

Remembering the Dead: Enhancing the commemoration qualities of ecological cemeteries

by

Brian Corrie

A REPORT

submitted in partial fulfillment of the requirements for the degree

MASTER OF LANDSCAPE ARCHITECTURE

Department of Landscape Architecture and Regional & Community Planning
College of Architecture, Planning, and Design

KANSAS STATE UNIVERSITY
Manhattan, Kansas

2018

Approved by:

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Abstract

Cemeteries are often perceived as static landscapes containing markers of our collective past. Although this characterization encapsulates the function of a funerary landscape, it does not account for the experiential and restorative qualities these spaces can provide. Memorials can act as a bridge, connecting us to the departed by allowing for the projection of remembrance onto a tangible medium.

At the turn of the 20th Century, the funerary industry in the United States began to define itself as a profession with the introduction of preservation technologies. Although these methods were not initially accepted, they are now considered to be the modern societal norm. Recently, there has been a revival in natural burial practices as an alternative to the traditional casket-embalming method. Ecological cemeteries incorporate natural burial practices as a way to provide their clientele with a sustainable, natural way of interment. This burial process includes a basic grave, shroud or biodegradable enclosure for the body and no toxic embalming fluids as a way of ensuring the body returns to the earth while enhancing the natural ecological cycle. These natural burial sites do not display rows of gravestones but are rather evocative landscapes meant to provide consolation without the environmental drawbacks that modern burial practices pose. This more sustainable, but often invisible, practice uses little physical denotation for mourners to identify their loved ones.

Cemetery design needs to retain the emotive and restorative qualities of funerary landscapes while accommodating the growing trend of natural burials. This project aims to create a design framework that can inform existing and future cemeteries by investigating burial norms, how people commemorate, the experiential design of funerary landscapes, and the evolution of natural burials. These findings were combined with precedent studies, surveys, interviews, and

design guidelines. The resultant design guidelines were then applied to an existing cemetery, Sunrise Cemetery located in Manhattan, Kansas.

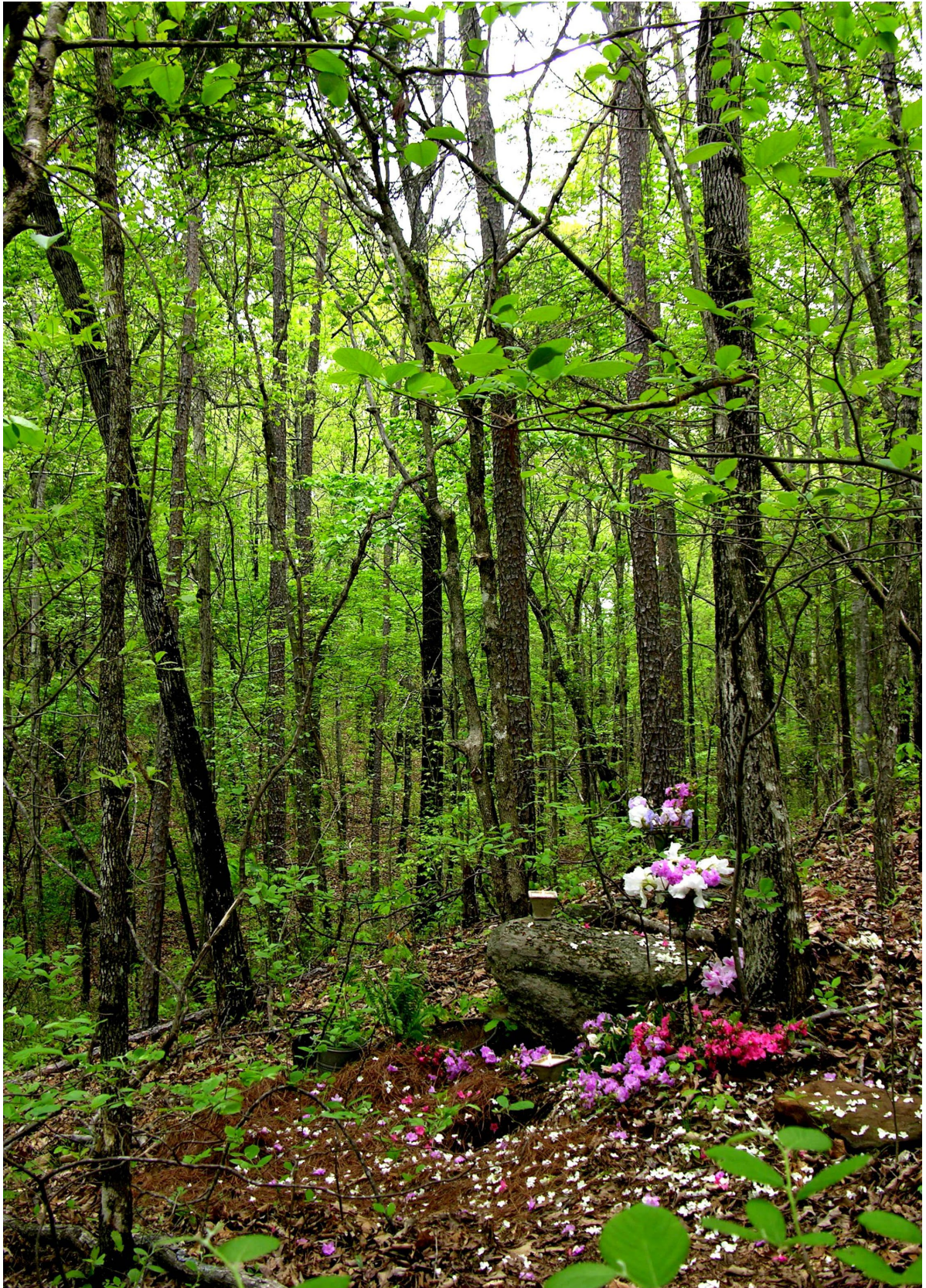
The proposed funerary landscape will provide mourners with a meaningful place for commemoration while maintaining healthy ecologies and could lead to a considerable shift in burial norms in the United States by demonstrating how a variety of remembrance practices can be accommodated in an ecological cemetery.



REMEMBERING THE DEAD

Enhancing the Commemoration Qualities of Ecological Cemeteries

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Approved by:

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Figure 1.1 (Cover)
Indian Burial Mounds Park, St. Paul, MN.
(Shaul, 2017)

Figure 1.2 (Inside Cover)
Grave decorated with flowers (Photo courtesy of
Memorial Ecosystems, 2018)

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The proposed funerary landscape will provide mourners with a meaningful place for commemoration while maintaining healthy ecologies and could lead to a considerable shift in burial norms in the United States by demonstrating how a variety of remembrance practices can be accommodated in an ecological cemetery.

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Personal Interest

What happens to us after we die has captivated the thoughts of philosophers, religious figures, and everyday individuals since the beginning of time. I am no different. My interest in burial practices sparked when I drove past a rural garden cemetery every day on my way to my high school job. This cemetery was enormous with manicured lawns, rows of headstone markers, and unnatural landscape forms. I was perplexed as to how these practices came to be. How is it that a society will stand idly by as valuable resources are wasted, local ecologies are damaged, and the amount of dedicated land to these spaces continues to grow? What happened to the origins of burial and why do we see the rural garden practice as a way of cheating the natural processes? These questions drove this project.

The challenge of shifting perceptions from traditional rural garden burial towards natural interment is due to the ingrained norms of modern society. As a landscape architect, I felt inclined to find a way to solve these issues and ultimately promote the natural burial. I sincerely hope this research can help other designers and cemetery professionals to promote the beautiful practice of natural burial across the country.

I am not religious but believe in the moral teachings found in scripture. I do not fear death as it is a natural occurrence of all life. My personal perception of death is as follows: Death is not the causer of pain but rather a method of escaping the sorrows it leaves behind. We need to practice commemoration to find closure in these tragic moments in life and cherish the ones we have.

Acknowledgments

I am forever grateful for those who have helped me on my journey in life and in accomplishing this milestone.

To my parents

Who have shown nothing but support in every aspect of my life. I would not be the person I am today without your guidance. I thank you with all my heart and hope I can continue to make you proud.

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To the rest.

This acknowledgment is for the people in my life that have always been there for me. I wish I could encapsulate in words the love, support, and encouragement my friends and family have shown me over the years.

I love and appreciate you all.



“Our fear of death is like our fear that summer will be short, but when we have had our swing of pleasure, our fill of fruit, and our swelter of heat, we say we have had our day.”

Ralph Waldo Emerson [1803 - 1882]



INTRODUCTION



Background

Funerary landscapes serve two primary functions: to inter bodies in a safe manner and provide a place of remembrance for those in need of spiritual and emotional healing. In the United States, these landscapes are often associated with the traditional rural garden cemetery, which often includes rows of headstones, manicured lawns and ornamental trees. This type of cemetery design requires large tracts of land and materials while providing little to no ecological benefit. With growing urbanization, growing ecological awareness, and shifts in cultural values, burial methods in the United States have begun to move away from traditional casket-embalming and towards more natural, sustainable means of interment. Although these new burial practices themselves may not be innovative, the concept of “natural burial” is by no means a norm in modern Western culture.

The current state of the funeral industry has created a stigma around natural burial as an option by pushing for services such as embalming, hardwood caskets, and reinforced concrete vaults as a means for a ‘proper’ burial. According to the *National Funeral Service Journal* (as cited in Mitford, 1963), “The focus of the buyer’s interest must be the casket, vault, clothing, funeral cars, etc. — the only tangible evidence of how much has been invested in the funeral — the only real status symbol associated with a funeral service.” The secondary effect of this industry model is the perpetuation of unsustainable burial practices. Therefore, this project aims to mitigate the impact of conventional burial practices on local ecologies by promoting natural burial as a culturally acceptable means of interment through the use of landscape design.

