



GUIDING SOLUTIONS IN THE
NATURAL ENVIRONMENT

Minimum Distance Separation Assessment - Sarah Properties Ltd. Part of Lots 2 and 3, Concession 10 Township of Amaranth, Dufferin County

Prepared For:

Sarah Properties Ltd.

Prepared By:

Beacon Environmental

Date: Project:

February 2015 213442

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1. Introduction

Beacon Environmental has been retained by Sarah Properties Ltd. to conduct a Minimum Distance Separation (MDS) Assessment for the properties located at 1 Evans Avenue and 9 Mill Street, in Waldemar, Ontario (subject property). The subject property is located within Part of Lots 2 and 3, Concession 10, Township of Amaranth in the County of Dufferin (**Figure 1**).

Sarah Properties Ltd. is proposing to develop a subdivision on the subject property. Section 1.1.5 of the 2014 Provincial Policy Statement contains policy related to rural lands in municipalities. Policy 1.1.5.9 specifically states:

New land uses, including the creation of lots, and new or expanding livestock facilities, shall comply with the minimum distance separation formulae.

Land use planning principles promote the grouping together of compatible land uses, while providing distance between unlike or incompatible land uses. Minimum Distance Separation (MDS) formulae were developed to be used as a basis for reducing and minimizing nuisance complaints due to odour from livestock facilities and to reduce land use incompatibility in relation to livestock operations. The Minimum Distance Separation (MDS) is a land use planning tool that determines a recommended separation distance between a livestock barn or manure storage and another land use. The objective of MDS is to minimize nuisance complaints due to odour and thereby reduce potential land use conflicts.

MDS is made up of two separate, but related formulae (MDS I and MDS II). MDS I provides the minimum distance separation between proposed new development and existing livestock facilities and/or permanent manure storages located in areas where the keeping of livestock is permitted. MDS II provides the minimum distance separation between proposed new, enlarged or remodelled livestock facilities and/or permanent manure storages and existing or approved development located in areas where the keeping of livestock is permitted.

Farm operations were documented during land use reconnaissance surveys undertaken in January, April, and May 2014. These surveys estimated the most likely use of the facilities from roadside assessment and from local knowledge from farm operators. Data collected included the identification of land use, identification and visual assessment of barns or any building capable of housing livestock, identification of animal types, if observed on the property, number of animals and barn location with respect to other land uses. Recent aerial photography (2010) and GIS software (ArcMap 10.2) was also used to assist in the identification of farm infrastructure within 2 km of the subject property.

2. Methodology

2.1 Background Review

Background information was gathered and reviewed at the outset of the project. A review of the surrounding properties was undertaken during land use reconnaissance surveys including roadside assessment and local knowledge from existing farm operators.

To determine Minimum Distance Separation (MDS 1) from potential and existing livestock facilities the Ontario Ministry of Agricultural, Foods and Rural Affairs' (OMAFRA) MDS Implementation Guidelines (publication 707) as well as the MDS Training Manual were reviewed and used as our basis for evaluating livestock facilities. The Implementation Guidelines are provided by OMAFRA and outline the requirements that need to be considered as part of the application and calculation of the Minimum Distance Separation Formulae. Specific Guidelines used for this assessment are listed below:

Implementation Guideline #2 provides direction on what MDS 1 does and does not apply to:

"MDS 1 does not apply to abattoirs, apiaries, assembly yards, fairgrounds, feed storage, field shade shelters, greenhouses, kennels, livestock facilities that are less than 10m² in floor area, machinery sheds, mushroom farms, pastures, slaughter houses, stockyards, or temporary field nutrient storage sites."

Implementation Guideline #6 provides direction for when MDS is applied:

"MDS 1 is applied to all livestock facilities reasonably expected to be impacted by the proposed development, lot creation, rezoning or redesignation. For Type B applications apply MDS 1 for livestock facilities within a 2000m radius. Separate MDS 1 calculations should be undertaken for each livestock facility located on a separate parcel of land"

Implementation Guideline #12 provides direction for when existing uses do not conform to MDS:

"MDS 1 is applied to new proposed development, even though there may be existing nonagricultural uses that do not conform to MDS 1 requirements. Where there are four, or more, existing non-farm uses closer to the subject livestock facility and in immediate proximity to the current application, MDS 1 will not be applied. The current application must not be located closer to the livestock facility than the four, or more, existing non-farm uses"

