Guidelines to Enhance the Ecological Value of Cemeteries in Southern Ontario

by

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ABSTRACT

GUIDELINES TO ENHANCE THE ECOLOGICAL VALUE
OF CEMETERIES IN SOUTHERN ONTARIO

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The cultural role of cemeteries is well defined, but the ecological importance of these sites is less recognized. As passively-used permanent greenspace, cemeteries have the potential to sustain biodiversity as surrounding land uses change. Informant interviews were conducted with professionals familiar with cemeteries and the funeral industry, and responses were compared within and between professions. Results of this study suggest that while cemeteries provide significant cultural and environmental benefits, their ecological potential is limited by factors including funding and legislation. In order to enhance the ecological value of cemetery sites, the incorporation of native trees and variable habitat within traditional cemetery designs should be considered to improve the quality of resources available to wildlife. Additionally, amendments should be made to the Provincial Policy Statement to include an independent land use designation for cemeteries and implement regional scale planning of these sites across Ontario.

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Chapter 1: Introduction

1.1 Context

This study is based on an examination of issues relating to the open-lawn style cemeteries that have represented the common aesthetic of burial sites in southern Ontario towns and cities from the end of the 1800s until the present day. These sites ranged from a few dozen square meters to several hectares in size, depending on the population being served. A typical cemetery is identifiable by an open lawn that contains burial plots and associated monuments organized into rows. Many cemeteries are surrounded by a fence or significant plantings (such as hedgerows or trees) and include trees and gardens within the site for aesthetic or memorial purposes. Larger cemeteries (with capacity greater than about 500 graves) may also incorporate other features such as formal vehicle access, parking, offices and maintenance areas that are not directly related to burial or memorialisation but play a valuable role in site access and upkeep (Rugg, 2000; Smart, 2001). Several of the largest cemeteries in the province were established at the turn of the 20th century, and most sites instituted since then have been influenced by what has now developed into this traditional aesthetic.

Having long been seen as tranquil and semi-natural sites, it is only relatively recently that the idea of cemeteries as a refuge for biodiversity has been suggested (Barrett & Barrett, 2001). While having long been recognized as an important cultural and historical resource, many cemeteries also represent a significant natural heritage resource as they protect existing habitat, landscape corridors, historic or endangered plant populations and many other significant ecological resources located on the site from redevelopment. The ecological significance of historic cemeteries is largely the result of their natural components remaining undisturbed for many decades, a condition which is easy to emulate and enhance on newly established sites

(Barrett & Barrett, 2001; Harvey, 2006).There are several other types of memorial landscape that are found in Ontario, but the ubiquity of the open-lawn cemetery makes their design an interesting and relevant focus when attempting to determine how the ecological value of these sites can be managed presently and into the future.
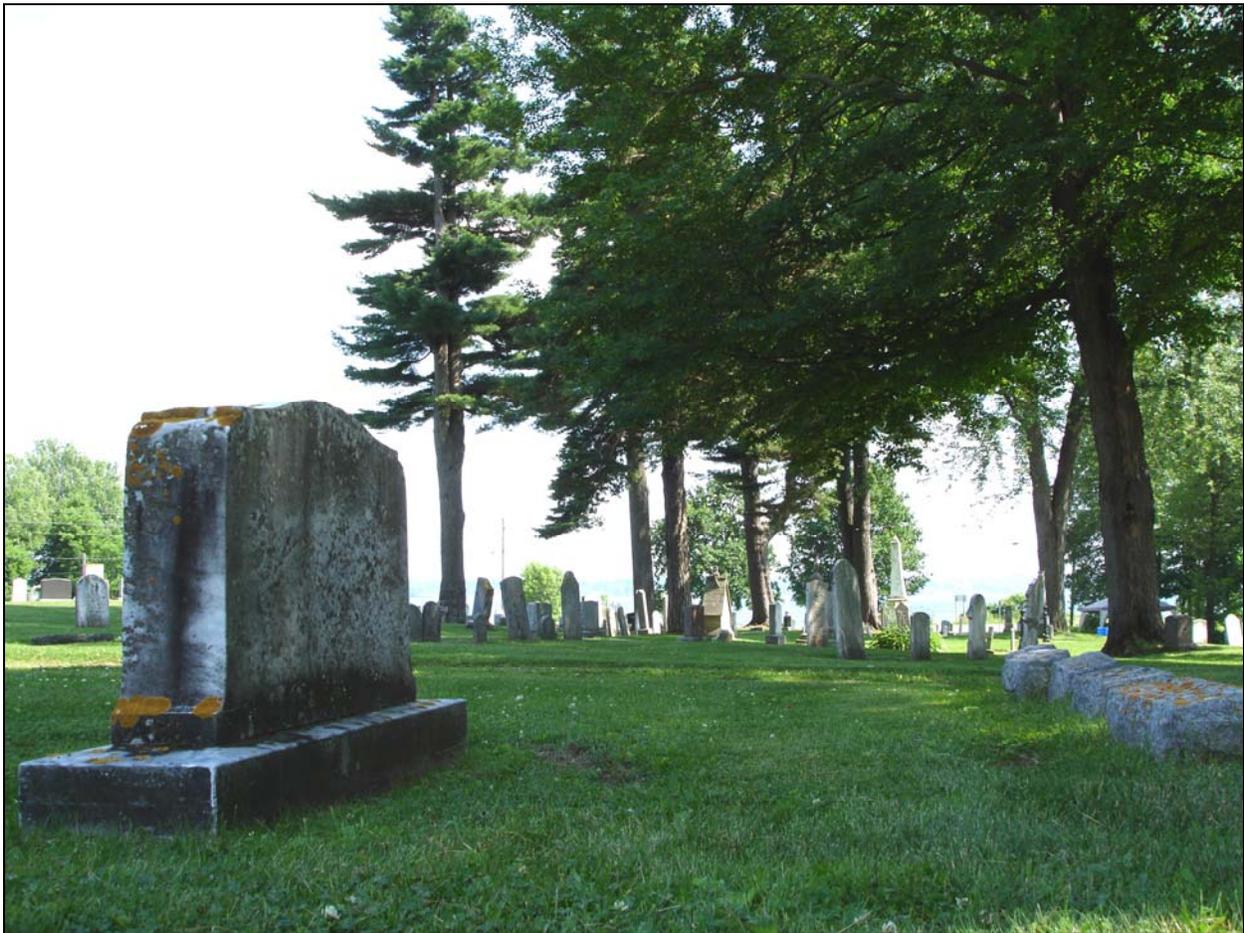
Figure 1: A typical cemetery in southern Ontario (Source: Diane Relyea)

1.2 Purpose of Research

Cemeteries in southern Ontario are considered to be a permanent land use, often taking the form of open greenspace, and have well recognized and documented cultural significance. Acknowledgement of the ecological significance of these sites and their potential contribution to existing greenspace networks is briefly referred to in the literature, but has been minimally

studied as a primary research focus. This project aims to investigate the barriers and opportunities for enhancing the ecological value of cemeteries in southern Ontario in order to determine how to best increase the future ecological benefits they will provide.

1.2.1 Research Goal

To produce a set of design guidelines that will benefit those interested in enhancing the ecological value of cemetery sites.

1.2.2 Research Objectives

- Outline the historical and cultural precedents that have led to the current traditional cemetery aesthetic being so widely accepted and implemented

- Determine which factors influence where a cemetery is established

- Gain an understanding of how the current trends and practices of the funerary industry in southern Ontario could affect the practical application of ecological principles to cemetery sites.

- Determine how ecological features might be best integrated with the expected cultural aesthetic on new and existing cemetery sites

Chapter 2: Literature Review

Cemeteries represent a unique land use that fulfills many different roles; in addition to the primary purpose of commemoration, a cemetery can also provide visitors with a spiritual benefit through the appreciation of nature. While holding a great emotional significance for many, cemetery sites must also be considered in terms of practical issues such as legislation and long term maintenance. This literature review will synthesize the necessary cultural, social and natural elements to consider when developing an effective long term strategy for ensuring cemetery sites are expanded and designed with their full ecological potential in mind.

2.1 The Modern Cemetery

2.1.1 History

Modern cemeteries are defined as "specifically demarcated sites of burial, with internal layout that is sufficiently well ordered to allow families to claim and exercise control over a particular grave space, and which facilitate the conducting of appropriate funerary ritual … [and] are principally secular institutions which aim to serve the whole community" (Rugg, 2000, p.264). The development of this style of burial place is closely linked to the changing social expectations and growing wealth of North Americans over the past 350 years. From the first arrival of European settlers up until the 1800s, most burials took place in small, informal graveyards that often occupied a back field on family farms. As communities grew and became more permanent, the importance of churchyards grew proportionally (Basmajian & Coutts, 2010; Eggener, 2010). Often situated in the center of a settlement, churchyards were highly regulated by social politics that dictated who was permitted to be buried in them. The 19th century graves were often reused, allowing a relatively small area to accommodate the parish dead. Following

European trends in burial reform that started in the 1720s, a significant shift in North American burial practice began in the 1850s which eventually led to the popularization of picturesque memorial landscapes designs across the continent and an expectation of permanence for burial sites (Rugg, 2000; Smart, 2011).

During the 19th century, rapidly increasing industrialization led to North American cities becoming larger, more crowded and more polluted, causing existing urban churchyards to come under increased pressure from both the burial needs of a growing population and the economic desire to redevelop land located in prime downtown locations. While these issues were acknowledged by society at the time, the idea of locating a cemetery outside of the urban center was seen as displacing the dead from their place among the living and there were concerns that vandalism might become prevalent in remote settings. Strong resistance also came from the local clergy, who stood to lose the profits gained from selling grave plots and managing churchyards. Despite this opposition, the poor condition of many churchyards combined with their perceived risk as a potential health hazard led to a movement favouring the development of larger burial sites on the outskirts of town (Canning & Szmigin, 2010; Rugg, 2000; Schuyler, 1984). One of the results of this new strategy was the construction of cemeteries on main roads and transit routes, to better facilitate access by users. Eventually, these sites were surrounded by growing cities and became important islands of open greenspace in urbanized areas (Harvey, 2006).

Mt. Auburn Cemetery, established outside of Boston in 1831, was the first "rural" cemetery to be opened to the public and was intended as a secular institution to provide services to all members of the community and enhance the urban environment (Sachs, 2010). Its design was heavily influenced by that of Père Lachaise Cemetery in Paris (itself drawing from English landscape theory), where greenery and architectural elements were used to create a peaceful

setting for remembrance and appreciation of nature (Schuyler, 1984). Largely because of the degraded state of many American churchyards, there was a perceived need to develop "rural" cemeteries as places for people to reconnect with nature and community on sites that were meant equally for the living and the dead, allowing the former to take time away from the increasingly hectic urban environment and the latter to rest undisturbed as they returned to nature (Bender, 1974; Schuyler, 1984). The term "rural" denotes the actual and perceived ideals represented by the natural aspects of the site more than its physical location. This is not to say that internal divisions did not exist for different religious groups, but emerging municipal requirements on new burial grounds required that the unbaptized and indigent be included in some churchyards where they had not been previously (Bender, 1974; Eggner, 2010; Harvey, 2006; Rugg, 2000, Sachs, 2010).

The principles guiding the development of Mt. Auburn, which included designing the site as a combination cemetery and experimental garden managed by the Massachusetts Horticultural Society, were novel at the time and by the late 1830's the site was extremely popular and became a tourist attraction comparable to Niagara Falls (Sachs, 1974; Schuyler, 1984). This popularity inspired not only the replication of the rural cemetery style in cities across the United States and Canada, but the popularity of these open public greenspaces led the principles of the rural cemetery movement to become the foundation of the American parks movement, one of the goals of which was to provide public access to nature (Bender, 1974; Sachs, 2010). The current cemetery aesthetic (which typically resembles a park more than an arboretum or botanical garden) can be credited to Adolph Strauch, who in 1856 was the superintendent of Spring Grove Cemetery in Cincinnati. He developed a 'lawn plan' which prohibited the placement of individual fences around individual plots, as he felt they disrupted the natural flow and beauty of the site

(Schuyler, 1984). This idea of an open-lawn cemetery planted with trees and flowers was both practical and easily replicable, leading to its adoption throughout North America at many scales from large city sites down to those found in the smallest villages.