Natural burial is best defined as an interment with no embalming that utilizes a simple (sustainable sourced) casket or shroud, and places the body directly into the earth in order to decompose (Natural Burial Association, 2018). These burials typically limit the use of headstones for grave demarcation in lieu of natural memorials such as native stones or vegetation. This model provides a funerary landscape with efficient land use over generations while preserving local natural ecologies. To become more accepted, natural burial cemeteries need to better incorporate the social and cultural customs of commemoration. This project sought to create a design framework that would provide quality experiences for visitors of funerary landscapes. This framework was then applied to Sunrise Cemetery located in Manhattan, Kansas, which represents a typical rural garden cemetery commonly seen throughout the United States.

Figure 1.5 Graves at Sunrise Cemetery, Manhattan, KS (Corrie, 2018)



Figure 1.4 (Background chapter cover)
Natural burial trail at Windridge Memorial Park, Cary, IL.
(Corrie, 2017)

Figure 1.6 (Below)
Damaged burial mound, Upland Sweden
(Mattsson, 2014)

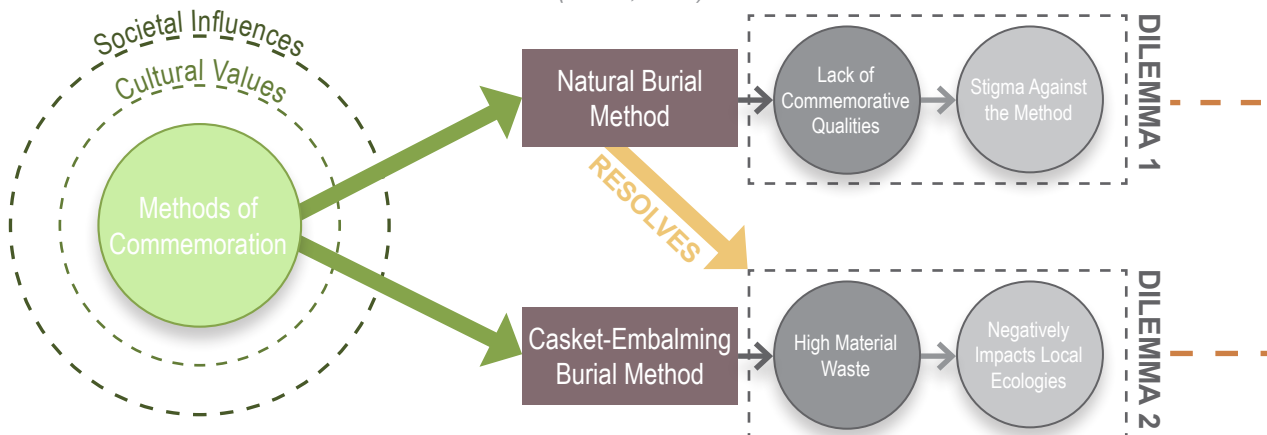


Statement of Problem

Throughout history, societies have commemorated the dead. Human nature dictates that we find answers to the unknown whether it be the meaning of life or what happens when we die. These types of questions led to how we treat the dead, whether it be to satisfy a religious idol, meet societal norms, or for the emotional healing of loved ones. One burial practice, embalming, began in the late 18th Century in England and the United States as a means to preserve bodies for transportation and viewing. Since then, the method has become a standard, and in some cases mandatory, method for burial in the United States (Encyclopaedia Britannica, 2018). This method comes at a cost. One study that examined over 2.5 million graves in 22,500 cemeteries found that 30 million board feet of hardwood, 1,636,000 tons of reinforced concrete and 872,060 gallons of embalming fluid were put directly in to the ground to accommodate the needs of traditional burials in the United States. Cremation, often perceived as a more sustainable method, uses an exceptional amount of energy in order to dispose of bodies (Uslu et al. 2009).

However, many people are hesitant to consider burials, not for practical reasons, but because of habit, social, and cultural norms. Combating the notions that conventional burial is the only way to respectfully dispose of the dead is not easy. It is made more challenging because ecological cemeteries incorporate fewer commemorative practices and have shifted to an open narrative allowing the user to control how they mourn. Although this may be effective in some cases, the reason traditional cemeteries are so successful as places of remembrance is that they provide some guidance to the user's experience through approaches, vegetation, monuments and other design components.

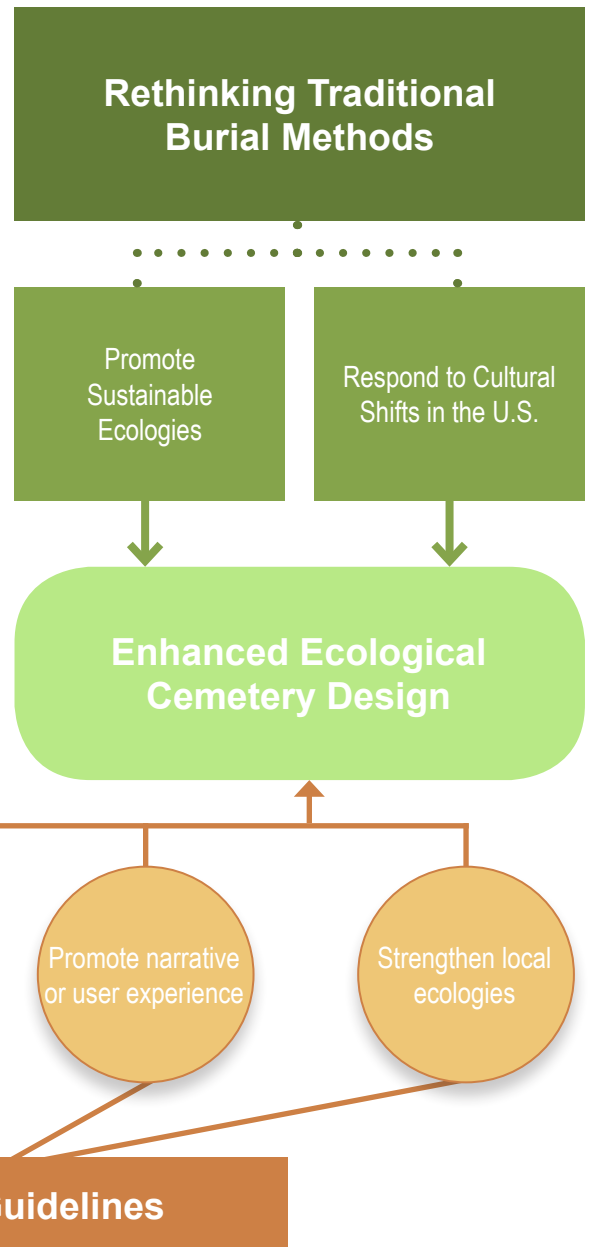
Figure 1.7
Research problem statement diagram
(Corrie, 2018)



Significance

Rethinking how we bury our dead is vital to our collective future. The current model of cemetery design is unsustainable ecologically and culturally. Without new design approaches for funerary spaces, conventional burial will continue to use resources and burden landscapes with limited function.

Through decades of conditioning preferences towards preservation burials, death and burial have become taboo subjects to discuss openly. This project aims to bridge the gap between traditional beliefs and natural burial by identifying strategies in which we can improve ecological interment to respond effectively to the commemorative expectations created by the rural garden cemetery typology. The resultant design and framework will provide landscape architects, city officials, and funeral industry professionals with a method to approach natural burial cemetery design in a variety of settings. The goal is to continue and enhance natural burial cemeteries as their own typology in anticipation for its growth as an interment method.



Research Question

How can commemoration and design practices be enhanced in ecological cemeteries to provide places for remembrance that can accommodate a variety of cultural practices?

Process

The basis of the research was to gain an understanding of commemoration, cultural influences, natural burials, and funerary landscape design. A literature review was conducted to understand each of these components in a broad sense and to identify areas of design and research that merited further analyses to be incorporated into the design framework. Precedent studies and site observations provided an understanding of the effectiveness of commemorative design practices such as grave markers, maintenance, landscape design as well as the overall experience as a visitor. This was accomplished through photography, written experiential narrative, and conducting a site inventory and analysis. Through personal observations, strengths and weaknesses were identified in each of the precedent sites to inform the design framework. Surveys and interviews were conducted with professionals in the natural burial industry across the United States to verify the validity of the background research, inform personal site observations, and gain valuable input for the research process and resultant design framework. Together, this research identifies, analyzes, and synthesizes both physical and qualitative aspects of natural burial and its potential commemoration qualities.

Intent

The goal with this research effort was to provide a framework for ecological cemetery design that can be applied to both existing and future cemeteries that includes a variety of commemorative practices while maintaining the mandate of having a reduced ecological footprint. The National Cemetery Administration's (NCA) *Facilities Design Guide* has no information regarding natural burial as an option even though the book, ironically, stresses the importance of creating natural looking landscapes and working within the ecological context. This project aimed to bridge the gap between commemoration and ecological design by using literature analysis to identify trends and best practices in the current natural burial industry. This basic knowledge was enhanced by observations of natural burial precedents and through interviews with funerary professionals to understand the inner workings behind meaningful burial spaces. The design framework derived from this knowledge base is capable of responding to contextual limitations and opportunities, and will allow for ecologically responsive cemeteries to utilize guidelines in an effective manner across the United States. These guidelines were then applied to an existing rural garden cemetery, Sunrise Cemetery, in Manhattan, Kansas. The conclusions of the research and project provide insight into how the design framework can be applied most effectively.

