



Moore Landfill Buffer Lands Management Plan

**St. Clair Region
Conservation Authority
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1.0 Introduction

For more than 15 years, St. Clair Region Conservation Authority and the County of Lambton have had a very successful partnership for the maintenance and development of the Perch Creek Habitat Management Area (HMA) and Marthaville HMA. In 2008, the County renewed contracts for maintenance of these two properties and added additional properties to be managed by the Authority, including the Moore Landfill Buffer Lands.

The Moore Landfill Buffer Lands management plan (10 year operational plan) was initially written to act as an appendix to the master agreement. The management plan provides direction to the Authority for the management of the property, as well as providing a guide for the costs associated with the required management including opportunities for revenues directly from the management or from potential grant sources.

In order to develop specific management recommendations, properties managed by the Authority are divided into subunits known as Vegetation Management Units (VMUs). Generally, each VMU is composed of a certain plant community, habitat, and/or landuse. If relevant, forest inventories are conducted and basic description of the history, soil type, herbaceous plants, wildlife features of each VMU are provided. This information is used to develop recommendations for each VMU individually and for the Management Area as a whole.

Key recommendations for the Moore Landfill Buffer Lands are as follows:

1. Invest in public recreational use by tree planting, trail design, and greening of the landfill. The property should remain closed for public recreational use for at least the next 10 years while enhancement projects are implemented and established.
2. The landfill was closed in May of 2007. There are still areas where erosion is a problem and vegetative cover needs to be established and maintained. Unless an amendment is signed to the contrary the County is responsible for any maintenance of the landfill area during the 10 year term of this plan
3. The field area along the east side which contains a pipeline corridor and high voltage electric transmission lines can be leased for agriculture or converted to natural habitat, without trees, such as tall grass prairie.
4. The section along the north side can be planted to trees and shrubs to enlarge the forest area or it can be left as a field and leased out. This woodlot, together with neighboring woodlots has the potential to provide interior nesting species of birds with nesting habitat. The only area where this potential can be expanded by planting more forest is along the north side.
5. There is potential for revenue from forest products in 15 to 20 years.



6. One of the first management activities will be to create a grid of management/access trails on the driest ground.
7. Reduce or remove the non-native exotics on the property
8. Allow the forest cover to continue to evolve



2.0 Property Location and Description

Moore Landfill Buffer Lands are located on Lots 20 and 21 Concession 5 in the geographical Township of Moore now in the Township of St. Clair. The property is accessed off Ladysmith Road between Courtright Line and Moore Line (Map 1). Map 2 shows the Moore Landfill Buffer Lands divided into VMUs based on habitat, vegetation types and land use.

The entire 57 hectare property, including bufferlands, was originally purchased in the early 1970s by the Township of Moore as their principal landfill site. A core of 13.6 hectares acted as the actual landfill (VMU 3). The landfill was closed in May of 2007. At the time of closure there were 3.1 hectares on the east side of the landfill that were unused (VMU 4).

The Moore Buffer Lands, which total 40 hectares, are to the east. They were intended to act as a buffer between the landfill and adjacent lands. 5.5 hectares of these buffer lands are rented to an agricultural tenant (VMU 2). 34.5 hectares have some kind of forest cover (VMU 1).

The agricultural lease (VMU 2) is in the form of a narrow L along the entire north and east sides of the property. The east portion of the agricultural lease contains both a pipeline and a high tension transmission corridor. It appears the entire 40 hectares were in pasture before the acquisition by the Township of Moore. It also appears that some of the area was beginning to revert to hawthorn and shrub forest. Small portions contained a few large trees which have supplied seed for other species which are now in the process of eliminating the hawthorns and shrubs.



Map 1: Location of Moore Landfill Buffer Lands





3.0 Vegetation Management Unit Inventory

In order to develop a management plan, the Moore Landfill Buffer Lands were subdivided into smaller compartments called Vegetation Management Units (VMUs), based on visual differences in the aerial photos, composition plant communities, habitat characteristics and current use. These artificial grouping are useful for management since specific recommendations can be developed for each VMU. For example, a recommendation for a VMU 2 which is in agriculture lease could be to farm that block organically. Based on the recommendations developed for each VMU, advice is also given for the property as a whole.

