Owner, claimed or resulting from such Claims. The obligations contained in this paragraph shall survive the termination or expiry of the Contract.

7.02 Third Party Claims

When the Contractor is contacted about, presented with or forwarded a Notice of Claim received by the Owner from a third party who claims to have been injured or suffered property damage within the construction zone or resulting from the Contractor's maintenance of the construction zone or as a result of work performed under the Contract ("Claimant"), the Contractor and/or their insurance representative shall:

- a) deal with the Claim in a prompt, courteous and efficient manner;
- b) correspond with the Claimant, their legal representative and/or insurance company directly; and
- c) forward an acknowledgement of receipt to the Claimant within ten (10) working days as well as forward a copy to the Contract Administrator and Insurance Claims Coordinator.

The Contractor and/or their insurer are requested to provide a final response to a Claim for property damage within four (4) weeks of receiving a notice of claim. In the event that

the Claim is denied, the Contractor and /or their insurer are requested to copy the Owner's Contract Administrator and Insurance Claims Coordinator in the denial letter with full explanation of the denial.

If the Contractor and/or the Owner is named and served with a Statement of Claim, the Contractor and/or their insurer shall assume the defense of any such action, including the Owner's defense, and ensure that the Owner is kept apprised of the status of the legal proceedings in any such action by copying the Owner's Contract Administrator and Insurance Claims Coordinator on all correspondence in this matter.

For any Claims, which the Contractor is ultimately deemed liable, the Contractor will reimburse the Owner for any costs incurred by the Owner in the investigation and handling of the Claim.

The Contractor must resolve and/or attend all Claims within thirty (30) Calendar Days from the date of notice to the satisfaction of the Owner's Director of Corporate Services. Prior to releasing a holdback reduction or final payment, the Director of Corporate Services will be contacted to ensure that all outstanding claims have been resolved and/or attended to.

7.03 Insurance

The Contractor hereby agrees to put in effect and maintain insurance for the duration of the Contract, at its own cost and expense, with insurers licensed to do business in the province of Ontario and having a secure A.M. Best rating of B + or greater, or the equivalent, all the necessary and appropriate insurance that a prudent person in the business of the Contractor would maintain including, but not limited to, the following:

- a) Commercial General Liability Insurance on an occurrence basis for third party bodily injury, personal injury and property damage, to an inclusive limit of not less than **\$5,000,000** per occurrence and including products and completed operations liability. The policy is to include the following:
 - the Owner (Township of Springwater) and K. Smart Associates Limited as additional named insureds with respect to liability arising in the course of performance of the Contractor's obligations under, or otherwise in connection with, the Contract
 - blanket contractual liability coverage
 - cross-liability and severability of interests clause
 - premises and all operations liability coverage
 - products and completed operations coverage
 - employers liability coverage
 - Owner's and Contractor's protective coverage
 - 30 day written notice of cancellation, termination or material change
 - tenants legal liability coverage (if applicable and with suitable sub-limits)
 - non-owned automobile coverage with blanket contractual coverage for hired automobiles

- a maximum deductible of five thousand dollars (\$5,000), the cost of which shall be the entire responsibility of the Contractor
- b) Automobile Insurance for all licensed vehicles that have access to the site or vehicles which are employed in the execution of the Deliverables in accordance with the applicable provincial statutes as they relate to vehicles licensed for public highways with liability limits subject to limits of not less than **\$2,000,000** per occurrence combined bodily injury and property damage.
- c) Contractor's Pollution Liability Insurance subject to limits of not less than **\$5,000,000** inclusive per claim.

The Owner reserves the right to request such higher limits of insurance or other types of policies appropriate to work as the Owner may reasonable require.

The Contractor shall use reasonable efforts to require that its subcontractors obtain appropriate coverage applicable to the portion of the Deliverables that they perform

7.04 Proof of Insurance

The Contractor shall provide the Owner with proof of the insurance required by this Contract in the form of valid certificates of insurance that reference this Contract and confirm the required coverage. The Contractor shall provide the Owner with renewal replacements on or before the expiry of any such insurance. Upon the request of the Owner, a copy of each insurance policy shall be made available to it.

7.05 Workplace Safety and Insurance

The Contractor warrants and agrees that it has complied and will comply with all applicable workplace safety and insurance laws and regulations and, if the Contractor is subject to the *Workplace Safety and Insurance Act*, will provide proof of valid coverage by means of a current Workplace Safety and Insurance Board ("WSIB") clearance certificate to the Owner upon request. The Contractor covenants and agrees to pay when due, and to ensure that each of its subcontractors pays when due, all amounts required to be paid by it and its subcontractors under the *Workplace Safety and Insurance Act* throughout the duration of the Contract. The Contractor further agrees to indemnify the Owner for any and all liability, loss, costs, damages and expenses (including legal fees) or other charges in connection with the Contractor's failure to comply with any applicable workplace safety and insurance laws or related to the Contractor's status with the WSIB.

Effective January 1, 2013, Bill 119 legislates that all Contractors and Sub-Contractors categorized under Class G: Construction, shall have a WSIB account and clearance coverage prior to commencing any Contract.

Alternatively, if the Contractor is an Independent Operator and is not categorized under Class G: Construction, the Contractor shall submit a letter from the WSIB confirming that s/he has Independent Operator Status under the WSIB Act. If the Contractor does not have Independent Operator Status, the Contractor shall;

- a) Complete an Independent Operator Status Questionnaire upon being awarded the Contract; and
- b) fund all costs associated with any appeal of a determination by WSIB that the Contractor is not an Independent Operator; and
- c) provide proof of Employer's Liability Insurance (provided either by WSIB or the Contractor's insurance provider with a limited of not less than \$2,000,000.

7.06 Subcontractor's Insurance

The Contractor shall ensure that each of its subcontractors obtains all the necessary and appropriate insurance that a prudent person in the business of the subcontractor would maintain and that the Owner and Indemnified Parties are named as additional insured with respect to any liability arising in the course of performance of the subcontractor's obligations under the subcontract for the provision of the Deliverables. If the Contractor intends to engage any subcontractor whose insurance coverage is less than the requirements stated in paragraph 7.03, the Contractor shall first obtain the Owner's written consent to use such subcontractor for a portion of the Deliverables on the Contract.

The Contractor shall be responsible to ensure all subcontractors have a current WSIB clearance certificate and a valid insurance certificate prior to commencement of any work under this Contract. The Owner reserves the right to request copies of these certificates at any time.

SC 8.0 Termination

8.01 Immediate Termination of Contract

The Owner may immediately terminate the Contract upon giving notice to the Contractor where:

- a) the Contractor is adjudged bankrupt, makes a general assignment for the benefit of its creditors or a receiver is appointed on account of the Contractor's insolvency;
- b) the Contractor breaches any provision in paragraph 5.0 Confidentiality;
- c) the Contractor breaches the Conflict of Interest paragraph in paragraph 2.0 Nature of Relationship;
- d) the Contractor, prior to or after entering into the Contract, makes a material misrepresentation or omission or provides materially inaccurate information to the Owner;
- e) the Contractor undergoes a change in control which adversely affects the Contractor's ability to satisfy some or all of its obligations under the Contract;
- f) the Contractor subcontracts for the provision of part or all of the Deliverables or assigns the Contract without first obtaining the written approval of the Owner; or
- g) the Contractor's acts or omissions constitute a substantial failure of performance and the above rights of termination are in addition to all other rights of termination available at law, or events of termination by operation of law.

8.02 Rectification Notice

Subject to the above paragraph, where the Contractor fails to comply with any of its obligations under the Contract, the Owner may issue a rectification notice to the Contractor setting out the manner and timeframe for rectification. Within seven (7) Business Days of receipt of that notice, the Contractor shall either: (a) comply with that rectification notice; or (b) provide a rectification plan satisfactory to the Owner. If the Contractor fails to either comply with that rectification notice or provide a satisfactory rectification plan, the Owner may immediately terminate the Contract. Where the Contractor has been given a prior rectification notice, the same subsequent type of non-compliance by the Contractor shall allow the Owner to immediately terminate the Contract.

8.03 Termination on Notice

The Owner reserves the right to terminate the Contract, without cause, upon thirty (30) Calendar Days prior notice to the Contractor.

8.04 Contractor's Obligations on Termination

On termination of the Contract, the Contractor shall, in addition to its other obligations under the Contract and at law (a) at the request of the Owner, provide the Owner with any completed or partially completed Deliverables; (b) provide the Owner with a report detailing: (i) the current state of the provision of Deliverables by the Contractor at the date of termination; and (ii) any other information requested by the Owner pertaining to the provision of the Deliverables and performance of the Contract; (c) execute such documentation as may be required by the Owner to give effect to the termination of the Contract; and (d) comply with any other instructions provided by the Owner, including but not limited to instructions for facilitating the transfer of its obligations to another Person. This paragraph shall survive any termination of the Contract.

8.05 Contractor's Payment Upon Termination

On termination of the Contract, the Owner shall only be responsible for the payment of the Deliverables provided under the Contract up to and including the effective date of any termination. Termination shall not relieve the Contractor of its warranties and other responsibilities relating to the Deliverables performed or money paid. In addition to its other rights of hold back or set off, the Owner may hold back payment or set off against any payments owed if the Contractor fails to comply with its obligations on termination.

8.06 Termination in Addition to Other Rights

The express rights of termination in the Contract are in addition to and shall in no way limit any rights or remedies of the Owner under the Contract, at law or in equity.

8.07 Suspension of Contractor's Performance

The Owner may in its sole discretion at any time upon written notice to the Contractor suspend the performance of the Deliverables, in whole or in part, for a specified or unspecified time. Upon receiving notice of the suspension, the Contractor shall immediately suspend all operations concerning that identified portion of the Deliverables except such Deliverables as is necessary in the opinion of the Owner to care for, preserve and protect the Deliverables. During the period of suspension, the Contractor shall only be entitled to be reimbursed for its reasonable, proper and actual expenses in caring for,

preserving and protecting the Deliverables. Should the period of suspension last longer than thirty (30) consecutive days or such longer period as the parties may agree upon in writing, either party to the Contract may consider the Contract to be terminated by mutual agreement without further liability.

8.08 Alternative Dispute Resolution

Differences between the parties as to the interpretation, application or administration of the Contract or any failure to agree where agreement between the parties is called for, herein collectively called “disputes”, shall be settled in accordance with an Alternative Dispute Resolution Procedure.

APPENDIX F – GENERAL SPECIAL PROVISIONS

GSP 1.0 Access to Site

1.01 General

Access roads/routes are required as part of the Contract to facilitate construction operations, delivery and unloading of equipment and materials, mobility and operation of construction equipment and advancement of work operations.

Access for the deliverables of this Contract shall be obtained from existing roads.

The Contractor shall be responsible for all re-grading of existing roads and access routes, including lanes, yards, fields and spoil berms, used for purposes of site access. He shall also be responsible for the restoration of all existing roads and access routes and landscaping to preconstruction conditions or better.

Any damage to trees or other property caused by the Contractor's site access shall be corrected to the Contract Administrator's satisfaction at the Contractor's expense.

Unlicensed vehicles and construction equipment shall not unnecessarily block, interfere with or disturb an unprotected lane, yard or field except where prior authorization is received from the Board.

The Contractor shall plan and schedule the routes of construction and delivery vehicles to, from and within the job site, so that vehicular movements are accommodated with minimal interference and interruption to public and private traffic. Access routes shall be established to allow vehicles to merge with public traffic and to avoid crossing traffic lanes.

The Contractor shall obtain the Contract Administrator's prior approval for the location of any other construction access not described by these Special Provisions. The Contract Administrator reserves the right to alter, reject or close same as considered necessary. The Contractor shall notify suppliers of materials and equipment of the location and proper use of the access points.

1.02 Additional Provisions for Road Allowance Access (If Roadway Access is Later Directed to be Used)

- Attend to utility locates
- Provide traffic control during use as required
- Provide temporary access ramp and culverts in any ditch if required
- Culverts to be a minimum of 600mm dia. in any temporary access
- Remove any temporary access at end of project and restore lands, road boulevards or channels by grading and seeding, if required.
- Haul away any vegetation removed
- Provide mud and dust control as necessary
- Prepare any previous green area ready for seeding and then seed.

1.03 Payment

There will be no separate payment for access provisions.

Works to provide (as required), maintain and restore access routes are to be considered as part of the General Work Item **GSP 21.0** with no separate payment.

GSP 2.0 As-Built Drawings/Information

The Contractor shall cooperate with and assist the Engineer in obtaining as-built data.

GSP 3.0 Changes in Deliverables

The Owner shall have the right at any time to order changes in the Deliverables in accordance with the terms and conditions detailed herein. Any such change shall be made pursuant to a written change order form executed by the Contractor and Owner, prior to the undertaking of the additional Deliverables (“Change Order”).

Except as stated in the Change Order, the Deliverables shall remain unaltered and the rights and obligations of the parties shall remain unaltered and in full force and effect. Each Change Order shall set out the change in the Deliverables, the reason for the change and the cost of such change. Unless indicated on the Change Order, the additional Deliverables shall not impact the schedule.

Each Contract Change Order, unless otherwise specified, shall be deemed to incorporate the terms and conditions of the Contract and shall be deemed to be part thereof.

The Owner and Contractor shall have the right to change, amend or modify the form or content of a Contract document in regard to matters, which do not affect the nature of Work, by Contract amendment, which shall be executed by the Owner and Contractor. Contract documents, except to the extent stated in the Contract amendment, shall remain unaltered and in full force and effect.

GSP 4.0 Clearing

There will be minimal to no clearing necessary on this project, and where any is necessary, it will be deemed to be part of the listed work items.

Clearing includes brushing and grubbing wherever necessary.

Clearing of wetland vegetation is to be part of channel work and is not deemed part of any clearing referred to in this section.

OPSS 201 will also apply to any clearing work.

Any clearing work, if required, is to be undertaken by power brushing or by excavation and off-site disposal of the brush and/or trees and/or roots.

In a power brushing procedure, generally trees may be ground from the top down, may be felled and then ground by either excavator mounted grinders or by grinders that are self-propelled or towed. The work is to be undertaken so that the chippings are confined to the construction zone. Chippings will be allowed to fall in canals to be backfilled or outside of the working limits only if use of normal care and operation by equipment, in the Engineer's opinion, has been exercised and pre-approval is given. Any chippings that fall on a roadway must be removed by brushing or sweeping or equivalent.

Buildings are to be recognized by power brushing so that the spray of chips is directed away from buildings.

Where chainsawing and off-site disposal occurs, the Contractor will be required to locate disposal sites.

All roots are to be separately excavated and disposed of at an off-site location.

GSP 5.0 Construction Dates of Substantial and Final Completion

5.01 Dates of Substantial Performance/Completion

Substantial performance shall be by _____ with total completion being achieved no later than _____.

Substantial performance shall be determined as outlined in the Construction Act.

The Contractor shall be deemed to have met total completion when all required surface asphalt is complete and all Deliverables have passed inspection and testing requirements, the Contractor has rectified all deficiencies in the Deliverables and all other obligations under the Contract have been fulfilled.

The General Special Provision **GSP 53.0** with respect to Time for Substantial Completion shall also apply.

An application by the Contractor for an extension of time once Deliverables has commenced shall be made to the Owner, in writing, within five (5) Working Days of the occurrence of the incidence causing the delay.

If the time for substantial completion of the Contract is affected by additional work, the Owner shall extend the applicable date of completion to compensate for such work.

GSP 6.0 Construction Timing/Constraints

6.01 General

At the time of the pre-construction meeting, the Contractor must submit his Progress Schedule to show how work will be completed by the Contract Time and how it will implement the considerations listed below.

6.02 Additional

Work is to be started and completed in the winter period.

Mobilization and demobilization is to occur while frost is in the ground or at pre-frost periods if fields are dry, crops are off, the Engineer permits such, and the necessary restoration is provided.

GSP 7.0 Construction Yard / Staging / Stockpile Area

One construction yard (minimum) is to be developed on the Gilroy/Doner property for equipment and materials storage and staging.

The drawings indicate the location for such.

The Contractor may undertake private negotiations with the landowner for final location of lands to be used as a construction yard. Any agreements or understandings for such will be between the Contractor and the landowner.

For any yard used, the Contractor is to ensure that such is maintained and restored to original condition upon completion of activities.

Agricultural activities cannot be impeded by the development and use of a construction yard/staging area.

Sanitary and garbage matters are to be provided and attended to on the site.

Should any fuel spills or other environmental damage occur, the site shall be cleaned and restored as directed by the Contract Administrator and/or by the MECP.

A sign-off letter from the private landowner whose property is used as a construction yard/stockpile/staging area is required upon completion.

The Contractor is to provide sufficient parking area and space on the yard for use by the Engineer and Project Manager.

No separate measurement for payment for attending to the work of any construction yard or staging/ stockpile area will be made, since such work is to be included as general work and thus be part of other items tendered. Silt fencing if required will be paid as part of the provisional item.

GSP 8.0 Contract Drawings

A full list of the contract drawings pertaining to this RFT is enclosed with **Appendix I**.

GSP 9.0 Contractor's Signing Authority

The Contractor shall submit to the Contract Administrator, prior to commencement of the Deliverables, a list showing names and specimen signatures of its designated staff, who will have the authority, on the Contractor's behalf, to sign, and receive the following during the term of the Contract:

- a. Owner's Daily Inspection Report;
- b. Daily Work Record;
- c. Instruction Notice(s); and
- d. Change Order(s)

The Contractor shall inform in writing to the Contract Administrator as and when any changes to its designated staff are made.

GSP 10.0 Coordination / Cooperation with Others Required

10.01 For GPS Surveys by Engineer

The Contractor is to ensure that the Engineer's staff is notified of all construction that requires surveys by the Engineer, and the Contractor is to co-operate to allow the Engineer's staff to GPS all such construction. (GPS – Global Positioning System)

Also the Engineer will GPS all exposed irrigation, drain and well line work and the Contractor is to ensure that the Engineer is advised of, and given the opportunity, to do such prior to backfill and that the Engineer has access to the site to do such.

10.02 For Environmental and Geotechnical Consultants, Provincial Agency Staff

The Contractor is to co-ordinate and co-operate with any Environmental or Geotechnical Consultant who may be on site from time to time to take soils, sediment and water samples and to attend to other surveys as required for geotechnical or environmental purposes.