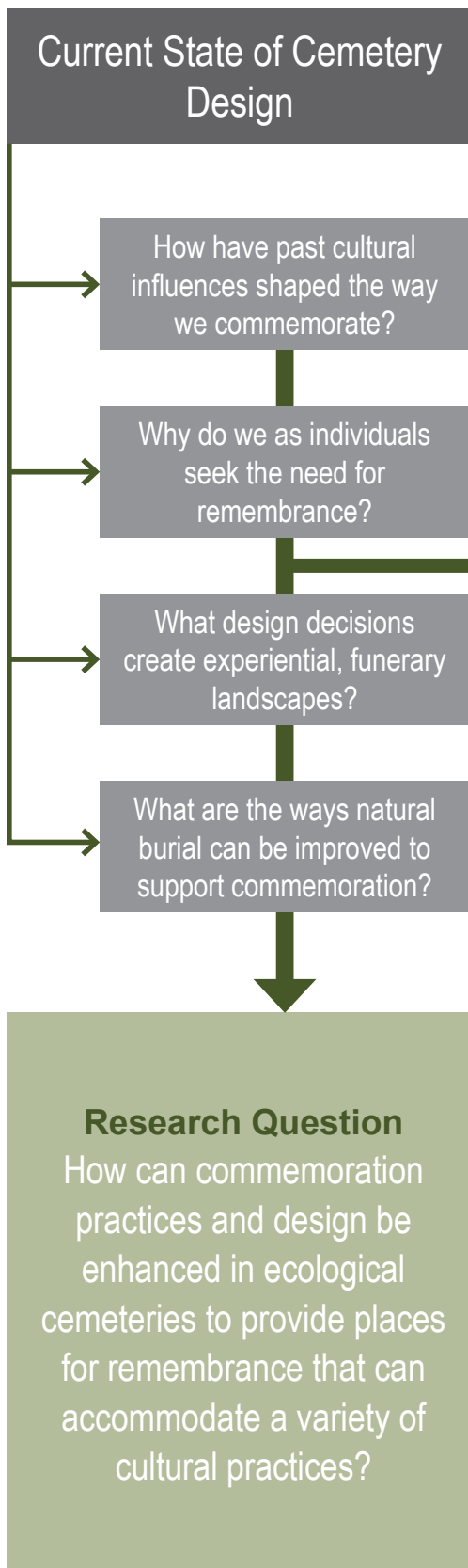
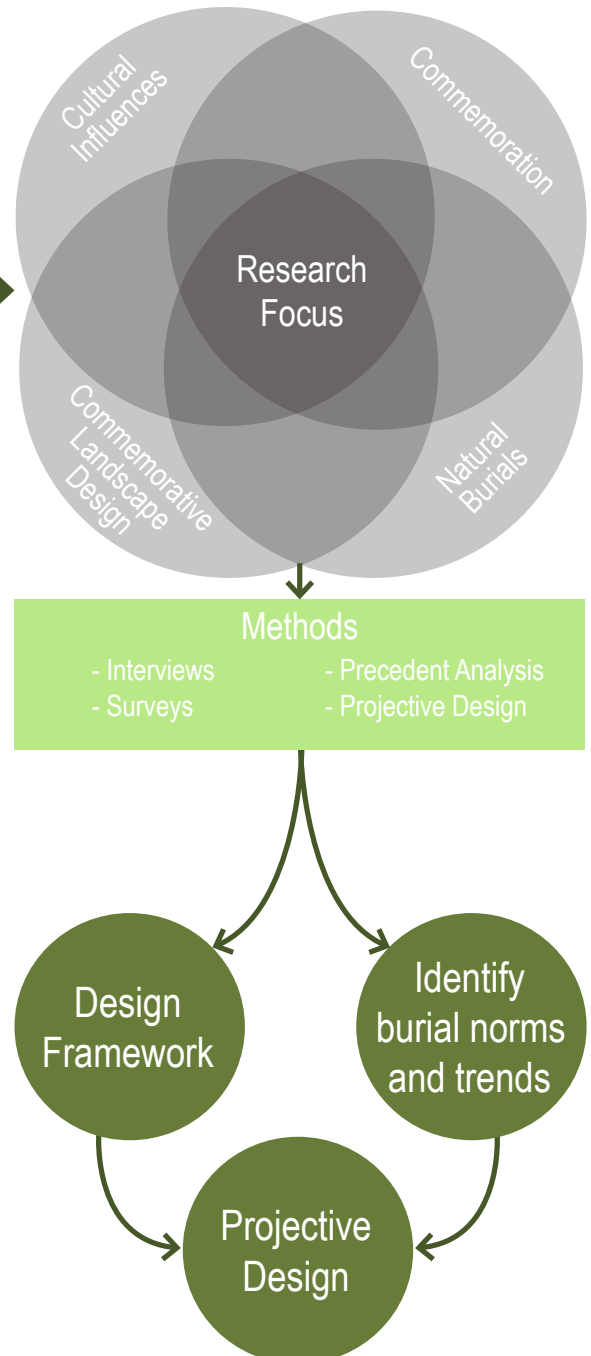
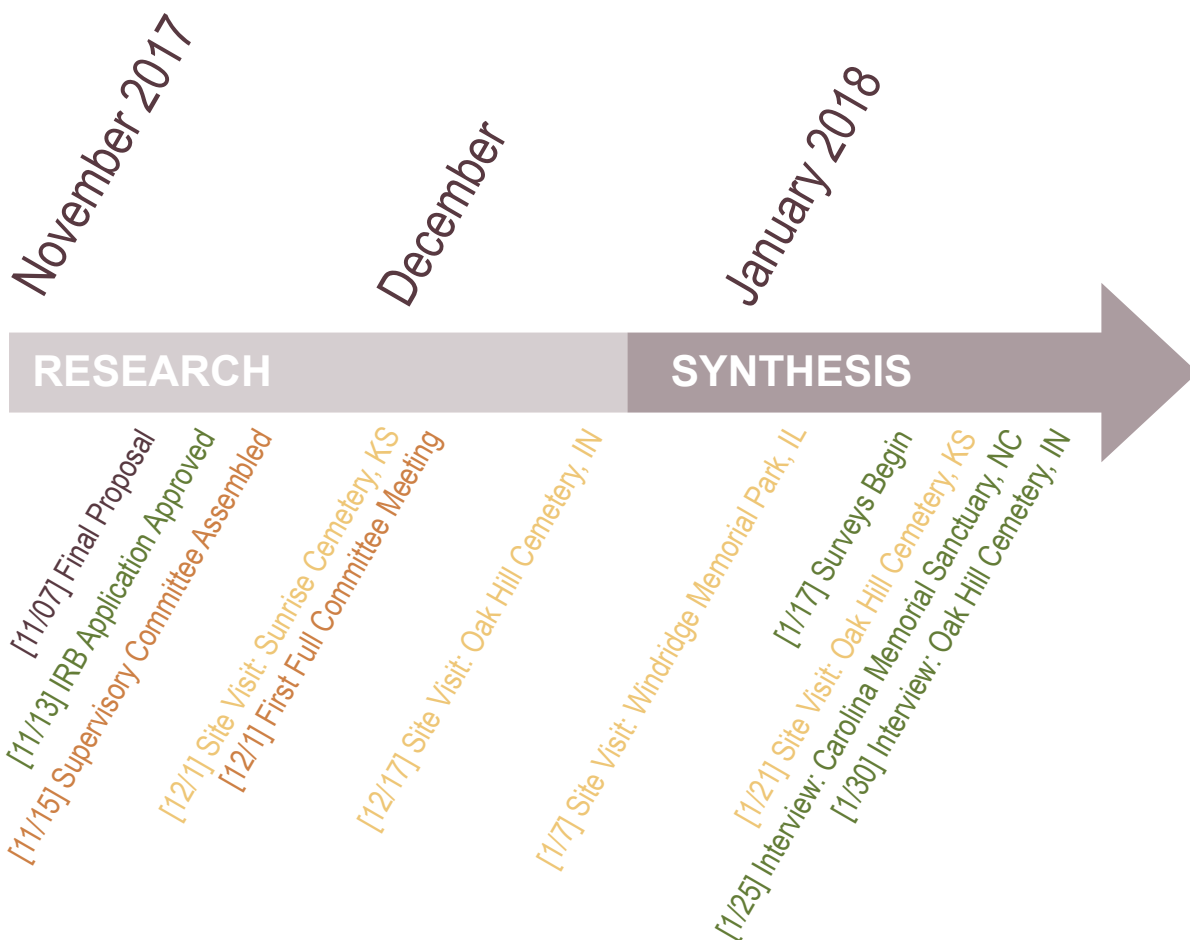


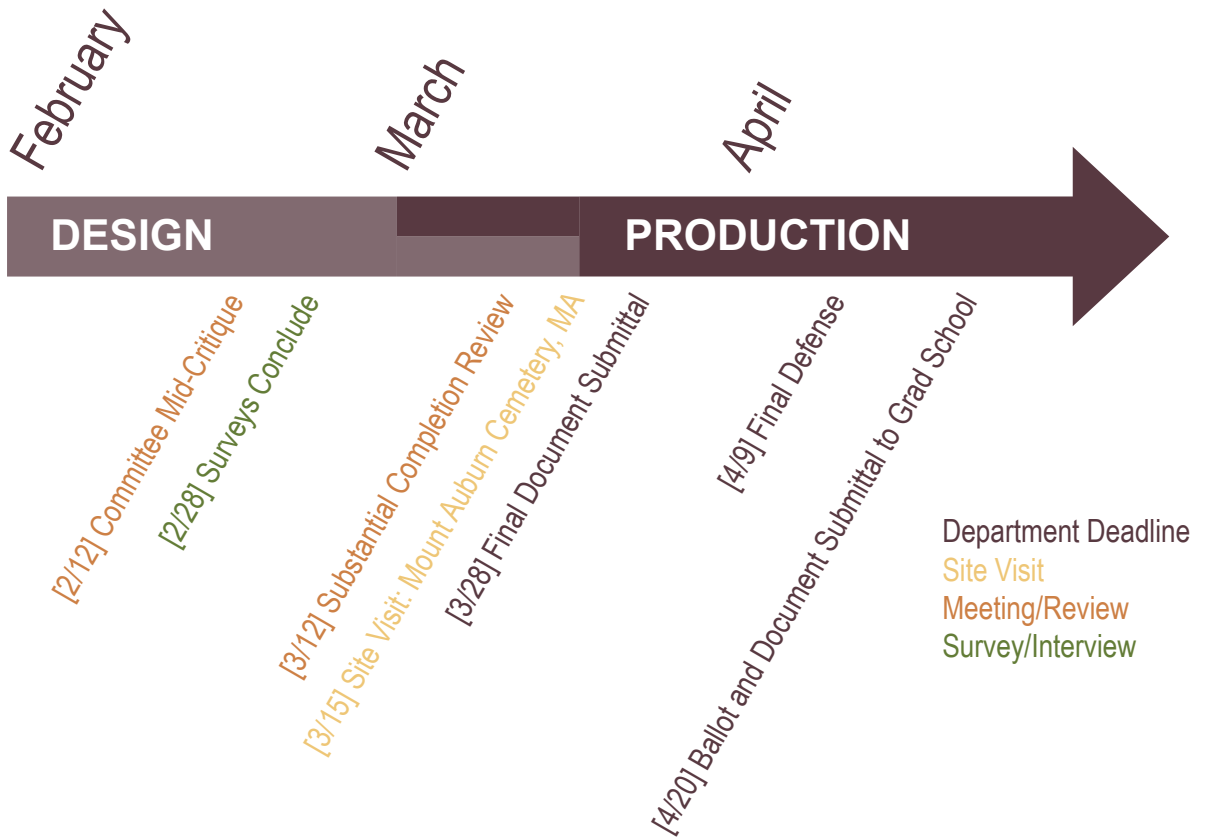
Figure 1.8
Research process diagram
(Corrie, 2018)