Implementation Guideline #14 provides direction regarding livestock facilities:

"MDS is not applied to portions of the livestock facility where livestock are not normally present for a long enough time for substantial amounts of manure to accumulate"

Implementation Guideline #19 provides direction regarding the capacity of livestock facilities for MDS:

"MDS calculations shall be based on the maximum livestock housing capacity for all livestock facilities on a lot, even if the building is not currently used, but is structurally sound and reasonably capable of housing livestock. This also applies for permanent manure storages on lots where there is no livestock generating manure"

Implementation Guideline #20 provides direction for the application of MDS to empty livestock facilities:

"MDS 1 applies to empty livestock facilities if they are structurally sound and reasonably capable of housing livestock, or storing manure"

Additionally, the MDS Training Manual provides direction for determining when a barn is a livestock facility. Section 9.2 of the Training Manual provides ten key elements to consider to determine if a



Site Location		Figure 1	
Sarah Properties Ltd. Waldemar Subdivision			
Ontario Base Map Vector Base First Base Solutions Web Mapping			
UTM Zone 17 N, NAD 83			
0 250 500 1,000 Meters		1:25,000	
		Project 213442 May 2014	

barn is structurally sound and reasonably capable of housing livestock. These key elements include the barn's foundation, walls, roof, internal structure, location, size and shape, last use as a livestock facility, era, current use and presence of related buildings on site. Section 9.2 also states that in some cases, if the answer to any one question relating to the state of the barn with regards to the ten key elements stated above is 'yes', that "*may be sufficient to determine that an empty barn is not 'structurally sound' or 'reasonably capable' of housing livestock*".

As noted above, GIS software assisted in the determination of the size of the agricultural facilities and tillable areas. The GIS measurement of each barn provides an overall area of the barn but does not differentiate between areas of the barn that may or may not be used by livestock. Local knowledge from farm operators was also used to complete this MDS analysis. MDS I arcs are based on an existing housing as a worst case scenario.

MDS software (Version 1.0.2) provided by OMAFRA was used to calculate the MDS I requirements. The reports generated are attached in **Appendix A** and the locations illustrated in **Figure 2**.

3. Analysis

Using aerial photography including Google Maps, County of Dufferin Interactive Maps and First Base Solutions Web Mapping Service (Dufferin 2010), field and roadside surveys undertaken in January, April and May 2014, and the local knowledge base, farm operations were documented.

The Preface of the MDS Implementation Guidelines states that "*today large barns are commonly triple the size of those of the past, accommodating 2000 feeder hogs, 250 dairy cows, or 50,000 chicken broilers at one time.*" Barns of these sizes can be considered large-scale industrial farming operations and following our investigations, these large scale operations are not characteristic of the farming operations in the vicinity of the subject property. The livestock operations within 2000 m of the subject property are older traditional smaller scale dairy farms and horse stables (25-75 cows, 2-5 horses) with some barns dating back many decades.

Figure 2 provides a map showing agricultural operations within the required 2000 metre radius of the subject property and **Appendix 1** provides information regarding those operations. Through our initial desktop interpretation of aerial photography of the area within 2000 m of the subject property, 6 properties were identified for further investigation. The assessment of livestock facilities did not identify any agricultural operations affected through the intent of Implementation Guideline #12.

Following the roadside surveys, 6 agricultural operations were identified for inclusion in this MDS analysis. These operations are identified in Table 1 below and described in the following paragraphs.

Table 1. Agricultural Operations Identified for MDS Analysis

MDS Identifier	Address	Operation
Location 1	213214 10 th Line	Beef, Cows and Feeders
Location 2	193129 Amaranth East Luther Townline	Horses, Medium Framed
Location 3	193031 Amaranth East Luther Townline	Beef, Cows
Location 4	21 Station Street	Horses, Medium Framed
Location 5	253164 9 th Line	Dairy, Large Frame Milking Age
Location 6	213016 10 th Line	Beef, Cows

3.1 Location 1

The property at 213214 10th Line is owned by Kent Glassford. The operation includes 40 beef cows including calves, 50 feeder cows, solid outside manure storage and the property consists of approximately 110 acres (44.5 hectares). The calculated MDS 1 distance generated using the MDS software (Version 1.0.2) provided by OMAFRA is 487 metres (m), and the Actual Setback is 750 m. The calculation assumed an area of tillable land (land, including pasture that can be worked or cultivated to grow crops) of 33 hectares (ha) based on GIS interpretation.