Similarly, the Contractor is to coordinate and cooperate with the Staff of any Provincial Agency who may be on site at any time to view the work.

10.03 General

There will be no separate payment for coordinating and cooperating with others. Such is to be deemed to be part of other items tendered.

GSP 11.0 COVID-19 Safety Policy

The Contractor shall provide a copy of their COVID-19 specific health and safety policy. Government guidelines for the construction sector are available at: <https://news.ontario.ca/opo/en/2020/04/health-and-safety-association-guidancedocuments-for-workplaces-during-the-covid-19-outbreak.htm> and <https://www.ihsa.ca/Urgent-Notices/COVID-19-Links-Resources.aspx>.

As applicable, the Contractor's policies and procedures should address communication, project meetings, site access for visitors, transfer of documents, physical distancing, personal hygiene, personal protective equipment, portable restrooms, site cleaning, worksite monitoring and worker self-assessment. It is the responsibility of the Contractor to communicate this policy to subcontractors and all other persons on site.

The Contractor may be required to update its COVID-19 safety policy during the contract if the government policies and recommendations due to COVID-19 change.

Prior to attendance at all construction meetings and prior to each working day, the Contractor's personnel shall complete the COVID-19 Screening Checklist (Appendix K). The checklist shall be provided to the Engineer.

In addition to standard construction PPE, at all construction meetings everyone must wear a mask covering the nose to chin and be a minimum of 2m apart. No documents shall be transferred between attendees.

GSP 12.0 Designated Stockpile Sites

12.01 For Imported Material

The construction yard is to be used if any site outside the construction zone is required for temporary storage of imported materials and whether later to be disposed of off site or incorporated into the work.

GSP 13.0 Duties and Authorities of Owners' Representatives

In these Special Provisions, the words "Contract Administrator" or "Engineer" and/or "Project Manager" are used randomly, but not incorrectly, due to the incorporation of previously prepared specification/provisions that have referred to one or the other. However, the Contractor shall consider that the Engineer will fulfill any of the duties, responsibilities referred to the Contract Administrator and/or Project Manager.

The Engineer may have assistants or inspectors or survey staff to assist him.

Definitions for the Contract Administrator, the Project Manager and the Engineer are included in the Instructions to Bidders section.

GSP 14.0 Emergency Telephone Numbers of the Contractor

Prior to commencing the Work, the Contractor shall provide the Owner with the name(s) and telephone number(s) of his/her representative(s) who can be contacted on a 24-hour basis in case of an emergency during the term of the Contract.

GSP 15.0 Emergency Work Due to Flooding and Accidents

15.01 Emergency and Maintenance Measures – General

Whenever the construction site is unattended by the general superintendent, the name, address and telephone number of a responsible official of the contracting firm shall be given to the Contract Administrator. This official shall be available at all times and have the necessary authority to mobilize workmen and machinery and to take any action directed by the Contract Administrator in case emergency or maintenance measures are required regardless whether the emergency or requirement for maintenance was caused by the Contractor's negligence, Act of God, or any cause whatsoever.

Should the Contractor be unable to carry out immediate remedial measures required, the Board will carry out the necessary repairs, the costs for which shall be charged to the Contractor.

15.02 Emergency Measures Due to High Flows/Flooding

High rainfall events forecast by Environment Canada may result in the Engineer directing the Contractor to implement emergency provisions.

Upon passage of flows causing the emergency and when and as designated by the engineer, the Contractor may resume the normal work. Work may have to be done to reconstruct works already constructed.

The payment for emergency work would be on a time and material basis using realistic unit prices for the equipment in use and with a payment of realistic invoices for materials at a markup of 10%.

Similarly, realistic hourly labour costs would be paid. The costs would be paid both for the removal of added features and for the reconstruction of any previous work. There would be no payment made for standby time while the flood event occurs.

15.03 Emergency Measures For Project Accidents and Malfunctions

The Contractor is to provide for the following to minimize accidents and malfunctions related to work done:

- Monitor as-constructed work for possible signs of erosion and sloughing.
- Continuously inspect equipment for damaged fuel lines and possible spill occurrences
- Inspect road embankments continuously for signs of failure
- Have ample supply of pylons and signs to cordon off any accident site
- Have on site traffic control signs for traffic movement in accident areas
- Have emergency contact numbers available at all work locations

15.04 Emergency Measures for Non-Project Accidents

The Contractor is to attend to the following provisions for other and non-work related accidents:

- If a traffic accident should occur on a road adjacent to the work activity, all works must temporarily cease.
- The Contractor is to assist in mitigating the immediate situation, is to supply and place pylons that he has available and is to provide traffic control.
- These provisions will apply regardless of whether the accident is due to the Contractor's activities or is unrelated but in the area of the Contractor's work.
- The Contractor is to notify the Contract Administrator and Spills Response personnel should a spill occur. (Refer to Contact List in General Special Provision **GSP 25.0**).
- Payment for such measures due to accidents by others will only be made when the Engineer feels such are justified and will be made using reasonable hours and rates and on a time and materials basis.

GSP 16.0 Environmental Obligations (General)

16.01 Scope

It is intended that the Deliverables be executed in such a manner that to the fullest extent possible, minimizes any adverse effects on the natural environment of the project area.

The environmental conditions of the Contract stated herein must be complied with in all respects. It is the responsibility of the Contractor that all their personnel be sufficiently instructed so that the Deliverables is carried out in a manner consistent with minimizing environmental impacts. The Owner may, in its sole discretion, assign a site inspector whose responsibility will be to ensure compliance with environmental objectives.

The Contractor shall comply with applicable Federal and Provincial and Municipal laws, orders and regulations concerning the control and abatement of water pollution. The Board will have obtained any required permits for approvals from the Conservation Authority and from Fisheries and Oceans Canada (DFO) for the work listed herein.

For general environmental compliances, the Contractor shall:

- a) Confine operations to limits of the construction zone described.
- b) Provide access roads to the construction zone and on the site in locations acceptable to the Contract Administrator.
- c) Make adequate protection for, and take precautions at times of, inclement weather.
- d) Maintain ditches and watercourses for surface water drainage of site and external properties during construction, and bear the responsibility for damage that may result by reason of not doing so.

- e) In general, restore the site to condition equal to or better than existing conditions.
- f) Restore lands outside of the limits of the working area but which are disturbed by the work, to their original condition in addition to complying with any related specific provisions as contained herein.

Details of specific environmental obligations follow.

16.02 Noise Regulations

The Contractor shall comply with all local municipal bylaws and, if required, will be responsible for obtaining any exemption from the bylaw. In addition, the Contractor shall ensure the following:

- a) Equipment shall be maintained in an operating condition that prevents unnecessary noise, including but not limited to proper muffler systems, properly secured components, and the lubrication of all moving parts. Idling of equipment shall be restricted to the minimum necessary for the proper performance of the specified Deliverables.
- b) Heavy breaking, grinding and use of pneumatic equipment will not be permitted during night time hours from 7:00 p.m. through to 7:00 a.m., Monday to Friday and from 7:00 p.m. Friday night until 9:00 a.m. Saturday morning. No heavy breaking, grinding and use of pneumatic equipment will be permitted on Sunday and Statutory Holidays.
- c) Adjacent residential owners are to be notified 48 hours in advance of any permitted activities that may occur from 7:00 p.m. to 7:00 a.m.

16.03 Archaeological Finds/Heritage Resources

In the event that deeply buried archaeological, historical artifacts or human remains are uncovered, work in the immediate area shall be terminated immediately, and the Contract Administrator and the appropriate Provincial Ministry shall be notified immediately.

16.04 First Nations Excavation and Disclosure of Findings

Should any site excavation unearth bones, remains or other such archaeological evidence of a native burial site, as obligated under the Cemeteries Act, the Contractor will notify the Owner's Contract Administrator, who will in turn arrange contact with the nearest First Nations group. The Contractor shall cease all work that would jeopardize the sanctity of the site until direction is provided by the Owner.

If any new, undisclosed or unforeseen issues should arise that have the potential for anticipated negative environmental impacts, anticipated impacts on a First Nations treaty and/or other protected rights, the Contractor shall notify the Owner's Contract Administrator.

16.05 Erosion and Sediment Control

The Contractor must prepare and submit a detailed description and drawing of their proposed Erosion and Sediment Control Plan (ESCP) to the Contract Administrator and receive approval for such plan prior to commencing the work. The specifically required erosion and sediment measures as outlined in the drawings shall be included in the ESCP to be prepared. The ESCP elements must be installed to the satisfaction of the Contract Administrator, in a staged manner, prior to the commencement of the work. This program must be in accordance with

Ontario Guidelines on Erosion and Sediment Control for Urban Construction Sites (May 1997 or latest revision) and OPSS 577.

In the event that the Contract Administrator determines that the Contractor is not working in accordance with the Contract or other environmental regulations, policies or guidelines, the Contractor shall cease those operations, as identified by the Contract Administrator, which are causing contamination of the environment. Such operations shall remain suspended until otherwise directed by the Contract Administrator.

16.06 Spill Reporting

Spills or discharges of pollutants or contaminants under the control of the Contractor, and spills or discharges of pollutants or contaminants that are a result of the Contractor's operations that cause or are likely to cause adverse effects shall forthwith be reported to the Contract Administrator and to the MECP Spills Action Centre (see **GSP 25.0**). Such spills or discharges and their adverse effects shall be as defined in the Environmental Protection Act R.S.O. 1990.

All spills or discharges of liquid, other than accumulated rain water, from luminaries, internally illuminated signs, lamps, and liquid type transformers under the control of the Contractor, and all spills or discharges from this equipment that are a result of the Contractor's operations shall, unless otherwise indicated in the Contract, be assumed to contain PCBs and shall forthwith be reported to the Contract Administrator.

This reporting will not relieve the Contractor of their legislated responsibilities regarding such spills or discharges.

At the conclusion of the Contract work, a thorough clean-up of the construction site shall be undertaken by the Contractor to the complete satisfaction of the Contract Administrator as part of this Contract. No separate payment will be made for any expense to the Contractor as a result of this clean up.

The provision of OPSS Provincial Form 100, Environmental Incidents (Section 7.13) shall also be regarded with respect to spills.

16.07 Dust and Mud Control

If the construction site is close to homes, commercial and office space then close control must be employed to keep dust from forming and blowing.

- a) The Contractor shall be responsible for the prompt and complete cleanup of all dirt and mud deposited on the traveled portion of the roadway as a result of their operation on this Contract. In the event the Contractor fails in their obligation the Contract Administrator may proceed with the necessary cleanup and charge all costs associated with the cleanup to the Contractor.
- b) The Contractor shall employ only wet type equipment for saw cutting, concrete grinding to control dust nuisance
- c) All trenches and disturbed areas by construction works that will produce dust shall be maintained dust free by an application of calcium chloride liquid 35% (min) at the Contract Administrators orders.

No separate measurement for payment will be made for any additional expense to the Contractor as a result of complying with the requirements and carrying out the Deliverables described under this Environmental Obligations provision.

GSP 17.0 Encountered Environmental Features Eligible for Payment

17.01 Species at Risk

Where the Contractor is required to suspend his activities due to the finding of a Species at Risk and where unable to move to an adjacent area for work immediately, stand-by payments will be made.

If the Contractor is able to move easily to an adjacent area, no additional payments will be provided.

If the work must be altered due to the finds, the Engineer will negotiate payment for such modifications on a pre-agreed amount or on a time and materials basis.

17.02 First Nations Artifacts and Burial Sites and Other Archeological Concerns

If any artifact or burial or other archeological site is encountered, similar provisions with respect to encountering a species at risk site will be applied for reimbursement.

GSP 18.0 Fencing

18.01 General

No new fence work is to be expected on this RFT. Fence repair/reconstruction work may be required. Only along the access route is fence work expected.

Removal and replacement of existing fences along the access route is to be expected to be done by landowner.

Discuss access fencing with the landowner at time of project start up to confirm. If landowner does not attend to such, Contractor is to do so.

18.02 If Unexpected Fence Work is Encountered

Should an existing fence that is not noted, be encountered, it is to be noted prior to work, and is to be pre-discussed with the Contract Administrator.

Existing fences, if encountered, are to be moved and replaced wherever materials are suitable for salvage and reuse and where movement is required/reasonable (see 18.01 re access fences).

Where materials are not suitable, new materials are to be provided and payment will be made as per the supplier's invoices with a 10% mark-up. No payment for labour will be made.

Any new farm fence is to be comparable in style or type to existing unless landowner agrees to pay the Contractor directly for upgrade.

If farm fences are encountered and have to be removed to allow work, the landowner is to be pre-notified so he can provide temporary fencing where necessary for access or animal control.

Upon completion of work, fences are to be re-erected to equal or better condition.

Where any transverse fence may terminate at the edge of work, the Contractor may be required to supply a new end panel with connections in accordance with OPSD 971.101 and with no additional payment.

A sign off letter from any affected landowner re satisfaction of farm fence work is to be requested. Where the landowner refuses to sign off, the Engineer will determine what, if any, further work is necessary.

Should unexpected privately or publically owned fence work be encountered requiring unexpected work, payment will be made as per the contract change order work provisions of this RFT.

To summarize, removal and replacement of existing fences is to be considered as general work and is to be part of the General Item. Only where new materials are necessary, or where unexpected fence work is encountered, would additional payment be made.

GSP 19.0 Field Office/Site Office (for Contract Administrator)

A separate field office or site office is not required for the Contract Administrator. However, if the Contractor should provide a field/site office for his own use, such field/site office is to be available for use by the Contract Administrator when needed.

GSP 20.0 Frozen Ground Conditions

No compensation will be made to the Contractor for frozen ground conditions. It is anticipated that this project will be undertaken when ground conditions are frozen.

GSP 21.0 General Work

21.01 General

All general work items on this contract are to be deemed to be included as part of contract items. There will be no separate measurement for general work items. The items that could be considered as general work could include:

- Access – Providing, Maintaining, Restoring, Removing
- Attendance at meetings
- Clearing
- Collecting and disposing of debris from the site
- Construction yards/Staging Areas
- Coordinating & cooperating with others

Environmental Obligations
Fencing (except where specified to be separately paid)
Initial Construction Activities/Site Preparation
Mobilization/Demobilization
Moving/Disposal of Debris along the Access
Providing and maintaining sanitary facilities for workers
Providing and maintaining on-site garbage containers
Public Convenience and Safety
Quality Control of Material (by Contractor)
Restoration
Safety and Labour Certificates
Securities and Insurance
Sharing any Contractor Field office
Survey Layout
Surveyor's Stakes and Monument Protection
Weather Related Provisions
Working Area

21.02 Work

Components of general work to be done are discussed elsewhere in these General Special Provisions sections or in the Supplemental General Conditions.

21.03 Payment

ISP 1.0 pertains to the payment for General Work.

GSP 22.0 Granular A

Granular A materials are to have 0% asphalt coated particles derived from RAP, and 0% of blast furnace slag material.

Salvaged, reclaimed, previously used Granular A materials will not be accepted.

Granular A for driveways and for road crossing restorations will be subject to this Special Provision.

Where Granular A is used for driveway restoration, fine grading and compacting of specified depth of Granular A to 100% of the material's Standard Proctor Maximum Dry Density (SPMDD) is required.

Granular A supplied for other purposes such as for environmental enhancements is to be included with the item applicable.

The Contractor shall identify the source of the Granular A material ten (10) working days prior to placement if required by the Contract Administrator.

The sources of the Granular A must be a recognized source and acceptable to the Contract Administrator.

Work is to be in accordance with OPSS 314, OPSS 1001 and OPSS 1010.

Granular A that becomes contaminated due to Contractor's activity, shall be removed and replaced at no extra cost to the Contract.

Where required to do so by the Contract Administrator, the Contractor shall perform QC testing at the discretion of the Contract Administrator. Written test results for the gradation must be received by the Contract Administrator within 4 hours of when the sample was taken.

The Contract Administrator may also have the Geotechnical Consultant perform random testing of any material used for compliance with specifications. If any granular material fails on a gradation analysis, the faulty material shall be replaced at the Contractor's sole cost. The Project Administrator's Geotechnical Consultant will attend to testing as per **GSP 24.0** and OPSS 501.

There will be no separate measurement of or payment for Granular A except where directed by the Contract Administrator. Where payment is made, such will be in accordance with the provisional contingency item.

GSP 23.0 Initial Construction Activities / Site Preparation

Prior to any construction work, the required pre-construction site meeting shall be implemented.

Then any environmental items identified by **ISP 1.06** that are to be attended to prior to start of channel work shall be addressed.

Prior to commencement of excavation, any fences encountered shall be addressed, any necessary brush and scrub removal is to be attended to and any movement of junk, debris, etc. is to be addressed.

All work described herein shall be deemed to be general work with no separate payment except for environmental measures identified to be part of **ISP 1.0**.

GSP 24.0 Inspection and Testing

The inspection and testing of all Deliverables shall be carried out by the Contract Administrator in accordance with the applicable Item **ISP's** and General **GSP's**, if any, to determine whether or not all Deliverables meet the requirements of the Contract.

Any material or Workmanship which fails in any way to meet the terms of the RFT is subject to rejection or to be purchased on an adjusted price basis. The decision of the Owner shall be final.

All cost associated with the inspection or testing of any service/material that does not meet the Owner's specification, shall be charged to the Contractor.

The Contractor shall give the required days or hours of notice of any operation that requires either inspection or measurements by the Contract Administrator and/or Environmental Consultant as set out in the applicable **GSP's** and/or **ISP's**. If no time is set out, the minimum notice to be given is to be forty-eight (48) hours.

GSP 25.0 Landowners/Agencies Emergency Contacts

Telephone numbers of landowners will be provided at the time of project start up. Each landowner shall be notified prior to work as required by the Contract Administrator.