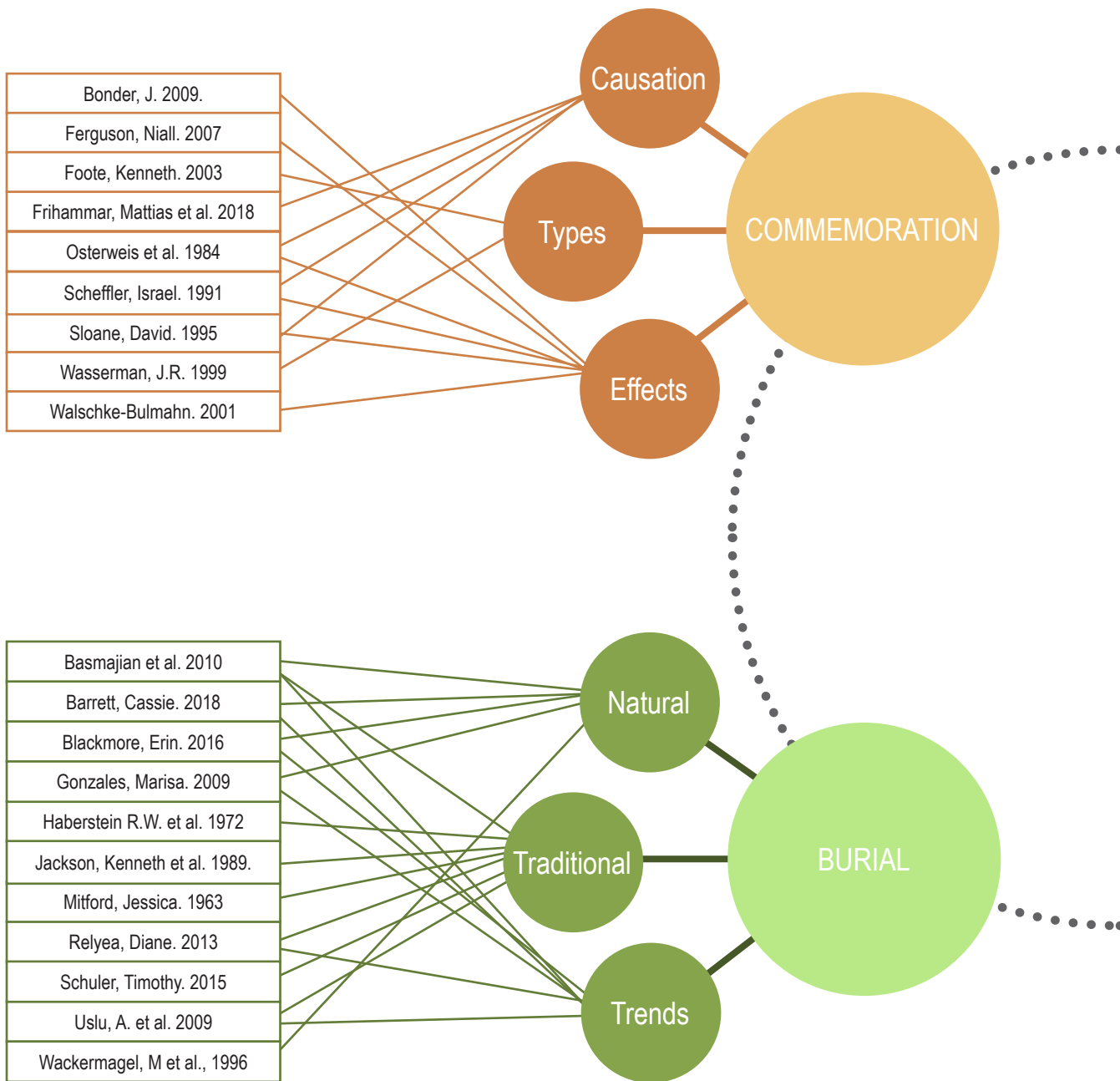
Project Timeline

The research for this project took place in two parts: background research and projective design. The first, research, involved discovering the base knowledge related to burial in the United States, funerary customs of the most practiced cultural institutions, the current perceptions and design of natural burial cemeteries, and identifying what makes a funerary landscape a place for commemoration. The resultant themes: Commemoration, Cultural Influences, Funerary Landscape Design, and Natural Burial were necessary to study for shaping of design guidelines that could be applied to a variety of cemetery conditions.



The second point involved was the application of the research to a projective design. After deriving the design guidelines from the literature review and methodology, they were applied to a Sunrise Cemetery, a traditional rural garden cemetery in Manhattan, Kansas to illustrate its effectiveness as a tool for Landscape Architects and funerary professionals.

Figure 1.9
Project timeline
(Corrie, 2018)



Hybrid Literature Map

Mapping literary connections is a succinct and organized way of communicating the complex nature of research. Shown here are the research categories, their themes, and associated literary source. This directly shows the connection from the author to the research framework. Secondary connections are also drawn to show overlaps in knowledge between sources.

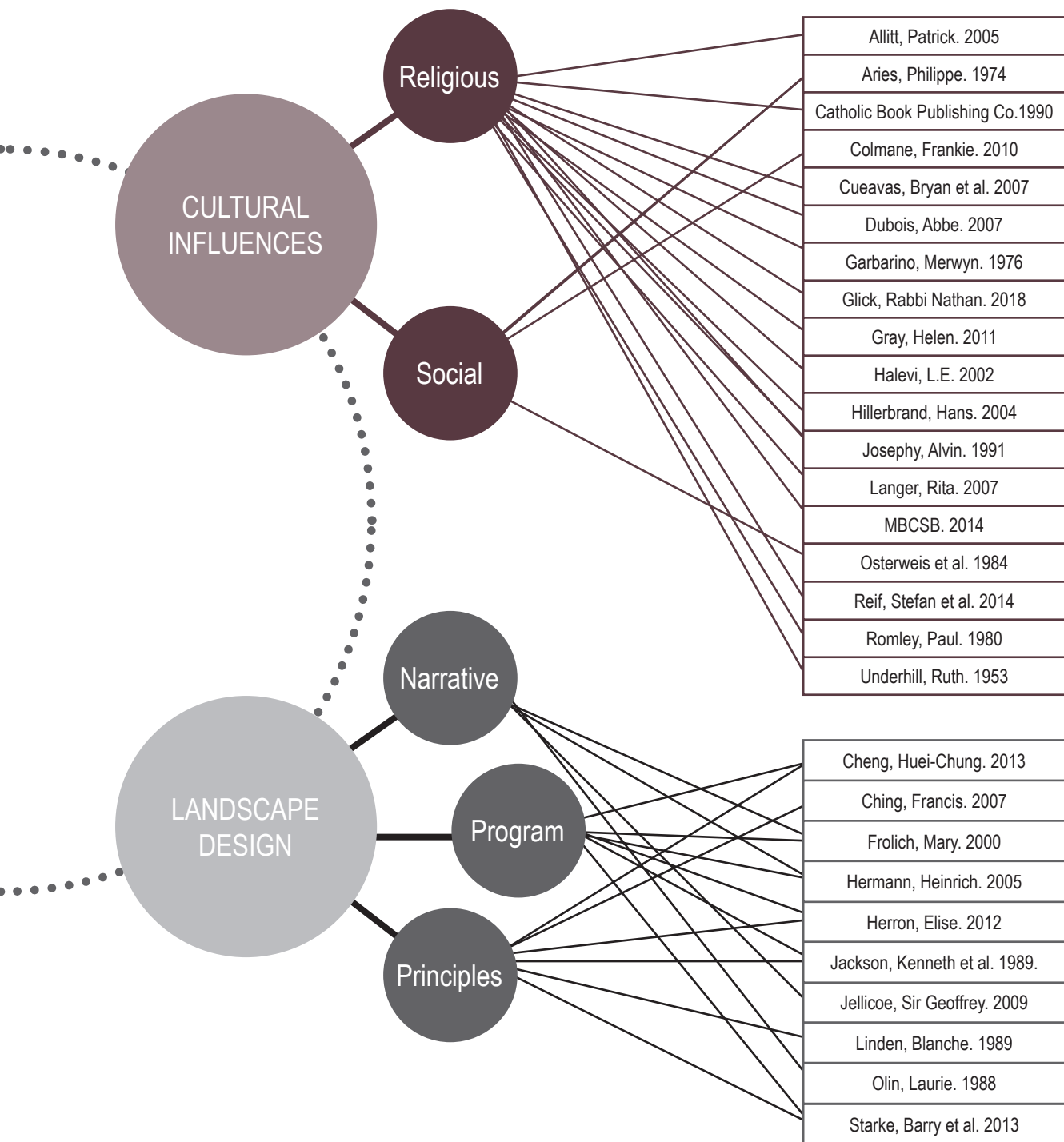


Figure 1.10
Literature Map
(Corrie, 2018)



BACKGROUND



COMMEMORATION



Commemoration

How we remember the past is vital to understanding how we have shaped our environment, the significant figures who lived before us, and providing closure for those we have lost. The act of commemoration provides us with the means to overcome grief in a physical way by visiting places, engaging with the environment, and creating a reflective narrative. The ability to create a future identity, based on the collective historic events of others, is accomplished through commemorative acts (Wolschke-Bulmahn, 2001). There are five primary reasons for commemoration: historical teaching, heritage, political symbolism, tourism, and for healing and closure (Beamish, 2017). Cemetery spaces typically do not contain political symbolism (on the monumental scale at least) or promote large-scale tourism and have hence been omitted from further analyses.