To give the reader an idea of the composition of the VMU, each VMU was assigned a descriptive title and the closest classification from the Ecological Land Classification (ELC) for Southern Ontario. Detailed inventories using standard forestry techniques were conducted and specific objectives were then developed for each VMU (Map 3-1 and Table 3-1).



VMU 1 Hawthorn Forest, CUT1

Area 35.5 hectares

Soils Caister clay

Drainage Imperfect to poor

History Prior to acquisition by the former Township of Moore the entire 40 hectares in the eastern section of the property was a pasture field (VMU 1 and 2). Most of this portion was in various stages of reforestation by hawthorn and shrub forest. Some of it contained a few larger trees of species other than hawthorn. Still other areas were open meadow with few or no woody plants. Since the livestock were removed the entire VMU has been progressing towards a more closed canopy forest.

Species Composition During the course of the inventory a total of 29 plots were surveyed. Four plots, which represent 14 % - about 4.8 hectares - were too open and the stems too small to measure by prism. Their statistics are contained in the chart below. The other 25 plots were inventoried by prism because the trees were dense enough and large enough to provide basal area statistics.

Species composition in areas where average tree/shrubs were too small to inventory with a prism:

<i>Species</i>	<i>%</i>	<i>Height (m)</i>	<i>DBH (cm)</i>	<i>Condition</i>	<i>Regeneration</i>
Purging buckthorn	40	.5 - 3	4.0	good	yes
Prickly ash	40	.5 - 1.5	2.5	good	yes
Green ash	15	.5 - 4	8.0	good	yes
Other Species*	5				

*European crab apple, nanny berry gray dogwood, hard maple, chokecherry, hawthorn, shagbark hickory, bur oak, swamp white oak silky dogwood, European honey suckle, blackberry

Species composition for areas where a prism was used:

<i>Species</i>	<i>%</i>
Hawthorn	70
White and Green Ash	15
White Elm	5
Other Species*	10

*silver maple, trembling aspen, swamp white oak, shagbark hickory, American blue-beech, cottonwood, European crab apple, American sweet crab apple, choke cherry, feral pear, black cherry, basswood, hard maple, and peach leaf willow



Basal Area

Size Class	POLEWOOD	SAWLOG CLASS				TOTAL
	Pole wood 10-24 cm	Small sawlog 26-36 cm	Medium sawlog 38-48 cm	Large sawlog 50-60 cm	X-Large sawlog 62 cm+	
AGS BA (m ² /ha)	15	1.7	0	0.4	0.2	17.6
UGS BA (m ² /ha)	0	0	0.5	0	0.1	0.1
Total BA (m ² /ha)	15	1.7	0.5	0.4	0.3	17.7

AGS - acceptable growing stock – trees which will be as valuable or more valuable in ten years than they are now.

UGS - unacceptable growing stock – trees which will be less valuable in ten years than they are now.

DBH (Diameter at Breast Height) 1.3m off the ground

Shrubs and vines Virginia creeper, purging buckthorn, American prickly-ash, gray dogwood, poison ivy and grape

Herbaceous Plants Meadow grasses & weeds

Diseases and Insects Dutch elm disease, ash rough bark disease

Ten Year Management This area is excellent habitat for species which thrive on early forest succession and edge. It will continue as this type of habitat for more than 10 years.

There are insufficient numbers of trees large enough for timber to warrant any management for timber values over the next 10 years.

Purging buckthorn is everywhere and will continue to expand at the expense of native species unless some control measures are taken.

If any kind of management is considered the first item will be to lay out trails on high ground to allow access to all of the property. Only one entry point should be created and all sections of the trail should be kept 50m or more from the edge of the property to reduce the risk of ATV users gaining access and destroying or enlarging the trail system.



VMU 2 *Field*

Area 1.1 hectares

Soils Caister clay

Drainage Imperfect to poor.