2.1.2 Creation of the Funeral Industry

Considering the progression of burial grounds from religion-oriented churchyards to privately-owned secular establishments, it is not surprising that a business strategy and customer service became the main focus of cemeteries. Prior to the Victorian era (1837-1901), most people were buried in common graves or with simple markers, with large ornate headstones being used exclusively by the wealthy. A desire to mimic European trends, the emergence of the middle class during the industrial revolution, as well as an increasingly prosperous Canadian society, led to an increase in the popularity of family and individual memorials which were representative of new wealth and status (Basmajian & Coutts, 2010; Francis, Kellaher & Neophytou, 2000; Rugg, 2000). This new trend for individualized monuments caused the reuse of graves, previously common in parish churchyards, to fall out of favour. Combined with a growing funeral industry selling embalming services (made popular during the American Civil War 1861-1865) and the idea of 'eternal rest' through undisturbed burial in perpetuity, the rituals surrounding death were redefined (Canning & Szmigin, 2010; Smart, 2011). The shift of priority from institution to individual affected not only funerary practice, but also memorial design and the perception of cemeteries as a permanent landscape feature (Petersson & Wingren, 2011).

2.1.3 Historical Cemeteries in Ontario

There are several cemeteries in Ontario with a history that reflects this cultural and philosophical evolution of burial and funerary trends. Woodlawn Cemetery (formerly Union

Cemetery), in Guelph, Ontario, was established in 1854 at an eighty acre site located on the north side of the city. In order to provide a pleasant memorial atmosphere both for the bereaved and those touring graves and picnicking on the site, a common family pass-time on Sunday afternoons up until the last few decades, the site was designed to include looping pathways, gardens and many trees . Although there are no longer hot dog carts outside the cemetery gates catering to visitors, recreational uses such as walking and jogging are still encouraged. The cemetery has entered into formal and informal partnerships with several other special interest groups, including the Guelph Historical Society, the Guelph Naturalists and the University of Guelph Arboretum, and hosts public events related to both the cultural and natural history of the city of Guelph and the surrounding area. In order to commemorate the 150th anniversary of the site and the multiple community benefits it provides, in 2004 the name Woodlawn Cemetery was officially changed to Woodlawn Memorial Park (Woodlawn Memorial Park, 2012).

Hamilton Cemetery, established in 1850, is the oldest municipal cemetery in Canada and has a historical significance similar to that of Woodlawn Memorial Park, as both sites are the final resting place of many historical figures and prominent citizens from their respective communities. Located on a sand and gravel bluff overlooking both Hamilton harbour and the city, this cemetery was established on the outskirts of what was once the most active and industrialized city in southern Ontario. Being in close proximity to significant conservation lands (including Cootes Paradise and the Royal Botanical Gardens), this is a popular site for birdwatchers during migratory seasons (City of Hamilton, 2005; Manneke, 2012).

2.1.4 Permanence and Cultural Significance

While established principally for interments, the main users of cemeteries are the bereaved. The emotional importance of cemeteries for those with loved ones buried in them

cannot be understated; these sites become sacred spaces that provide context for memorialisation

and rituals associated with death (Bachelor, 2007; Pitte, 2004; Rugg, 2000). Despite their

importance to friends and family, studies have shown that visitors are relatively infrequent

following the first five years after death, dropping to almost no visits after twenty years. The

passage of time helps to minimize grief, and after several decades there may be no family or

friends remaining who might visit (Bachelor, 2007). Even when no longer cared for by family, it

is common for visitors of nearby plots to bring flowers to 'lonely' graves; while the generational

continuity may be broken, the sacredness of the site protects all occupants (Francis et al., 2000).

This is an important point to consider when selecting a site for a new cemetery or developing

management plans for urban cemeteries that are no longer in use: once established, cemeteries

are virtually impossible to move due to community opposition and bureaucratic constraints

(Harvey, 2006; Uslu, Baris & Erdogan, 2009).

2.2 Cemetery-Related Legislation

2.2.1 Land Use Planning

Planning in southern Ontario is governed by several provincial policies, including the

Provincial Policy Statement (2005), The Greenbelt Plan (2005) and the Places to Grow Act

(2005), that outline approved long-term regional land use and development strategies. These

various pieces of legislation consider cemeteries to be built form, institutional lands or open

space, depending on the context in which they are being discussed. In the Provincial Policy

Statement (PPS) cemeteries are classified as cultural heritage landscapes, which are defined as a

"geographical area of heritage significance which has been modified by human activities and is

valued by a community" (PPS, 2005, p. 29). The Provincial Policy Statement also defines natural

heritage features and areas as follows:

"Natural heritage features and areas means … significant habitat of endangered species and threatened species, significant wildlife habitat, and significant areas of natural and scientific interest, which are important for their environmental and social values as a legacy of the natural landscapes of an area" (PPS, 2005, p.33).

This legislation also indicates that "natural features and areas shall be protected for the long term" (PPS, 2005, p.15). Cemeteries, as a truly permanent land use, have the potential to protect and support the significant habitats and natural legacies outlined above and in many cases they already do; Hoary Mountain-mint (*Pycnanthemum incanum*), which is currently protected under the Endangered Species Act (2007), has found refuge on bluffs which are part of a cemetery property in Burlington, Ontario (Hoary Mountain-mint Recovery Team, 2011). The ecological value of cemeteries is not accounted for in the existing legislation as they are not currently defined as natural areas or natural heritage features, resulting in cemetery planning being based around requirements relating to development and cultural services.

Planning within municipalities is further defined within provincial legislation by policies outlined by municipal governments. The current status of cemeteries within existing provincial planning policies in Ontario has been summarized as follows:

"The implication is that cemeteries are urban land uses. The problem with this notion, however, is that cemeteries cannot compete with the traditional urban land use (residential, commercial, industrial and recreational) for what has become a scarce resource within municipal boundaries [due to the cost of land and long term return on investment]. At the same time, sufficient land for cemetery use outside of established urban areas cannot be developed because of the Province's land use planning policy [which focuses on protecting agricultural land and directing infill of existing urban areas]" (Larkin, 2011, p. 56).

Larkin (2011) goes on to add, based on an analysis of a review of the cemetery planning policy of selected municipalities in southern Ontario, that only two of 46 municipal plans studied make any reference to the long term nature of cemetery land use or include clear guidance for incorporating new cemeteries into urbanized areas. In terms of long term community growth and possible effects on future development patterns this approach is not only short-sighted, but also

fails to recognize the long term cultural and ecological benefits of cemeteries and their ability to play multiple roles beyond that of burial space.

2.2.2 The Funeral, Burial and Cremation Services Act, 2002

A consolidation of the Cemeteries Act (Revised) and the Funeral Directors and Establishments Act, the Funeral, Burial and Cremation Services Act addresses operator licensing and obligations, management of human remains, consumer protection, pricing and reporting to the Registrar. The minimum length, width and depth for an in-ground burial plot are provided, as well as the stipulation that all buildings, columbaria and mausolea must be located a minimum of 4.57 meters from in-ground burials, scattering grounds (designated areas to scatter cremated remains) and each other (O. Reg. 30/11, s. 154 (1-3); O. Reg. 30/11, s. 155). Aside from these specifications, the Act is directed mostly toward consumer protection and regulating proper conduct by cemetery operators, and does not offer guidance regarding cemetery design beyond basic requirements such as suitable access.

2.2.3 Cemetery By-laws

In Ontario, cemetery by-laws are used to regulate the daily activities at a given cemetery site, including but not limited to such things as hours of operation, style of personal memorials permitted and routine maintenance. Cemetery by-laws may be created by a municipality to provide guidelines for managing existing and new sites within municipal borders, outlined by a religious organization (such as a religious diocese) to manage its sites, or may be independently produced to dictate the management of large municipal or privately-run sites subject to a specific or varied set of circumstances. The Ontario Association of Cemetery and Funeral Professionals provides guidelines for developing cemetery by-laws but as long as they are not contrary to the

Funeral, Burial and Cremation Services Act, a given site may be managed as seen fit by the owners or operators.

2.3 Site Planning and Management

2.3.1 Cemetery Planning

The development of new cemeteries concerns not only those involved in their design and construction, but also the surrounding community, funeral directors, religious groups, future users and the general public. The varied and often conflicting views related to cemetery property, its aesthetics and intended use can lead to significant issues when attempting to accommodate all user groups. There is also potential for conflict associated with surrounding land uses, related to both the cultural and social aversion to living next to cemeteries, their possible impact on viewsheds and the permanent nature of the sites (Basmajian & Coutts, 2010; Canning & Szmigin, 2010; Francis et al., 2000). Despite these difficulties, there is no question that the planning and long term management of cemeteries is something that needs to be addressed. The aging baby boom population will put an enormous strain on existing capacities for all types of interment, and there is no question that existing sites will need to be expanded and new sites planned and built. Problems caused by a lack of planning on the part of municipalities will be further complicated by the difficulties associated with determining future need; mobility of senior citizens between communities, choice of internment and a common desire to be with family make it difficult to determine cemetery capacity requirements based on census data alone (Basmajian & and Coutts, 2010; Coutts, Basmajian & Chapin, 2011).

It seems that the potentially overwhelming nature of this issue may be what has led to municipalities putting little effort into guiding the long term planning of cemeteries. It is important to note that Canada is not alone in having a fragmented system for managing its

cemetery sites; Denmark, Taiwan and Germany are examples of other countries where cemetery establishment and care are seen as a local concern, with very few legislative ties to higher levels of government. Additionally, in these countries cemeteries are also considered to be part of the greenspace network, but are managed separately from parks and urban planning initiatives (Huang, 2007; Kjoller, 2012).

The current situation in Britain should serve as a warning regarding what may happen if cemetery planning is consistently ignored. While the circumstances leading to a shortage of grave space in London, England is closely related to a quickly growing population due to immigration combined with inefficient cemetery planning, the net result is a significant shortage of available burial space which is further complicated by a shortage of available land within the city. The Ministry of Justice (which is responsible for burials policy) and the Greater London Authority conducted a survey of all the burial grounds in England and Wales in 2007, with the intent to "establish the identity, nature, location, operational status, capacity and management arrangements of every burial ground in England and Wales" (Ministry of Justice, 2007). The results of this study indicate that while rural cemeteries still have space for new burials and the popularity of cremation has helped reduce some of the pressure on existing sites, the burial grounds in the city of London have an average of 4% capacity remaining and an average predicted operational lifespan of twelve years (Ministry of Justice, 2007). This study was designed simply to provide a snapshot of the current state of burial grounds in England and Wales; it does not offer suggestion on how burials will be dealt with in future but does underscore the somewhat dire situation in England's most heavily populated areas. This situation has become so extreme that in May of 2011 a BBC News story outlined current practices for managing new burials, including a "lift and deepen" policy for doubling the use of graves and a

rather unfortunate practice called "cramming" which involves removing horticultural features (and sometimes chapels) to provide new burial space; while effective, this is degrading to the historical, cultural and ecological features of affected sites. Dr. Julie Rugg, of the Cemetery Research Group, suggests that returning to the practice of grave reuse which fell out of favour in the Victorian era may be the best solution to this problem (Jones, 2011). A study of this scope and scale has never been undertaken in Canada, where statistics relating to burial grounds are maintained by independent interest groups or in regional archives where the focus is mostly on history and genealogy rather than the cemeteries themselves. Records of existing capacity and maintenance costs are kept by municipalities responsible for cemeteries, but this is considered internal information and is not consolidated on a provincial level or generally available to the public.

In light of this future need, current cemetery planning and design has the potential to redefine how cemetery land is used and perceived by surrounding communities. Existing sites may be appreciated for their historical value, but are costly to maintain once they reach capacity, are closed to burials and no longer generate income (Basmajian & Coutts, 2010; Woodthorpe, 2011). When new cemeteries are established, the importance of maximizing profit on a long-term business strategy is reflected in high capacity designs that may fall short of ecological, social or aesthetic ideals (Francis et al., 2000).