The very definition of commemoration requires that an event be evoked from memory while preserving the memory itself in a physical form. Memorials, tombs, monuments are all ways in which we signify a historic event, individuals or groups have deemed necessary to remember. In regards to commemoration, design, environment, and art can be the means of creating a “dialogical relation” with events, in this case death, to “help frame the process toward understanding” (Bonder, 2009). Commemorative spaces such as memorials provide visitors with the means of reflecting upon past mistakes or actions by individuals, groups or nations in such a way as to learn and adapt from these previous events. However, commemoration is not based on historical accuracy, but is rather initiated by

figureheads that have their own political or religious agenda (for better or worse). “Precisely for that reason, commemoration can involve the systematic misrepresentation, or even outright invention, of past events.” (Ferguson, 2007). Regardless of the accuracy of commemoration or the spaces that manifest themselves from it, the act of remembrance provides us with an identity within the larger human narrative. This is evident with successful commemorative spaces that are capable of enduring time without a loss of meaning. Meaningful and lasting acts of commemoration illustrate the importance of an event within the historical narrative and therefore continue educating its significance for future generations. War, victims, disasters, and atrocities are primary types of commemoration that act as reminders to the past (Beamish, 2017).

Commemorative spaces can process important, complex stories and convey them in such a way as to promote cultural unity (Wasserman, 1999). Commemorating heritage is typically associated with major social or religious changes such as human rights movements and the accomplishments of unique groups. Monuments commemorating the Civil and Women’s Rights Movements exemplify the idea of remembering events that change to future generations. Remembering such events allows us to recall within the larger narrative a time in which we were not capable of thinking or acting the way we do today. This type of commemoration acts as a significant marker in the development of society.

The most pertinent type of commemoration to this research are types that provide closure and healing after the loss of a loved one on a personal level. As put by Viennese architect Adolf Loos, “A confrontation with death prevents us from going on with the usual business of life, that it carries us to another place, a place, usually submerged, within the self. What matters is not who lies buried there, but that a human being lies buried there” (Bonder, 2009). Commemorative spaces can provide visitors with the illusionary consolation that an event or loss is truly over (Beamish, 2017).

Although we commemorate death in a variety of ways, cemetery spaces are the most common way to recall the loss of life. They are landscapes that tie individual and communal grievances together while conveying the cultural, political, ideological, religious and economic aspects that formed the space in which commemoration takes place (Frihammar and Silverman, 2018). Here, the public and private realms are indistinct as a common space that is claimed for individualized remembrance. Therefore, the acts of commemoration are not dictated by societal influences as seen in public memorials, but are rather personal (Sloane, 1995). The rise of the funeral industry has diminished many family-centered commemoration and burial activities (Sloane, 1995). However, with changes to the perception of cemetery spaces comes opportunity to improve upon the declining act of commemoration in cemeteries.

The act of remembrance can manifest itself in many different forms depending on factors such as cultural and social influences. However, there are four primary means of memorialization that categorize

how tragic events are remembered: sanctification, designation, rectification, and obliteration (Foote, 2003). Sanctification arises when society see moral lessons epitomized by a tragedy such as the John F. Kennedy Memorial in Runnymede, UK. It often is a way for loved ones to memorialize victims in a tragedy through the construct of a monument or space. Designation simply reserves an area as it stands as a literal reminder to an event through acknowledgment, often done using a sign or plaque. Rectification is a process of reutilizing a site after a tragedy as a means to moving on with life and not be burdened with the constant visual reminder of an event. Lastly on the spectrum, Obliteration, occurs when mourners want to disassociate themselves from the action that led to an event. These events are often taboo, shameful, or violent and therefore cause the response to remove evidence of the event in its entirety (Foote, 2003). An example of commemorative obliteration is the Columbine High School mass shooting in which 12 students and a teacher were killed. The building itself was repaired and the alarm sirens that were playing during the tragedy were changed as to not further traumatize students. A separate memorial was erected nearby to further dissociate the monument from the physical place it occurred. Obliteration attempts to create a sense of normalcy for the victims and mourners.

These types are reflected in many memorial designs because they are the ways which people cope with the loss of life and tragedy. The tools used to accomplish these types of memorialization are almost limitless but can include plaques, statues, or art installations as a means of communicating the significance. However, they all result in some form of designation whether it be literal, metaphoric, or involves a change in policy.



Figure 2.3a
John F. Kennedy Memorial
Runnymede, UK

Assassination



Figure 2.3b
Memorial Plaque
Rosses Point, Ireland

Multiple Shipwrecks

MEMORIALIZATION TYPES

Sanctification

Designation

Rectification

Obliteration

Figure 2.3c
Cleveland Clinic
Cleveland, OH

Reused after 1929 Fire



Figure 2.3d
Columbine Memorial
Littleton, CO

Mass School Shooting



CULTURAL INFLUENCES

IN LOVING MEMORY
OF
THOMAS WILLIAM WALLIS
WHO DIED OCT. 12TH 1897.
AGED 78 YEARS.
ALSO OF JOHN WALLIS,
2ND SON OF THE ABOVE,
THE P. AND O. S. N. CO.'S SERVICE,
WHO DIED DEC. 11TH 1870,
AGED 22 YEARS.

"GONE, BUT NOT FORGOTTEN."

MARY WALLIS.

(Left)
Figure 2.4
Christian Cemetery
(Mikes Photos, n.d.)

Religion

The melting pot that is the United States has culminated an assortment of commemorative and burial practices since its founding (Allitt, 2005). Combining these practices in a bounded site can be difficult and reduce the overall commemorative impact they have. Identifying the nuances between religious practices related to death and remembrance will provide opportunity to discover new ways in which these customs can effectively function within an ecological cemetery. Each religion was reviewed to understand the overarching concepts of burial rites and identify religious sects that may have unique characteristics. The major religions reviewed included: Christianity, Judaism, Islam, Buddhism, Hinduism and Native American practices

Religion is a multifaceted subject that is difficult to study in an objective manner. There are interminable interpretations, sects, and niche practices that make it difficult to reflect the entirety of values in the world. It is important to recognize that this study merely analyzes the overarching themes of religions' death rituals and burial practices as to inform the design of funerary landscapes that pays homage to the values.

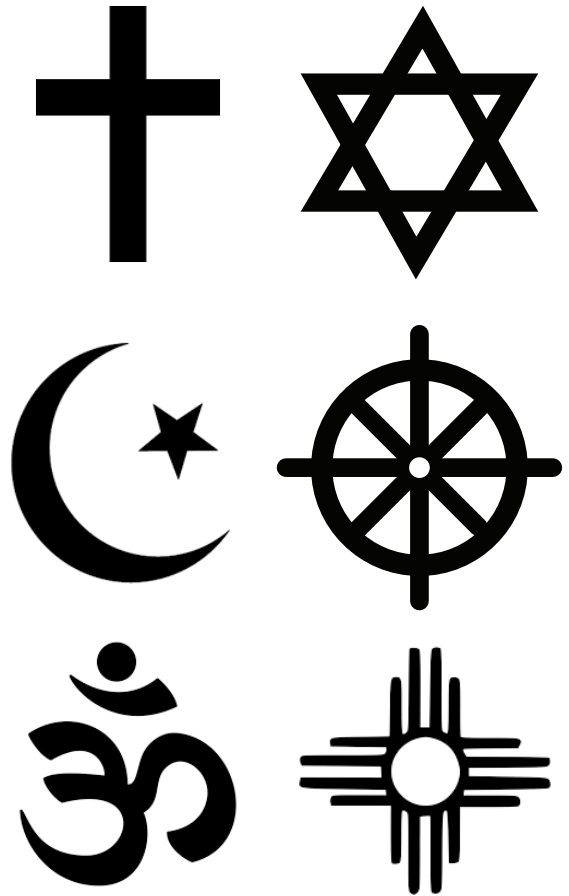


Figure 2.5 Religious symbols (Corrie, 2018)
From left to right, top to bottom: Christian, Jewish,
Islamic, Buddhist, Hindu, Native American

Christianity

Early Christian views of death began with the belief that death was an unavoidable conclusion to one's life and should be accepted with dignity with little emotional displays of grief. Instead, solace was found through individual prayer and absolution after which the departed would be placed in a cemetery located outside the town center. It was not until burials took place in churchyards that significant changes in commemorative practices began to develop. The "Church Graveyard" essentially brought death closer to the community fabric making it more apparent to the living and was strongly associated with daily religious practices (Aries, 1974).

Death in the Christian faith is defined by two 'lives' that are believed to be experienced. The first is the "life of sense, of intellect, of static forms, of fixed perceptions and well-defined conceptions" and the second is the spiritual life of God, which was conveyed by Jesus and achieved through his acceptance as the Lord and savior. The knowing of a final judgment imminent after death paired with the exposure to graveyards shifted the values of death from an anthropological commonality to an individual's summation of their life experience. Christians began to focus death rituals on promoting the individual's religious merits in life to ensure their place in the afterlife. In other words, headstone inscriptions and covering human remains during funerary services replaced the intimate relationship and exposure to death seen in early Christianity. Death is now seen by Western Christians as an inconvenience that should be hidden away, almost as if the physical form of life should be disposed and forgotten of to be replaced with the divine spirit and memory (Aries, 1974).