3.2 Location 2

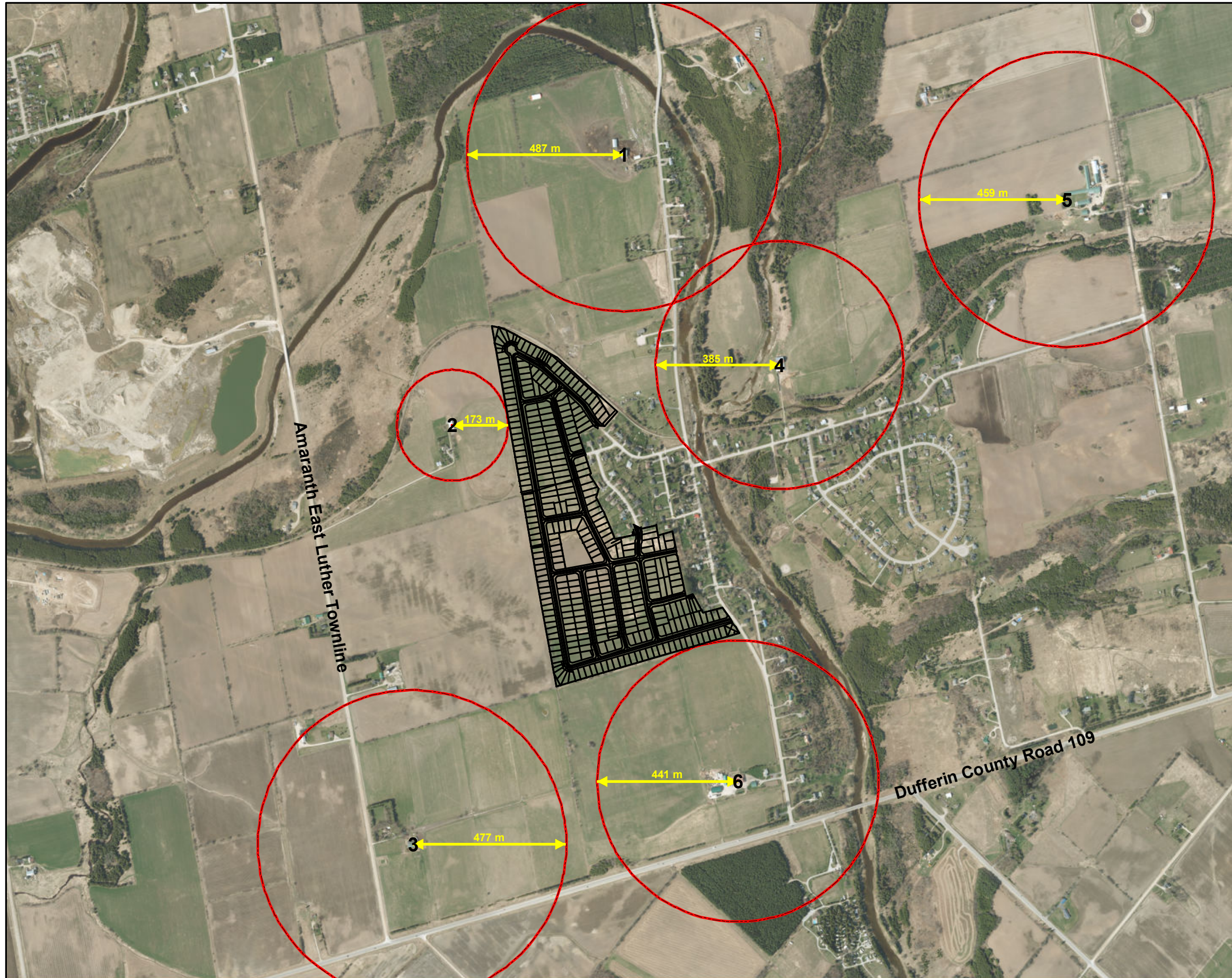
The property at 193129 Amaranth East Luther Townline is owned by Jim Davidson. The small operation includes 4 riding horses with solid outside manure and the property consists of approximately 20 ha. GIS interpretation approximated the size of the existing barn to be 300 m², although our calculations are assuming that the entire interior of the barn is available for livestock. Although calculations using a barn containing 4 medium framed horses results in the MDS software calculating a barn size of 93 m², the resultant MDS 1 required setback does not change from 173 m. The Actual Setback is 175 m. The resultant MDS 1 required setback is based on GIS interpretation of tillable land (14 ha) and does not include the area of outdoor riding track (~5 ha).