2.3.2 Multi-Use Sites

When choosing a site, it should be recognized that surrounding land uses will change much more rapidly than the interior of the cemetery. The lifespan of a cemetery far exceeds that of its surrounding land use, leading to a changing relationship between the two over time. Cemeteries tend to go through a series of stages, from active use (burials), to passive use

(visitors) and finally to the possibility of neglect or irrelevance (Harvey, 2006). By including

infrastructure for secondary uses in the initial design, some of which may not come into effect

until after the cemetery is no longer actively used as a burial ground, this decline can be avoided.

In urbanized areas, cemeteries are open greenspaces which provide a break in the built

environment and can be adapted to alternative uses, most likely including passive recreation such

as walking or running; the establishment of walking paths, arboreta, naturalized areas or habitat

within the confines of socially acceptable aesthetics can be part of initial phasing (Basmajian &

Coutts, 2010; Harvey, 2006). If a cemetery site provides benefits to and is used by the

surrounding community, instead of being considered a detracting feature, any strategies used to

maintain or increase the site's ecological value may benefit from this appreciation (Herringshaw,

Thompson & Stewart, 2010; Nassauer, 2012).

2.4 The Ecological Role of Cemeteries

2.4.1 Biodiversity

Biodiversity can be defined as the total variety of life and its processes, which includes

interactions between the living and non-living elements of a natural system, as well as the

patterns created by these interactions (Ahern, Leduc & York, 2006; Peck, 1998). It is important

to recognize that landscapes are continually changing due to natural processes and disturbances

that occur over various spatial and temporal scales, and that most people who are interested in

biodiversity preservation or management are referring to specific impacts created by human

modification of a particular landscape (Peck, 1998). Cemeteries are important for the

maintenance of local biodiversity as they provide areas of open greenspace that is minimally

disturbed over long periods of time. In some cases, cemeteries contain remnants of the native

landscape (such as tallgrass prairie or oak savannah) and mature trees and shrubs, although these

features are often limited to sites that are more than a century old. Modern cemetery sites are

extensively planned and reflect changes in horticultural trends and economics (Barrett & Barrett,

2001). This diversity in existing cemetery design provides a large range of possible habitat types

within and between sites, which has been shown to be an important factor in increasing

biodiversity (Farinha-Marques, Lameiras, Fernandes, Silva & Guilherme, 2011).

2.4.2 Landscape Systems and Connectivity

With the exception of pristine environments, those interested in providing resources for

desirable species must often do so within the confines of habitat fragments that are being used

simultaneously for economic or cultural purposes (Sanderson, Redford, Vedder, Coppolillo &

Ward, 2002). The management of habitat and natural systems can be difficult when

environmentally-significant features span properties held by multiple individuals or

municipalities. Additionally, the continual shift of land use over time can lead to changes in

landscape structure and function which may or may not meet future societal and environmental

requirements; the permanent nature of cemeteries is, in part, what makes them so valuable when

developing large-scale greenspace management strategies (Barrett & Barrett, 2001; Forsyth &

Mussachio, 2005; Nassauer, 2012; Saunders, Hobbs & Margules, 1991). Awareness of this

eventuality is necessary to develop a long term plan that will mitigate these changes and help

protect essential ecosystem services and their associated natural communities. By taking social,

economic and ecological aspects of a landscape into account when developing a management

strategy, decisions can be based on known interactions and linkages. A clear plan of how and

when to implement connectivity-based management activities provides a basis for the

development of innovative design that benefits all inhabitants of urban and suburban

environments (Huber, Shilling, Thorne & Greco, 2012; Nassauer, 2012; Pickett et al., 2001; Sanderson et al., 2002).

2.4.3 Habitat Provision

Extensive information regarding the preservation, protection and creation of habitat is available, provided by both public and private agencies. Many of these publications, such as the Significant Wildlife Habitat Technical Guide (which supports and elaborates on natural heritage policy outlined in the Provincial Policy Statement), are dedicated to the provision or maintenance of specialized or rare habitats. The importance of urban greenspace and its potential ecological value is also extensively outlined in the literature. Most information provided is presented from a strictly ecological perspective, and there is little information specifically dedicated to the creation of habitat within the cultural context of a site; despite this, cemeteries are often mentioned as open space suitable for habitat creation projects (Barrett & Barrett, 2001; Daigle & Havinga, 1996; Lovell & Johnston, 2009). The principle of using design elements that have both a cultural and ecological purpose is well established, and there are many examples of this including bioswales, hedgerows and grey water cycling systems (Stitt, 1999; Yeang, 2006). A mature cemetery landscape, like that of parks and some golf courses, very often includes plantings and natural design features that are comparable to habitat types such as meadows, woodlands and various types of edges which support a variety of plant and animal species (Cooper, 1995; Cornell et al., 2011; Ruch, Torke, Badger & Rothrock, 2010). On more urbanized or intensely managed sites there is an opportunity to develop habitat at a smaller scale, such as the inclusion of plants valuable to native pollinators in a more formal garden layout, which may be less affected by overall fragmentation of the landscape (Williams & Winfree, 2013). Each cemetery will have limitations on the size and type of habitat it can support based on the location

and size of the site, but every cemetery has the potential to provide habitat for a considerable number of species with the proper evaluation and initiative.

2.4.4 Importance of Aesthetics

For many, there is a very distinct difference between 'nature' and 'naturalization'- the former being associated with the observation and enjoyment of the qualities of a landscape, and the latter evoking images of wildness and disarray (Forsyth & Musacchio, 2005; Nassauer, 1995). These cultural constructs have profound implications for conservation, ecological systems management and landscape design, and can lead to conflict amongst those who interpret the meaning and value of a landscape in different ways (Herringshaw et al., 2010; Nassauer, 2012; Pickett et al., 2001). As much as people may care about the ecological value of their environment, its importance does not often surpass that of the expected aesthetic (Nassauer, 1995). With this is mind, it is entirely possible to design a landscape that will provide ecosystem and species-specific benefits while still having a manicured appearance (Tallamy, 2009). As Nassauer (1995) points out, the cultural importance of neatness and 'cues to human care' should not be underestimated, especially when the relationship between landscape appearance and function is not always apparent upon first glance. When discussing cemetery design, what is considered an acceptable landscape aesthetic becomes increasingly complex due to the emotional importance attached to these sites.

2.5 Summary

While cemeteries are designed primarily to satisfy cultural requirements, there is an additional opportunity to create long-term ecological value on these sites. The current cemetery aesthetic, though relatively new in historical terms, represents a style of memorialisation that has

been accepted in North America for several generations. Land use designations and a cultural distaste for disturbing burial sites ensures that cemeteries represent a permanent memorial to those interred there. The cultural expectations of a cemetery site are the driving factors for current design and management strategies, with the by-product of these expectations resulting in open greenspace that has value to both the surrounding community and wildlife. An attentive approach to cemetery design that accords equal importance to both the cultural and ecological uses of the land will ensure the long term success of cemetery sites and enhance their contribution to the communities they serve.

Chapter 3: Methodology

Key informant interviews are a standard research method used in disciplines such as anthropology, sociology and psychology where it is necessary to collect qualitative data based on the experiences and opinions of individuals (DiCicco-Bloom & Crabtree, 2006; Marshall, 1996). When used in landscape architectural research, the key informant interview can be used as a tool to collect information which will then be used in a multidisciplinary design approach (Deming & Swaffield, 2011). This approach is applicable to the study of the ecological value of cemeteries in southern Ontario as the literature provides little information relating directly to this topic; in-depth analysis of site conditions is limited to individual cemeteries that are particularly well known, though even then the focus is usually on the cultural and historical features of the cemetery. The value of natural features on cemetery sites is recognized, but there is little information on how these features could be improved or enhanced within the context of a traditional memorial aesthetic. Key informant interviews were used in this study to collect information based on professional experience related to the funerary industry and the practical application of ecological principles to cemetery sites in order to help fill these gaps in the literature and narrow the scope of the study area to southern Ontario.

3.1 Questionnaire Development

Data collected in this study was based on themes from the literature deemed to be significant to ecologically-sensitive cemetery design. Following the selection of four professions (landscape architect, cemetery manager, planner, ecologist) who were determined to be able to provide insight into the current state of cemetery design and management in southern Ontario, a set of questions for each profession was developed that reflected the aspects of each theme an informant from a particular profession would be able to answer (see Appendix 1). Each set of

questions was designed to ask at least one question relating to each theme, and each interviewee was asked the same set of questions as others in the same profession. The results of these informant interviews provided the bulk of the data analyzed for this study. When the opportunity arose to contact individuals with experience in implementing ecological interventions (such as habitat creation) on cemetery sites, a specific set of questions was developed for these informants in order to answer questions related to a site specific context (see Appendix 2). The results of these informant interviews provided data that was used to provide specific examples for the development of design guidelines.

Following the completion of the informant interviews, data was organized and then summarized according to theme. Analysis of data fitting each theme was done by making comparisons between information in the literature and responses provided by interviewees. Additional themes that were made apparent by reviewing interview responses were also presented and analyzed. Topics that required further consideration or elaboration were outlined in the discussion. Guidelines for enhancing the ecological value of cemeteries were derived by considering how the outcome of the results, analysis and discussion could be applied in the context of on-site cemetery layout and design.

3.2 Key Informants

Key informants from each profession were selected based on information regarding professional experience outlined in public forums (professional websites and publications), references from professional contacts and accessibility by the researcher. Selection of key informants was also based on diversity of experience and professional focus, with the goal being to increase the potential of various perspectives in interview responses on which factors most

influence current cemetery design and management. A summary of the professional qualifications and focus of the informants interviewed is as follows:

- Landscape Architect 1 is the principal of a landscape architecture firm that specializes in cemetery master planning and design.

- Landscape Architect 2 is an independent landscape architect with experience in the design of 'green burial' sites.

- Cemetery Manager 1 has over thirty years experience as the on-site manager of a not-for-profit memorial park, and was also treasurer for the site during the majority of this time.

- Cemetery Manager 2 is the supervisor of several municipally-owned cemeteries.

- Planners 1 and 2 are the principal and planner at a firm with experience as both project lead and consultant in the planning and development of cemetery sites.

- Ecologist 1 is an associate professor whose research is focused on understanding and assessing the ecological value of landscapes, particularly as this relates to the movement of bird and amphibian species in urban areas.

- Site Specific Informant 1 is a field botanist and landscape designer who specializes in creating native plant gardens and implementing naturalization projects.

- Site Specific Informant 2 is an MLA graduate employed by a conservation authority who has offered advice to urban cemetery owners on increasing habitat and preserving existing natural features on their sites.

3.3 Interview Protocol

Contact was made with potential informants by email, providing a brief summary of the study and asking if they were willing to participate. Upon confirmation of interest in participation, follow-up emails were used to organize interview time and location. Informants

were provided with the set of interview questions appropriate to their profession at least one week prior to meeting in person.

