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By: Email & Hand

November 15, 2013

Township of Puslinch  
7404 Wellington Road 34  
R.R.# 3  
Guelph, Ontario  
N1H 6H9

Attention: Mrs. Karen Landry  
C.A.O./Clerk

Dear: Mrs. Landry

**Re: Puslinch Community Centre – Parkland Trail**

## **1.0 Introduction**

As requested, I have updated and revised my June 13<sup>th</sup> report to expand on issues discussed at our October 2<sup>nd</sup> site walk with Township Council. A cost estimate for trail construction is now also provided to facilitate budget considerations of the Township.

The recently acquired woodland area at the Puslinch Community Centre was initially inspected during winter and spring conditions to determine the feasibility of establishing a recreational trail in this area. This woodland surrounds an existing hay field and it is my understanding that the agricultural land is to be converted into a soccer pitch, including lighting for evening play.

Fieldwork confirmed that woodland conditions were suitable for trail development and a proposed route was flagged in advance of a site meeting with Nathan Garland and Robert Messier of the Grand River Conservation Authority (GRCA) on May 21, 2013. GRCA staff confirmed that the proposed trail location was acceptable from their perspective, subject to a minor modification in order to avoid a wet area. The following discussion describes existing conditions in the woodland, constraints on trail development, the recommended trail design and use, and finally the estimated cost of trail construction.

## **2.0 Existing Biophysical Conditions**

Mill Creek flows along the north and west boundaries of the subject property. A small cold water tributary discharges into Mill Creek at the northwest corner of the property. The location of these streams was inaccurately mapped by the GRCA so their actual alignments were recorded using a hand held GPS unit. According to the Soil Survey of Wellington County<sup>1</sup> this woodland is characterized by the slightly stony, imperfectly drained Brisbane loam which occurs on smooth

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<sup>1</sup> Hoffman, D.W> et. al. 1963. Soil Survey of Wellington County Ontario. Report No. 35 of the Ontario Soil Survey. Research Branch Canada. Department of Agriculture and the Ontario Agricultural College.

level topography. Fieldwork confirmed that the Brisbane soil type is most prevalent in this forested area and adjacent agricultural field, but the poorly drained Gilford loam occurs along the west boundary of the property in the vicinity of Mill Creek. GRCA mapping identifies a wetland within this forested area and it is part of the Mill Creek Swamp Wetland Complex, a Provincially Significant Wetland (PSW). This wetland was also verified by site inspection although the wetland limits are somewhat different than shown on the GRCA map.

Vegetation communities on the subject lands were initially identified through interpretation of aerial photography available on the GRCA website. Vegetation mapping was done in accordance with the Ecological Land Classification (ELC) system for southern Ontario. Fieldwork confirmed the presence of three naturally established vegetation communities, as well as an old field meadow, a coniferous hedgerow and a dug pond. Figure 1 illustrates the spatial distribution of these vegetation communities.

A fresh-moist cedar coniferous forest (FOC4-1) occurs along the northern property boundary and it extends southward around the hay field. It is characterized by a pure, dense stand of immature white cedar that is approximately 1.7 acres in size. Most trees are of pole timber size being 4 to 9 inches in diameter at breast height (dbh). Tree regeneration and shrub growth are sparse in the understory of this community. Groundflora are also negligible due to the dense overstory. A small man-made pond occurs within this cedar stand. A small stand of upland cedar about 0.4 acres in size also occurs along Maple Leaf Lane. Two small meadow communities (CUM1-1) totalling 0.2 acres occur adjacent to FOC4-1 and the hay field.

The balance of the agricultural land is bordered by a fresh-moist ash lowland deciduous forest (FOD7-2) and a dense white cedar hedgerow (H). The ash stand is 0.8 acres in size and it is characterized by a moderately dense mixture of deciduous trees, including white and black ash, trembling aspen, white and yellow birch, red and sugar maple, black cherry, basswood, Manitoba maple, butternut and black walnut. Most trees are immature in age/size being 4 to 14 inches dbh. The understory is moderately dense and consists mostly of ash and aspen regeneration as well as shrubs such as dogwood, white elderberry, common buckthorn and red raspberry. Groundflora are uniformly distributed throughout the stand and consist of common woodland wildflowers, ferns, asters, goldenrods and grasses. Butternut is an endangered species and must be protected from disturbance. Immature butternut trees 6 to 13 inches dbh are found in this stand, as well as regeneration which mostly occurs along the forest edge. Most of these butternuts appeared to be cankered but would still be considered retainable trees.

A white cedar-hardwood mineral mixed swamp (SWM1-1) is found along the west boundary of the property and it covers about 2 acres. Hardwoods growing in association with cedar include yellow birch, red maple, sugar maple, black ash and butternut. Most dominant and codominant trees are 10 to 16 inches dbh and represent immature sawtimber. However, a mature butternut about 20 inches dbh occurs near the road. This tree exhibits cankers on its trunk but the crown nonetheless appears healthy. Although several trees have blown down the stand is still fully stocked. The forest understory is sparse and mainly consists of cedar regeneration and shrubs such as red-osier dogwood and white elderberry. Groundflora cover is moderate and mainly consists of sedges, sensitive fern, jack-in-the-pulpit and jewelweed.