3.3 Location 3

The property at 193031 Amaranth East Luther Townline is owned by Bill Clark. The farm is a beef cow operation and includes approximately 25 cows and 20 calves with solid outside manure on a property approximately 37 ha in size. The calculated MDS 1 distance generated using the MDS software (Version 1.0.2) provided by OMAFRA is 477 m, and the Actual Setback is 665 m. The calculation assumed an area of tillable land of 35 hectares (ha) based on GIS interpretation.

3.4 Location 4

The property at 21 Station Street is a small operation includes 3 riding horses with solid outside manure and the property consists of approximately 37 ha. GIS interpretation approximated the size of



MDS Setback Arcs

Figure 2

Sarah Properties Ltd.
Waldemar Subdivision

Legend

- MDS Setback Arc
- ↔ Setback Distance (metres)

NOTE:
The subject property delineation was digitized from file information.
This drawing is for illustration purposes only and must not be used
in place of surveyed information.

First Base Solutions Web Mapping Service	
UTM Zone 17 N, NAD 83	
0 125 250 500 Meters 	1:12,500



Project 213442
February 2015

the existing barn to be 300 m², although our calculations are assuming that the entire interior of the barn is available for livestock. Similar to the calculations undertaken for Location 2, the calculations using a barn containing 3 medium framed horses results in the MDS software calculating a barn size of 93 m² for either 3 horses or more horses. The resultant MDS 1 required setback changes dependant upon tillable land available. The tillable land for Location 4 is 19 ha and as such, the required setback is 385 m. The Actual Setback is 665 m.

3.5 Location 5

The property at 253164 9th Line is a dairy farm with approximately 75 Holstein milking age cows with liquid manure outside in an open storage facility. The property is approximately 23 ha with about 12.5 ha tillable. The calculated MDS 1 distance generated using the MDS software (Version 1.0.2) provided by OMAFRA is 399 m from the nearest livestock building and 459 m from the nearest permanent manure storage facility. The Actual Setback is 1687 m.

3.6 Location 6

The property at 213016 10th Line is a beef cow operation and includes approximately 20 cows with no manure stored on the property. The property is approximately 35 ha in size. The calculated MDS 1 distance generated using the MDS software (Version 1.0.2) provided by OMAFRA is 441 m, and the Actual Setback is 442 m. The calculation assumed an area of tillable land of 28 hectares (ha) based on GIS and aerial photographic interpretation.

3.7 Applying MDS Setbacks

Section 1.1.5 of the 2014 Provincial Policy Statement (PPS) contains policy related to rural lands in municipalities and specifically states:

New land uses, including the creation of lots, and new or expanding livestock facilities, shall comply with the minimum distance separation formulae

The MDS Implementation Guidelines provide direction on measurement of MDS setbacks between livestock facilities, and other existing or proposed development, lot lines, and road allowances. Implementation Guidelines # 42 provides direction for lot creation:

“For MDS 1, measurements are taken as the shortest distance between the lot line of the lot being created and the livestock occupied portion of the livestock facility (or storage). Where larger lots may be permitted (generally larger than 1 hectare), a suitable location must be identified for a 1 ha building envelope outside the MDS 1 separation.”

The MDS setback for each of the 6 agricultural operations identified above is illustrated in **Figure 2**. The six locations comply with Policy 1.1.5.9 of the PPS.

4. Conclusion

Beacon Environmental has been retained by Sarah Properties Ltd. to conduct a Minimum Distance Separation (MDS) Assessment for the properties located at 1 Evans Avenue and 9 Mill Street, in Waldemar, Ontario.

Sarah Properties Ltd. is proposing to develop a subdivision on the subject property. Farm operations were documented during land use reconnaissance surveys undertaken in January, April, and May 2014. The MDS study reviewed the livestock housing facilities within 2,000 m of the Subject Property and our review of the MDS 1 separation requirements demonstrates that the proposed development is not impacted by neighbouring livestock facilities.