Emergency use telephone numbers of other contacts of interest are as follows:

Agency	Phone No.
Township of Springwater	705-728-4784
Springwater Drainage Superintendent – Steve Buchanan	705-728-4784, Ext 2075
Ministry of Environment, Conservation & Parks (MECP) - Spills Action Centre	1-800-268-6060
DFO	1-800-565-1633
MNDMNRF Midhurst (Kate Gee)	705-716-4963
NVCA (Dave Featherstone)	705-424-1479, Ext. 242
K. Smart Associates Limited	519-748-1199
Environmental Consultant – RiverStone Environmental Solutions Inc.	705-645-9887

GSP 26.0 Liquidated Damages

It is agreed by the parties to the Contract that in case all work is not substantially finished or substantially completed by the substantial completion date as set forth in **GSP 5.0** herein, damage will be sustained by the Owner due to the failure of the Owner to ensure the work of this project is substantially complete by the date to have such work done, and that it is, and will be, impracticable and extremely difficult to ascertain and determine the actual damage which the Owner will sustain in the event of, and by reason of, such delay and the parties hereto agree that the Contractor will pay to the Owner the sum of five thousand dollars (\$5,000.00) for the liquidated damages for each and every calendar days' delay in substantially or completely finishing the work as required in year _____ in excess of the substantial completion date prescribed and it is agreed that this amount is an estimate of the actual damage to the excess of the prescribed time of substantial completion in year _____ as set out in Section **GSP 5.0** hereto.

The Owner may deduct any amount due under this paragraph from any monies that may be due or payable to the Contractor on any account whatsoever. The liquidated damages payable under this paragraph are in addition to and without prejudice to any other remedy, action, or other alternative that may be available to the Owner.

If the time available for the substantial completion of the work is increased or decreased because of an overrun or under run of the channel work items, the Owner may revise the completion date by adding or subtracting days there from, as the case may be, the number of days calculated on the average daily production of the most productive 50% of the working time shown on the Contractors Schedule, divided into the difference between the actual quantity and the estimated Tender quantity, provided that this basis for calculation may not be used where in the opinion of the Owner, all or any of the relevant major items are carried out concurrently.

GSP 27.0 Material and Equipment Movements

The Contractor should be careful to choose and operate their equipment to avoid any damages. Any asphalt, entrances, shoulders or grass areas which are damaged by the Contractor due to their operation will be replaced by the Contractor to the satisfaction of the Contract Administrator at the Contractor's expense.

Trespassing onto private properties other than those defined for access or working area shall not be allowed.

GSP 28.0 Meetings – Pre-Construction, Progress, Post-Construction

The Contractor's representative(s), as requested by the Owner, shall attend all meetings required prior to and or during the project. This shall include the preconstruction meeting, regular bi-weekly progress meetings, emergency meeting(s), and the post construction meeting.

Prior to commencement of the Work, the Contractor shall attend a pre-construction meeting with the Owner's representatives to establish site protocols and emergency contacts. The Contractor shall prepare and submit at the pre-construction meeting, a detailed construction schedule showing the tasks/activities start and completion dates, milestones and critical activities to meet the specified Substantial Completion Dates. Data re subcontractors and emergency contacts is also to be provided. Such schedule shall be reviewed by the Owner's representative and, when accepted, shall form the baseline for monthly tracking of the Work progress.

Selected landowners, municipal representatives and affected agencies may be invited to meetings.

The Contractor's representative(s) attending meetings shall be thoroughly versed and knowledgeable with respect to the proposed topics of discussion and shall have the authority to make the necessary decisions and commitments with respect to matters agreed upon at the meetings.

The pre-construction meeting is to occur seven (7) days before construction start up. The Contract Administrator will organize and convene the pre-construction meeting.

The post-construction meeting is to occur just prior to the issuance of Substantial Completion/ Performance for all work.

GSP 29.0 Mobilization/Demobilization

The moving in and the moving out of all plant and equipment including necessary moves during construction is to be considered as general work and be paid as per **ISP 1.0**. No separate measurement for payment for mobilization/demobilization will be made.

GSP 30.0 New Materials

All materials that are to be manufactured or fabricated for use as Deliverables on this project are to be new materials/products. Used, reclaimed or refurbished materials, items or components are not to form part of any manufactured or fabricated component of this project, unless specifically authorized.

GSP 31.0 Non-Assignment

Neither this Contract nor any Work to be performed under this Contract or any part hereof may be assigned by the Contractor without the prior written consent of the Owner. Such written consent however shall not under any circumstances relieve the Contractor of his/her liabilities and obligations under this Contract and shall be within the sole and unfettered discretion of the Owner.

GSP 32.0 Non-Waiver

No condoning, excusing or overlooking by the Owner of any default, breach or non-observance by the Contractor at any time or times in respect of any provision herein contained shall operate as a waiver of the Owner's right hereunder in respect of any continuing or subsequent default, breach or non-observance or so as to defeat or affect in any way the rights of the Owner herein in respect of any such continuing or subsequent default or breach, and no waiver shall be inferred from or implied by anything done or omitted by the Owner save only an express waiver in writing. Any Work completed by the Owner required by this agreement to be done by the Contractor shall not relieve the Contractor of his/her obligations to do that Work.

GSP 33.0 Notification of Engineer & Landowners and Release Letters

At the time of the pre-construction meeting, contact data will be supplied to the Contractor for the Contract Administrator/Project Manager/Engineer and landowners.

GSP 34.0 Original Ground Acceptance

Prior to the start of any Deliverables on the work site, the Contractor shall review the original ground elevation data provided by the Owner and provide in writing that he accepts the original ground data as correct and accurate. This original ground acceptance shall be completed within two (2) weeks from the date of Execution of Form of Agreement. If the Contractor commences with any earth works on site prior to issuing said acceptance letter or does not provide the acceptance letter within the time frame allotted, then the original ground data provided by the Owner will be taken as accepted by the Contractor. The Contractor will not be compensated for any additional costs based on acceptance of the Owner's original ground data.

Should the Contractor not accept the Owner's original ground elevation data, the following information/data shall be submitted along with a rejection letter. Failure to submit all supporting data with the rejection letter shall mean that the Contractor has accepted the

Owner's original ground elevation data. All the following data shall be submitted to support the Contractor's claim:

- a. Geo-referenced CAD file of the Contractor's original ground survey showing all shots taken, showing the triangulated surface, showing contours (1.0M –major & 0.25M – minor).
- b. Contractor's original ground cross-sections super-imposed on the Owner's cross-section which was provided to the Contractor at the project initiation meeting.
- c. The input survey file used to create the triangulated original ground surface CAD file in item #1 above.
- d. The raw survey file(s) from the survey data collectors

GSP 35.0 Private Driveways

The Contractor shall at no time use any private driveway for the purpose of turning or storing of any trucks, cars, equipment or any vehicles used by his/her employees or Subcontractors' employees. Only the designated construction yard/staging area may be used for such.

GSP 36.0 Project Information Signs

Not required on this contract.

GSP 37.0 Providing and Maintaining Sanitary Facilities for Workers

In carrying out the Deliverables, or any portion thereof, sanitary facilities for workers must exist on-site at all times and be located within or adjacent to the working area.

The work with respect to provision and maintenance of the sanitary facilities is deemed part of the General Work Item.

GSP 38.0 Providing and Maintaining On-Site Garbage Container

In carrying out the Deliverables, or any portion thereof, an on-site garbage facility for domestic type of garbage containment and disposal must exist at all times.

The work will, as a minimum, involve providing one metal garbage container, with an easily opened and closed metal lid and with a latch to prevent animal tampering.

The facility must have tie-down provisions to guard against wind damage.

The work with respect to provision and maintenance of the on-site garbage container is deemed part of the General Work Item.

GSP 39.0 Provisional / Contingency Items

Provisional/Contingency Items, including and Environmental Enhancement Contingency and a Lump Sum Contingency Allowance, have been/will be identified in this RFT. These show as **RFT Items B1 to B6 & C1 to C2**. Payment would only be made under these items if the work is required, authorized and applicable. However where the work is directed to be done, the Schedule of Items and Prices will apply for payment. Each Provisional/Contingency Item may be discussed in the Item Special Provisions Section that follows. To allow Provisional items to be tendered, provisional quantities are established herein. These quantities are hypothetical and are not intended to imply the extent of Provisional work that may or may not be necessary.

The environmental enhancement contingency and the lump sum contingency items will not be amounts that are paid. Approved change orders are what the contingency items are intended to offset in whole or in part.

GSP 40.0 Public Convenience and Safety

In carrying out the Deliverables, or any portion thereof, the convenience of the public must always be considered and provided for by the Contractor. The Contractor shall not obstruct any road, pedestrian access or field access, longer or to any greater extent than is absolutely necessary. He shall in no case tear up or open up more of any road, pedestrian or field access than is required or sanctioned by the Contract Administrator.

The Contractor at all times shall provide perfectly safe, ample and convenient means of approach and entrance to adjoining lanes, driveways, buildings and field property, both for vehicles and farm equipment. In order to comply with the foregoing the Contractor if necessary shall construct and maintain, in good and serviceable condition, suitable and convenient platforms, approaches, structures, bridges, crossings or other Deliverables.

The Contractor during the progress of the Deliverables shall keep the site in as tidy a condition as practicable. He shall not deposit any material on any portion of road, pedestrian access or field access, or other of the Owner's property without the permission of the Contract Administrator. He shall remove any material without delay when directed by the Contract

Administrator. Upon completion of the Deliverables, he shall remove all false Deliverables, plant or surplus materials, as well as any rubbish accumulated due to their operations, and shall leave the site in a condition satisfactory to the Contract Administrator.

All surplus material, rubbish, false Deliverables, etc. shall be removed from time to time, when and as directed by the Contract Administrator. If this requirement is not complied with the Contract Administrator will proceed to do whatever is necessary to restore the site to an acceptable condition, and charge the cost thereof to the Contractor. Whenever and wherever any work is finished, suspended or stopped for the winter, all equipment and material of every description must be removed from the site.

No separate measurement or payment will be made for any additional expense the Contractor may incur as a result of complying with the above requirements.

GSP 41.0 Restoration

In general, the Contractor shall restore all features damaged or destroyed during the construction of the services under this Contract to the satisfaction of the Owner and at no cost to the Owner.

When completing work under this contract, restoration of existing facilities outside of the construction zone such as roadways, road allowances, driveways, and green areas if disturbed by the Contractor's operations shall be restored like other items of work as described in this General Special Provision.

All restoration work must be carried out simultaneously with the contract progress as directed by the Contract Administrator.

In the event that the Contractor fails or neglects to make satisfactory progress in the execution of any restoration work within forty-eight (48) hours of the receipt of written notice from the Contract Administrator, the Contract Administrator may remove or cause to be removed any surplus material or to re-grade any area or perform any work which he deems necessary to leave the site in an approved condition and the cost of any such work shall be charged to the Contractor and shall be deducted from any monies due or to become due him.

Roadways, entrance driveways, or other surfaces subject to vehicle or farm traffic shall be reinstated with a minimum of delay and inconvenience to the general public and shall be maintained in a satisfactory condition until completion and final acceptance of the works by the Contract Administrator.

Failure to maintain the roadways and driveways in an acceptable condition, shall result in the work being undertaken directly by the Contract Administrator with the costs to be deducted from any monies due the Contractor by the Board.

Where established lawns or other landscaped areas within or adjacent to the access, or elsewhere if damaged by the Contractor, are excavated or otherwise damaged, these areas

shall be restored by grading, topsoiling and seeding according to the Contract Administrator's satisfaction. Watering of seed will be necessary.

GSP 42.0 Salvaging of Structures/Material

The Contractor shall have full rights to all removed materials and must dispose of them.

The Contractor shall locate his own disposal sites for all removed materials.

GSP 43.0 Securities and Insurance

All costs to supply and maintain the necessary bonds and insurance that are used as surety and insurance throughout this contract including the maintenance period are to be considered as general work.

Refer also to **Appendix A** – Schedule 2 – Article 8.03, **Appendix D, Part C (Mandatory Submission Requirements)** – 3. Bid Bond and 4. Agreement to Bond, Supplemental Conditions _____. ***(Engineer to confirm this item with Springwater prior to tendering)***

No separate payment for attending to the securities and insurance will be made, since such are to be considered as general work and are to be included as part of other items tendered.

GSP 44.0 Shop Drawings and Working Drawings

At this time shop drawings should not be necessary for any item. However, should shop drawings be required, the following shall apply.

For the portions of the work to be completed under this Contract where detail drawings are to be supplied by the Contractor, one (1) electronic copy, in an unrestricted PDF format and four (4) paper copies of same, together with specifications plus such additional copies as the Contractor and their subcontractors may require, plus design calculations where specified, shall be submitted to the Contract Administrator for review.

The Contractor or their subcontractor shall check and initial all shop drawings before submission to the Contract Administrator so as to intercept and correct any major errors or omissions. Shop drawings will not be reviewed by the Contract Administrator unless they have been previously checked by the Contractor. Work which relates to the shop drawings shall not be carried out before the Contract Administrator's review of the shop drawings is complete. The Contractor shall provide the shop drawing submissions with the overall project schedule in mind and allowing sufficient time for the review, approval, manufacturing/fabrication and installation.

The review of the Contract Administrator is for the sole purpose of ascertaining conformance with the general design concept. This review shall not mean that the Contract Administrator

approves the detail design inherent in the shop drawings, responsibility for which shall remain with the Contractor submitting same, and such review shall not relieve the Contractor of their responsibility for errors or omissions in the shop drawings or of their responsibility for meeting all requirements of the Contract Documents.

The Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of the work of all sub trades.

GSP 45.0 Shot Rock

Where any riprap protection is required on the contract, shot rock materials are to be used. At this time, there are no areas where riprap are required. Shot rock may be ordered to be used for environmental enhancements also.

Shot rock is to be graded crushed rock (quarry/bedrock) with a minimum stone size of 150mm and a maximum stone size of 400mm. Sufficient fines are to be included with the materials to completely fill voids. Some clay materials (up to 10%) may be mixed in, on site, with the shot rock materials.

The provisions of OPSS 511 and 1004 are to be considered where applicable.

Materials are to be placed to a 500mm thickness where used as slope and/or culvert riprap/protection and should be placed on a 2:1 slope or flatter. Use on a steeper slope is to be only if directly approved by the Engineer. Where specifically noted, shot rock thicknesses may be reduced to 300mm thickness. A reduction in maximum size particle to 200mm is to be made in 300mm thicknesses.

The materials are to be placed on a geotextile fabric unless specifically deleted.

Geotextile Filter Fabric satisfying OPSS 511 and equal to Terrafix 270R/400R is to be used. No addition in payment will be made for adding filter fabric.

Shot rock on slopes is to be placed such that the toe of the material is placed to a minimum width and depth of 1m, and the material is to be placed to a 1m minimum width at the top of the riprap area, and to a 0.5m thickness.

All shot rock is to be counter-sunk/recessed into the surface of the slope.

Shot rock shall be tamped /rolled in placed to ensure voids are minimized and to maximize density of shot rock. Preapproval of the Contractor's method of placing and tamping/rolling is required and reviews will be made of shot rock placed to determine if sufficient tamping/rolling is provided to minimize voids and to maximize density of shot rock

The Contractor will be required to obtain pre-approval of the source(s) of the shot rock material.

The Engineer may require samples of the shot rock placed so that analyses can be made to confirm compliance with composition requirements of this specification.

The Geotechnical Consultant may be requested to attend at source to review and comment on the material to be used and may attend on site during placement to sample and comment on materials used and methods of placement to minimize voids.

Shot rock may also be required at outlets of surface water routes into ditch work.

There will be separate measurement for payment pursuant to Provisional **ISP 4.0** for shot rock required on this project if directed by the Contract Administrator. The provisional item payment for the shot rock shall be payment in full for any shot rock required by the Contract Administrator, and is to include excavation, materials, filter, placement and grading.

GSP 46.0 Soils Investigations

No specific geotechnical investigation or report has been prepared as part of the work associated with this RFT. One exploratory hole has been excavated by the Engineer at the end of the existing channel during the design period for the purpose of determining existing conditions where the work starts.

The hand dug hole was on the spoil berm and was 1m deep. The spoil berm surface at this location was equal to the level of the wetlands waters. The hole indicated the upper 500mm was a mixture of peat, organics, sediments and loams. The bottom 500mm was into the native loamy soils.

The information given here is for guidance only and is not guaranteed by the Owner. It shall remain the Contractor's responsibility to interpret, review and confirm existing ground conditions and/or recommendations as may be outlined herein.

Each Contractor should visit the site of the work before submitting their Bid and satisfy themselves by personal examination as to the local conditions to be met during construction (including peat depths, ground water seepage) and as to their own estimate of the facilities and difficulties to be encountered during construction including the nature of the subsurface materials and conditions. The Contractor shall not claim, at any time after submission of this RFT that there was any misunderstanding of the terms and conditions of the Contract relating to site conditions. No extra payments or claims will be considered by the Owner related to soil conditions except as noted in **ISP 1.03**.

GSP 47.0 Standard Specifications and Standard Drawings

47.01 General Specifications and Standard Drawings

Subject to the requirements of the Supplemental Conditions, the General Special Provisions and the Item Special Provisions, the Deliverables on this Contract shall be performed in

accordance with any Standard Specifications and Standard Drawings for Drain Construction included herein.

47.02 Precedence of Standard Specifications and Drawings

Supplemental Conditions, and Item and General Special Provisions included in this RFT shall, when in conflict, take precedence over any Standard Specifications and Standard Drawings included herein.

47.03 Standard Specifications and Standard Specifications for Drain Construction

These are found in **Appendix H** hereto.

GSP 48.0 Subcontractors

Bidders shall submit a list of their subcontractors at the time of the pre-construction meeting

Bidders shall ensure that all subcontractors selected and named have experience in the subcontract work described, and that they shall execute their work with competence and within the required time frame.

Bidders shall ensure that all subcontractors submitting bids shall be actively engaged in work of the type described and shall be able to show proof upon request by the Board of previous work of similar nature performed by them.

The Contract Administrator reserves the right to reject a subcontractor for reasonable cause (eg. in litigation with the Township). Upon such rejection, the Contractor shall be required to propose an alternate subcontractor without resulting change to the Bid.

All subcontractors shall have a current WSIB clearance certificate and a valid insurance certificate prior to commencement of any work under this Contract. The Contract Administrator reserves the right to request copies of these certificates at any time.

The successful Bidder shall be responsible to ensure all subcontractors are employing licensed trades in good standing with the Ontario College of Trades, where applicable and required.