Catholicism

The process for Catholic burials involves a vigil, funerary liturgy, and rite of committal. When possible, those who were a part of the Catholic community are traditionally buried in a dedicated cemetery. A priest has the ability to bless grave sites in such cases as military funerals in national cemeteries but is not uncommon to occur for families who wish to be buried in non-Catholic cemeteries as well. A vigil is held prior, often at a nearby parish church, to celebrate the life of the deceased and commend them to God. The crucial difference between Christians and Catholics is the need to repent your sins to reach Heaven and therefore important to commend the soul. This is followed by the funeral mass in which they celebrate the memorial of Christ's death and resurrection. Lastly, the final rite of committal allows for last farewells from loved ones and last respects. The Catholic Church promotes burial for the deceased, often within two to three days after death, but has in recent years changed its stance on cremation. Cremated ashes should be buried rather than scattered as it is perceived as mutilating God's image of man (Catholic Book Publishing Co., 1990). The attitude towards death focuses on assuring God's grace and asking for the assistance for the deceased's soul (Gray, 2011).

"So we are always of good courage. We know that while we are at home in the body we are away from the Lord, for we walk by faith, not by sight. Yes, we are of good courage, and we would rather be away from the body and at home with the Lord."

– Corinthians 5:6-8

Protestantism

This denomination includes the Lutheran, Presbyterian, and Baptist Churches. Protestant religions are very similar in nature to Catholic burials, in that, they promote burial over cremation, involve a series of funerary rites and involve celebrating the life of the deceased, God, and the afterlife. However, the attitude towards death is much more focused on the celebration of resurrection in the home of the Lord. In some cases, such as in the American South, the cemetery is still used as a place of communal gathering and recreation (Hillerbrand, 2004).



Figure 2.6 Salem United Methodist Church (Nyttend, 2011)



Figure 2.7 Roman Catholic coffin display (Willjay, 2008)

Eastern Orthodox Church

The Eastern Orthodox Church outlines its burial rites in a more specific manner compared to Protestantism and Catholicism. Natural burial or embalming are both accepted whereas cremation is not allowed. Traditionally upon death, those present at the time assist in washing the body and placing them on a bed (or table) with the face elevated towards the East. Clothing or a white shroud covers the bodies with a chaplet around the head of the deceased and their baptismal cross is placed upon the breast of the body. The evening before the burial, an all-night vigil is held to pay respects to the deceased, typically at a Church. At the time of burial, the deceased typically lies with their face in the direction of East. After final prayers and remarks, the deceased is lowered and buried. A meal is typically served after the final ceremony to celebrate the time "...when the Risen Savior appear to His disciples on the shore of Lake Tiberias (John 21) and served bread and fish." On the third, ninth, fortieth, and anniversary day after death, the "Panikhida" is held, which is a memorial service to pay respects for the dead (Romley, 1980).



Figure 2.8 Eastern Orthodox funeral service (Massalitin, 2005)

Judaism

The Jewish faith approaches death as a social phenomenon (Huntington, 1979) rather than a personal experience as seen in the Christian faith. Death is viewed as process that inherently needs communal remembrance to achieve solace. It is prohibited in the Jewish faith to leave a dying person alone and the Kaddish (or Qaddish), a common mourning prayer, cannot be recited without the presence of a minyan. These group remembrance practices extend over a period marking seven days (shiva period), thirty days (Sheloshim), and one year (Yahrzeit). Yom Kippur and the three Pilgrimage Festivals are also days in which communal mourning takes place. During Yom Kippur, the Yizkor ceremony takes place, which directly commemorates the dead (Reif et al, 2014). Jews often do not visit cemeteries on Saturdays due to the Shabbat, or day of rest (Visiting the Cemetery, 2018).

Jewish cemeteries are not considered to be a significant part of the faith since the strong existing structure for frequent remembrance practices in the faith itself is so prominent. It is expected that all commemorative acts are communal events except for the practice of yahrzeit, the lighting of a memorial candle usually done in private on the anniversary of a person's death. When seeking individual reflection or mourning, Jews travel to the grave to concentrate on the gift of life rather than dwell on the deceased. Habitual visitation is not typical for most Jews to ensure that prayer is focused on G-d* (Visiting the Cemetery, 2018).

*G-d refers to the higher being of the Jewish faith. It is spelled this way in Jewish tradition as to not disrespect Him if this script were to be defaced or destroyed.

Traditional Jewish burial practices also dictate that the body not be embalmed and should decompose naturally, although there is leniency with this rule (Reif et al, 2014). Embalming and cosmetology are not generally used in the Jewish faith unless it is required by law. Amongst the different sects of Judaism, the only real differences in burial rites involves cremation. Orthodox Jews believe that cremation is not acceptable, and the body should be buried. Conservative Jews oppose cremation as an option but will in some cases provide funeral services for the individual. Reform Jews allow cremation with interment and it has become an increasingly common practice. In regards to burial, bodies are typically washed, purified, and dressed in the Taharah process (Visiting the Cemetery, 2018).



Figure 2.9 Jewish grave with stones placed upon it (Petka, 2009)

The Taharah Process

This process is meticulous and follows very specific steps to ensure the ritual respects and honors the deceased. Four people is the recommended size for the ritual. This includes the washing of the hair and face with water, followed by the right and left side of the body respectfully from the shoulders to the feet. The back of the body is then washed in the same manner before the body is placed on top of wooden planks and elevated head rest. Three buckets of water are then poured, continuously, on the body from the top to the bottom. Another method of the Taharah process includes submerging the body in a ritual bath. After the body is dried, it is dressed starting from the head before being placed in the casket. Specific prayers are said prior to each step in the Taharah process (NASCK Chevra Kadisha, 2015).

Jewish laws dictate that a simple wooden casket (also known as an aron), commonly made of pine, used to provide a completely biodegradable container to store the body. Some caskets may even have holes drilled into the bottom to accelerate the rate of decomposition. Mourners typically follow the hearse or transport to the burial site where prayers are then recited, and the casket is interred. It is traditional that all mourners participate in placing soil onto the grave (Reif et al, 2014)

Pebbles

There are many different interpretations behind the origin of the Jewish custom of placing small stones or pebbles on a grave site. The most common perception is that by placing a small stone on a grave, you are marking your presence and showing that someone still cares for the deceased. Since stones are a durable material, they symbolize the continued commemoration of a person for eternity.

Another rationale behind the practice responds to the belief that the soul continues to reside at the grave site for a time after death. Typically an Eastern European tradition, the stone is placed on the grave to prevent the remnant spirit from leaving its burial spot. This act of maintaining the grave is also perceived as a mitzva (Glick, 2018).

The symbolism behind the use of the stone can be connected to many different stories in the Jewish faith. The Western Wall, the stone on which Abraham takes to sacrifice his son, and even the description of an 'altar' (pile of stones) can all be interpreted as a reason for placing these markers. Regardless of the origin, this commemorative act is a way to recognize a burial site in a natural, meaningful way (Glick, 2018),

“And the dust returns to the ground as it was, and the lifebreath returns to G-d who bestowed it.”

– Ecclesiastes 12:7

Islam

The Islamic faith is one of submission to religious practices with the teachings dictating and influencing virtually all aspects of human actions, also known as Shari'ah . The Shari'ah law (also spelled Sharia), was created on the principles of the Quran, a holy text revealed to the prophet Muhammed by the Angel Jibreel from God. Muhammad conveyed 5 religious principles (Five Pillars of Islam) which included Shanadah (Faith), Salat, (Prayer), Zakat (Charity), Sawm (Fasting), and Hajj (Pilgrimage to Mecca) (Halevi, 2002). These pillars define the importance of ritualistic faith and influence burial and commemoration practices. For example, excessive mourning is considered to be an insult to Allah because it is perceived as questioning His omnipotence (or lacking faith) (Halevi, 2002).

The actual burial methods of the Islamic faith are specifically outlined in the Koran (the sacred text of Islam) as to how the body is prepared, interred, and commemorated. The departed are buried without embalment as soon as possible after the time of death and cremation is forbidden. The body itself goes through a cleaning process three times before being wrapped in three layers of cloth. Men then take the body and arrange the grave, so the body lies on its right side facing Mecca. Women are buried separately from men. Since the urgency for burial is so great in the Islamic faith, viewing or visitation is typically not held prior to the interment.

Traditionally, men are the only ones allowed to be present at the actual burial but it is allowed in some religious communities. Once a body is placed in the grave, a layer of wood or stones is placed on top of the body to prevent direct contact between the body and the soil. Mourners are typically expected to place three handfuls of soil onto the grave before the final filling. Originally, gravestone markers were not used in response to the equality and humility principles of Islam, but has since become an acceptable practice (Halevi, 2002).

“Every soul will taste death, and you will only be given your [full] compensation on the Day of Resurrection. So he who is drawn away from the Fire and admitted to Paradise has attained [his desire]. And what is the life of this world except the enjoyment of delusion.”