Interviews were designed to be completed within one hour, with the interviewer going through the list of questions and recording the answers by hand while the interviewee spoke. Interview data was transcribed by the researcher as soon as possible following each interview to fill in context and complete notes where necessary.
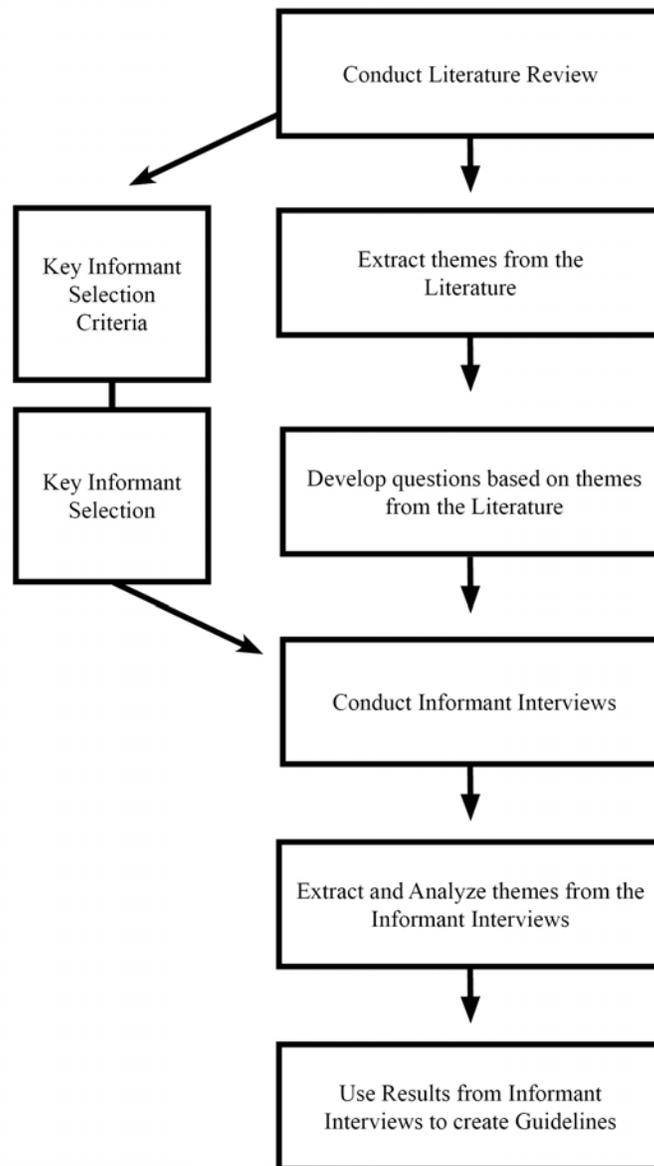
Figure 2: Research Approach - Methodology Flow Chart

Chapter 4: Results and Analysis

Data collected from the informant interviews were compiled and organized into categories according to the following eight themes derived from the literature: Policy, Connectivity, Trend, Permanence, Perception and Cultural Expectations, Multi-Use Sites, Valuable and Natural Elements and Aesthetics. An additional two themes were derived from the results of the informant interviews, Maintenance and Funding and Site-specific Suggestions for Habitat Creation, for a total of ten themes being considered. In this section results are summarized by theme, and each summary is followed by an analysis based on comparisons of data from the literature with that provided by industry professionals. Similarities and discrepancies are outlined, as well as how the existing conditions revealed by these findings might influence the how the ecological value of cemeteries is enhanced.

4.1 Theme: Policy

4.1.1 Results

Interview responses reveal that there is a significant lack of legislation in place that would provide guidelines for the planning, development and management of cemetery sites in Ontario. Cemetery land use designations vary between municipalities, ranging from institutional to private or open greenspace. Ontario's Provincial Policy Statement (PPS) does not provide any guidance on this matter, which may be because the focus of the PPS is a twenty-year planning horizon, far less than the minimum hundred-year planning horizon required for cemetery sites. Each municipality is responsible for developing its own cemetery planning policies, an approach that has not been effective (see 2.2.1 Land Use Planning). An interviewee points out that this situation is further complicated by the fact that many municipalities have little experience

managing the development of new cemeteries, as most cemeteries under municipal control were established over a century ago. As these older sites fill up and populations continue to grow, many municipalities may not have the expertise (or precedents available) to make effective planning decisions.

The result of this lack of guidance at the provincial and municipal level is that the management of cemetery sites is mostly accomplished through cemetery by-laws. Cemeteries are still required to comply with various other pieces of legislation that manage aspects of greenspace design including setbacks from roads, waterways and environmentally sensitive areas. Of particular note, the use of pesticides for turf management is no longer permitted on cemetery sites.

4.1.2 Analysis

Results from informant interviews, which demonstrate problems associated with a lack of efficient policy development, are supportive of what is revealed in the literature and outline the consequences of failing to adequately plan cemetery development and long term management (Basmajian & Coutts, 2010; Canning & Szmigin, 2010; Francis et al., 2000; Larkin, 2011). Discussing Ontario's current policies with professionals who are required to make use of them on a regular basis offers insight into the difficulties associated with incomplete legislation. The cemetery industry is currently self-regulating, which allows professionals to implement effective management plans at the site level. However, the lack of regional planning and cursory government oversight means that it is very difficult for a municipality to keep track of existing capacity other than its own sites. At a larger scale, lack of guidance from the province in terms of best practices for cemetery development makes it difficult to ensure that cemeteries end up in the most reasonable locations to avoid conflict with future development and contribute to the

existing greenspace network. It should be noted at this point that it is difficult to find a municipal, provincial or federal government (in Canada or otherwise) that has a comprehensive plan for managing cemetery land designation on a large scale; most documents outline intensive planning and master plans done for significant sites on a case-by-case basis or general cemetery management policies for a region. It seems odd that there is such limited legislation regarding a substantially large and permanent land use, although it would be reasonable to estimate that this may be due to the fact that those responsible for creating this legislation have more pressing, short term goals to accomplish.

The continued availability of land in most areas may also preclude serious consideration of provincially legislated cemetery planning, although with the rate of urbanization occurring in southern Ontario it would not be surprising if some of the most densely-populated areas eventually end up with cemetery capacity issues similar to those that have become prominent in Europe (see 2.3.1 Cemetery Planning). While there may not be a pressing need in Ontario to begin the reuse of graves, as is being conducted in London, England, for some municipalities it may be worth collecting information on existing capacity as well as likely public preference for a final resting place (which could be based on pre-use plot sales or extrapolating cremation rates) in order to better project what cemetery services will be necessary in future. Inadequate guidance regarding the planning and long term management of cemeteries has several significant implications for the long term cultural and ecological success of these sites; these elements will be discussed in further detail throughout the Results and Analysis section.

4.2 Theme: Connectivity

4.2.1 Results

Interview responses reveal that the location of new cemetery sites is determined by land availability and development constraints. Cemeteries are compatible with virtually all surrounding land uses and, as permits allow, can be established wherever a property of suitable size and affordability is available. There is a preference for sites with a geology and soil type that allows for the most efficient land use, but the spatial relationship to the intended market is potentially a more important consideration as this can determine the financial success of the cemetery. The proximity of a new cemetery location to existing greenspace networks in order to promote wildlife movement is not a typical planning consideration, although on-site design is generally influenced by surrounding land uses and existing site conditions such as topography, depth of the water table and vegetation.

The presence of wildlife in cemeteries is very common, and it is not unusual to observe larger animals such as deer, fox and coyote in the center of cities. Limited by roadways and dense urbanization, these animals are dependent on landscape corridors to provide access to cemetery sites. Birds are not subject to these constraints and are able to move easily throughout the landscape, although one interviewee points out that a large percentage of birds in urban areas are exotic generalists (such as sparrows and starlings) and suggests that the provision of mixed habitat would help exclude some of these edge species while providing resources for native birds.

4.2.2 Analysis

Results from informant interviews demonstrate a discrepancy between cemetery planning strategies in southern Ontario and evidence from the literature advocating landscape connectivity

(Pickett et al., 2001; Sanderson et al., 2002). As previously discussed, at the provincial level there is currently no legislation in place to regulate or inform where cemeteries should be established, the consequences of which are reflected in the tendency to select sites based primarily on the cost of land. The literature suggests that ecological benefit planning is most effective when applied consistently throughout a region during the initial phasing of various types of projects (Farinha-Marques et al., 2011; Huber et al., 2012). This is important when considering cemeteries as, in the traditional form, they seem to develop a high ecological value as evidenced by the prevalence of various wildlife species already found on these sites. While it is encouraging to hear that cemetery designers and managers often attempt to preserve natural aspects of a particular cemetery, a significant opportunity is missed when a site is not selected with the connection to surrounding greenspace networks, effects of future urbanization and the development of probable natural heritage value in mind.

4.3 Theme: Trend

4.3.1 Results

Interview responses reveal that cemetery design and management are continuously adapting to changing cultural expectations while remaining reliant on historical precedents for guidance. Cemetery services in Ontario are generally provided by the private sector, with municipalities taking a secondary role due to concerns regarding cost and liability. Most new cemetery sites are developed in semi-rural areas on previously agricultural land, are established based on facility need (due to population growth), and tend to reflect the traditional romantic landscape aesthetic. Both landscape architects interviewed emphasized the importance of

efficient planning when developing cemetery sites, and observed that negotiating concessions with the client and legislative bodies is critical to ensuring a successful long term plan.

Daily maintenance activities of a cemetery site are taken care of by a grounds crew which is overseen by a cemetery manager, who is also responsible for such tasks as hiring and budgeting. Both cemetery managers interviewed commented on the increased popularity of cremation, but suggest that in-ground burials will always be requested. There has also been an increase in the number of native tree species being used to replace existing trees as they die off. The preference for native trees over horticultural varieties is being driven by visitor request as well as management initiative.

4.3.2 Analysis

Results from informant interviews and the literature are somewhat complementary, with the literature outlining regional trends (such as the effect of an increasingly mobile population on cemetery planning and a preference for cremation) and the informant interviews providing insight into trends at a local scale (Basmajian & Coutts, 2010; Coutts et al., 2011). Trends in many businesses are driven by the consumer, which seems to be similar to how trends in memorial and cemetery design are determined, albeit over a much longer timeframe; an example of this is the increased popularity of highly personalized headstones which can deviate widely from the standard rectangular stone decorated with religious iconography, and may include custom sculpture or references to hobbies or pets. Conversely, choices available to those using cemetery services are limited to what a relatively small number of suppliers provide.

The acceptance of alternative disposal types and commemorative styles is a slow process due to cultural limitations, but it may be worth considering the conscious development of trends

that can provide a greater benefit for either cemetery visitors, site management or the community at large.

4.4 Theme: Permanence

4.4.1 Results

Interview responses reveal that the notion of 'permanence' is a cultural construct that is subject to highly variable personal interpretation. In North America it is not considered culturally acceptable to move graves, as they are expected to remain 'in perpetuity'. One interviewee points out that, in reality, it is very difficult to guarantee that records will remain intact and individual memorials undisturbed over such an extended period of time. Another interviewee suggests that the permanence of individually-marked graves is not of great concern, as recognition of the memorial landscape serves a similar purpose and will provide 'perpetual' commemoration as long as the site remains undeveloped for other purposes. This opinion, though logical, is contrary to the experiences of cemetery managers, who often encounter individuals who are under the impression they have acquired ownership of a parcel of land in a cemetery (not simply purchased the interment rights to a plot) or make requests for a memorial stone to be situated exactly over a burial rather than at the head of the grave. Personal preferences aside, the permanence of a cemetery site is far more likely than that of an individual grave. Cemeteries are managed based on a twenty- to forty-year business plan and many remain active for over a century, but will eventually reach capacity and become inactive. Over time the landowners may relinquish their property rights, at which point the municipality becomes legally obligated to accept responsibility for the site. Many burial sites currently under municipal control are pioneer or family cemeteries, and have often suffered from neglect prior to becoming municipal property. Collecting broken headstones, which are then combined into a single concrete monument, is a

very common solution to help streamline site maintenance and protect the memorials from further damage.

4.4.2 Analysis

Results from informant interviews and the literature are complementary, demonstrating that cultural reverence is as important as the presence of burials for ensuring the permanence of cemetery sites (Pitte, 2004; Rugg, 2000). Permanent memorials are a reflection of the human need to maintain the presence, at least figuratively, of the deceased (Petersson & Wingren, 2011). Once the monument is installed, however, it is a very common trend in western cemeteries for visitors to stop attending individual plots after a few years (Bachelor, 2007). This dichotomy does not seem to preclude the necessity of a physical monument as mourners often require some token of individuality, most often at the beginning of the grieving process.

The expectation of perpetuity has become increasingly realistic, as sites developed today are more likely to remain open greenspace well beyond their active years due to both their larger size, archived records and modern legislation protecting burial sites against disturbance. This will provide long term benefit from both an ecological and cultural perspective, as well as satisfying existing directives in the Provincial Policy Statement relating to natural heritage and cultural heritage landscape preservation. The challenge is to ensure that new cemeteries are able to transition from active burial and memorialisation to a more passive use over time; while cemetery land is not at risk for being redeveloped, considering the long term ecological and cultural value of these sites should be part of the planning process.