GSP 49.0 Supervision

The Contractor shall provide skilled and qualified supervisory staff on the project at all times to ensure proper execution of the Deliverables. The Contractor shall provide a qualified full time superintendent capable of communicating by both written and oral means to ensure that the Deliverables proceeds in a proper and efficient manner.

If, in the opinion of the Contract Administrator, the assigned superintendent is not competent to carry out appropriate direction of the work, the Contractor shall replace the superintendent immediately upon written request of the Contract Administrator.

All supervisory personnel who will be assigned to this project must be entirely familiar with the terms, conditions and details of the Contract and related documents.

GSP 50.0 Survey Layout

The Contractor shall be responsible for the survey layout. The Item Special Provisions may indicate the further services to be provided, if any, by the Engineer with respect to the provision of data for survey layout.

The Owner shall at any time during construction have the right to check the construction layout for accuracy. If at any time during the progress of the Deliverables any error shall appear or arise in the positions, levels, dimensions or alignment of any part of the Deliverables, the Contractor shall, at his own expense, rectify such error to the satisfaction of the Contract Administrator. The checking of the setting out of any line or level by the Contract Administrator shall not in any way relieve the Contractor of his responsibility for the correctness of the Deliverables.

No separate measurement for payment of survey layout will be made, since such work is to be considered general work and is to be included as part of other items tendered.

GSP 51.0 Suspension of Work

The owner may in its sole discretion at any time upon notice to the Contractor in writing suspend the performance of the Work, in whole or in part, for a specified or unspecified time.

Upon receiving notice of the suspension, the Contractor shall immediately suspend all operations concerning that identified portion of the Work except such Work as is necessary in the opinion of the Owner to care for, preserve and protect the Work.

During the period of suspension, the Contractor shall only be entitled to be reimbursed for its reasonable, proper and actual expenses in caring for, preserving and protecting the Work.

Should the period of suspension of the Work, in whole or in part, last longer than thirty (30) days consecutive days or such longer period as the parties may agree upon in writing, either party to the contract may consider the contract to be terminated by mutual agreement without further liability.

GSP 52.0 Temporary Water and Power

The Contractor shall make their own arrangements for the supply of temporary water and power. No separate payment will be made for the provision of temporary water and power. This shall be considered part of the General Work Item.

GSP 53.0 Time for Substantial Completion

The Contractor shall complete the Work by the Date of Substantial Completion as specified in General Special Provision **GSP 5.0** of the Contract.

The Contractor is deemed to have thoroughly understood the requirements for completing the Work within the specified time for completion and allowed for any additional and/or augmented daylight shifts in his Bid should it be in his/her opinion that there may not be sufficient time for completion by him/her Working a normal number of hours each day or week on a single daylight shift basis. Any additional costs occasioned by compliance with these provisions shall be considered to be included in the prices Bid and no additional compensation shall be allowed therefore.

If the Contractor is delayed in the completion of the Work:

- a. By any negligent act of the Owner or any Owner employee;
- b. By any provincial or federal agency;
- c. For any cause beyond the reasonable control of the Contractor or by acts of God or of the Public Enemy Acts of the Province or of any foreign state, fire, flood, epidemics, quarantine restrictions, embargoes or delays of sub-contractors due to such causes.

Then the time for completion shall be extended in writing at any time on such terms and for such period as shall be determined by the Owner, notwithstanding such extensions, time shall continue to be deemed of the essence of this Contract.

An application by the Contractor for an extension of time once the Work has been commenced shall be made to the Owner in writing within five (5) Working Days of the occurrence of the incidence causing the delay. In the event such application is approved by the Owner, all bonds or other Contract surety furnished to the Owner by the Contractor shall be amended where necessary at the expense of the Contractor to provide coverage beyond the date of any extension of time granted and the Contractor shall furnish the Owner with evidence of such amendment of the surety.

If the time for completion of the Contract is affected by additional Work, the Owner shall amend the date for Substantial Completion established in General Special Provision **GSP 5.0** to compensate for such Work. Commencement date of liquidated damages will similarly be amended.

GSP 54.0 Use of Site

The Contractor shall confine all equipment, labour and materials to within the limits of the site, except as may be otherwise permitted by the Owner. The Contractor shall not park any equipment, material or staff vehicles on private property unless approved by the Contract Administrator through prior arrangement with the property Owner.

In addition, the Contractor shall locate any Contractor's trailer and any interim area for storage of materials within an area to be approved by the Owner.

GSP 55.0 Utilities

No utilities are anticipated to be encountered on this project.

The Contractor shall, however, pursue due diligence re utilities and shall contact the landowners involved to determine if utilities may affect construction or access.

Any exposure of a utility if such is deemed to exist is to be done as per the General Item.

GSP 56.0 Valuation and Certification of a Contract Change Order

The Owner will supply all necessary Change Order forms. The forms to be supplied by the Owner will be consistent with the forms used in an MTO contract.

When a Change Order is proposed or required the Contractor shall present to the Contract Administrator, for approval, its claim for changes in the Contract Price and schedule, with the appropriate supporting documentation. The Contractor shall promptly submit, at the request of the Owner, such further and other information and documentation as the Owner considers necessary to assess the claims. The Contract Administrator will assess the merits of the claim and, when approved by the Owner, a Change Order shall be issued to the Contractor amending the Contract Price and schedule as appropriate.

If the type of Deliverables involved in the Change Order is included in the items contained in the Schedule of Items and Unit Prices within the Bid Form, it shall be performed on the same payment basis as the original Deliverables.

If the type of Deliverables involved in the Change Order is not included in the items contained in the Schedule of Items and Unit Prices within the Bid Form and the Owner and the Contractor fail to agree on the method of valuation, measurement and change in the Contract Price the Owner shall order the Deliverables to be performed on a time and materials basis pursuant to **OPSS GC 8.02.04**.

Notwithstanding any other provision, no payment shall be made to the Contractor for or in respect of hand tools or equipment that are tools of the trade.

Each month, the Contractor shall submit an invoice to the Owner covering Deliverables performed to carry out the Change Order during the preceding month and to the extent that the Deliverables covered by the invoice can be verified by the Owner, the invoice will be processed by the Owner for payment.

The final invoice shall be submitted by the Contractor within twenty-five (25) Working Days after the completion of the Change Order.

Separate invoices shall be submitted in triplicate for each Change Order issued. Each invoice shall include the Change Order number and covering dates of the Deliverables and shall itemize separately, labour, materials and equipment and shall include invoices for materials, rented equipment and other charges incurred by the Contractor in carrying out the Change Order.

If the final invoice and all required substantiation and support are not submitted within twenty-five (25) Working Days after completion of the Change Order it shall be deemed that all invoices for the applicable Change Order have been submitted and no further invoices will be permitted.

Payments in respect of payroll burden will be made at the rate of 26% of wages and salary.

The Owner will reimburse the Contractor for its actual payroll burden if the Contractor provides all relevant accounting information in a format acceptable to the Owner, including a statement from an independent auditor, which establishes to the Owner's satisfaction, that the Contractor's costs are higher than those specified above.

Any Change Order executed by the Contractor and Owner shall be deemed to include any and all costs incurred by the Contractor as a result of the Change Order, including, but not limited to, labour, equipment and overhead and the Contractor shall not be entitled to claim any additional compensation for these items, including any claims for delay.

GSP 57.0 Weather Related Provisions

There will be no separate payment for adverse weather conditions on this project.

This is to be a winter work project.

The Contractor is to ensure that ice breakup is undertaken to allow any winter excavation.

The Contractor is to provide for releveling of any materials levelled/spread in winter conditions in the following construction season, if necessary. Additional payment on a time basis will be provided.

All sites may be prepared in the late summer/fall conditions in anticipation of winter conditions.

Ensure fuel and fluid lines on all equipment are inspected and kept free from damage by ice and snow.

Monitor weather forecasts and schedule work to prepare for such.

Build in allowances for lost time for adverse winter conditions.

GSP 58.0 Working Area

The working area on this project is defined in Item **ISP 1.0**.

If the Contractor wishes to use any other area, outside of the working area, the Contractor must make his own pre-arrangements with the landowner(s).

All areas used by the Contractor for access or storage are to be restored to their original condition at the Contractor's expense.

Materials and equipment shall be stored in areas designated or secured by the Contractor as a Staging Area/Construction Yard. Materials and equipment shall not be stored within four (4) meters of an unprotected lane or pathway.

Notwithstanding the foregoing, the Contractor shall, at its own expense, remove any equipment or materials, which in the Contract Administrator's opinion constitute a hazard to traffic or farm operations.

The Contractor shall be responsible for all re-grading of existing roads, landscaping and access routes. He shall also be responsible for the restoration of all existing roads and landscaping to preconstruction conditions or better. Any damage to trees or other property caused by the Contractor's site access shall be corrected to the Contract Administrator's satisfaction at the Contractor's expense.

APPENDIX G – ITEM SPECIAL PROVISIONS

ISP 1.0 Open Drain/Channel Construction

1.01 Scope

- This ISP applies to all open drain /channel construction on this project.
- This ISP contains specifications (common) that are applicable to both of the two types of channel construction and also contains sub-sections which set out further/specific specifications for the two specific categories of channel construction (Type I and Type II).
- Type I channel construction is along the overdigging/pool area where the barge is launched.
- Type II is the balance of the channel work downstream.
- All open drain/channel construction on this project will require work to be done by barge methods and will be in depths of wetlands waters up to 1200mm.
- All work is to be done in the early winter period when sufficient frost is in the ground.

1.02 Common Work

- All channel work is to be in the locations, to the elevations, and to the dimensions shown on the applicable drawings including the plans, the profiles and the cross-sections.
- The drawings show the location of the channel centerline with respect to the property lines. The centreline is to be established by GPS methods of layout/travel using coordinates determined from the plan drawing as supplied by the Engineer.
- All open drain/channel construction will initially involve clearing of wetland vegetation in the wetlands waters to a width only wide enough to allow the barge to move and operate.
- After wetland vegetation is removed, the required channel is to be excavated at the bottom of the cleared width of wetlands waters.
- Excavation is to be done by an excavator sitting on the barge and of sufficient size and reach to be able to cast all removed materials on each side of the barge with an undisturbed 3m wide buffer to be maintained between the barge path and the area of the casting.
- Should the excavated material be “heavy” materials with a substantial silt and/or clay content, the Engineer may require the materials to be placed all on one side of the cleared path adjacent to the buffer area with a levelling off of the materials by the excavator bucket to give a future maintenance berm as exists now beside the existing Swaley Drain. If passage over the newly created berm, to further level the materials, is separately required after completion of the barge work, additional payment on a time basis will be made.
- The cross-section of the channel is to be basically a flat bottom with tapered sides at the edges if possible (2:1 to 3:1 slopes). If it is not possible to excavate tapered side slopes in standing water by barge methods, more vertical slopes will be accepted knowing there may be slumping of the more vertical slopes to give a natural side slope.

- The route of the barge is to be controlled by GPS methods and the barge or excavator is to be equipped with equipment to allow GPS control.
- The Engineer will provide the required input for GPS control and will assist with GPS control.
- The procedure is to be also such that pipes can be driven as and where required for monitoring purposes.
- **ISP 3.0** further describes the monitoring work.
- Access is to be as set out in Section **ISP 1.04** below.
- The working area is as set out in Section **ISP 1.05** below.
- All environmental requirements as set out in Section **ISP 1.06** below are to be implemented.
- Should any former root masses be excavated the Engineer may require such to be placed immediately adjacent to the barge path for habitat diversity.

1.03 Soils

- With respect to the vegetation to be removed, such can be described as very thick mats of dense grass with reed-canary grass being the prominent grass. The density of such is high. This is as set out in the Environmental Report.
- Scattered areas of elm and willow shrub exist adjacent to the work area but should not be encountered by excavation.
- With respect to the soils to be excavated at the floor of the wetlands waters after vegetation is removed, it is expected that some sediments may exist above the native organics/peats.
- Below the organics/peats, loamy native soils will be encountered. Some decaying root material may be encountered also.
- The extent of clay, silt and/or sand in the loams will vary. The depth of the organics is expected to be 300mm± and the loams will exist below.
- Due to the existence of wetlands waters, soil probing was only done at the end of the Swaley Drain and no probing was done in the 750m length of work. The consistency/wetness of the soils was not determined. Thus the consistency and composition of the soils may vary from the description given here.
- There will be no variation in payment due to soils encountered unless the soils encountered involve hardpan or rock materials or unless substantial lateral sloughing occurs.

1.04 Access

- Access is to be off George Johnston Road and in the Gilroy/Doner gravel driveway.
- At an agreed upon location in the gravel yard of the Gilroy/Doner property, equipment is to be unloaded and assembled. Then from that small staging area, the excavator is to skid the barge through the Gilroy field southerly to the original spoil berm which is now a grassed and levelled field area along the north side of the more recent Swaley Drain spoil berm.

- From this location, the excavator is to continue to skid the barge to the end of the existing Swaley Drain along the original spoil berm.
- On the Gilroy/Doner property, the original spoil berm is a levelled and grassed field area while the original spoil berm on the Parker and other downstream properties remains in its original spoil berm condition with minor natural vegetation.
- If at any location the used spoil berm is found to be soft and/or unstable, “mats” are to be used for movement of the excavator so that the used spoil berm is preserved.
- There currently is an electric fence between the two spoil berms on the Gilroy farm and the landowner has indicated he will assist the Contractor in removal of the electric fence when and where needed.

1.05 Working Area

- The total width of working area is to be the 9m width of cleared wetland vegetation within which the barge with excavator is to travel, the two 3m buffers on either side of the cleared width and then a 5 to 6m minimum width outside of each buffer strip within which the removed materials are cast to settle in the existing wetland vegetation and waters.
- Should the Engineer direct that the materials be cast all on one side to create a new maintenance berm similar to what parallels the existing Swaley channel, the working area could be 5 to 6m less in width and the cast spoil will be evident as a maintenance berm.

1.06 Environmental Measures to Implement

- The Natural Environment Report identified the following specific environmental measures to address during construction.
- *All in-water improvement works are to be completed during winter months when the site is frozen. This timing will minimize the potential for impacts to fish and fish habitat while avoiding sensitive times of year (e.g., spawning).*
- *Movement of heavy equipment through the agricultural communities adjacent to the improvement areas is to only occur during this time period.*
- *Disturbance and removal of riparian vegetation must be minimized, and all temporarily disturbed areas must be reinstated to original condition or better.*
- *Best Management practices should be utilized with all machinery operated within the study area to ensure that material and tracks are free from invasive species (Phragmites australis, etc.).*
- *Machinery should arrive on site in clean condition and is to be checked and maintained free of fluid leaks.*
- *Machinery must be refueled, washed and serviced a minimum of 30 m from wetlands that occur near the subject property boundary on adjacent lands.*
- *Locate all fuel and other potentially deleterious substances a minimum of 30 m from wetlands and drainage features. Minimize fuels and chemicals stored onsite and ensure a spills*

management plan and the associated spill response equipment is always available on-site for implementation in the event of a spill of deleterious material.

- *Vegetation removal and disturbance outside of the proposed drain construction areas should be minimized to the extent possible.*
- *All necessary vegetation removal (e.g., tree/shrub clearing, etc.) within the proposed extraction area should be completed outside of the primary breeding bird nesting window (which is between April 1 and August 31).*
- Any materials required for environmental enhancement as per ***ISP 9.0*** are to be brought in as part of the mobilization/demobilization and are to be moved to the work site by skidding methods as used for the barge, or approved equivalent methods.

1.07 Type I Channel Construction

- This is the channel work for the first 175m of new work where overdigging is necessary to ensure there is a minimum of water after the lowering occurs to allow the barge to return.
- There will be no change in the width of the cleared vegetation or in the widths of the buffers as set out in ***ISP 1.02***.
- The width within which the materials are cast will increase by 1 to 2 metres to allow for the greater amount of materials.
- The amount of overdigging beyond the standard 500mm depth of new channel will vary from 500mm to 700mm as shown by the profiles.
- The soils in the additional depth are expected to be the native loams.
- If more overdigging of up to 300mm is requested at the time of construction to provide a greater area for possible sediment accumulation, additional payment will be made on a Change Order basis.

1.08 Type II Channel Construction

- This is the channel work downstream of the Type I channel work.
- The widths, buffers, and disposal are to be as per ***ISP 1.02***.
- This is to involve a standard 500mm depth of excavation at the floor of the wetlands waters.
- As indicated, the soils encountered are expected to be 300mm± of topsoils/peats above the native loamy mineral soils.
- Some soft and wet sediments may exist above the topsoils.

1.09 Payment

- The unit price bid per lineal metre for each type of channel work is to be payment in full for all labour, equipment and materials including the movement along the access, the supply of any needed materials, any mats required, GPS route control, the creation of the barge launching pool, the clearing and casting of the wetland vegetation, and the excavation and casting of the channel materials.

- Only if hardpan, boulders or excessive sloughing are encountered will additional payment be made.
- The additional payment will be on a time and materials basis and will be for the additional time involved. The basic time for comparison will be the time incurred where no hardpan, boulders or sloughing occurs.
- If additional levelling of any material used to create a new spoil berm is required, the additional payment will be on a time basis.

ISP 2.0 Mobilization, Demobilization and other General Work

2.01 Scope

- This item applies primarily to the mobilization and demobilization.
- All other general work is to be paid as per this item.

2.02 Work

- General work to be included in addition to mobilization and demobilization is defined in **GSP 21.0**.

2.03 Payment

- The lump sum bid for General Work is to be full compensation for all items needed to complete this project beyond work paid pursuant to other ISP's.
- Payment will be made in two equal installments of 50% of the lump sum bid.
- The first payment will be made within 30 days of the start of construction and the second payment will be made with the payment made at the time of substantial completion.

ISP 3.0 Monitoring Pipes

3.01 Scope

- This item pertains to the supply and placement/driving of pipes or posts that can be used for future monitoring of water levels and channel bottoms.

3.02 Work

- The materials may either be 75mm dia. steel pipe or 150 x 150mm pressure treated wood posts. The 75mm dia. steel pipes are preferred.
- Pipes or posts are to be supplied in minimum of 6m± lengths.