### **3.0 Constraints on Trail Development**

The following considerations limited trail development within the woodland area.

- During winter and spring fieldwork surface water ponding was evident in close proximity to Mill Creek even within the upland cedar stand, FOC4-1. This suggested that minor flooding occurs during winter thaws and/or spring snowmelt.



- Poorly drained soils occur in the wetland area and as a result the trees are shallow rooted and prone to blowdown. Several cedar trees have in fact blown down and now pose an obstruction to pedestrian movement. Elsewhere, the groundflora is sensitive to potential trampling damage due to wet soil conditions. As a result, expensive wooden boardwalk would be needed to traverse wetland areas and this could not be done without some level of vegetation disturbance.
- Endangered butternut trees occur within vegetation communities SWM1-1 and FOD7-2 and care must be taken to protect these trees from potential impacts associated with trail construction. In general, the trail should not be located in close proximity to any retainable butternut trees that could potentially be damaged by trail construction and/or use (i.e. severing tree roots during construction or compacting soil during trail use).

#### **4.0 Recommended Trail Design and Use**

Given the above mentioned constraints, it is recommended that a recreational trail should be located around the perimeter of the woodland within vegetation units CUM1-1, FOC4-1 and FOD7-2 as shown in Figure 1. In this constrained woodland environment a trail width of 8 feet (2.4m) is considered most appropriate in order to minimize tree loss and impacts to other vegetation. Either a stonedust or stonedust over compacted granular surface treatment could be used in this setting as per the Wellington County Active Transportation Master Plan (May, 2012). Alternatively, woodchips could be utilized in some sections of the trail. Based on these trail design parameters it is estimated that only about 10 living trees ranging in size from 4 to 10 inches dbh (10-26cm) would have to be removed to accommodate trail construction. However, 7 dead trees would also have to be removed along with cedar and hardwood regeneration (i.e. young trees 1 to 3 inches dbh). This assumes only hand held equipment and small machines are used in trail construction (e.g. chainsaws, bobcats etc.).

During trail construction old barbed wire fencing should be removed from the woodland. Invasive common buckthorn shrubs should also be eradicated from the woodland by mechanical and/or chemical methods (i.e. cutting and spraying stumps with Roundup or spraying the foliage of small shrubs and sprout growth with Roundup) while their abundance is low and potentially controllable. Grape vines that are strangling trees should also be cut at the same time as this ecological enhancement work is being performed. Consideration should also be given to tree planting along open portions of the trail (e.g. in CUM1-1 and other areas in very close proximity to the woodland edge) to screen out the future soccer field and create a more natural setting for trail users. Trees such as white pine, white spruce, sugar maple, silver maple, red oak and bur oak should grow well in this area. Potted tall stock should be used for planting rather than seedlings in order to achieve the desired effect in a short period of time. Approximately 60 trees should be randomly planted on 3m centres in the areas identified on Figure 1. In this environment passive trail uses are considered most appropriate such as walking, running, cross country skiing, nature viewing and photography.

#### **5.0 Estimated Cost of Trail Construction**

In preparing this cost estimate it was necessary to make several assumptions which are listed below.

- Trees to be removed or pruned will be marked with spray paint by GWS staff prior to the initiation of tree clearing work.
- Tree removal and pruning work will be carried out by Puslinch staff in the Public Works and Parks Department using hand tools and a rental chipper. Two days have been allocated for this task.

- The main trail will be constructed using 6 to 8 inches of compacted granular material plus a surface treatment of stonedust 2 inches thick. This work will be tendered to an appropriately qualified contractor
- The spur trail which extends through the cedar swamp to the creek will only receive a surface treatment of wood chips 4 inches in thickness. The wood chips will be created on-site during the tree removal operation and they will be applied to the spur trail by the contractor.
- Trees to be installed along the woodland edge will be supplied by Green Legacy at no cost to the Township. The trees will be planted by Township Staff.

<u>Construction Task</u>	<u>Cost</u>
a) Tree clearing and pruning along approximately 280m of trail	\$2,800
b) Installation of granular and stonedust to 410m of trail 2.4m wide @ \$25.00/m <sup>2</sup> plus the application of wood chips to 30m of spur trail	\$25,000
c) Installation of 60 potted trees	\$1,000
d) Herbicide treatment of buckthorn shrubs	\$400
e) Trail layout and environmental supervision (GWS)	\$1,800
f) Tender preparation and construction supervision (Gamsby and Mannerow)	\$5,000

**Estimated Total Cost      \$36,000**

I trust this information assists the Township in their deliberations about recreational use of this property. Please do not hesitate to contact me if I can be of further assistance with this matter.

Yours truly,

**GWS Ecological & Forestry Services Inc.**



Greg W. Scheifele, M. A., R.P.F.  
Principal Ecologist/Forester

cc: Aldo Salis, County of Wellington  
Steve Conway, Gamsby & Mannerow  
Nathan Garland, Grand River Conservation Authority