4.5 Theme: Perception and Cultural Expectations

<u>4.5.1 Results</u>

Interview responses reveal that many varying personal opinions exist within the strong cultural expectations associated with cemetery sites. Visitors expect sites to be neat and orderly, with well maintained lawns and gardens. Many people have a sense of ownership that extends beyond individual family plots to the site as a whole, to the point that some feel the need to be consulted on matters related to general site maintenance such as re-sodding and roadwork. Personal attachment to a cemetery can also be expressed through contributions that enhance the entire site, such as memorial trees or gardens. Visitors' sense of ownership can also lead to circumstances that are contrary to management goals, such as the removal of plants from site gardens; while some flowers are relocated to individual plots, many disappear completely from the cemetery.

Both cemetery managers and landscape architects interviewed suggested that memorialisation is rarely driven by cost, but rather by how well a memorial represents an individual. One cemetery manager offered an anecdote about a lady who wished to contribute a memorial tree to the cemetery, but was not impressed by the species planted (hackberry) as it "did not represent her father"; a compromise was reached by planting an additional tree that she found more suitable. Personal connection to a cemetery can also be made through indirect associations, such as the site's proximity to a familiar landmark or the planting of a favourite flower from the decedent's garden at the site, which helps maintain a connection as families are increasingly moving between communities.

Cultural expectations surrounding cemeteries can also be based on negative associations. When new cemeteries are established, concerns about the water table, as well as misconceptions

about the environmental impact of the site, are common. Many people are uncomfortable in cemeteries or do not like having to pass by them on a daily basis. In order to compensate for some of these perceptions the term 'memorial park' can be used instead of 'cemetery', as the former has less negative connotations.

4.5.2 Analysis

Results from informant interviews suggest that personal associations with the physical characteristics of a cemetery may be as important as an emotional connection to the site. The few assumptions made about what a cemetery 'should' look like are often associated with traditional values, and may help individuals compartmentalize their grief (Pitte, 2004; Rugg, 2000). As most people have experience with traditional cemetery sites, it is logical that they would tend to expect similar features when new sites are developed.

While it is completely reasonable to move beyond traditional designs, the focus must remain on a style of commemoration that is identifiable to users. The combination of cultural relevance and aspects of the environment that can be manipulated by visitors to strengthen a personal connection to the site is important to consider when outlining phasing and management plans for a cemetery. Ensuring that the ritual needs of users are accommodated may make the implementation of a secondary site focus such as habitat development much simpler, and promotion of the cemetery for reasons unrelated to memorialisation or burial might create a more positive perception among those who are more likely to form a connection with the site for environmental rather than cultural reasons.

4.6 Theme: Multi-Use Sites

<u>4.6.1 Results</u>

All interviewees were of the opinion that alternative activities are permissible on cemetery sites, as long as those activities are respectful of the site and its primary use as a memorial. Cemeteries are generally accessible to the public, whether they are managed by public or private landowners. Visitors are generally permitted on the site from dawn until dusk and, with the exception of some religiously dedicated sites, gates are left unlocked at all times. All interviewees emphasized that the presence of visitors at the site acts as a deterrent to vandalism and loitering. Additionally, one cemetery manager suggests that cemeteries are mainly serving the needs of the living, and so should be accessible at all times to those who wish to visit or mourn.

The range of alternative activities compatible with cemeteries is extensive, and is largely a reflection of the park-like environment of many sites. Passive activities that are encouraged include dog walking, jogging, cycling, photography, painting and the appreciation of gardens and wildlife. Special interest groups are also welcomed at cemetery sites, such as arborist clubs touring the native trees or historians taking rubbings from memorials. In some cases, alternative activities are actively planned by cemetery management, and may include such events as theatrical re-enactments of historical figures buried at the site or permitting the filming of movies. Individuals undertaking activities on site that are not permitted, including off-leash animals and sports, are addressed on a case-by-case basis. Landscape architects interviewed suggested that while many cemeteries established years ago were not necessarily intended as multiuse sites, increasing urbanization and the pleasant landscape of many cemeteries led them to become popular recreation spots for communities with limited greenspace. New cemeteries

are increasingly designed with the understanding that the site will be used for passive recreation as well as ritual activities, and may provide enhanced site features (such as walking paths and additional parking) for this purpose.

4.6.1 Analysis

Results from informant interviews and the literature are mostly compatible, in that both recognize the importance of permitting (and often encouraging) alternative activities on cemetery sites (Basmajian & Coutts, 2010; Harvey, 2006; Petersson & Wingren, 2011; Woodthrope, 2011). There are, however, discrepancies relating to the 'popularity' of cemeteries and the types of activities undertaken on-site. Both Woodthrope (2011) and Harvey (2006) lament the relative lack of interest the public has in some cemetery sites, and the difficulties in negotiating 'appropriate' alternative uses for both active and inactive sites. However, based on accounts from cemetery managers interviewed, it would seem that visitors engaged in passive recreation activities are very common when cemeteries are located in urbanized areas and users are not disturbed while using the site in a respectful manner. Many established organizations which use cemetery property on a regular basis (such as historical or bird-watching groups) have a friendly relationship with cemetery management and may serve an additional function by preserving the cultural and ecological value of the site through either stewardship programs or active promotion of their activities. This may be a Canadian phenomenon (the comparative studies were conducted in England and the USA, respectively), but the general impression is that the value of having visitors on the site far outweighs any minor conflicts that may occur.

Additionally, the literature does not reflect the diversity of alternative activities that may occur on cemetery sites. This may be a result of the broad scope taken by researchers, or the secondary focus on alternative uses (Basmajian & Coutts, 2010). A discrepancy based on the

lack of in-depth research is likely, as it is evident from the informant interviews that there is significant knowledge in the funerary industry that has not been translated to academics.

4.7 Theme: Valuable and Natural Elements

4.7.1 Results

Interview responses reveal that cemetery visitors are equally attracted to the historical and ecological features of a site, depending on personal interest. The most prominent site features are usually man-made, including gardens and monuments, but large trees, natural areas and viewsheds are often favourite stops for visitors. It is common to find trees in cemeteries dating back to the original establishment of historic sites, as they generally have a longer lifespan than others growing in urban areas. Landscape architects interviewed also suggest that saving existing features when developing a new site is important; it is often possible to negotiate saving an area with high ecological value, such as a woodlot, by encroaching on one that is less important. Development on a new cemetery site can be impeded by many restrictions, and it is up to the designer to negotiate with the client, various government authorities and other parties that may be involved. It is not unheard of for less scrupulous developers to level a site prior to entering the planning phase, as this will limit the scope of discussions regarding environmental impact and discourage the establishment of endangered species that may affect possible future development on the site.

4.7.2 Analysis

Responses from the informant interviews are complementary to the literature, indicating that while natural elements on cemetery sites are considered valuable, they are secondary to the creation of a site plan and the installation of features that address cultural requirements (Barrett

& Barrett, 2001; Zielinksi, 1991). Case studies in the literature generally focus on the cultural importance of a site, though often mention natural features as pleasant but unintended (Francis et al., 2005; Harvey, 2006). The negotiations of landscape architects regarding existing site features help mitigate community opposition to natural areas being disturbed and give the finished design a more 'mature' aesthetic by preserving vegetation which is difficult to regenerate in a short period of time. As one interviewee pointed out, any opportunity to create mixed habitat should not be overlooked as it is a significant contributor to biodiversity. This situation illustrates one of the unique challenges when dealing with cemetery design: while most other development types are comparatively short term and it is expected that a project will be installed and 'finished' within a predictable timeframe, it is not unreasonable to suggest that a cemetery might not be at its aesthetic peak or nearing capacity for upwards of a century. In terms of natural heritage, the changes the cemetery undergoes during this timeframe could result in a series of very different but equally relevant ecological functions and benefits. Many authors outline the benefits associated with greenspace planning, biodiversity and habitat connectivity, but there are limited suggestions on how to implement or measure the success of these ideals in an existing system where development is driven mostly by economics (Farinha-Marques et al., 2011; Peck, 1998; Pickett et al., 2001; Sanderson et al., 2002). Cemetery sites may offer an opportunity in this regard, as their permanent land use designation would be complementary to the establishment of long-term ecological studies.

4.8 Theme: Aesthetics

4.8.1 Results

Interview responses reveal that the impression that a site is being cared for is more significant than any particular design feature. The layout of many older cemetery sites evolved

haphazardly, with expansions and new sections developed as needed. New cemetery designs are created using a complete design process, including site analysis, concept designs and a master plan which often includes phasing for the entire site, even if the plans will not be fully implemented for several years. The design of a cemetery often responds to surrounding land uses, and there may be a cultural preference for developing site features and viewsheds in a particular area. Different cultural groups often have very particular ideas about what types of features should be included in a cemetery. An interviewee offers an anecdote concerning issues relating to the establishment of a native flower garden in a cemetery with a traditional clientele; although the plantings were neat and well cared for, the use of horticultural ornamentals was seen by some as more appropriate for a cemetery setting as the commemorative value was seen to be higher with formal, familiar plantings than less known and wilder-looking native plants. To help mitigate this difference of opinion, mowing around the edges of wildflower gardens to preserve the boundary between formal and informal became necessary. Visitors are generally more accepting of semi-formal plantings in less travelled areas of the site, but require plantings in the entrance and the main commemorative areas to be much more formal; this does not seem to apply to non-living design elements, as rough hewn boulders are extremely popular. Trees are not generally subject to the same prejudices as perennials but are still required to be well trimmed, even if this is against the natural growth habit of the plant.

4.8.2 Analysis

Results of informant interviews are completely in accordance with the literature, and provide evidence of the importance of cues to care (Forsyth & Musacchio, 2005; Nassauer, 1995). The need for a site to be well maintained and cared for is increased once it becomes a memorial; site features that would be perfectly acceptable and encouraged in parks can become

contentious in more prescribed settings. Awareness of cultural expectations is likely one of the biggest challenges faced by someone intending to base a cemetery design around the use of native plants; luckily authors such as Tallamy (2009) offer many suggestions on appropriate species selection. Consideration of other factors including maintenance requirements may result in a short list of plants acceptable in the formal and informal areas of the site, with some relegated permanently to back corners.

4.9 Theme: Maintenance and Funding

4.9.1 Results

Interview responses reveal that the costs associated with cemetery sites play a significant role in dictating how issues relating to general maintenance, design elements and implementing phasing are addressed. Lawns represent the largest part of a cemetery maintenance budget, due to both the scale of some sites and the cost of labour. It takes twice as long to cut the lawn of a cemetery compared to that of a similar size park; care must be taken not to damage monuments with equipment, and a second pass is usually needed to trim around stones. For many larger sites, this means that lawn maintenance of various sections is on a continuous one week rotation. Inactive sites are mowed less often, but still require regular site checks and maintenance of fences and monuments. Cemetery managers interviewed were in agreement that while they initially felt that the pesticide ban could make maintaining lawns more difficult, the elimination of the cost associated with purchasing pesticide products has proven beneficial. Complaints about weeds in the lawn are also more easily addressed as there is no longer room for discussion (complaints were also made before the ban was implemented), though some visitors have taken to removing the weeds on individual plots by hand. The regular use of heavy machinery for both site maintenance and burials leads to compaction of the soil, damaging turf and making it more

susceptible to drought, as cemetery sites are not generally irrigated. The selection of hardy, drought- tolerant grass species can help mitigate some of these issues, but it is difficult to carry out more involved lawn maintenance practices such as topdressing. Despite these difficulties, the lawn remains a necessary feature of cemetery sites as it allows easy access to plots for both visitors and maintenance.

 The issue of compaction can also affect tree roots, and trees near roads or maintenance access routes tend not to reach their full lifespan. Planting trees only in areas that are minimally used, such as borders of sections, can help minimize this problem. While trees are necessary to the aesthetic of cemetery sites, they can also be a safety hazard if not properly maintained. One cemetery manager points out that a single well-established tree can potentially occupy up to $50,000 of saleable plot space due to its root mass, or cause monuments to shift as it grows beneath them; as a result, selecting locations for new trees should be done with discretion.