- A minimum of 1.5m of the pipe or post is to be driven into the native soils and a maximum of 1m of the pipe or post is to protrude above normal wetlands water levels. Cutting off may be necessary if the pipe or post can not be driven sufficiently deep to use all 6m.
- The pipes/posts in the new work are to be driven along the perimeter of the barge path and are to be placed after excavation has been completed.
- The pipes/posts in the existing channel are to be placed after waters are lowered and are to be at the edge of water in the channel.
- All pipes/posts are to be driven to be plumb with the vertical.
- Each post/pipe in the new 750m of work is to be accessible by small boats for monitoring purposes after the work is completed.
- The Engineer and/or his environmental consultant will attach staff gauges to each post/pipe.
- Each post/pipe is to have holes drilled by the Contractor to allow affixation of the staff gauges. The diameter and number of holes will be indicated to the Contractor at the time of project start up.
- Where pipe material is used the top is to have a secured metal cap attached.
- The expected number of posts will be five (5).
- The expected locations are at the downstream end of the new channel, at mid length of the new channel, at the start of the new channel, at mid length between the start of the new channel and the Gilroy tile outlet, and one near the Gilroy tile outlet.
- The Engineer may require more pipes/posts and will advise the Contractor prior to his ordering of the material.
- The posts/pipes are to be driven/placed by the excavator either while returning along the access route or while working from the barge on its return route.

3.03 Payment

- Measurement for payment shall be the actual quantity of each post/pipe directed to be placed.
- Payment at the contract unit price for the monitoring pipes/posts shall be full compensation for all labour, equipment and materials to do the work including supply of materials, drilling of holes for affixation of staff gauges, placement of pipes/posts, and placement of caps.

ISP 4.0 Shot Rock Riprap – Provisional Item (Item B1)

4.01 Scope

- This Item applies to the supply and installation of shot rock for riprapping or surfacing or environmental enhancement, including excavation, shaping, grading and disposal of excavated material at locations if required by the Engineer.
- At this time, there are no set locations.

4.02 Work

- Work to be in accordance with OPSS 511 and in accordance with General Special Provision **GSP 45.0** re Shot Rock.
- Shot rock to be underlain by a filter fabric at no extra cost but only if directed to do so by the Engineer.
- This is a provisional item and estimated quantities are provided for bidding purposes only.

4.03 Payment

- The actual amount of shot rock placed at locations where directed by the Engineer, will be measured and will be paid at the applicable tendered provisional cubic metre rate. There will be no difference in payment made for shot rock placed to a 300mm depth versus shot rock placed to a 500mm depth.
- The unit price per cubic metre bid will be full compensation for all labour, equipment and materials including preapproval of sources, hauling, preparation, filter fabric, placing and grading.

ISP 5.0 Straw Bale Dams – Provisional Item (Item B2)

5.01 Scope

- This Item Special Provision applies to straw bale dams installed as directed by the Engineer.
- At this time, there are no set locations.

5.02 Work

- The work is to be in accordance with OPSD 219.180 and OPSS 805.
- This is a provisional item and estimated quantities are provided for bidding purposes only.
- Where the drawings do not show the locations for straw bale dams, and where the Engineer requires such, the locations for such will be provided at the time of the pre-construction site meeting.

5.03 Payment

- Measurement for payment shall be the actual quantity of each straw bale sediment dam.
- The provisional unit price bid for each straw bale dam will be payment in full for all labour, equipment and materials for any dam up to a nine (9) metre width.
- Should any straw bale dam be required with a width greater than 9 metres a proportional increase in payment will be made based on the factor of installed width divided by 9 metres.

ISP 6.0 19mm Crushed Stone – Provisional Item (Item B3)

6.01 Scope

- This Provisional Item applies to the supply, placement, fine grading and compacting 19mm crusher run stone to 100% of the material's Standard Proctor Maximum Dry Density (SPMDD) for use in areas as directed by the Engineer. Expected usage will be primarily for environmental enhancement.
- Stone type may include limestone. (Limestone is preferred.)
- At this time there are no set locations.

6.02 Work

- This is a provisional item and estimated quantities are provided for bidding purposes only.
- Work to be in accordance with OPSS 314 and OPSS 1004 and as per any applicable GSP.
- 19mm crusher run stone that becomes contaminated due to Contractor activity shall be removed and replaced at no cost to the Contract.
- Water required for compaction is to be supplied and applied as necessary and as part of this Provisional Item.

6.03 Payment

- Measurement for payment shall be actual quantity approved/directed (by weigh tickets) and the unit of measurement is tonnes.
- Payment at the provisional unit price shall be full compensation for all labour, equipment and material to do the work.

ISP 7.0 Granular A – Provisional Item (Item B4)

7.01 Scope

- This Provisional Item Special Provision applies to the supply and placement of Granular A where directed by the Engineer.
- General Special Provision **GSP 22.0** is applicable.
- At this time, there are no set locations.

7.02 Work

- This is a provisional item and estimated quantities are supplied for bidding purposes.
- Grading and compaction is required as per the **GSP 22.0**.
- If any existing materials are to be loaded and hauled away or otherwise disposed of, such work shall be deemed to be part of this Provisional Item.

- Work to excavate a narrow width and length in locations if indicated by the Engineer may also be required and is to be included.

7.03 Payment

- Measurement for payment shall be actual quantity approved/directed (by weigh tickets) and the unit of measurement is tonnes.
- Payment at the provisional unit price shall be full compensation for all labour, equipment and material to do the work.

ISP 8.0 Silt Fences – Provisional Item (Item B5)

8.01 Scope

- This Provisional Item Special Provision applies to the supply, installation, inspection, maintenance and removal of temporary silt fences to prevent the migration of sediment onto private property, if directed by the Engineer.
- Siltation Controls shall conform to the requirements outlined in General Special Provision **GSP 16.05** re Environmental Obligations.

8.02 Work

- This is a provisional item and estimated quantities are provided for bidding purposes only.
- The work shall be in accordance with OPSS 805 and OPSD 219.110.
- No work shall be carried out beyond the limits directed by the Engineer.
- Silt fences may have to be erected prior to any other work and be removed after restoration and ground cover is established.
- The Contractor shall inspect any installation weekly and following each rainfall event and provide a written inspection and maintenance report. Any repairs/reconstruction necessary shall be attended to as part of the unit price bid.

8.03 Payment

- Measurement for payment will be made in linear metres of the silt fence required by the Engineer.
- Silt fence constructed outside the authorized limits will be measured and deducted from the total quantity measured prior to payment.
- Payment will be made at the Provisional unit price and shall constitute full compensation for all labour, equipment and materials.

ISP 9.0 Environmental Offsetting Measures – Contingency Item (Item C1)

9.01 Scope

- This item pertains to the supply and placement of environmental offsetting features
- The features to be constructed are to be defined by the Engineer at the time of the start-up meeting.

9.02 Work

- The type of features have not yet been confirmed but could involve works such as turtle nesting habitat (using a granular type of material).

9.03 Payment

- The work will be done as Change Order work (see **GSP 3.0** and **GSP 56.0**) and will be paid as a Change Order.
- Where a provisional item may apply, payment will be made as per the Provisional Item rather than as a Change Order in full or in part.
- The contingency created may or may not be sufficient for the Environmental Measures ordered.

APPENDIX H – STANDARD KSAL SPECIFICATIONS

200 GENERAL CONDITIONS

200.1 SCOPE

The work to be done under this contract consists of supplying all labour, equipment and materials to construct the drainage work as outlined in the Instructions to Tenderers, the Form of Tender and Agreement, the Schedule of Tender Prices, the Drawings, the General Conditions, Special Provisions and the Standard Specifications.

200.2 ORDER OF PRECEDENCE

In case of any inconsistency or conflict between the drawings and specifications, the following order of precedence shall apply: Addenda, Form of Tender and Agreement, Schedule of Tender Prices, Special Provisions, Contract Drawings, Standard Specifications, General Conditions.

200.3 MUNICIPALITY

Municipality refers to a municipal corporation in the Province of Ontario. Where reference to Township, County, Region, Town, City or Owner appears it shall be deemed to be the same as the word Municipality. Where reference to owner appears in the specifications it is usually in reference to the owner of the property on which the drain is being constructed.

200.5 EXAMINATION OF SITE, PLANS AND SPECIFICATIONS

Prior to the submission of the Tender, the Tenderer must examine the premises and site to compare them with the Drawings and Specifications in order to be satisfied with the existing conditions and the extent of the work to be done. The Tenderer must ensure that the meaning and intent of the drawings, estimated quantities and specifications is clearly understood before submission of the Tender. No allowances shall be made on behalf of the Contractor by reason of any error made in the preparation of the tender submission.

Any estimates of quantities shown or indicated on the drawings or elsewhere in the tender document are provided for the convenience of the Tenderer. The Tenderer should check the estimate of quantities for accuracy. Any use made of the estimated quantities by the Tenderer in calculating the tendered amounts is done at the Tenderers risk.

200.6 COMMENCEMENT AND COMPLETION OF WORK

The work must commence immediately after the Tenderer is notified of the contract award or at a later date, if set out as a condition in the Form of Tender and Agreement. If weather and ground conditions are unsuitable, work may be started at a later date from either of the above two dates if such delay is approved by the Engineer. The Contractor shall provide a minimum of 48 hours advance notice to the Engineer and the Municipality before commencement of any work. The work must proceed in such manner as to ensure its completion at the earliest possible date consistent with first class workmanship and within the time limit set out in the tender/contract document. Failure to commence or complete the work as set out in the tender/contract document may result in a forfeiture of all or part of the Contract Security if the Engineer deems that damages have been sustained to the Municipality or to any landowner because of the non-commencement or non-completion of the contract as awarded and that the failure to meet the specified dates has been the fault of the Contractor.

200.7 NOTICES RE COMMENCEMENT OF WORK

If the Contractor leaves the job site for a period of time after initiation of work, a minimum of 48 hours advance notice shall be given to the Engineer and the Municipality before commencement of any further work. If any work is commenced without the advance notice the Contractor shall be fully responsible for all such work undertaken prior to such notification and shall make good any works or materials judged to be inadequate or constructed in any manner that may have been subject to alteration if made known to the Engineer prior to commencement of construction.

200.8 PERMITS, NOTICES, LAWS AND RULES

The Contractor shall apply and pay for all necessary permits or licenses required for the execution of the work. This shall not include the obtaining of permanent easements or rights or servitude. The Contractor shall give all necessary notices and pay all fees required by the law and comply with all laws, ordinances, rules and regulations relating to the work and to the preservation of the public's health and safety and if the specifications and drawings are at variance therewith, any resulting additional expense incurred by the Contractor shall constitute an addition to the contract price.

200.9 HEALTH AND SAFETY

Contractor must comply with the Occupational Health and Safety Act (OHSA) and the associated Regulations for Construction Projects. Contractor will also follow any site-specific safety and training requirements of the Municipality, agencies, utility companies or other authorities.

Communication about site-specific hazards and safety requirements shall occur at the preconstruction meeting. If no pre-construction meeting is conducted, Contractor will communicate site-specific hazards and safety requirements before beginning work.

Contractor shall immediately report any workplace incidents, near misses, injuries and occupational illnesses to the Engineer.

200.10 LIMITATIONS OF OPERATIONS

Except for such work as may be required by the Engineer to maintain the works in a safe and satisfactory condition, the Contractor shall not carry out operations under the contract on Sundays or Statutory Holidays without permission in writing from the Engineer. The Engineer may direct in writing to the Contractor to cease or limit operations under the contract on any day or days if the operations are of such a nature, or if the work is so located, or if the traffic is of such a volume, that the Engineer deems it necessary or expedient to do so.

200.11 SUPERVISION

The Contractor shall provide constant supervision of the construction work and shall keep a competent foreman in charge at the site.

200.12 CHARACTER AND EMPLOYMENT OF WORKERS

The Contractor shall employ only orderly, competent and skillful workers to do the work and shall give preference to available qualified residents in the area of the contract. Whenever the Engineer informs the Contractor in writing that any workers are, in the opinion of the Engineer, disorderly, incompetent, or breaking the law, such workers shall be discharged from the job site and shall not again be employed on the job site without the written consent of the Engineer.

200.13 SUB-CONTRACTORS

If the Municipality so directs, the Contractor shall not sublet the whole or any part of this contract without the approval of the Engineer.

200.14 PAYMENT

Progress payments in cash equal to about 90% of the value of the work done and materials incorporated in the work will be made to the Contractor monthly. If directed by the Engineer the Contractor may be required to provide a written request for the progress payment amount. An additional 7% will be paid 45 days after the date of the Completion Certificate by the Engineer and 3% of the contract price may be reserved by the Municipality as a maintenance holdback for one year from the date of the Completion Certificate.

The holdbacks noted above may be increased by the Municipality if, in the written opinion of the Engineer, particular conditions of the contract require such greater holdback.

After the completion of the work any part of maintenance holdback may be used to correct defects from faulty construction and/or materials provided that notice shall first be given by the Engineer in writing to the Contractor stating that the Contractor has seven (7) days in which to remedy the defect in construction and/or materials.

200.15 TERMINATION OF CONTRACT BY THE MUNICIPALITY

Termination of the contract by the Municipality may be considered if the Contractor:

1. should be adjudged bankrupt or make a general assignment for the benefit of creditors or if a receiver should be appointed on account of insolvency;
2. should refuse or fail to supply enough properly skilled workmen or proper materials after having received seven (7) days' notice in writing from the Engineer to supply such additional workmen or materials in order to commence or complete the works;
3. should fail to make prompt payment to sub-contractors or for materials or labour;
4. should persistently disregard laws, ordinances, or instructions from the Engineer, or otherwise be guilty of a substantial violation of the provisions of the contract;

then the Municipality, upon Certificate of the Engineer that sufficient cause exists to justify such action, may without prejudice to any other right or remedy, give written notice to the Contractor to terminate the employment of the Contractor and take possession of the premises, and of all materials, tools and appliances thereon, and may finish the work by whatever method the Municipality may deem expedient, but without undue delay or expense. In such case, the Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the contract price will exceed the expense of finishing the work including compensation to the Engineer for additional services and including other damages of every name and nature, such excess shall be paid to the Contractor. If such expense will exceed such unpaid balance including the Contract Security, the Contractor shall pay the difference to the Municipality. The expense incurred by the Municipality, as herein provided, shall be certified by the Engineer. If the contract is terminated by the Municipality due to the Contractor's failure to properly commence the works, the Contractor shall forfeit the Contract Security and furthermore shall pay to the Municipality an amount to cover the increased costs, if any, associated with a new tender for the contract being terminated.

If any unpaid balance and the Contract Security do not equal the monies owed by the Contractor upon the termination of the contract, the Municipality may also charge such expenses against any money which is or may thereafter be due to the Contractor from the Municipality.

200.16 LIQUIDATED DAMAGES

It is agreed by the parties to the Contract that in case all the work called for under the Contract is not finished or complete within the period of time as set forth in the Tender/Contract Document, damage will be sustained by the Municipality. It is understood by the parties that it will be impracticable and extremely difficult to ascertain and determine the actual damage which the Municipality will sustain in the event of and by reason of such delay. The parties hereto agree that the Contractor will pay to the Municipality a sum as set out in the Form of Tender and Agreement for liquidated damages for each and every calendar day delay, including Saturdays, Sundays and Statutory Holidays, in finishing the work in excess of the number of working days prescribed. It is agreed that the liquidated damages amount is an estimate of the actual damage to the Municipality which will accrue during the period in excess of the prescribed number of working days.

The Municipality may deduct any amount due under this section from any monies that may be due or payable to the Contractor on any account whatsoever. The liquidated damages payable

under this section are in addition to and without prejudice to any other remedy, action or other alternative that may be available to the Municipality.

The Contractor shall not be assessed with liquidated damages for any delay caused by acts of nature, or of the Public Enemy, Acts of the Province or of any Foreign State, Fire, Flood, Epidemics, Quarantine Restrictions, Embargoes or any delays of Sub-Contractors due to such causes.

If the time available for the completion of the work is increased or decreased by reason of alterations or changes made under the provisions of the Contract, the number of working days shall be increased or decreased as determined by the Engineer.

If the Form of Tender and Agreement does not show an amount for Liquidated Damages then Liquidated Damages do not apply for this contract.

200.17 CONTRACTOR'S LIABILITY

The Contractor and all workers, agents or any party under the Contractor's control, including Sub-Contractors, shall use due care that no person or property is injured and that no rights are infringed during the construction work outlined in the contract. The Contractor shall be solely responsible for all damages by whomsoever claimable in respect of any injury to persons or to lands, buildings, structures, fences, livestock, trees, crops, roadways, ditches, drains and watercourses, whether natural or artificial, or property of whatever description and in respect of any infringement of any right, privilege or easement wherever occasioned in the carrying on of the work or any part thereof, or by any neglect, misfeasance or non-feasance on the Contractor's part or on the part of any workers, agents or parties under the Contractor's control including Sub-Contractors, and shall bear the full cost thereof. The Contractor shall be fully responsible to make such temporary provisions as may be necessary to ensure the avoidance of any such damage, injury or infringement and to prevent the interruption of or danger or menace to the traffic in any railway or any public or private road entrance or sidewalk and to secure to all persons and corporations the uninterrupted enjoyment of all their rights, in and during the performance of the work. The Contractor shall indemnify and save harmless the Municipality and the Engineer from and against all claims, demands, losses, costs, damages, actions, suits or other proceedings by whomsoever made, brought or prosecuted in any manner based upon, occasioned by, or attributed to any such damage, injury or infringement.

Wherever any work is of such an extent and nature that it must necessarily be confined to particular areas of a roadway, a working area, or private property, the Contractor shall use reasonable care not to damage or deface the remaining portions of the property, and if any damage is occasioned as a result of the Contractor's operations, it shall be rectified by and at the expense of the Contractor, to the satisfaction of the Engineer. Notwithstanding the indemnity provisions contained in this section, where in the opinion of the Engineer the Contractor has failed to rectify any damage, injury or infringement or has failed to adequately compensate any person for any damage, injury or infringement for which the Contractor is responsible under the contract, the Engineer, following notice in writing to the Contractor of an intention so to do, may withhold payment of any monies due the Contractor under this or any other contract until the Contractor has rectified such damage, injury or infringement or has paid

adequate compensation for such damage, injury or infringement, provided however, that the Municipality will not withhold such monies where in the opinion of the Engineer there are reasonable grounds upon which the Contractor denies liability for such damage, injury or infringement and the Contractor has given the claimant a reasonable time in which to establish the validity of the claim, and provided further that the amount withheld under this section shall not exceed the amount of such claims against the Contractor.