History This unit is in the shape of an L along the north and east sides of the property. The Trapp Municipal drain is located along the entire length of the North side.

Ten Year Management The northern portion of the area could be naturalized with trees and shrubs to increase the future size of area available to interior nesting birds. A sufficient width along the Trapp Drain should be left in meadow, tall grass prairie or shrubs to allow for future drain maintenance.

There are two easements totaling 40m in width that extend along the entire eastside. These easements contain a high-pressure liquid petroleum line and high voltage power line. They cannot be reforested. They could be planted to and managed as tall grass prairie or they could continue to be leased out for agriculture.

VMU 3 *Landfill*

This unit is not part of the agreement



VMU 4 Ash/ Maple Deciduous Swamp, SWD6-2

Area 3.1 hectares

Soils Caister clay

Drainage Imperfect to poor

History Prior to acquisition by the former Township of Moore this portion of the property was in forest. About 25-30 years ago it was logged to the diameter limit - or less (presumably because it was scheduled to be cleared for landfill).

Species Composition Species composition for areas where a prism was used:

<i>Species</i>	<i>%</i>
Silver maple	30
White and green ash	30
White elm	15
Other species*	25

*swamp white oak, red oak, shagbark hickory, American blue-beech, ironwood, cottonwood, trembling aspen, choke cherry, black cherry, hawthorn, basswood and Juneberry

Shrubs and vines Glossy buckthorn, nannyberry, American prickly-ash, and honey suckle.

Herbaceous Plants White turtleheads

Basal Area

Size Class	POLEWOOD	SAWLOG CLASS				TOTAL
	Pole wood 10-24 cm	Small sawlog 26-36 cm	Medium sawlog 38-48 cm	Large sawlog 50-60 cm	X-Large sawlog 62 cm+	
AGS BA (m ² /ha)	8	6	0	0.6	0	14.6
UGS BA (m ² /ha)	0	0	0	0	0	0
Total BA (m ² /ha)	8	6	0	0.6	0	14.6

AGS - acceptable growing stock – trees which will be as valuable or more valuable in ten years than they are now.

UGS - unacceptable growing stock – trees which will be less valuable in ten years than they are now.

DBH (Diameter at Breast Height) 1.3m off the ground

Ten Year Management

- This is a reasonably healthy woodlot although ash makes up 30% and elm 15% of the basal area. Hazard trees and trees affected by these diseases will be removed as necessary.
- There is a very small population of glossy buckthorn and it should be eliminated if possible.





4.0 General Management Strategies

Management objectives can generally be classified into one of the following categories as outlined in ‘*A Guide to Stewardship Planning for Natural Areas*’ published by the Ontario Ministry of Natural Resources (MNR):

1. Environmental Protection
2. Forest Products
3. Recreation
4. Wildlife
5. Nature Appreciation

The MNR guide lists a sixth category, “investment,” but because there is no intention of selling the property it is not considered in this document.) Table 1 below ranks the priorities at Moore Lanfill by VMU.

The key priority for Moore Landfill Buffer Lands is environmental protection, followed by recreation and where possible forest products. Recreation is not a priority on the property. On VMU 2, which is currently leased for agriculture, wildlife is a greater priority than environmental protection.

No land use change is recommended for VMUs 1, 3 and 4. There are two valid options for VMU 2. It can continue to be leased for agricultural to generate income for property management or be planted to trees and shrubs to extend the size of the wooded area.

Table 1: Summary of Current Use and Projected Priorities

Unit #	Area ha	Current Use	Goal/Priority				
			Continue current use (y/n)?	Environmental Protection	Wildlife	Recreation	Forest products
1	34.5	Forest	y	1	2	0	3
2	5.5	Agriculture	y/ n	2	1	0	N/A
3	13.6	Landfill	X	N/A	N/A	N/A	N/A
4	3.1	Forest	y	1	2	0	3

0- Not a priority

N/A – not applicable to current land use.

X- not managed by the Conservation Authority, not part of agreement with Lambton County

1. Public use should be taken into consideration by investment into the property through tree planting, trail design, and greening of the landfill. The property should remain closed for public recreational use for at least the next 10 years while enhancement projects occur and have a chance to establish.