In addition to completing daily maintenance tasks, cemetery managers interviewed suggest that regular preventative maintenance is the best way to avoid long term problems. For example, vandals tend to push over stones that are already loose, so pre-emptively checking stones and replacing putty as needed (every 15 to 20 years) can prevent large costs and hassle. While cemetery by-laws enforce site requirements, seasonal clean-ups of faded wreaths and other tokens help maintain a neat appearance and minimize the dumping of unwanted plant material into cemetery gardens or natural areas in the spring. It is important that the cemetery stays presentable, not only out of respect, but also because plots are more likely to sell in a site that looks well cared for.

The main issues associated with cemetery funding are cash flow and inflation. Funding for site maintenance can come from various sources depending on the particular funding model

that is put in place, whether the site is privately or municipally run. Some privately-run sites are financed using investments, while municipal sites are funded through taxes. Both private and municipal cemeteries can generate income through the selling of plots and compulsory contributions to maintenance funds. Additional programs, such as arbour or general beautification funds, can also provide supplemental income. Most plots are purchased pre-need and contributions are made to the maintenance fund simultaneously. While a lump sum payment of $25 would have been a significant amount in 1900, it cannot pay for the perpetual care of the plot. A more common but less drastic example of this situation is that of an individual being buried a decade or more after their spouse. In effect, recent sales are required to pay for the maintenance of older plots and the site as a whole, which becomes a problem when there are no plots left to sell. As municipalities will eventually become responsible for cemetery sites that are not generating income, funding and maintenance will be provided through unrelated income streams.

Changing expectations of a site can also affect how spending is allocated. Given the increased popularity of cremation over the past fifty years, it has become very common to infill existing cemeteries with columbaria. This maintains active use and generates income for the cemetery, as well as uses space on the site that may be unsuitable for in-ground burials. One cemetery manager does offer caution when taking this approach; while a columbarium can hold a significant number of remains, each individual pays far less for a niche than they would for an in-ground burial. Depending on the number of people a columbarium is designed for and how elaborate the surrounding landscaping, it may take more time and effort to maintain the associated gardens and walkways than it would a comparable number of plots, which is less cost effective over time.

Results from informant interviews suggest that while the details of site maintenance are not recorded in the literature, planning at this level is as significant as taking regional and municipal trends into account. When designing a cemetery, considering how site layout might affect the day-to-day workings of the site would assist in simplifying issues related to maintenance and ensure that more complex site features are sustainable over the long term. Lawns and the use of turf-grass have become increasingly demonized by society because of high input requirement and potential environmental impact, but in reality the maintenance of a residential lawn is much different than that of a cemetery. It is interesting that golf courses, as recreational enterprises, are permitted the use of pesticides while permanent memorials are not. The argument for this is likely that golf courses require highly manicured lawns to retain customers and generate income, which again illustrates the difficulty of implementing ecological initiatives in an economy-driven system.

4.10 Theme: Site-specific Suggestions for Habitat Creation

4.10.1 Results

Over the course of the interview process, all interviewees offered suggestions as to how ecological value could be added to a cemetery site through specific site features or management strategies. These suggestions, which have been implemented on existing sites, are summarized in point form below. Some of these suggestions may be worth considering for new designs or cemetery expansion projects based on existing site conditions.

- An ecologist suggests that small groupings of native tree species surrounded by an understory of native perennials represent far greater ecological value than a single native tree in a lawn.

- A dedicated memorial copse provides both cultural benefits and ecological services such as habitat, food and other resources.

- Using undeveloped portions of a large site as a nursery to supply a tree purchase program allows site management to have tighter control over species planted on the site, and also reduces conflicts associated with removing mature trees to implement phasing in future.

- Consulting the local conservation authority to obtain a list of recommended native plant species would simplify this process for cemetery management.

- Collecting and germinating seed from existing heritage trees on site can be used to preserve genetic stock and provide starting material for native plant nurseries serving the cemetery itself or related sites.

- A stormwater pond or infiltration area that is well landscaped can be used to showcase cemetery products such as benches and headstones, as well as reducing the need for this often essential site feature to be hidden.

- Using native shrubs to denote boundaries between sections also provides habitat for birds.

- Bird boxes are very effective in promoting certain species of interest, and can be discreet if necessary.

- Hibernacula can be installed in areas of the site that provide appropriate habitat and are not generally accessible, such as a back woodlot.

- Dry-stone walls provide habitat for various insect species and small mammals.

Interviewees also provided insight into difficulties that can be associated with trying to implement ecological programming on cemetery sites. While these examples may be dependent on specific site conditions, they illustrate some of the challenges associated with habitat creation.

- Many native trees provide nuts and berries which are an excellent food source for animals. However, larger nuts such as walnuts can be flung by mowing equipment and cause safety concerns, and berries can attract large flocks of birds, including non-target species such as starlings.

- While wildlife on cemetery sites is generally accepted, groundhogs can be pests; they create a tripping hazard when digging burrows, and have been known to scatter bones around a site while using historic graves as dens.

- Goldenrod, while a valuable source of pollen, is generally unpopular with the public because of the incorrect association with hay-fever.

4.10.2 Analysis

These results suggest that there is ample opportunity to create or enhance habitat on cemetery sites, whether it is at a large or small scale. However, it may be difficult to locate a particular habitat type and identify the necessary resources needed for a target species, despite the large number of resources that deal specifically with habitat creation in open and urban greenspaces. In this respect, planning to enhance the ecological value of cemeteries may be beyond the scope and ability of designers and land owners. For smaller sites it may not be economically feasible to hire an outside consultant to complete this work, but developing partnerships with conservation authorities or natural stewardship groups more familiar with ecological aspects of the site could be an option. Alternatively, focusing on sites with a previously identified ecological value (as determined by conservation groups or government policy) that can support the long term, low impact development required for cemeteries could help preserve sites that do not contain recognized 'significant' habitat but are still necessary to maintain landscape connectivity and large scale ecological functions. While there are few

publicly documented precedents for the enhancement of ecological value on cemetery sites, results from the informant interviews indicate that there is significant knowledge and interest in ecological development within the funerary industry. With this in mind, speaking to those who are familiar with the qualities of successful established cemeteries may be the most direct method to determine what types of ecological enhancement may be successful in future.

4.11 Summary

While the literature provides background and context for this study, results from the informant interviews suggest that it does not reflect the entirety of factors which currently influence cemeteries and the funerary industry in southern Ontario. Studies relating to the cultural importance of cemeteries are well represented in the literature, as well as those that emphasize the value of natural site features and the theory behind ecological principles. However, results from the informant interviews are more informative in terms of existing policy, cemetery management and previously successful habitat creation initiatives at cemetery sites. The complimentary nature of data from the literature and results from the informant interviews on most occasions suggests that both are equally valuable to the development of guidelines for the practical enhancement of the ecological value of cemeteries in southern Ontario.

Chapter 5: Discussion

Evidence from the literature and informant interviews suggests that the ecological value provided by existing cemeteries in southern Ontario, which are mainly permanent open greenspace and semi-naturalized areas, is the result of historical design precedents rather than deliberate planning. The following discussion is intended to examine some of the finer details and associated implications of the ecological value of cemeteries becoming intentional rather than accidental.

5.1 Site Focus and Planning

Given the potential complexity of the relationship between the many roles of a cemetery, it is important that a balance is found between different functions of the site. Of particular note are the relationships between natural areas and aesthetics, as well as habitat development and maintenance. There are certain issues that commonly arise during the establishment of new natural areas, such as the encroachment of unwanted plant species or the presence of non-target animals; however, these challenges cannot be seen as reason to forgo the inclusion of mixed habitat or other natural elements on a site. As long as it is recognized that resources are required for maintenance over the short term and there is a dedication to preserving valuable site features in future, developing a traditional cemetery that has increased ecological value should be relatively straightforward. When considering the intentional enhancement of the ecological value of cemeteries it should be noted that if new designs and improvements to existing sites are successful, this will further promote the idea of cemeteries as refuges for biodiversity and remembrance. The most detailed, comprehensive plan that maximizes ecological services and habitat but does not address the cultural requirements of the site is a failure in that it will not be used as a precedent for the inclusion of natural elements in other cemeteries. As a result of these

considerations, balancing cost, maintenance requirements and cultural expectations when implementing ecology motivated plans on a cemetery site is essential for long-term success.

5.2 Connectivity

Landscape connectivity is an important consideration when selecting a location for a cemetery, but the emotional connection that visitors make to the site and the surrounding environment is equally important. The concept of 'shades of green', or the degree to which an individual is environmentally conscious, is one that can be easily applied to several funerary services. When a cemetery satisfies the cultural expectations of visitors it is likely they will be much more accepting of the implementation of a secondary ecological focus on the site, and all users would benefit from the sense of place created regardless of interest in environmental issues. The preference for natural elements demonstrated by cemetery visitors should also be noted, as many newly-established cemeteries have minimized site features (such as implementing by-laws requiring flat stones to expedite lawn maintenance) or plantings due to concerns relating to increasing maintenance costs and liability. It is worth reiterating that the memorial landscape and its occupants are interdependent, with both less likely to be recognized without the other. The cultural value attributed to cemetery sites is what allows them to be permanent; working within this framework to provide additional community and ecological services ensures that these sites will stay relevant to those who visit them and allow people to form a connection to the site whether or not they have loved ones interred there.

5.3 Legislation

The lack of guidance at the provincial level for selecting the best locations for cemeteries, as well as inconsistencies in land use designations between municipalities, has the potential to

have the most significant impact on efforts to increase the ecological value of cemeteries at a regional scale. The manner and extent to which legislation guiding where cemetery sites should be developed is beyond the scope of this project, but at the very least there needs to be an acknowledgement that the current system (where cemeteries are presumed to be an urban land use but, due to cost of land, are often located in less than ideal locations) is not particularly effective from either an environmental or long-term planning perspective.

Cemeteries are mentioned briefly in the Provincial Policy Statement (PPS) as potential cultural heritage landscapes, but this reference seems to cover only existing historic sites; the development of new sites is not referred to in the document. To complicate this issue, very few municipalities have a comprehensive plan for the development and long term management of cemeteries they are or will one day be responsible for. Individual cemetery managers or developers may have an interest in increasing the ecological value of a site for various reasons, but this is decided on a site-by-site basis. One solution would be to have the ecological value of cemetery planning acknowledged in the PPS (and related secondary legislation such as the Greenbelt Plan) and have municipalities develop more defined policies relating to cemetery sites, starting with the adoption of a cemetery specific zoning designation; this would help to address land-use specific issues including the promotion of ecological development as well as help to remove cemetery planning from the grey area it currently occupies.

Emphasizing the many beneficial roles of cemeteries may make municipalities more interested in where these sites can and should be located, especially when considering large-scale ecological services (such as water management and habitat development) requiring management over many adjacent areas of open greenspace (such as school yards, parks and agricultural land) which might have different cultural programming.

5.4 Business

  As significant as cemeteries can be for their cultural and ecological value, they are still first and foremost a business that needs to be self regulating and sustainable for an unusually extended period of time. While cemeteries are in the unusual position of being guaranteed assumption by municipalities and financial support should their business model fail, basic plans for capacity and maintenance funding must be met. Unfortunately, least of all for the funeral industry, a formula does not exist to ensure a business is perpetually profitable. A well-designed cemetery can provide other services during its active years which will encourage people who frequent the site to provide support either through taxes, donations or simply attendance once it reaches capacity. In order to make a cemetery as successful as possible, it requires both the right location with a suitable consumer base, and a designer willing to make use of knowledge in the funeral industry and find counterparts who are prepared to experiment and come up with site designs that are as functional, connected and balanced as possible.

5.5 Design

  Attentive and intelligent design is the key to successfully incorporating ecological features into the existing cemetery design aesthetic. Minor additions and modifications can be made to a plan that will greatly enhance the ecological value of the site, but not necessarily detract from the site's primary purpose as a memorial. Basic design principles can be applied to plantings and built features to provide a structured, formal appearance while still providing additional benefits in the form of habitat or other resources. Landscape architects should not feel limited by what may seem to be constraints associated with cemetery sites, but rather appreciate the opportunity to implement a design that has the potential to benefit both people and wildlife for many years to come.