Where the Contractor uses privately owned lands for pits or waste disposal areas, the Contractor shall comply with applicable laws and provide the Engineer with a release signed by or on behalf of the owner of each pit or waste disposal area used by the Contractor. If the said release is not obtained, then sufficient monies will be withheld from the Contractor except, however, where the owner's signature is withheld solely on the basis of damage, injury, or infringement it will be dealt with as provided elsewhere in this subsection.

Nothing herein contained shall be construed as in any way restricting or limiting the liability of the Contractor under the laws of the country, province or locality in which the work is being done. Neither the Completion Certificate nor final payment thereunder, nor any provision in the Contract Document shall relieve the Contractor from this liability.

200.18 LIABILITY INSURANCE

The Contractor shall take out and keep in force until the date of acceptance of the entire work by the Engineer, a comprehensive policy of public liability and property damage insurance providing insurance coverage of at least \$3,000,000 for each and every accident, exclusive of interest and cost, against loss or damage resulting from bodily injury to or death of one or more persons and loss of or damage to property and such policy shall where, and as requested by the Municipality, name the Municipality and the Engineer as an additional insured thereunder and shall protect the Municipality against all claims for all damage or injury including death to any person or persons and for damage to any property of the Municipality or any other public or private property resulting from or arising out of any act or omission on part of the Contractor or any of his servants or agents during the execution of the Contract.

200.19 LOSSES DUE TO ACTS OF NATURE, ETC.

All damage, loss, expense and delay incurred or experienced by the Contractor in the prosecution of the work, by reason of unanticipated difficulties, bad weather, strikes, wars, acts of nature, or other mischances, shall be borne by the Contractor and shall not be the subject of a claim for additional compensation.

400 STANDARD SPECIFICATIONS FOR CONSTRUCTION OF DRAINS

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400 STANDARD SPECIFICATIONS FOR CONSTRUCTION OF DRAINS

400.1 Abbreviations

- i) MTO means the Ministry of Transportation of Ontario.
- ii) ASTM means the American Society for Testing Materials.
- iii) CSA means the Canadian Standard Association.
- iv) OPSD means Ontario Provincial Standard Drawings
- v) OPSS means Ontario Provincial Standard Specifications
- vi) DFO means Fisheries and Oceans Canada
- vii) MNDMNRF means Ministry of Northern Development, Mines, Natural Resources and Forestry
- viii) MECP means Ministry of Environment, Conservation and Parks

400.2 Pre-Construction Meeting

The Contractor should arrange a pre-construction meeting with the Engineer, Municipality, affected landowners prior to commencement of construction.

If there is no pre-construction meeting or if a landowner is not present at the pre-construction meeting, the following shall apply. The drain is to be walked by the Contractor and each landowner prior to construction to ensure that both agree on the work to be done. Any difference of opinion shall be referred to the Engineer for decision. If the landowner is not contacted for such review, they are to advise the Engineer and/or Municipality.

400.3 Cold Weather

When working in cold weather is approved by the Engineer, the Contractor shall provide suitable means for heating, protection, and snow and ice removal. All work completed in cold weather conditions shall be to the satisfaction of the Engineer and any additional cost to remedy unsatisfactory work, or protect the work shall be borne by the Contractor. All backfilling operations shall be done as soon as possible to avoid backfilling with ground containing frozen particles. The Contractor will assume all responsibility for damages to any tile drains and for settlements or bank slippages that may result from work in cold weather.

400.4 Working Area

Where any part of the drain is on a road allowance, the road allowance shall be the working area. For a closed drain the working area shall be a 10 metre width on either side of the trench or any combination not exceeding 20 metres. A 10m x 10m working area shall exist around any catchbasin, junction box or access point. For an open drain the working area shall be 17 metres on the side for leveling and 3 metres on the opposite side. A 10m working area shall exist for any overflow swale or grassed waterway. If any part of the drain is close to a property line then the fence line shall be one of the limits of the work area. Reduced or increased working areas will be described in detail on the Drawings.

400.5 Access

The Contractor shall have access to the drain by entering the working area directly from road allowances or along access routes shown on the Drawings. All specifications governing fences, livestock and crops during drain construction apply to access routes. No other access routes shall be used unless first approved by the Engineer and the affected landowner. The Contractor shall contact each landowner prior to using the designated access routes. Contractor shall make good any damages caused by using the designated access routes.

400.6 Access to Properties Adjoining the Work

The Contractor shall provide at all times and at no additional cost, adequate pedestrian access to private homes and commercial establishments unless otherwise authorized by the Engineer. Where interruptions to access have been authorized by the Engineer, reasonable notice shall be given by the Contractor to the affected landowners and such interruptions shall be arranged to minimize interference to those affected.

400.7 Drainage Superintendent

Where a Drainage Superintendent (Superintendent) is appointed by the Municipality, the Engineer may designate the Superintendent to act as the Engineer's representative. If so designated, the Superintendent will have the power to inspect and direct the execution of the work.

Any instructions given by the Superintendent which change the proposed work or with which the Contractor does not agree shall be referred to the Engineer for final decision.

400.8 Alterations to Work

The Engineer shall have the power to make alterations, additions and/or deletions in the work as shown or described in the Drawings or Specifications and the Contractor shall proceed to implement such changes without delay. Alterations ordered by the Engineer shall in no way render the contract void.

If a landowner desires deviations from the work described on the Drawings, the landowner shall submit a written request to the Engineer, at least 48 hours in advance of the work in question.

In every such case, the contract amount shall be increased or decreased as required according to a fair evaluation of the work completed. Where such changes involve additional work similar to items in the contract, the price for additional work shall be determined after consideration is given to the tendered price for similar items.

In no case shall the Contractor commence work considered to be extra work without the Engineer's approval. Payment for extra work is contingent on receipt of documentation to the satisfaction of the Engineer. Refer to the Extra Work Summary included in the Special Provisions.

400.9 Errors and Unusual Conditions

The Contractor shall notify the Engineer immediately of any error or unusual conditions which may be found. Any attempt by the Contractor to correct the error without notice shall be done at the Contractor's risk. Any additional cost incurred by the Contractor to remedy an error or unusual condition without notice shall be borne by the Contractor. The Engineer shall direct the alteration necessary to correct errors or unusual conditions. The contract amount shall be adjusted in accordance with a fair evaluation of documentation for the work added, deleted or adjusted.

400.10 Tests

The Engineer reserves the right to subject any materials to a competent testing laboratory for compliance with the standard. If any materials supplied by the Contractor are determined to be inadequate to meet the applicable standards, the Contractor shall bear full responsibility to remove and/or replace all such inadequate materials with materials capable of meeting the standards.

The cost of testing the materials supplied by the Contractor shall be borne by the Contractor.

400.11 Benchmarks and Stakes

Prior to construction, the Engineer will confirm the benchmarks. The Contractor shall be held liable for the cost of replacing any benchmarks destroyed during construction.

If the Engineer provides layout stakes, the Contractor shall be held liable for the cost of replacing any layout stakes destroyed during construction.

Where property bars are shown on the Drawings, they are to be protected and if damaged by the Contractor, they will be reinstated by an Ontario Land Surveyor at the expense of the Contractor. Where property bars not shown on the Drawings are damaged, they will be reinstated by an Ontario Land Surveyor at the expense of the project.

400.12 Opening up of Finished Work

If ordered by the Engineer, the Contractor shall make such openings in the work as are needed to re-examine the work, and shall forthwith make the work good again. Should the Engineer find the work so opened up to be faulty in any respect, the whole of the expense of opening, inspecting and making the work good shall be borne by the Contractor. Should the Engineer find the work opened up to be in an acceptable condition the Contractor shall be paid for the expense of opening and making the work good, unless the Contractor has been obligated by any specification or by the direction of the Engineer to leave the work open for the Engineer's inspection.

400.13 Final Inspection

Final inspection by the Engineer will be made within twenty (20) days after receiving notice in writing from the Contractor that work is complete, or as soon thereafter as weather conditions

permit. All the work included in the contract must at the time of final inspection have the full dimensions and cross-sections.

Prior to commencing the final inspection an on-site meeting may be held by the Engineer and landowners directly affected by the construction of the drain. The Contractor will attend this meeting upon notice by the Engineer.

If there is no on-site meeting with the Engineer and landowners, the Contractor shall obtain from each landowner a written statement indicating that the work has been performed to the owner's satisfaction. If the Contractor is unable to obtain a written statement from the landowner, the Engineer will determine if further work is required prior to issuing the Completion Certificate.

400.14 Warranty

There shall be a one-year warranty period on all completed work. The warranty period will commence on the date of the Completion Certificate.

When directed by the Engineer, the Contractor shall repair and make good any deficiencies in the work that may appear during the warranty period.

Before the work shall be finally accepted by the Municipality, the Contractor shall complete all work as directed by the Engineer and remove all debris and surplus materials and leave the work neat and presentable.

400.15 Materials

400.15.1 Concrete Drain Tile

Concrete drain tile shall conform to the requirements of the most recent ASTM C412 specifications for heavy duty extra quality, unless a stronger concrete tile is required by the Special Provisions or Drawings. All tile furnished shall be subject to the approval of the Engineer.

The minimum nominal lengths of the tile shall be 750mm for 150 to 350mm diameter tile and 1200mm for 400 to 900mm diameter tile.

All tile should be of good quality, free from distortions and cracks and shall meet the standards specified. The ends should be smooth and free from cracks or checks. All rejected tile are to be immediately removed from the site.

Granular backfill, where required, shall consist of approved sand or gravel having no particles retained on a screen having 50mm square openings.

Earth backfill shall consist of approved material having no large lumps or boulders.

400.15.2 Corrugated Plastic Tubing

Corrugated plastic tubing shall conform to the *Land Improvement Contractors of Ontario Standard Specification for Corrugated Plastic Drainage Tubing, 2006*. Type of material (solid or perforated) and need for filter sock will be specified on the Drawings or in the description of the work in the Special Provisions. Filter sock where specified shall be a standard synthetic filter material as provided by a recognized plastic tubing manufacturer unless noted differently on the contract drawings or elsewhere in the contract document. Protect coils of plastic tubing from damage and deformation.

400.15.3 Corrugated Steel Pipe

Corrugated Steel Pipe (CSP) shall be according to OPSS 1801 (CSA G401). Unless stated otherwise in the Special Provisions the pipe shall be:

- galvanized
- helical corrugation with lock seam and re-rolled annular ends
- 68mm x 13mm corrugation profile for diameters up to 1200mm
- 125mm x 25mm corrugation profile for diameters 1200mm and larger
- minimum wall thickness of 1.6mm for diameters up to 500mm
- minimum wall thickness of 2.0mm for diameters 600mm and larger
- joined using standard couplers matching the pipe diameter and material

Other coatings that may be specified include aluminized Type 2 or polymer. Polymer coating shall be a 254mm polymer film laminated to both sides of the pipe.

400.15.4 Plastic Pipe

Plastic Pipe shall be a high density polyethylene (HDPE) double wall corrugated pipe with smooth inner wall, solid with no perforations in accordance with OPSS 1840.

A minimum stiffness of 320 KPa at 5% deflection

The pipe shall be joined with snap-on or split couplers.

400.15.5 Concrete Sewer Pipe

Concrete sewer pipe shall be in accordance with OPSS 1820.

Non-reinforced concrete sewer pipe shall be used for pipe 375mm in diameter and smaller and reinforced concrete sewer pipe shall be used for pipe over 375mm.

Classes shall be as shown on the Contract Drawings or as described in the Form of Tender.

All new concrete sewer pipe shall have rubber-type gasket joints.

Where concrete sewer pipe “seconds” are specified, the pipe should exhibit no damage or cracks on the barrel section and shall be capable of satisfying the crushing strength requirements of OPSS 1820. The pipe may contain cracks or chips in the bell or spigot which prevent the use of rubber gaskets but the joints must be protected with filter cloth.

400.16 Riprap

All riprap is to be placed on a geotextile underlay (Terrafix 360R or equal) unless directed otherwise in the specific construction notes. The riprap is to be graded heavy angular stone (quarry stone is recommended) with particles averaging in size from 200mm to 300mm and is to be placed at 300mm thickness. Fine particles may be included to fill voids. Along upstream edges of riprap, where surface water will enter, underlay is to extend a minimum of 300mm upstream from riprap and then be keyed down a minimum of 300mm. Wherever riprap is placed, the area is to be over-dug so that finished top of riprap is at design cross-section, at design elevation or flush with existing ground.

400.17 Geotextile

To be non-woven fabric that is rot proof, non-biodegradable, chemically resistant to acidic or alkaline soils and is dimensionally stable under different hydraulic conditions. The filter fabric is to be a material whose primary function is to act as a highly permeable, non-clogging soil separator for fine soils (Terrafix 360R or equal). Contractor is to follow the manufacturer's recommendations for cutting, installation and precautions necessary to avoid damage to fabric. Other approved equals will be considered by the Engineer prior to construction.

400.18 Disposal of Materials

The Contractor shall remove all surplus materials from the job site at the end of the project. The Contractor shall locate the disposal site for all materials to be disposed of. Disposal of materials shall comply with applicable regulations.

400.19 Notification of Railroads, Road Authorities and Utilities

Contractor will notify any Railroad, Road Authority or Utility at least 48 hours in advance regarding work to be performed on their property or affecting their infrastructure. The notice will be in writing and is exclusive of Saturdays, Sundays and Holidays.

A utility includes any entity supplying the general public with necessities or conveniences.

400.20 Working in Road Allowances

400.20.1 General

Work within public road allowances shall be done in accordance with the Ontario Traffic Manual Book 7, latest edition.

400.20.2 Road Crossings

If no specific detail is provided for road crossings on the drawings or in the specifications the following shall apply:

- A Road Authority will supply no labour, equipment or materials for the construction of the road crossing.

- Contractor will not commence road crossing work until any required permits have been obtained. The Engineer may apply for any required permits prior to construction.
- Contractor will notify the Road Authority at least 72 hours in advance of any construction in the road allowance.
- Road crossings may be made with an open cut unless otherwise noted.
- Exact location of crossing shall be verified with the Road Authority and the Engineer.
- Pipe shall be placed on a minimum 150mm depth of Granular A shaped for the pipe.
- Pipe backfill shall be compacted Granular A and extend 300mm above the top of the pipe.
- Trench shall be backfilled with acceptable native material for the base width of the road bed.
- The material shall be placed in lifts not exceeding 300mm in depth and shall be thoroughly compacted with an approved mechanical vibrating compactor.
- Top 600mm of the road bed backfill shall consist of 450mm Granular B and 150mm of Granular A placed in lifts and fully compacted.
- Any surplus excavated material within the road allowance may be spread on the right-of-way with consent of the Road Superintendent otherwise the surplus material shall be hauled away.
- Existing asphalt or concrete pavement or surface treatment shall be replaced by the Contractor to the satisfaction of the Engineer and Road Authority.
- Contractor shall be responsible for correcting any backfill settlement during construction and during the warranty period. Upon approval of the road authority, surplus gravel shall be stockpiled near gravel road crossings to provide backfill for future trench settlement.
- All road crossings shall meet the approval of the Road Authority.
- If any road crossing is not left in a safe manner at the end of the working day barricades and warning signs shall be erected to guarantee the safety of the travelling public.
- If the Engineer deems a road to surface to have been damaged by the construction of a drain, either across or along the road, the Engineer may direct the Contractor to restore the road surface to existing or better condition at no additional cost.

400.20.3 Maintenance of Traffic

Unless directed otherwise on the drawings or in the specifications the Contractor shall keep the road open to traffic at all times. The Contractor shall provide suitable warning signs and/or flagging to the satisfaction of the Road Authority to notify of the construction work. If a detour is required, the Contractor shall submit a proposal as to the details of the detour for approval by the Road Authority. If necessary to close the road to through traffic, the Contractor shall provide for and adequately sign the detour route. Contractor shall undertake all notifications required for a road closure in consultation with the Municipality.

400.21 Locations of Existing Utilities

The position of pole lines, conduits, watermains, sewers and other underground and overhead utilities are not necessarily shown on the Contract Drawings, and, where shown, the accuracy of the position of such utilities and structures is not guaranteed. Before starting work, the Contractor shall have all utilities located in accordance with the Ontario Underground Infrastructure Notification System Act.

All utilities shall be exposed to the satisfaction of the utility company to verify that the construction proposed will not conflict with the utility structure. Additional payment will be allowed for relocation of utilities if conflicts should occur.

The Contractor is responsible for protecting all located and exposed utilities from damage during construction. The Contractor shall assume liability for damage caused to all properly located utilities.

400.22 Laneways

If no specific detail is provided for laneway crossings on the Drawings or in the Specifications the following shall apply:

- Pipe backfill shall be acceptable native material that can be compacted in place.
- Top 450mm of laneway backfill shall consist of 300mm Granular B and 150mm of Granular A placed in lifts and fully compacted.
- Minimum cover on laneway culverts shall be 300mm.
- Existing asphalt or concrete pavement or surface treatment shall be replaced by the Contractor.
- The width of surface restoration shall match the existing laneway.
- Contractor shall be responsible for correcting any backfill settlement during construction and during the warranty period.

The timing of laneway closures will be coordinated by the Contractor to the satisfaction of the landowner.

400.23 Existing Crossing Cleanout

Where the Special Provisions require an existing crossing to be cleaned, the Contractor shall provide a bottom width and depth that provides capacity equivalent to the capacity of the channel on either side. Excavated materials shall be hauled away unless adjacent landowners give permission for leveling. Care shall be taken to ensure that existing abutments or any portion of the structure are not damaged or undercut. The method of removing the material is to be pre-approved by the Engineer.

400.24 Fences

If the Contractor is responsible to remove and install fences, the following shall apply:

- All fences removed by a Contractor are to be re-erected in as good a condition as existing materials permit.
- All fences shall be properly stretched and fastened. Where directed by the Engineer, additional steel posts shall be placed to adequately support a fence upon re-erection.