Report prepared by:
Beacon Environmental



Jamie Nairn, M.Sc., P.Ag.
Senior Ecologist

Appendix A

MDS I Calculation Sheets

Minimum Distance Separation I (MDS I) Report

File: 213442 MDS.mds

Application Date: 31-Jan-2014

File Number: 213442

Preparer Information

Jamie Nairn
Beacon Environmental Ltd.
126 Kimberley Avenue
Bracebridge, ON, Canada P1L 1Z9

Applicant Information

Unspecified

County of Dufferin
Township of Amaranth
Geotownship: AMARANTH
Concession: 1
Lot: 1

Location #1

Adjacent Farm Contact Information

Kent Glassford
213214 10th Line
Waldemar, ON, Canada

Farm Location

County of Dufferin
Township of Amaranth
Geotownship: AMARANTH
Concession: 1
Lot: 1

Manure Form	Type of Livestock/Material	Existing Capacity	Existing NU	Estimated Barn Area
Solid	Beef, Cows, including calves to weaning (all breeds); Confinement	40	40.0	372 m ²
Solid	Beef, Feeders (7 - 16 months); Confinement Bedded Pack	50	16.7	232 m ²

Encroaching Land Use Factor: Type B Land Use

Tillable area of land on this lot: 33 ha

Manure/Material Storage Type: V3. Solid, outside, no cover, >= 30% DM

Factor A (Odour Potential): 0.73
Factor B (Nutrient Units): 434
Factor D (Manure/Material Type): 0.7
Factor E (Encroaching Land Use): 2.2
Total Nutrient Units: 57

	Required Setback	Actual Setback
Distance from nearest livestock building 'F' (A x B x D x E):	487 m (1598 ft)	750 m (2461 ft)
Distance from nearest permanent manure/material storage 'S':	487 m (1598 ft)	

Signature of Preparer:



Jamie Nairn, Beacon Environmental Ltd.

Date: May 28/2014

NOTE TO THE USER:

The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) has developed this software program for distribution and use with the Minimum Distance Separation (MDS) Formulae as a public service to assist farmers, consultants, and the general public. This version of the software distributed by OMAFRA will be considered to be the official version for purposes of calculating MDS. OMAFRA is not responsible for errors due to inaccurate or incorrect data or information; mistakes in calculation; errors arising out of modification of the software, or errors arising out of incorrect inputting of data. All data and calculations should be verified before acting on them.



Minimum Distance Separation I (MDS I) Report

File: 213442 MDS.mds

Location #2

Adjacent Farm Contact Information

Jim Davidson
193129 Amaranth East Luther Townline
Waldemar, ON, Canada

Farm Location

County of Dufferin
Township of Amaranth
Geotownship: AMARANTH
Concession: 1
Lot: 1

Manure Form	Type of Livestock/Material	Existing Capacity	Existing NU	Estimated Barn Area
Solid	Horses; Medium-framed, mature; 227 - 680 kg (including unweaned offspring)	4	4.0	93 m ²

Encroaching Land Use Factor: Type A Land Use

Tillable area of land on this lot: 14 ha

Manure/Material Storage Type: V3. Solid, outside, no cover, >= 30% DM

Factor A (Odour Potential): 0.7
Factor B (Nutrient Units): 321
Factor D (Manure/Material Type): 0.7
Factor E (Encroaching Land Use): 1.1
Total Nutrient Units: 4

	Required Setback	Actual Setback
Distance from nearest livestock building 'F' (A x B x D x E):	173 m (568 ft)	175 m (574 ft)
Distance from nearest permanent manure/material storage 'S':	173 m (568 ft)	

Location #3

Adjacent Farm Contact Information

Bill Clark
193031 Amaranth East Luther Townline
Waldemar, ON, Canada

Farm Location

County of Dufferin
Township of Amaranth
Geotownship: AMARANTH
Concession: 1
Lot: 1

Manure Form	Type of Livestock/Material	Existing Capacity	Existing NU	Estimated Barn Area
Solid	Beef; Cows, including calves to weaning (all breeds); Yard/Barn	45	45.0	209 m ²

Signature of Preparer:


Jamie Nairn, Beacon Environmental Ltd.