5.6 Summary

The preceding chapter outlines some of the potential opportunities and conflicts that may arise when considering ecological enhancement a secondary focus on cemetery sites. The following chapter presents guidelines which outline how cultural and ecological requirements can be simultaneously addressed.

Chapter 6: Guidelines

The following guidelines represent a summary of evidence provided in the literature and through informant interviews, as well as other circumstances that may play a role in how a cemetery site is selected or designed. These suggestions are by no means a comprehensive list of all the considerations necessary when developing cemetery sites, but will provide at a minimum a starting point for the discussion and promotion of enhancing the ecological value of cemeteries in southern Ontario.

6.1 Connectivity

- Promote connectivity within the regional greenspace network select a site which is in close proximity or adjacent to natural or semi-natural land uses; neighbouring sites which are under municipal, provincial or conservation authority control are more likely to provide long term connectivity to cemetery sites than those that are not.
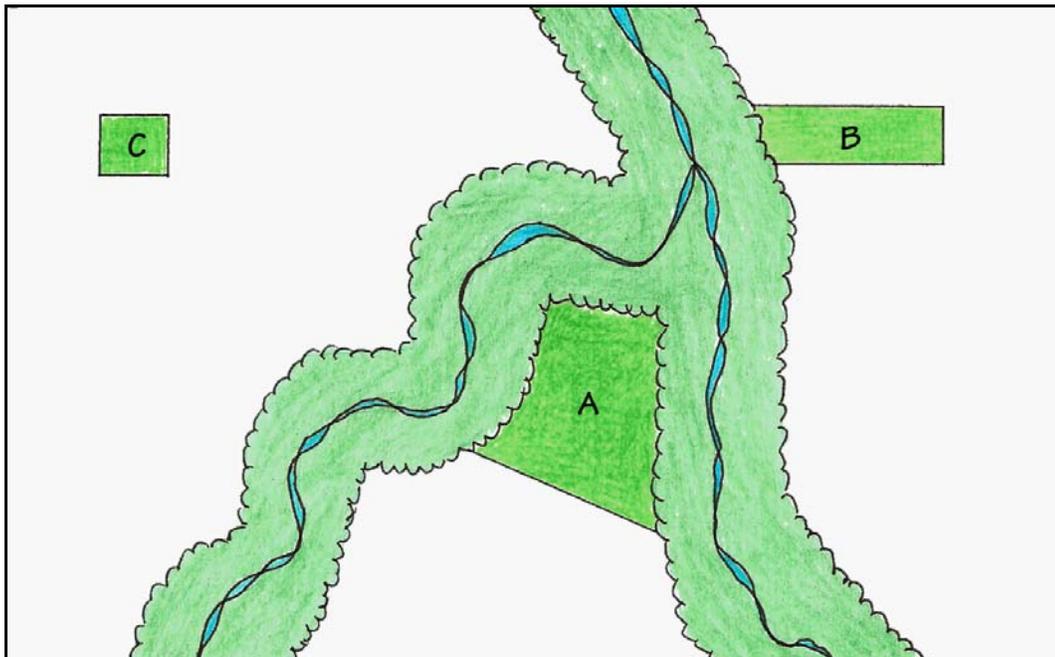
Figure 3: Select a site in proximity to existing natural or semi-natural land uses

- Integrate existing site features into the proposed design as focal points or to further develop sense of place.

- Provide connections to the site through existing trail networks.

- Plantings forming divisions between sections may be able to be linked to border plantings, increasing the opportunity for wildlife to move into the center of the site.
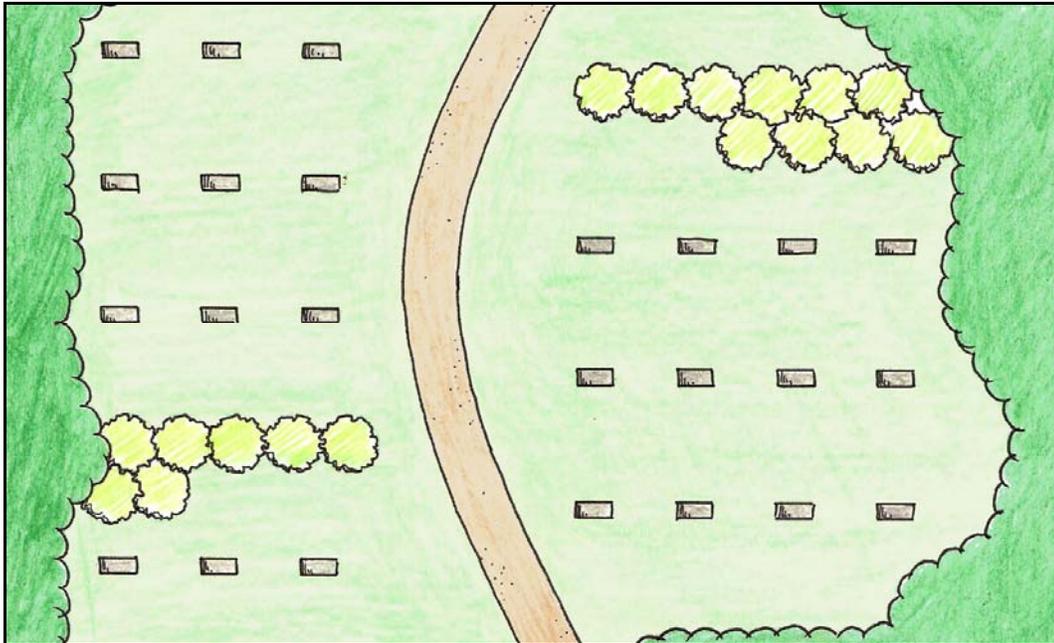

Figure 4: Plantings forming divisions between sections

6.2 Trees and Plantings

- Use mass planting rather than specimen plantings to maximize canopy on the site where appropriate.

- Be judicious in the use of turf, and break up large expanses of lawn with other plantings.

- Keep existing trees to give the site a mature feel before new plantings reach maturity.

- Concentrate trees in areas of the site which do not have in ground burials.

- Include native plant species that may be less aesthetically pleasing in the center of mass plantings or around the edges of the site where they will be less noticeable while still providing resources to wildlife.

- Use native shrubs to create and define boundaries between cemetery sections.

- Create a more formal setting and help create a sense of place for the site or its main focal point by using geometric planting designs.

- Draw trees at full scale on the master plan to better predict their eventual contribution to the site canopy and avoid future conflict between roots and memorial placement.
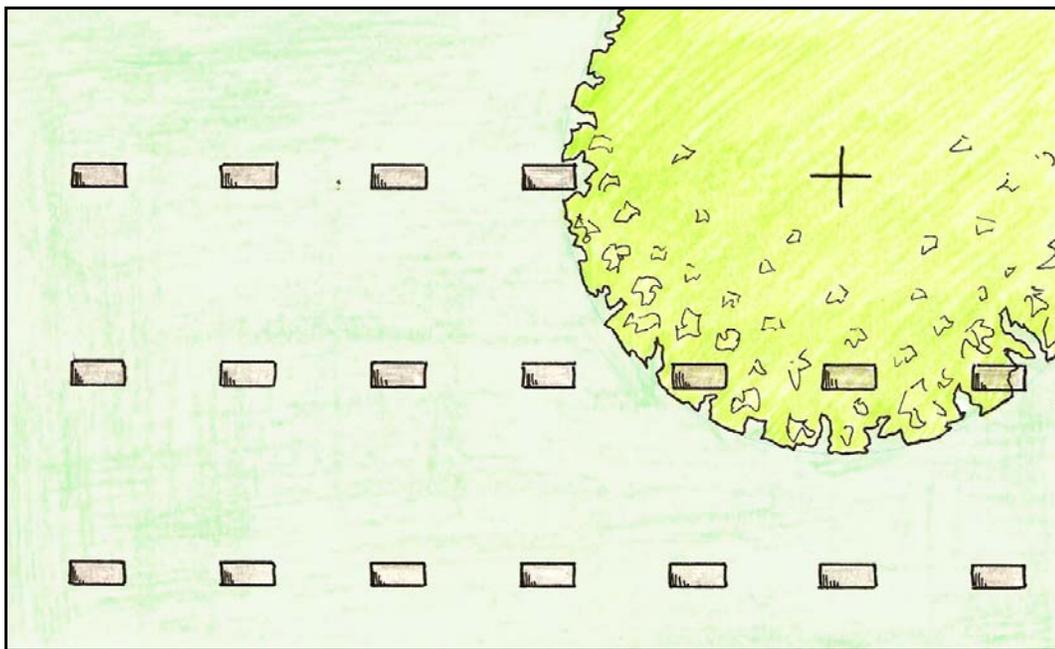
Figure 5: Draw trees at full scale on master plan to avoid future conflicts

6.3 Promotion

- Refer to natural features of the site when developing promotional material and explain ecological value when consulting with potential clients who are interested in other 'green' services.

- Encourage the satisfaction of cultural requirements of the site while providing some ecological benefits by including both native and horticultural varieties of plants in planting designs.

- Advocate for the ecological benefits of your plan when communicating with municipalities; explaining the reasoning behind what may be unconventional decisions may increase the likelihood of approval.

- Collaborate with other organizations, such as nature and photography clubs, to promote secondary activities on site.

- Encourage municipalities to consider acquiring, zoning and reselling land to developers in order to exercise some control over the location of cemetery sites and their relationship to other greenspace.

6.4 Habitat and Resource Provision

- Increase the width of naturalized riparian corridors whenever possible, especially if this will have limited impact on the amount of saleable site area.

- Provide perches for predatory birds to help reduce the presence of unwanted flocks of exotic species.

- Preserve dead trees where feasible to provide nesting cavities or as a place to hang bat boxes.

- Remember that a single large continuous section of habitat is more beneficial than several small scattered sections, and several small sections of habitat are better than no habitat at all.

- Consider providing food resources for migrating wildlife, as opposed to habitat, if a site is isolated among urban land uses.

- Expand natural features (such as woodlots and meadows) from surrounding sites onto the cemetery site when possible in order to increase total available habitat.
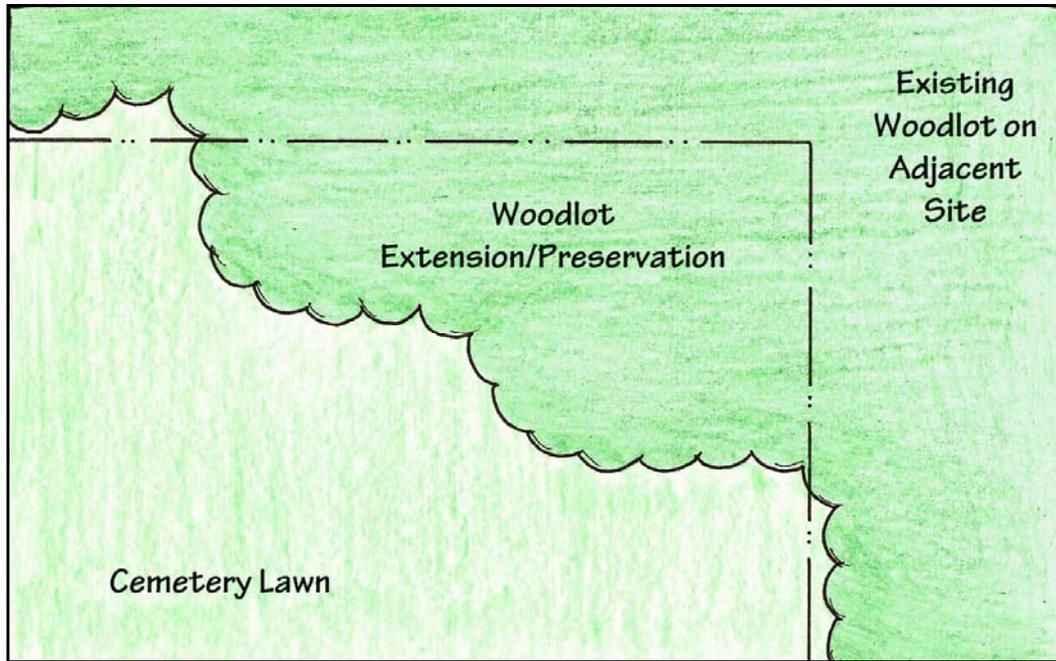

Figure 6: Expand natural features from surrounding sites

- Contact local conservation groups or other organizations that might be interested in joint habitat creation projects in the cemetery or able to offer suggestions regarding target species or habitat types.