- Where practical and where required by the landowner, the Contractor shall take down an existing fence at the nearest anchor post and roll the fence back rather than cutting the fence and attempting to patch it.
- Where fence materials are in such poor condition that re-erection is not possible, the Contractor shall replace the fence using equivalent materials. Such fence material shall be approved by the Engineer and the landowner. Where the Engineer approves new fence material, additional payment will be provided.

Any fences paralleling an open drain, that are not line fences, that hinder the proper working of the excavating machinery for drain construction or maintenance shall be removed and rebuilt by the landowner at their own expense. If such parallel fences are line fences they shall be removed and reinstalled by the Contractor.

No excavated or cleared material shall be placed against fences.

The installation of all fences shall be done to the satisfaction of the Engineer and the landowner.

400.25 Livestock

If any construction will be within a fenced field containing livestock that are evident or have been made known to the Contractor, the Contractor shall notify the owner of the livestock 48 hours in advance of access into the field. Thereafter, the owner shall be responsible for the protection of the livestock in the field during construction and shall also be liable for any damage to or by the livestock.

Where the owner so directs or where the Contractor has failed to reach the owner, the Contractor shall adequately re-erect all fences at the end of each working day. No field containing livestock shall have a trench left open at the end of the working day, unless the trench has been adequately backfilled or protected. Failure of the Contractor to comply with this paragraph shall render the Contractor liable for any damage to or by the livestock.

Where livestock may be encountered on any property the Contractor shall notify the Engineer to arrange for inspection of the work prior to backfilling.

400.26 Standing Crops

The Contractor shall not be held responsible for damages to standing crops within the working area for the drain. However, the Contractor shall notify the owner of the crops 48 hours prior to commencement of construction so as to allow the owner an opportunity to harvest or salvage the crop within the drain working area. If this advance notice is not given the Contractor may be liable for the loss of the standing crops.

400.27 Clearing Vegetation

400.27.1 General

The area for clearing, if not defined elsewhere, shall be 15m on each side of the drain.

400.27.2 Trees to Remain

Where it is feasible to work around existing trees that do not impede the function of the drainage works, the Contractor shall not remove any deciduous tree larger than 300mm and any coniferous tree larger than 200mm, unless authorized by the Engineer.

400.27.3 Incidental Clearing

Incidental clearing includes removal of trees, brush or other vegetation with an excavator during construction activities, and the cost is to be included in the price for the related construction activity.

400.27.4 Power Brushing

Power brushing includes removal of above-ground vegetation with a rotary brush cutter or other mechanical means. Stump and root removal is not required. Power brushed vegetation in a channel cross-section shall be removed and leveled in the working area. Excavated material may be placed and leveled on power brushed vegetation.

400.27.5 Close-Cut Clearing

Close-cut clearing includes removal of above-ground vegetation cut flush with the ground. Stump and root removal is not required.

400.27.6 Clearing and Grubbing

Clearing and grubbing includes removal of vegetation, including stumps and roots. Removal of earth from the grubbed area into the windrows or piles is to be minimized.

400.27.7 Disposal of Cleared Vegetation

400.27.7.1 In Bush Areas

Cleared vegetation is to be pushed into windrows or piles at the edge of the cleared area. Stumps and roots are to be piled first at the edge of the cleared area, followed by other vegetation (trunks, branches, etc.). Provisions for lateral drainage are required through all windrows. Windrows are not to block any laneways or trails. After removing cleared vegetation, the working area shall be leveled to the satisfaction of the Engineer.

400.27.7.2 In Field Areas

Cleared vegetation resulting from incidental clearing or power brushing may be hauled away, mulched in place or reduced to a size that permits cultivation using conventional equipment without causing undue hardship on farm machinery.

Cleared vegetation resulting from close-cut clearing or clearing and grubbing is to be hauled away to an approved location. Disposal sites may be in bush areas or other approved locations on the same farm. No excavated material shall be levelled over any logs, brush or rubbish of any kind.

400.27.8 Landowner Requested Salvage

A landowner may request that wood be separated from the windrows for the landowner's future use. This additional work would be eligible for extra payment, subject to the approval of the Engineer. The cost of the additional work would be assessed to the landowner.

400.27.9 Clearing by Landowner

Wherever the Special Provisions indicate that clearing may be undertaken by the landowner, work by the landowner shall be in accordance with the Clearing Vegetation requirements of this specification and must be completed so as not to cause delay for the Contractor. If the landowner does not complete clearing in accordance with these requirements, the Contractor will undertake the clearing at a price approved by the Engineer.

400.28 Rock Removal

400.28.1 General

Rock shall be defined as bedrock and boulders that are greater than one-half cubic metre in size and that require blasting or hoe-ram removal. Bedrock or boulders that can be removed with a standard excavator bucket are not considered rock removal.

400.28.2 Blasting Requirements

All blasting shall be performed by a competent, qualified blaster in accordance with OPSS 120. Blasting mats are required. A pre-blast survey meeting the requirements of OPSS 120 must be completed for any structure within 200m of any blasting. The cost for pre-blast survey shall be included in the tender price for rock removal.

400.28.3 Typical Sections and Pay Limits

For tile drains and road culverts, rock shall be removed to 150mm below the proposed grade shown on the profile so that pipes are not in direct contact with rock. The width of rock removal shall be 1m minimum or the diameter of the pipe plus 600mm.

For open drains, rock removal shall match the proposed grade and bottom width shown on the Drawings. Side slopes shall be vertical or sloped outward. Side slopes shall be free of loose rock when excavation is completed.

Payment for the quantity of rock removed will be based on the typical sections described in these specifications and confirmed by field measurements. There will be no payment for overbreak.

400.28.4 Disposal of Rock

Excavated rock shall be piled at the edge of the working area at locations designated by the landowner. The cost to pile excavated rock shall be included in the tender price for rock removal. If the Special Provisions or the landowner require excavated rock to be hauled away, additional payment will be considered.

Where approved by the Engineer, excavated rock may be used in place of imported riprap.

400.29 Seeding

400.29.1 General

Contractor responsible for re-seeding as necessary for uniform catch during warranty period.

Areas that remain grassed after construction may not need to be seeded unless directed otherwise by the Engineer.

400.29.2 Drainage Works and Road Allowances

All disturbed ditch banks, berms and road allowances are to be seeded at the end of the day.

The following seed mixture shall be applied at 60kg/ha using a mechanical (cyclone) spreader:

- 35% Creeping Red Fescue
- 25% Birdsfoot Trefoil
- 25% Kentucky Bluegrass
- 10% Cover Crop (Oats, Rye, Barley, Wheat)
- 5% White Clover

Provide temporary cover for late fall planting by adding an additional 10 kg/ha of rye or winter wheat.

400.29.3 Hydroseeding

Where hydroseeding is specified, disturbed areas will be restored by the uniform application of a standard roadside mix, fertilizer, mulch and water at a rate of 2,000 kg/ha and be in accordance with OPSS 804.

400.29.4 Seeding Lawns

Unless specified otherwise, lawn areas shall be seeded with Canada No. 1 lawn grass mixture applied at 300 kg/ha using a mechanical (cyclone) spreader on 100mm of topsoil. Fertilizer shall be 5:20:20 or 10:10:10 applied at 300 kg/ha. Seed and fertilizer shall be applied together. Contractor shall arrange for watering with landowners.

400.29.5 Sod

Where sod is specified, sod is to be commercial grade turfgrass nursery sod, Kentucky Bluegrass placed on 50mm of topsoil. Fertilizer shall be 5-20-20 applied at 10kg/ha. Place sod in accordance with supplier instructions. Contractor is responsible for saturating the sod with water on the day of sod placement. Subsequent watering is the responsibility of the landowner.

400.30 Erosion Control Blankets

Erosion Control Blankets (ECB) shall be biodegradable and made of straw/coconut (Terrafix SC200, Nilex SC32 or equal) or coconut (Terrafix C200, Nilex C32 or equal) with photodegradable, double net construction. The blanket and the staples shall be supplied and installed as per OPSS 804.

Erosion control blanket shall be placed and stapled into position as per the manufacturer's installation instructions on slopes as directed by the Engineer. Blankets shall be installed in direct contact with the ground surface to form a uniform, cohesive mat over the seeded earth area. The blankets are to be single course with 150mm overlap between blankets and joints are to be staggered. The Contractor shall ensure that the ECB is anchored to the soil and that tenting of the ECB does not occur.

On slopes, when the ECB cannot be extended 1m beyond the crest of the slope, the uppermost edge of the ECB shall be anchored in a 150mm wide by 150mm deep trench. The trench shall be backfilled with earth and compacted.

400.31 Sediment Control

400.31.1 General

Contractor shall install sediment control features at the downstream limits of the project and at other locations as shown on the drawings or directed by the Engineer.

Sediment control features shall be installed prior to any excavation taking place upstream of that location. The Contractor shall maintain all sediment control features throughout construction and the warranty period.

Sediment that accumulates during construction shall be removed and levelled as required.

400.31.2 Flow Check Dams

400.31.2.1 Temporary Straw Bale Flow Check Dam

The straw bale flow check dam shall consist of a minimum of 3 bales. Each bale is to be embedded at least 150mm into the channel bottom and shall be anchored in place with 2 T-bar fence posts or 1.2m wooden stakes driven through the bale.

Straw bales shall be hauled away at the end of the warranty period. Accumulated sediments shall be excavated and levelled when the temporary straw bale flow check dam is removed.

400.31.2.2 Temporary Rock Flow Check Dam

The temporary rock flow check dam shall extend to the top of the banks so that dam overtopping does not cause bank erosion. Rock shall be embedded a minimum of 150mm into the ditch bottom and banks. No geotextile is required for temporary rock flow check dams.

Accumulated sediments shall be excavated and levelled when the temporary rock flow check dam is removed at the conclusion of the warranty period.

400.31.2.3 Permanent Rock Flow Check Dam

The requirements of temporary rock flow check dams shall apply except rock shall be placed on geotextile and the dam shall remain in place permanently.

400.31.3 Sediment Traps

400.31.3.1 General

The channel bottom shall be deepened in accordance with the dimensions provided in the Drawings or Special Provisions. If dimensions are not specified on the Drawings, the sediment trap shall be excavated within the channel cross-section at least 0.3m below the design grade.

The Contractor will monitor the sediment trap during construction and cleanout accumulated sediments as required to maintain the function of the sediment trap.

If specified to be temporary, no sediment trap maintenance is required after construction is complete.

If specified to be permanent, the contractor will clean out the sediment trap at the conclusion of the warranty period, unless directed otherwise by the Engineer.

400.31.3.2 Sediment Trap with Flow Check Dam

A permanent rock sediment trap shall include a permanent sediment trap and a rock flow check dam.

A temporary rock/straw sediment trap shall include a temporary sediment trap and a rock/straw flow check dam.

400.31.4 Turbidity Curtains

A turbidity curtain is required when there is permanent water level/flow and a sediment trap is not feasible.

Turbidity curtains shall be in accordance with OPSS 805 and installed per manufacturer's instructions.

Turbidity curtains shall be sized and anchored to ensure the bottom edge of the curtain is continuously in contact with the waterbody bed so that sediment passage from the enclosed area is prevented. The curtain must be free of tears and capable of passing the base flow from the drainage works. Turbidity curtain locations may be approved by the Engineer.

Turbidity curtains are to remain functional until work in the enclosed area is completed. Prior to relocating or removing turbidity curtains, accumulated sediment is to be removed from the drain and levelled.

Where a turbidity curtain remains in place for more than two weeks it shall be inspected for damage or clogging and replaced, repaired or cleaned as required.

400.31.5 Silt Fence

Silt fence shall be in accordance with OPSS 805.07.02.02 and OPSD 219.110 (light-duty).

400.32 Grassed Waterways and Overflow Swales

Grassed waterways and overflow swales typically follow low ground along the historic flow route. The cross-section shall be saucer shaped with a nominal 1m bottom width, 8:1 side slopes and 300mm depth unless stated otherwise in the Special Provisions.

All grassed waterways are to be permanently vegetated. Grassed waterways shall be seeded with the following permanent seed mixture: 50% red fescue, 45% perennial ryegrass and 5% white clover, broadcast at 80 kg/ha. Fertilizer to be 7-7-7 applied at 80 kg/ha. Provide temporary cover for late fall planting by adding an additional 10 kg/ha of rye or winter wheat.

Overflow swales may be cropped using conventional farming practice.

400.33 Buffer Strips

Open drains shall include minimum 3m wide, permanently vegetated buffer strips on each side of the drain. Catchbasins shall include a minimum 1m radius, vegetated buffer strip around the catchbasin.

Cultivation of buffer strips using conventional farming practice may be undertaken, provided sediment transport into the drain is minimized.

400.34 Maintenance Corridor

The maintenance corridor along the route of the drain, as established in the report, shall be kept free of obstructions, ornamental vegetation and structures. When future maintenance is undertaken, the cost of removing such items from the corridor shall be assessed to the landowner.

400.35 Pollution

The Contractor shall keep their equipment in good repair. The Contractor or any landowner shall not spill or cause to flow any polluted material into the drain that is not acceptable to the MECP. The local MECP office and the Engineer shall be contacted if a polluted material enters the drain. The Contractor shall refill or repair equipment away from open water. If the Contractor causes a spill, the Contractor is responsible to clean-up the spill in accordance with MECP clean-up protocols.

400.36 Species at Risk

If a Contractor encounters a known Species At Risk designated by the MECP, MNRF or DFO, the Contractor shall notify the Engineer immediately and follow the Ministry's guidelines for work around the species.

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FOR

OPEN DRAINS

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410 STANDARD SPECIFICATIONS FOR OPEN DRAINS

410.1 DESCRIPTION

Work under this item shall include the supply of labour, equipment and materials required for: channel excavation to the cross-section specified, leveling or disposal of all excavated material (spoil) as directed, reconstruction of all intercepted drains as required and any other items related to open drain construction as required by the Schedule of Tender Prices, Special Provisions or the Drawings.

410.2 MATERIALS

Refer to Section 400, Standard Specifications for Drain Construction for any materials required for open drain construction.

410.3 CONSTRUCTION

410.3.1 Excavation

The bottom width and the side slopes of the ditch shall be as shown on the profile drawing. If the channel cross-section is not specified in the Special Provisions it shall be a 1m bottom width with 1.5m horizontal to 1m vertical (1.5:1) bank slope. At locations along the drain where the specified side slopes change there shall be a transitional length of not less than 5m between the varying side slopes. At locations along the drain where the specified bottom width changes there shall be a transitional length of not less than 5m. In all cases there shall be a smooth transition between changes in any part of the channel cross-section. Where the bottom width of the existing ditch matches the specified bottom width, ditch excavation shall be completed without disturbing existing banks.

410.3.2 Low Flow Channels

Unless specified otherwise in the Special Provisions, all intermittent open drains with a bottom width greater than 1.8m and a grade less than 0.07%, shall have a low flow channel. The bottom of the low flow channel shall be the grade shown on the profiles.

The low flow channel shall have a U-shaped cross-section with an average top width of 0.5m and a minimum depth of 0.3m. The low flow channel will not be seeded and may meander along the main channel bottom provided it remains at least .3m from the toe of main channel bank slope.

410.3.3 Line

The drain shall be constructed according to the alignment shown on the drawings or shall follow the course of the existing ditch. All bends shall have a minimum inside radius of 2m. There shall be a smooth transition between changes in the channel alignment. The Contractor shall contact the Engineer before removing any bends or irregularities in an existing ditch.

410.3.4 Grade Control

The profile shows the grade line for the bottom of the ditch. Cuts may be shown on the profile from the existing top of bank and/or from the existing ditch bottom to the new ditch bottom. These cuts are shown for the convenience of the Contractor and are not recommended for quantity estimate or grade control. Accurate grade control must be maintained by the Contractor during ditch excavation. The ditch bottom elevation should be checked every 50 metres and compared to the elevation on the profile.

Benchmarks are identified on the Contract Drawings. The Engineer will confirm all benchmark elevations prior to construction.

410.3.5 Variation from Design Grade

A variation of greater than 25mm above the design grade line may require re-excavation. Excavation below design grade up to 150mm is recommended so that sediment accumulation during or following excavation will not place the ditch bottom above the design grade at completion. Under some circumstances the Engineer may direct that over excavation greater than 200mm will have to be backfilled. No additional payment will be made if backfilling is required to remedy over excavation.

410.3.6 Excavated Material

Excavated material (spoil) shall be deposited on either or both sides of the drain within the specified working area as directed in the Special Provisions. The Contractor shall verify the location for the spoil with each landowner before commencing work on their property. If not specified, spoil shall be placed on the low side of the ditch or opposite trees and fences. The spoil shall be placed a minimum 1m from the top of the bank. No excavated material shall be placed in tributary drains, depressions, or low areas such that water is trapped behind the spoil bank. Swales shall be provided through the leveled or piled spoil at approximately 60m intervals to prevent trapping water behind the spoil bank.

The excavated material shall be placed and leveled to a maximum depth of 250mm; unless otherwise instructed. If excavating more than 450mm topsoil shall be stripped, stockpiled separately and replaced over the leveled spoil, unless stated otherwise in the Special Provisions. The edge of the spoil bank furthest from the ditch shall be feathered down to existing ground. The edge of the spoil bank nearest the ditch shall have a maximum slope of 2:1. The material shall be leveled such that it may be cultivated with conventional equipment without causing undue hardship on farm machinery.

Wherever clearing is necessary prior to leveling, the Contractor shall remove all stumps and roots from the working area. No excavated material shall cover any logs, brush or rubbish of any kind. Large stones in the leveled spoil that are greater than 300mm in diameter shall be moved to the edge of the spoil bank nearest to the ditch but in general no closer than 1m to the top of bank.

Lateral channels that outlet into the drain shall be tapered over a distance of 10m to match the grade of drain excavation. No additional payment will be made for this work.

Where the elevation difference between the lateral channel and the drain is greater than 450mm, a rock chute or similar bank protection approved by the Engineer shall be provided. Additional payment may be allowed for this work.

Where it is specified to straighten any bends or irregularities in the alignment of the ditch or to relocate any portion of an existing ditch, the excavation from the new cut shall be used for backfilling the original ditch. Regardless of the distance between the new ditch and old ditch, no additional payment will be allowed for backfilling the existing ditch.