-Quran 03:185

Qiblah
(Direction of Mecca)

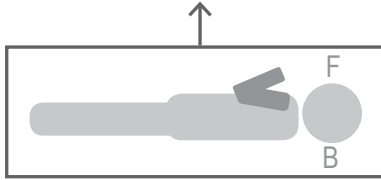


Figure 2.10 Body alignment for Islamic burials
(Corrie, 2018)

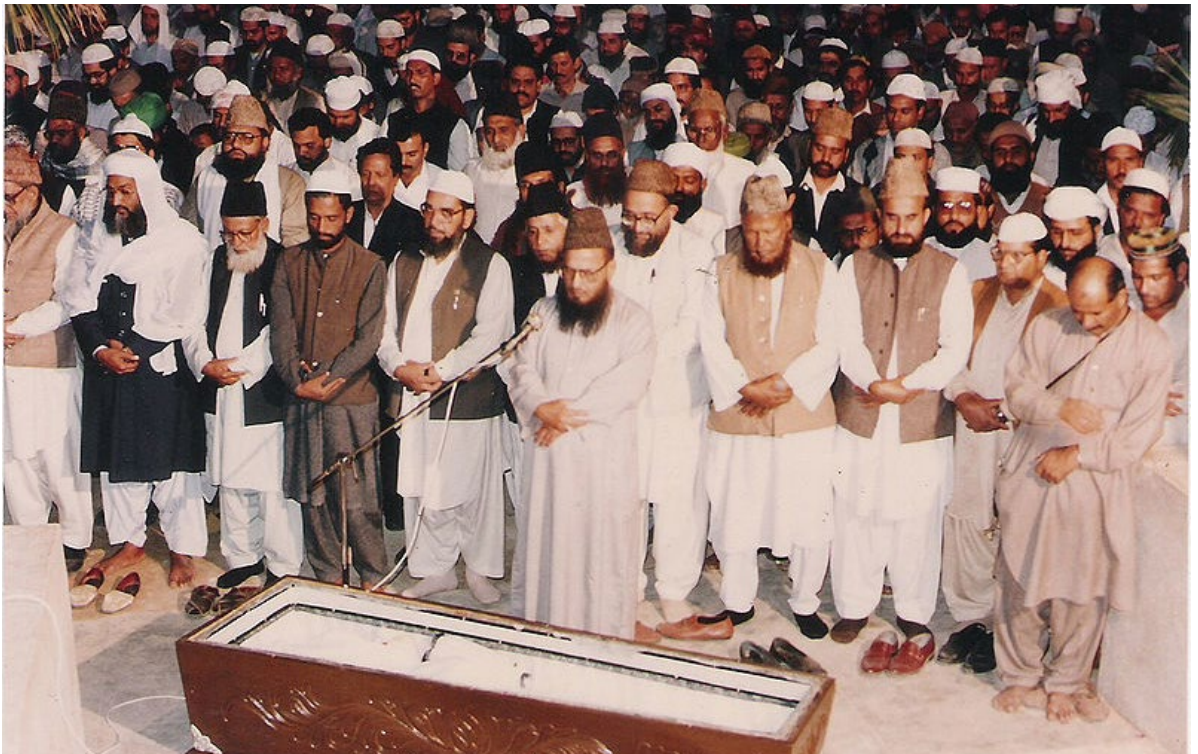
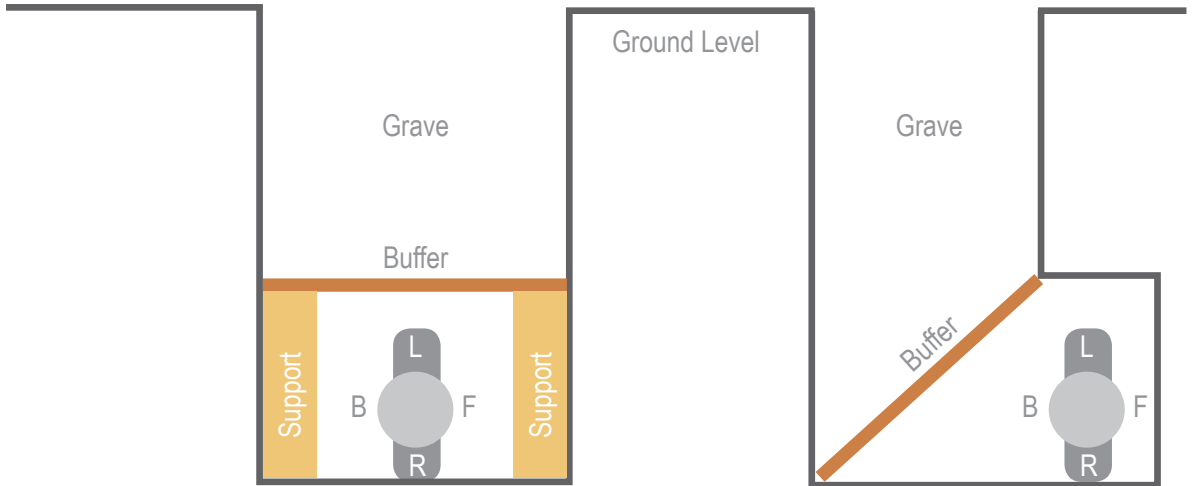


Figure 2.11 Muslim funeral procession
(Tauseen123, 1993)

Buddhism

Buddhism encompasses many different denominations based upon the teachings of the Buddha. The goal of the faith is to achieve Nirvana or Enlightenment and to escape what is perceived as the constant suffering and rebirth known as life and death. This suffering was defined by the Buddha in the Four Noble Truths:

1. The Truth of Suffering - Dukkha (All life is subject to suffering).
2. The Truth of the Origin of Suffering - Samudāya (The Desire to live is the cause of rebirth).
3. The Truth of the Cessation of Suffering – Nirodha (By conquering desire, you can achieve enlightenment).
4. The Truth of the Path to the Cessation of Suffering – Magga (The means of achieving Enlightenment is through the Eightfold Path)

The Eightfold Path is a series of practices used to clear one's desire of life and its continuous rebirth after death: Samma Ditthi, Samma Sankappa, Samma Vaca, Samma Kammanta, Samma Ajiva, Samma Vayama, Samma Sati, and Samma Samadhi (Langer, 2007).

Based on these beliefs, the disposal of remains is treated with no direct consequence to the spirit of the departed. This allows for cremation or burial in funerary proceedings depending on the denomination of the religion and personal preference. After the body is disposed, religious services are traditionally held on the third, seventh, forty-ninth, and one hundredth days to commemorate the deceased (Cuevas and Stone, 2007).

Mahayana Buddhism

In Mahayana Buddhism, which is primarily practiced in the regions of India, Tibet, and East Asia, in the final moments of a Buddhist's life, a person close to them will recite the name of Buddha into their ear so it is the final words they hear. After their passing, the body is washed, surrounded by wreaths and candles, and given a funeral service. It is believed that the rebirth of a person takes up to 7 weeks after death. The graves themselves are typically denoted by a headstone or monument and often decorated with offerings from mourners such as flowers, photos and Buddha idols (MBCSB, 2014). Specifically, in Tibet due to its mountainous landscape, bodies are either cremated or placed in crevices along mountain faces so that they may be decomposed by scavenger birds. This practice, which is called Sky Burial, is considered to be the final last act of generosity by the deceased by allowing their body to be consumed for the benefit of nature (BBC, 2018).

"The life of mortals in this world is troubled and brief and combined with pain. For there is not any means by which those that have been born can avoid dying; after reaching old age there is death; of such a nature are living beings. As ripe fruits are early in danger of falling, so mortals when born are always in danger of death"

-The Buddha

Theravada Buddhism

In Theravada Buddhism, often practiced in Sri Lanka and Southeast Asia, rebirth takes place directly after death. In Sri Lanka, the family will give cloth to the monks for new robes. Typically a week after the death, monks will come to the home of family and perform a sermon of remembrance.

Cremation is the preferred method with the bones of the departed placed into an urn. These remains are typically left at the base of a tree, enshrined, or scattered into a body of water (Langer, 2007).



Cremation of Buddhist priest
(New York Public Library, 1907)

Hinduism

Hinduism is a diverse theology that is difficult to define due to its unique philosophy of god worshipping. Hindus can choose to worship many gods (polytheism), a single god or no god at all. However, the unifying concept of Karma and cyclical life-death reincarnation is a constant. Karma refers to the energy gained or lost through past and present actions to achieve the next form. This reincarnated form can take the place of another person or animal. Like Buddhism, the goal of Hinduism is to reach a state known as moksha, escaping the illusory world (Dubois, 2007). The form one takes on after death depends entirely on how they lived their previous life.

Traditional funerary practices dictate that the body be cremated rather than buried though there are exceptions (babies, children and saints are typically exempted from cremation). The deceased are typically given a holy bath either in the Ganges River or in a mixture of milk, yogurt, butter and honey (Dubois, 2007). The body is then tied and shrouded in a plain white cloth before a brief wake takes place. The body is then placed on a pyre and burned or, if in the United States, taken to a crematorium. The ashes are then taken and spread, ideally in the Ganges River which is regarded as a God and giver of life (W3theatre, 2014).

“The Spirit is neither born nor does it die at any time. It does not come into being or cease to exist. It is unborn, eternal, permanent, and primeval. The Spirit is not destroyed when the body is destroyed.”

-Bhagavad Gita 02.20

Pyre Cremation

Burial and cremation both accomplish what anthropologists recognize as vital actions for funeral rites: Facilitating the physical and otherworldly transition of the deceased while providing the living with consolation. It is difficult to trace the origin of cremation as a funeral rite, but it is often traced to the Vedas, Hinduism's earliest scriptures which provide hymns for the ceremony (Dubois, 2007).

Ancient cremations were typically conducted with the use of a pyre, or altar made from combustible materials for the purpose of burning a body. This common burial practice in Hindu dominant countries such as India is a frequent occurrence in places such as Varanasi, a city with some of the holiest funeral landscapes in Northern India. The banks along these parts of the Ganges River are lined with pyres from past, present, and future cremations (Dubois, 2007). However, this form of funeral rite is no longer accepted in the United States. In fact, there is only one location in the U.S. that allows open air cremations similar to the traditional Hindu practices: The Crestone End of Life Project located in Crestone, Colorado.