2. The landfill was closed in May of 2007. There are still areas where erosion is a problem and vegetative cover needs to be established and maintained.
3. The field area along the east side which contains a pipeline corridor and high voltage electric transmission lines can be leased for agriculture or converted to some kind of natural habitat like tall grass prairie without trees.
4. The section along the north side should be planted to trees and shrubs to enlarge the forest area. This woodlot, together with neighbouring woodlots has the potential to provide interior nesting species of birds with nesting habitat. The only area where this potential can be expanded by planting more forest is along the north side.
5. There is potential for revenue from forest products in 15 to 20 years.
6. One of the first management activities will be to create a grid of management/ access trails on the driest ground.
7. Reduce or remove the non-native exotics on the property
8. Allow the forest cover to continue to evolve.

Recommendations adopted by Council October 19, 2011

1. Continue/strengthen environmental (including control of invasive species) and wildlife enhancement while allowing safe and passive use by the Public.
2. Restrict use as follows:
 - Dogs - must be leashed
 - Motorized vehicles (ATVs, dirt bikes, snowmobiles, etc.) - not permitted
 - Horseback riding - permitted on trails only at walking speed
 - Hunting - not permitted
 - Bicycles - permitted on trails only at recreational speeds (no extreme or bicycle-cross)
3. Focus on pedestrian use initially and consider multi-use trails in the future should demand warrant.
4. Erect signage with regards to: intended use, hours (daylight use only), ownership, property boundaries, interpretive areas, and trail designation.



Appendix A. Tree Species of Moore Landfill 2008

Abbr	Common Name	Scientific Name
Ag	Green Ash	<i>Fraxinus pennsylvanica</i>
Aw	White Ash	<i>Fraxinus americana</i>
Al	Large Tooth Aspen	<i>Populus grandidentata</i>
At	Trembling Aspen	<i>Populus tremuloides</i>
Bd	Basswood	<i>Tilia americana</i>
Bu	American Blue-Beech	<i>Carpinus caroliniana</i>
Cb	Black Cherry	<i>Prunus serotina</i>
Pv	Choke Cherry	<i>Prunus virginiana</i>
Pd	Cottonwood	<i>Populus deltoides</i>
	American Sweet Crab Apple	<i>Malus coronaria</i>
	European Crab Apple	<i>Malus sylvestris</i>
Ea	White/American Elm	<i>Ulmus americana</i>
Ht	Hawthorn	<i>Crataegus spp.</i>
Hs	Shagbark Hickory	<i>Carya ovata</i>
Ld	Ironwood	<i>Ostrya virginiana</i>
Bj	Juneberry	<i>Amelanchier spp.</i>
Mh	Hard (Sugar) Maple	<i>Acer saccharum</i>
Ms	Silver Maple	<i>Acer saccharinum</i>
Ob	Bur Oak	<i>Quercus macrocarpa</i>
Pr	Red Oak	<i>Quercus rubra</i>
Osw	Swamp White Oak	<i>Quercus bicolor</i>
	Feral Pear	<i>Pyrus communis</i>
Wpl	Peach Leaf Willow	<i>Salix amygdaloides</i>



Appendix B. Shrubs and Vines of Moore Landfill 2008

Common Name	Scientific Name
Common Blackberry	<i>Rubus allegheniensis</i>
Glossy Buckthorn	<i>Rhamnus frangula</i>
Purging Buckthorn	<i>Rhamnus cathartica</i>
Gray Dogwood	<i>Cornus racemosa</i>
Red Osier Dogwood	<i>Cornus stolonifera</i>
Silky or Swamp Dogwood	<i>Cornus amomum</i>
Grape	<i>Vitus spp</i>
European Honey Suckle	<i>Lonicera tatarica</i>
Poison Ivy	<i>Rhus radicans</i>
American Prickly-Ash	<i>Xanthoxylum americanum</i>
Nannyberry Viburnum	<i>Viburnum lentago</i>
Virginia Creeper	<i>Parthenocissus vitacea</i>