- Consider dedicating a portion of the site to the establishment of rare or endangered plant communities, to be maintained either by the cemetery or an associated group.

6.5 Aesthetics

- Provide a green buffer on edges of the site which are adjacent to land uses that could change to the detriment of the cemetery aesthetic.

- Pollinator gardens can be designed in a very formal style while still providing food and habitat to native insects such as solitary bees and butterflies.

- Use dry stone walls to define the borders of less manicured sections of the site, such as meadows and wildflower gardens, as well as create habitat for insects and small animals.
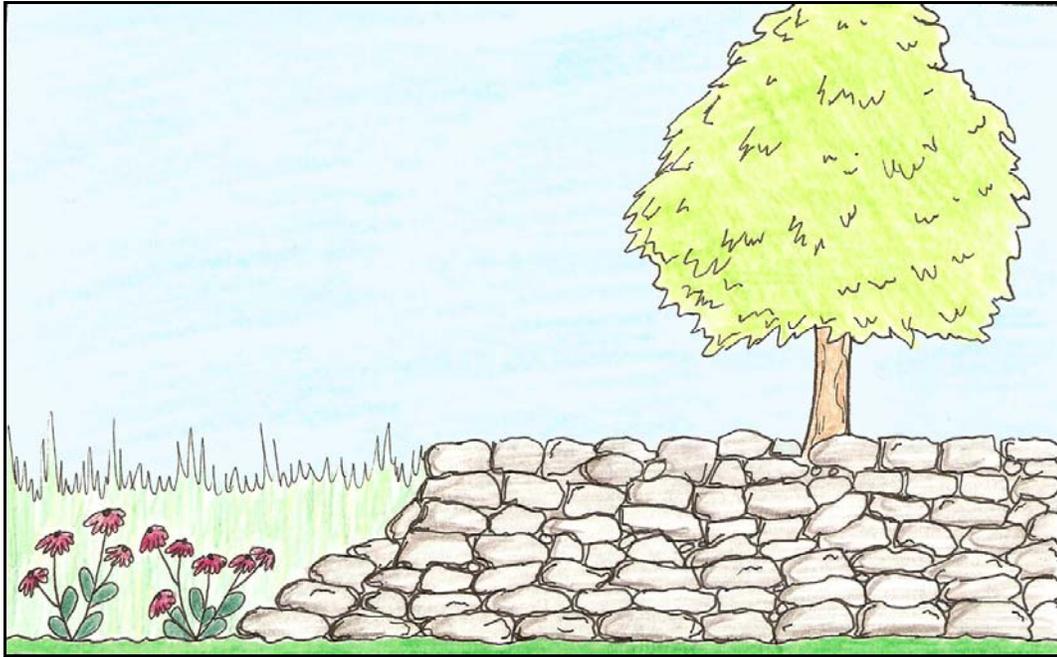
Figure 7: Use dry stone walls for aesthetics and to create habitat

6.6 Master Planning

- Include space for trees provided by an arbour fund or through donations in the site master plan to avoid conflict between trees and memorials, as well as to offset the cost of completing an intensive planting plan.

- Include protection and management of natural features in cemetery by-laws to ensure long-term implementation of plans.

- Consider the standard width of maintenance equipment, and attempt to space site features appropriately and limit obstacles on high traffic routes.

6.7 Other

- Use existing meadows, copses and woodlots as scattering areas where possible, with the addition of pathways and benches.

- Avoid distress to the family due to the death of transplanted memorial trees; contribution to an arbour fund to enhance ecological value of trees may be a less complicated arrangement for both parties.
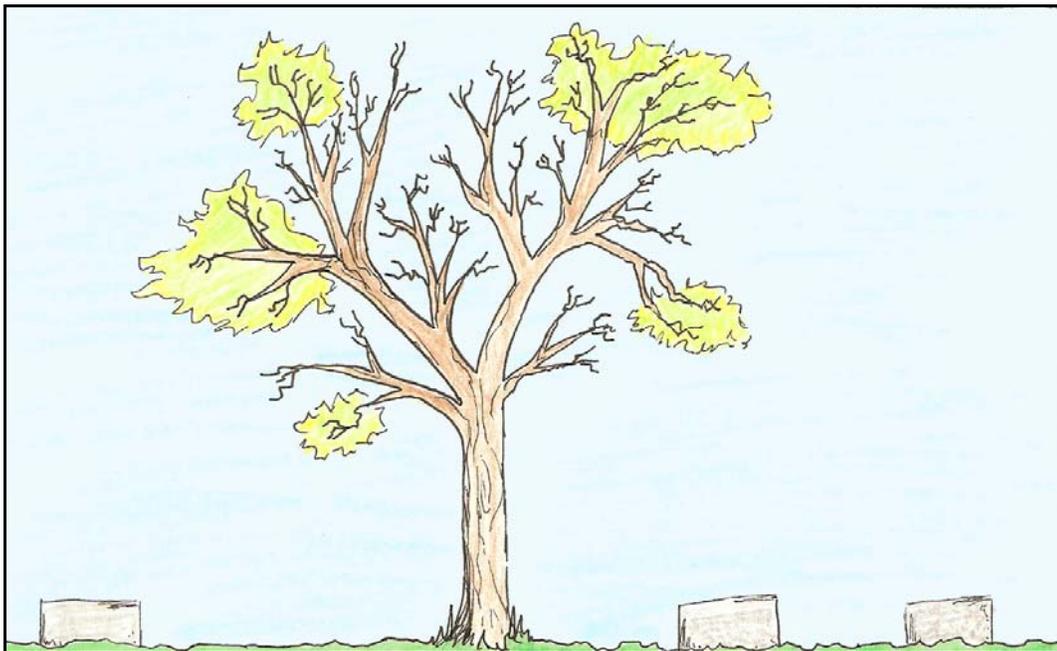
Figure 8: Avoid the use of memorial trees

- Provide seating to allow visitors to spend more time contemplating natural areas of the site.

- Consider designating formal, semi-formal and natural areas of the site to set expectations for site maintenance and to help balance costs.

- Use local resources; for example, the local conservation authority can provide a list of native species that are suited to the site.

Chapter 7: Conclusion

This study demonstrates that ecological value as a secondary focus of cemetery design is complementary to the cultural roles these sites play, as well as being beneficial to the environment over the long term. While the guidelines developed from these findings could be equally applicable in many situations regarding greenspace management, the permanent nature of cemeteries makes the consideration of ecological value on these sites exceptionally important.

7.1 Limitations of the Study

- This study generalizes the existing conditions on cemetery sites, and does not address extenuating circumstances or particular conditions on a given site.

- A small pool of interviewees limits the scope of interview data.

- It is difficult to find peer-reviewed literature on cemeteries in general, with even less available from an ecological perspective; information must be compiled from various other disciplines

7.2 Directions for Future Research

- A comprehensive survey, including directed questions regarding existing conditions on cemetery sites in Ontario, would assist in developing a more comprehensive management approach.

- Develop a management plan that is generally applicable to historic, rural and urban cemetery sites which are no longer active; this may include plans for secondary uses or increasing ecological features on site.

- Consider other memorial traditions that are ecologically sensitive and could be reasonably integrated with existing Canadian cultural expectations.

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Appendix 1: Informant Interview Questions

Interview Questions: Landscape Architect

1. Are cemeteries designed to include elements that promote alternative activities on the site (such as dog walking, jogging, etc.)?

   Theme: Multi Use Sites

2. Do surrounding land uses influence the amount of importance accorded to environmental/habitat features added when planning the site?

   Theme: Connectivity

3. How does the expectation of 'perpetuity' affect the design of a cemetery site?

   Theme: Permanence

4. What are the main expectations of those requesting cemetery designs (aesthetics, cost efficiency, etc.)?

   Theme: Aesthetics

5. Are you familiar with any policies or publications that mandate/suggest ways to increase biodiversity or ecological function of cemetery sites, or is this at the discretion of the designer? policy

6. If you have previously designed or suggested site elements with potential ecological value (ex. native flower gardens, etc.), what was the response to the idea?

   Theme: Perception

7. Based on your experience, have you noticed the trend towards increased environmental awareness ('green' movement) becoming prominent in cemetery design and expansion projects?

   Theme: Trend

8. Is the preservation of existing natural features a consideration when designing cemetery sites?

   Theme: Valuable Elements

Interview Questions: Cemetery Manager

1. What types of recreational activities (such as dog walking, jogging, etc.) take place in cemeteries, and are they encouraged, tolerated or discouraged?

   Theme: Multi Use Sites

2. Is the site managed with the intent of encouraging local wildlife and plant species?

   Theme: Connectivity

3. Has the expectation of perpetuity ever affected the way in which management either maintained or modified the site?

   Theme: Permanence

4. Does the site(s) contain any natural features that are considered aesthetically pleasing?

   Theme: Aesthetics

5. Do you think the promotion of the ecological value of a cemetery would encourage people to purchase plots at the site?

   Theme: Perception

6. How far beyond individual plots do the activities and sense of ownership of cemetery users extend?

   Theme: Perception

7. How do the management and funding frameworks for municipal cemeteries compare to those for other municipal greenspace?

   Theme: Policy

8. What are some of the most common site maintenance and management issues encountered by cemetery managers?

   Theme: Trend

9. Are the most well recognized site features natural or man made?

   Theme: Valuable Elements

Interview Questions: Planner

1. Are cemeteries considered as possible community greenspace, or is their role seen as being exclusively for burial/ritual?

   Theme: Multi Use Sites

2. Are regional greenspace networks and system services taken into account when selecting potential cemetery sites?

   Theme: Connectivity

3. To your knowledge, has a cemetery land use designation ever been used to help preserve an environmentally significant area?

   Theme: Permanence

4. Which surrounding land uses are considered most compatible with cemetery sites?

   Theme: Aesthetics

5. What makes a parcel of land suitable for designation as a cemetery site?

   Theme: Policy

6. What are the most common objections from the surrounding community when zoning or expanding cemetery properties?

   Theme: Perception

7. What is the most typical land use of a site preceding a new cemetery designation?

   Theme: Trend

8. Is the preservation of significant natural features a consideration when locating cemetery sites?

   Theme: Valuable Elements

Interview Questions: Ecologist

1. Which human behaviors have the most potential to affect plants and wildlife in naturalized urban areas?

    Theme: Multi Use Sites

2. What are the most common barriers to wildlife movement through urban environments in southern Ontario?

    Theme: Connectivity

3. In urban environments, what is necessary to create a self-sustaining population of a species which is usually displaced by development? Do you know of any examples in southern Ontario?

    Theme: Permanence

4. What type of naturalized urban landscape typically supports the most native species?

    Theme: Aesthetics

5. Does legislation exist which specifically promotes the maintenance/protection of biodiversity in urban areas?

    Theme: Policy

6. Do you think the promotion of the ecological value of a cemetery would encourage people to purchase plots at the site?

    Theme: Perception

7. What types of landscape features or modifications are used to encourage wildlife and native plant species to populate an area?

    Theme: Trend

8. What types of natural features are most important to preserve when developing an urban or suburban site?

    Theme: Valuable elements

Naturalized urban area – an urban area where an attempt has been made to reintroduce species which occupied the area prior to development, such as in a park or on private property; this may include landscapes such as gardens, meadows, forests or individual plantings of native trees and shrubs.

Appendix 2: Site Specific Interview Questions

Interview Questions: Site Specific Informant

1. How did you start at your current position?

2. What are your main responsibilities at this position?

3. What type of projects have you started/completed in cemeteries? What were the results?

4. What sort of reception have these projects received?

5. Based on your experience, are there other types of habitat provision/restoration that you have not seen in cemeteries, but think would be appropriate to include on these sites?

6. Are you aware of any other environmentally relevant projects at other municipal or privately run cemeteries or memorial gardens?

7. Comments and other contacts