The Contractor shall contact the Engineer if a landowner indicates in writing that spoil on the owner's property does not need to be leveled. The Engineer may release the Contractor from the obligation to level the spoil and the Engineer shall determine the credit to be applied to the Contractor's payment. No additional compensation is provided to the owner if the spoil is not leveled.

The Engineer may require the Contractor to obtain written statements from any or all of the landowners affected by the leveling of the spoil. Final determination on whether or not the leveling of spoil meets the specification shall be made by the Engineer.

410.3.7 Excavation at Existing Bridge and Culvert Sites

The Contractor shall excavate the drain to the specified depth under all bridges and to the full width of the structure unless specified otherwise in the Special Provisions. All necessary care and precautions shall be taken to protect permanent structures. Temporary bridges may be removed and left on the bank of the drain. In cases where the design grade line falls below the top of footings, the Contractor shall take care to not over-excavate below the grade line. The Contractor shall notify the Engineer if excavation of the channel exposes the footings of the bridge or culvert, so the Engineer can make an evaluation.

The Contractor shall clean through all pipe culverts to the grade line and width specified on the profile. The Contractor shall immediately contact the Engineer after a culvert cleanout if it is found that the culvert bottom is above the grade line or where the structural integrity of the culvert is questionable.

Material resulting from cleanout through bridges or culverts shall be levelled on the adjacent private lands or hauled offsite at the expense of the bridge/culvert owner.

410.3.8 Bridges and Culverts

The size and material for any new ditch crossings shall be as outlined in the Special Provisions.

For culvert installation instructions, refer to the General Specifications for Drain Construction and the Drawings.

Any crossings assembled on-site shall be assembled in accordance with the manufacturer's specifications.

If directed on the drawings that the existing crossing is to be salvaged for the owner, the Contractor shall carefully remove the existing crossing and place it beside the ditch or haul to a location as specified by the owner. If the existing crossing is not to be saved then the Contractor shall remove and dispose of the existing crossing. Disposal by burying on-site must be approved by the Engineer and the owner.

All new pipe crossings shall be installed at the invert elevations as specified on the Drawings, usually a minimum of 50mm below design grade. If the ditch is over excavated greater than 200mm below design grade the Contractor shall confirm with the Engineer the elevations for installation of the new pipe crossing.

For backfill and surface restoration, refer to the General Specifications for Drain Construction and the Drawings.

Installation of private crossings during construction must be approved by the Engineer.

410.3.9 Obstructions

All trees, brush, fallen timber and debris shall be removed from the ditch cross-section and as required for spreading of the spoil. The roots shall be left in the banks if no bank excavation is required as part of the new channel excavation. In wooded or heavily overgrown areas all cleared material may be pushed into piles or rows along the edge of the cleared path and away from leveled spoil. All dead trees along either side of the drain that may impede the performance of the drain if allowed to remain and fall into the ditch, shall be removed and put in piles, unless directed otherwise by the Engineer.

410.3.10 Tile Outlets

The location of all existing tile outlets may not be shown on the profile for the drain. The Contractor shall contact each owner and ensure that all tile outlets are marked prior to commencing excavation on the owner's property. If a marked tile outlet or the tile upstream is damaged due to construction, it shall be replaced at the Contractor's expense. Additional payment will be allowed for the repair or replacement of any unmarked tile outlets encountered during excavation. In all cases, if an existing tile outlet requires replacement the Contractor shall confirm the replacement tile outlet with the Engineer. Where riprap protection exists at any existing tile outlet such protection shall be removed and replaced as necessary to protect the outlet after reconstruction of the channel.

If any tile outlet becomes plugged as a result of construction, the Contractor shall remove the obstruction.

410.3.11 Completion

At the time of final inspection, all work in the contract shall have the full dimensions and cross-sections specified.

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420.1 DESCRIPTION

Work under this specification will consist of supplying, hauling, laying and backfilling subsurface drainage conduit with the conduit materials as described on the Drawings and in the location, depth and invert grade as shown on the Drawings. In this specification the word "tile" will apply to all described conduit materials. Lengths are in millimeters (mm) and meters (m).

The work shall include the supplying of all labour, tools, equipment and extra materials required for the installation of the tile; the excavation and backfilling of the trenches; the hauling, handling, placing and compaction of the excavated material for backfill, the loading, hauling, handling and disposal of surplus excavation material; the removal and replacing of topsoil and sod where required by the Engineer.

All existing laterals crossed by the new line shall be reconnected in an approved manner. Either special manufactured connections shall be used or another method of sealing connections as approved by the Engineer. The Contractor shall also construct catchbasins, junction boxes and other structures where directed by the Engineer.

Except where complete removal of an existing pipe is required by new construction, existing pipes to be abandoned shall be sealed with a concrete or mortar plug with a minimum length of 300mm to the satisfaction of the Engineer.

Sections 6 and 7 of the current version of the *Drainage Guide for Ontario*, OMAFRA Publication 29 shall provide a general guide to all methods and materials to be used in the construction of tile drains except where superseded by this Contract.

The licensing requirements of the *Agricultural Tile Drainage Installation Act, 1990* will not be applicable to this Contract unless specified otherwise by this Contract.

420.2 MATERIALS

Refer to Section 400, Standard Specifications for Drain Construction for any materials required for tile drain construction.

420.3 CONSTRUCTION**420.3.1 Outlet**

A tile drain outlet into a ditch or creek shall be protected using a 6m length of rigid pipe with a hinged grate for rodent protection. Maximum spacing between bars on the rodent grate shall be 50mm. Material for rigid pipe will be specified in the Special Provisions, plastic pipe is preferred. The joint between the rigid pipe and the tile drain shall be wrapped with filter fabric. All outlets will be protected with rock riprap to protect the bank cut and as a splash apron. In some locations riprap may also be required on the bank opposite the outlet. The quantity of riprap required will be specified in the Special Provisions. A marker stake as approved by the Engineer shall be placed at each tile outlet.

420.3.2 Line

The Engineer will designate the general location of the new drain. A landowner may indicate a revised location for the drain which must be approved by the Engineer. Where a change in alignment is required that is not accommodated in a catchbasin, junction box or similar structure the alignment change shall run on a curve with a radius not less than the minimum installation radius specified for the tile material.

The Contractor shall exercise care to not disturb any existing tile drains which parallel the course of the new drain, particularly where the new and existing tile act together to provide the necessary capacity. Where an existing tile is disturbed or damaged the Contractor shall perform the necessary correction or repair with no additional compensation.

NOTE: It is the Contractor's responsibility to ascertain the location of, and to contact the owners of all utility lines, pipes and cables in the vicinity of drain excavations. The Contractor shall be completely responsible for all damages incurred.

420.3.3 Grade Control

Tile is to be installed to the elevation and grade shown on the profiles. Accurate grade control must be maintained by the Contractor at all times during tile installation. The tile invert elevation should be checked every 50m and compared to the elevation on the profile.

Benchmarks are identified on the Contract Drawings. The Engineer will confirm all benchmark elevations prior to construction.

420.3.4 Variation from Design Grade

No reverse grade will be allowed. A small variation in grade can be tolerated where the actual capacity of the drain exceeds the required capacity. The constructed grade should be such that the drain will provide the capacity required for the drainage area. Constructed grade should not deviate from design grade by more than 10% of the internal diameter for more than 25m. Grade corrections shall be made gradually over a distance not less than 10m.

420.3.5 Installation

At each work stoppage, the exposed end of the tile shall be covered by a tight fitting board or metal plate. No installed tile shall be left exposed overnight. Any tile damaged or plugged during construction shall be replaced or repaired at the Contractor's expense.

Topsoil over the trench shall be stripped, stockpiled separately and replaced after the trench is backfilled. Where installation is across a residential lawn, existing sod over the trench shall be cut, lifted and replaced in a workmanlike manner or new sod laid to match pre-construction conditions.

420.3.5.1 Installation of Concrete Tile

Concrete tile shall be installed by a wheel trencher unless an alternate method of construction is noted on the Drawings.

Digging of the trench shall start at the outlet end and proceed upstream. The location and grade shall be as shown on Drawings but shall be liable to adjustment or change by the Engineer on site with no additional payment allowed except where the change involves increased depth of cut beyond the limitation of the wheel trencher in use at the time of the change. The trench width measured at the top of the tile should be at least 150mm greater than the tile diameter.

The bottom of the trench is to be cut accurately to grade and shaped so that the tile will be embedded in undisturbed soil or in a compacted bed at least for 10% of its overall height. Where hard shale, boulders or other unsuitable bedding material is encountered, the trench shall be excavated to 75mm below grade and backfilled with granular material compacted to a shaped, firm foundation. If the trench is overcut below the proposed grade, it is to be backfilled with granular material to the correct grade and compacted to a shaped, firm foundation.

Where the depth for the tile installation exceeds the depth capacity of the wheel trencher the Contractor shall excavate a trench of sufficient depth so that the wheel trencher can install the tile at the correct depth and grade. The tender price shall include the cost of the additional excavation and backfilling and stripping and replacing topsoil over the trench.

The inside of the tile is to be kept clean during installation. All soil and debris should be removed before the next tile is laid. Maximum spacing at joints between tiles should be about 3mm. Directional changes can be made without fittings or structures provided the centre-line radius of the bend is not less than 15m radius. The tiles are to be beveled, if necessary, to ensure close joints on all bends.

All tile joints and connections with other pipe materials are to be fully and tightly wrapped with a minimum 300mm width of geotextile drain wrap. A 150mm overlap on top is required. No additional payment will be made for joint wrapping.

420.3.5.2 Installation of Corrugated Plastic Tubing

Corrugated plastic tubing shall be installed by a drainage plow or wheel trencher unless an alternate method of construction is specified on the Drawings. For other installation methods, proper bedding and backfill is required to maintain the structural integrity of the plastic tubing so that surface and earth loads do not deflect the tubing by more than 20% of its nominal diameter.

For all installation methods:

- the plastic tubing should not be stretched by more than 7% of its normal length
- protect tubing from floating off grade when installing in saturated soil conditions
- directional changes can be made without fittings provided the centre-line radius of the bend is not less than five times the tubing diameter

Drainage plow equipment should construct a smooth bottomed opening in the soil and maintain the opening until the tubing is properly installed. The size of the opening in the soil should conform closely to the outside diameter of the tubing.

420.3.5.3 *Installation of Concrete Sewer Pipe or Plastic Pipe*

The Contractor may install pipe using a wheel trencher. For concrete sewer pipe, the bells must be recessed.

The Contractor may install pipe using an excavator by shaping the bottom of the trench to receive and support the pipe over 10% of its diameter if the trench is backfilled with native material. Shaping the trench bottom is not required where 150mm of granular bedding is placed to the satisfaction of the Engineer.

420.3.6 **Backfilling**

All tile should be blinded by the end of the day's work to protect and hold them in place against disturbances. After tile is inspected, it shall initially be backfilled with a minimum cover of 300mm.

For blinding and initial backfilling use clean native soil with no organic matter. Initial backfill shall be tamped around the pipe by backhoe bucket or similar if directed by the Engineer.

The tile shall be backfilled with native material such that there is a minimum cover of 600mm. In addition, a sufficient mound must be placed over the trench to ensure that no depression occurs after settling along the trench.

420.3.7 **Tile Connections**

All lateral drains encountered along the route of the new tile drain are to be connected to the new drain if the intercepted tile are clean and do not contain polluted water. Lateral drains that are full of sediments or contain polluted waters will be addressed by the Engineer at the time of construction. All lateral drains are to be connected to the new tile using a pipe material and size that will provide the same flow capacity as the existing lateral drain unless a different connection is described in the Special Provisions. Corrugated plastic tubing can be used for all tile connections. Tubing can be solid or perforated, filter sock is not required. Contractor is responsible for installation and backfilling in a manner that maintains the structural integrity of the connection. Manufactured fittings should be used to ensure tight connections. Where an opening must be made in the new tile drain for a connection, the opening shall be field cut or cored. After the opening is cut in the new tile any gaps or voids around the connection shall be sealed with mortar, low-expanding spray foam or geotextile. Lateral tubing shall not protrude more than 25mm beyond the inside wall of the new tile drain. The Contractor shall ensure that any material used to seal the connection does not protrude beyond the inside wall of the new tile drain.

All connections that are described in the Special Provisions are considered to be part of the original Contract price. For all other connections the Contractor will be paid in accordance with the price established in the Schedule of Tender Prices. The Contractor must list all connections on the Lateral Connection Summary sheet, if included in the Special Provisions, in order to qualify for payment. The Lateral Connection Summary sheet describes all tile encountered based on location (station), side of trench, size and type of tile and approximate length and type of material used for the connection.

420.3.8 Stones and Rock

The Contractor shall immediately contact the Engineer if bedrock or stones of sufficient size and number are encountered such that installation by wheel trencher cannot continue. The Engineer may direct the Contractor to use some other method of excavation to install the tile. The basis of payment for such extra work shall be determined by the Engineer. Stones greater than 300mm in diameter that are removed during excavation shall be disposed of by the Contractor at an offsite location. No additional payment for excavating or hauling these stones will be provided.

420.3.9 Brush, Trees and Debris

Unless stated otherwise in the Special Provisions, the following requirements shall apply for installation of a tile drain in a wooded area. The Contractor will clear and grub a minimum corridor width of 30m centered on the tile drain alignment. The resulting debris shall be placed in a windrow along the edge of the working area. No additional payment will be made for such work.

420.3.10 Subsoil Instability

If poor subsoil conditions are encountered during tile installation by wheel trencher an attempt shall be made to install the tile with a continuous geotextile underlay in the trench bottom. The cost of the underlay, if approved by the Engineer, will be paid as an extra. If the continuous geotextile underlay is not sufficient then the tile will be installed by backhoe or excavator on a bedding of 19mm clear crushed stone (300mm depth) to achieve trench bottom stability for the new tile. If approved, the above work will be paid based on the unit price provided on the Form of Tender. The unit price shall include the cost to supply and place the stone. If more than 300mm depth of stone is required for bottom stability, additional payment will be allowed for the additional depth of stone. The additional quantity of stone shall be supported by weigh tickets and the suppliers invoice.

If poor subsoil conditions are encountered during tile installation by backhoe or excavator, the tile shall be installed on stone bedding as noted above. For this installation only the material cost of the stone will be paid as an extra. Supply of stone and cost to be supported by weigh tickets and supplier's invoice.

If the subsoil is a fine grained soil it may necessary to place the stone on a geotextile with the geotextile wrapped over the stone before laying the tile. Additional payment will be allowed to supply and install the geotextile.

420.3.11 Broken or Damaged Tile

The Contractor shall dispose of all damaged or broken tile and broken tile pieces off-site.

420.3.12 Excess Tile

All excess tile shall be removed from the job site.

420.3.13 Catchbasins

420.3.13.1 General

All catchbasins shall have minimum inside dimensions matching the dimensions shown on the Drawings. Contractor is responsible for ordering catchbasins to match the inlet and outlet connections and top elevations required by the Special Provisions and the Drawings.

420.3.13.2 Materials

Requirements in this section apply to catchbasins in non-travelled locations. Where catchbasins are proposed for travelled locations, refer to the Special Provisions and the Drawings for applicable OPSD information.

Precast concrete catchbasins shall be manufactured by Coldstream Concrete or approved equal. Minimum wall thickness for catchbasins without reinforcement is 150mm and with reinforcement 100mm. The joints between precast catchbasin sections shall be protected with geotextile to prevent soil material from entering into the catchbasin. Joint protection using mortar or water tight barrier is also acceptable. Grates are to be birdcage grates as manufactured by Coldstream Concrete or approved equal unless specified otherwise on the Drawings. All grates to be secured with corrosion resistant hardware.

HDPE catchbasins shall be as fabricated by ADS, Armtec, Hancor or approved equal. Steel catchbasins shall be the Heavy Duty Steel Catch Basin as manufactured by AgriDrain or approved equal. PVC catchbasins shall be Nyloplast as manufactured by ADS or approved equal. HDPE, steel and PVC catchbasins shall be supplied with integral stubouts fabricated by the manufacturer and sized according to the pipe connections shown on the Drawings. Grates for HDPE, steel or PVC catchbasins shall be in accordance with the Special Provisions and manufacturer recommendations.

Marker stakes as supplied by Coldstream Concrete or equal are to be placed beside each catchbasin unless specified otherwise on the Drawings.

420.3.13.3 Installation

All tile or pipe connected to concrete catchbasins shall be mortared or secured in place so that no gaps remain at the connection. Mortar is to be applied on both the inside and outside wall surfaces.

Backfill around all new catchbasins is recommended to be 19mm clear crushed stone to avoid future settlements. The Contractor shall be responsible for backfilling all settlement areas around catchbasins during the contract warranty period. No additional payment will be provided for adding backfill to settlement areas around catchbasins.

All catchbasin sumps to be fully cleaned by the Contractor after completion of drain installation and backfilling.

420.3.14 Junction Boxes

Junction boxes shall be precast concrete to the same specification as above for catchbasins except that the junction box shall have a solid lid. The lid shall be a minimum of 125mm thick with wire mesh reinforcement and 2 lifting handles. The top of the junction box should have a minimum ground cover of 450mm.

APPENDIX I – DRAWINGS

The following drawings are included in Appendix I that is a separate file in the Documents section in the bidding system:

1	Watershed Plan of Swaley Drain on Aerial Base
2	Watershed Plan to show Areas Studied and Roll Numbers & Enlargements
3	Enlargement 1
4	Enlargement 2
5	Enlargement 3
6	Access Route Recommended
7	Access Route – Cont'd
8	Access Route – Cont'd
9	Balance of Access and Plan & Profile No. 1
10	Plan & Profile No. 2
11	Plan & Profile No. 3
12	Plan & Profile No. 4
13	Typical Cross-Sections for New Work
14	General Profile to Show New Work in Concession 11, Plus Existing Swaley Drain Upstream to Highway 26
15	Existing Swaley Plan to Show Recommended Cleanout by Superintendent
16	Existing Swaley Profile to Show Elevations in 2013 and 2021
17	Cross-Sections if Cleanout Done by Drainage Superintendent
18	Erosion and Sediment Control Plan
19	Monitoring Plan