Date:

May 28/2014

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Minimum Distance Separation I (MDS I) Report

File: 213442 MDS.mds

Encroaching Land Use Factor: Type B Land Use

Tillable area of land on this lot: 35 ha

Manure/Material Storage Type: V3. Solid, outside, no cover, >= 30% DM

Factor A (Odour Potential): 0.7
Factor B (Nutrient Units): 443
Factor D (Manure/Material Type): 0.7
Factor E (Encroaching Land Use): 2.2
Total Nutrient Units: 45

	Required Setback	Actual Setback
Distance from nearest livestock building 'F' (A x B x D x E):	477 m (1565 ft)	665 m (2182 ft)
Distance from nearest permanent manure/material storage 'S':	477 m (1565 ft)	

Location #4

Adjacent Farm Contact Information
Unspecified
21 Station Street
Waldemar, ON, Canada

Farm Location
County of Dufferin
Township of Amaranth
Geotownship: AMARANTH
Concession: 1
Lot: 1

Manure Form	Type of Livestock/Material	Existing Capacity	Existing NU	Estimated Barn Area
Solid	Horses; Medium-framed, mature; 227 - 680 kg (including unweaned offspring)	3	3.0	70 m ²

Encroaching Land Use Factor: Type B Land Use

Tillable area of land on this lot: 19 ha

Manure/Material Storage Type: V3. Solid, outside, no cover, >= 30% DM

Factor A (Odour Potential): 0.7
Factor B (Nutrient Units): 357
Factor D (Manure/Material Type): 0.7
Factor E (Encroaching Land Use): 2.2
Total Nutrient Units: 3

	Required Setback	Actual Setback
Distance from nearest livestock building 'F' (A x B x D x E):	385 m (1264 ft)	665 m (2182 ft)
Distance from nearest permanent manure/material storage 'S':	385 m (1264 ft)	

Signature of Preparer: _____


Jamie Nairn, Beacon Environmental Ltd.

Date: _____

May 28/2014

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Minimum Distance Separation I (MDS I) Report

File: 213442 MDS.mds

Location #5

Adjacent Farm Contact Information
Unspecified
253164 9th Line
Wlademar, ON, Canada

Farm Location
County of Dufferin
Township of Amaranth
Geotownship: AMARANTH
Concession: 1
Lot: 1

Manure Form	Type of Livestock/Material	Existing Capacity	Existing NU	Estimated Barn Area
Liquid	Dairy; Milking-age Cows (dry or milking) Large Frame (545 - 636 kg) (eg. Holsteins); 6 Row Free Stall	75	107.1	697 m ²

Encroaching Land Use Factor: Type B Land Use

Tillable area of land on this lot: 12.5 ha

Manure/Material Storage Type: M1. Liquid, outside, no cover, straight-walled storage

Factor A (Odour Potential): 0.7
Factor B (Nutrient Units): 323
Factor D (Manure/Material Type): 0.8
Factor E (Encroaching Land Use): 2.2
Total Nutrient Units: 107

	Required Setback	Actual Setback
Distance from nearest livestock building 'F' (A x B x D x E):	399 m (1307 ft)	1687 m (5535 ft)
Distance from nearest permanent manure/material storage 'S':	459 m (1505 ft)	

Location #6

Adjacent Farm Contact Information
Unspecified
213016 10th Line
Waldemar, ON, Canada

Farm Location
County of Dufferin
Township of Amaranth
Geotownship: AMARANTH
Concession: 1
Lot: 1

Manure Form	Type of Livestock/Material	Existing Capacity	Existing NU	Estimated Barn Area
Solid	Beef; Cows, including calves to weaning (all breeds); Yard/Barn	25	25.0	116 m ²

Signature of Preparer:


Jamie Nairn, Beacon Environmental Ltd.

Date:

May 28/2014

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Minimum Distance Separation I (MDS I) Report

File: 213442 MDS.mds

Encroaching Land Use Factor: Type B Land Use

Tillable area of land on this lot: 28 ha

Manure/Material Storage Type: V3. Solid, outside, no cover, >= 30% DM

Factor A (Odour Potential): 0.7

Factor B (Nutrient Units): 409

Factor D (Manure/Material Type): 0.7

Factor E (Encroaching Land Use): 2.2

Total Nutrient Units: 25

	Required Setback	Actual Setback
Distance from nearest livestock building 'F' (A x B x D x E):	441 m (1448 ft)	442 m (1450 ft)
Distance from nearest permanent manure/material storage 'S':	441 m (1448 ft)	

Signature of Preparer:



Jamie Nairn, Beacon Environmental Ltd.

Date: May 28/2014

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