*Cremation pyres of Manikarnika Ghat, Varanasi, India
(Noopur28, 2011)*



*View of cremation pyres from the Ganges River
(Jarvis, 2007)*



Native American Practices

With the tribes spread across North America, it comes as no surprise that cultural traditions vary with their circumstances and geographical location. However, a commonality is found in a clear majority of native tribes who believe in a spirit world where your soul would transcend to after death (Garbarino, 1976). There is an enormous variety in burial customs that existed among the Native Americans. Most rites are conducted to aid the spirit in the afterlife whether it be through possessions, structural protection or even food (Josephy, 1991). Native American burial practices are typically use natural methods for interment and therefore, can be used to identify and incorporate applicable methods to modern natural burial cemeteries.

1. Arctic Tribes often left the dead out in the open

(Above)

Figure 2.15 Bluff used by Native Americans for burial (Dcwright14, 2015)

(Below)

Figure 2.16 Native American funeral service (Unknown, 2017)



on the freezing ground to slow decomposition while allowing for animals to dispose of the remains.

2. Upper Midwest Tribes built mounds and in some cases tombs in which to place their dead. This allowed for contamination control, prevented wild animals from disturbing graves and served as a religious vessel to carrying the soul to the spirit world.
3. Southeastern Tribes utilized secondary bone burial, a practice in which a body is exhumed after weeks of decomposition so that the bones may be cleaned and reburied.
4. Northeast Iroquois accumulated skeletons so that they could be buried in mass with lavish gifts.
5. Northwest Coastal Tribes built funerary 'houses' to place their dead, similar to a modern-day mausoleum.
6. California Tribes utilized cremation on a pyre.
7. Western Mountain Tribes placed the dead in rock fissures or caves.
8. Nomadic Tribes utilized trees or wooden scaffolding to support bodies high in the air to decompose.
9. Central and South Atlantic Tribes used a mummification and embalming method to preserve their dead, but quickly led to contamination, disease and many deaths. Bodies were then put in a mass grave or placed in a river (Underhill, 1953).



Figure 2.17 Chinook Burial Grounds
(Stanley, circa 1870)



Figure 2.18 Marksville State Historic Site burial
mound (Conn, 2008)

Societal Influences

Western cultures such as the United States began funerary practices as “homogeneous communities”. People were often living near like-minded people with similar religious beliefs while living close to extended families. However, as the United States continued to diversify, and transportation became more accessible, the family cemetery and communal grieving stopped being a social norm. Today, the bereavement process is expected to be done in private with immediate family and friends (Osterweis and Green, 1984). Most often, bodies are turned over to funerary professionals who will strongly suggest disinfection and embalming. This continued practice has led to an acceptance of chemical preservation as a norm for burial (Colmane, 2010).

All these salient characteristics of contemporary Western society, and others—such as the decline of kinship and religion, the nuclearization and high mobility of the family, a diminished sense of community, and the disengagement of the elderly—have important implications for recovery from bereavement and grief.
- Osterweis and Green, 1984

Indicators of social change related to death can be seen in the professional environment. One hundred years ago, funerary directors were typically carpenters who sold coffins (Harberstein and Lamers, 1972). However, the funeral industry now defines itself as a professional practice that requires higher education to operate. A professional shift such as this indicates a desire or dependency on a service, in this case embalming-casket methods. Another shift

related to professional practices is the fact that more deaths occur in institutional settings such as hospitals and nursing homes. This changes the dynamic in which we experience and cope with death (Osterweis and Green 1984).

Another significant change in the social dynamics of commemoration and burial is the decentralization of the American family. In the past, families were often living near one another since transportation was expensive (and dangerous at times). However, in the modern age, families of all ages leave their childhood homes to seek opportunity elsewhere. The family cemetery ceased to be a vital landscape for historic and personal reflection.

The American Way of Death by Jessica Mitford analyzed the shifts in burial practices in the United States and the abuses of the funeral industry. These industries specifically targeted those in bereavement for monetary gain by ensuring families that these services (hardwood caskets, embalming, and vaults) are necessary for ‘proper burial’. With less and less literature is being produced related to the significance of the bereavement process, “Research is needed on the various grieving experiences of ethnic group members to determine cultural norms of grieving and to lay the groundwork for determining pathology” (Osterweis and Green 1984).



Figure 2.19 Tree growing over a grave marker, Oak Hill Cemetery, Crawfordsville, IN (Corrie, 2017)

A photograph of a stone-paved path leading into a wooded area. The path is made of dark, rectangular stone blocks arranged in a grid pattern. The path leads towards a dense forest of green trees. The text "COMMEMORATIVE LANDSCAPE DESIGN" is overlaid in white, bold, sans-serif font on the right side of the image.

COMMEMORATIVE LANDSCAPE DESIGN

(Left)

Figure 2.20 Path leading to the John F. Kennedy Memorial (Smuconlaw, 2015)

Emotive Landscapes

The term emotive landscape design is used in this research to describe the type of experience landscapes cemetery spaces should offer. Since cemetery spaces are places of mourning, self-contemplation, and healing, the landscapes they reside in need to respond with equally emotional experiences. Landscapes themselves contain the meaning placed there by the constructs of society (Olin, 1988). It is vital then that the narrative a place is understood by all types of users, which can be difficult to accomplish in multi-cultural spaces such as cemeteries. “I found that these spaces’ capacity for eliciting emotive/spiritual responses was traceable to a comparable presence of “trigger strategies and devices”...Similarly, important human rituals and commemorative human activities rely on related strategies to affect us cognitively/emotionally” (Scheffler, 1991). These “trigger strategies” can be employed to enhance the metaphoric experience of specific user groups while being read as literal by the layperson. In essence, emotive landscape design may act as a tool for creating meaningful landscape design while accommodating diverse user groups.

There are many tools that can create moments of contemplation or emotional response. Directed views and axis are used predominately in traditional cemetery landscapes as they can offer a high visual impact and focus on a singular element, such as a monument or obelisk. However, concealing and revealing a focal point can offer equal if not greater impact on emotive responses given the correct context. The directionality, approach, and framing of a view or design element can greatly impact our emotive response. This is the same for symmetrical

design and visual balance to create emphasis or cue for the user. The form of the landscape can raise or lower elements to create varying levels of circulation, approach, visual sight lines, and elemental hierarchy. Even the contrast in materials and vegetation can indicate changes in space or create directionality (Starke, 2013). The design of the landscape can greatly influence our emotive response to space.

Today, many contemplative seekers find themselves without the benefit of...a single integral tradition. Meanwhile, we are presented with unprecedented breadth of access to an array of spiritual practices, movements and texts from past and present. ...Through written materials, tapes, traveling teachers, and the internet, the wisdom and practices of all the world's religions are knocking at our doors.”

-Frolich, 2000

Through the use of landscape design elements, a hybrid funerary landscape can be achieved that accommodates diverse user groups that read to the layperson as a cohesive space but have greater secondary meanings to those other specific user groups. Design elements can be framed, approached, or incorporated in such a way as to carry significant meaning to the varying cultural communities (Frolich, 2000).

Traditional Cemetery Design

The main types of cemeteries in the United States are: church graveyards, country graveyards, military cemeteries, monumental cemeteries, family cemeteries, potter's fields, prison cemeteries, rural garden cemeteries, and memorial park cemeteries (Herron, 2012). By examining the prominent funeral landscapes that existed in the United States, trends can be identified as to what was deemed successful in terms of commemorative properties that can later be applied to the design framework. Understanding failures of these cemetery designs is equally important to ensure mistakes are not repeated in the projective design.

Church Graveyards

Recognized as one of the most traditional forms of cemetery designs, the church graveyard was created to accommodate the needs of those with strong religious beliefs who belonged to the church (which in the past were much more widespread). These burial sites were later considered to be the source of many health problems in urban environments since the church was typically situated in the center of development rather than town perimeters in the past (Jackson & Vergara, 1989). The decomposing bodies would often contaminate ground water and those who buried the bodies often spread infectious diseases.

Potter's Fields

A Potter's Field is essentially a burial site for the destitute, people with no known kin, identity, or great social significance (Jackson & Vergara, 1989). This type of burial site usually had unmarked graves and was eventually forgotten over time. With no one to adequately maintain or visit grave sites, these types of cemetery spaces often lose their significance with the living since they have no connection with the deceased.



Figure 2.21 A trench at the potter's field on Hart Island, NY (Riss, circa 1890)



Figure 2.22 Trinity Church Cemetery, New York, NY (Gryffindor, 2010)

Rural Garden Cemetery

As a response to the appalling conditions of church graveyards in the 1830's, the rural garden cemetery was located outside the city to mitigate disease. Because they were so well designed with pathways, luxurious landscaping, and shade, they became desirable spaces for multi-functional activities, such as picnicking and strolling (Linden, 1989). Mount Auburn Cemetery in Cambridge, MA and its predecessor the Père Lachaise Cemetery in Paris, France, are informative precedents for how cemeteries may be programmed looking toward the future to incorporate other activities then individual commemoration (Sloane, 1995). This innovative use of cemetery space inspired competition: the urban city park. Shifts in perceptions during the Victorian Era began to weigh in favor of separated activities between cemeteries and what is considered modern urban park programming. This ultimately led to the decline of the Rural Garden Cemetery as a place of community gathering (American Forests, 2014).

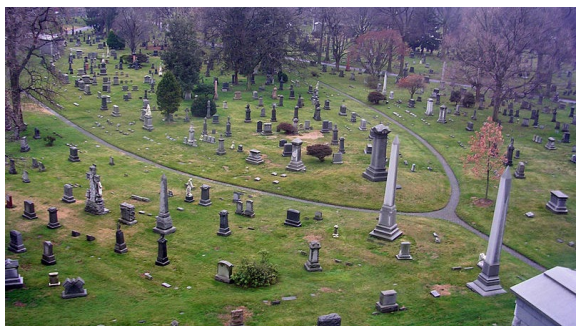


Figure 2.23 Green Wood Cemetery
(Shankbone, 2007)

Memorial Park Cemetery

The Memorial Park Cemetery (or Lawn Cemetery) is one of the newest burial designs to emerge in the last 100 years. The lawn cemetery incorporates all of the appealing qualities of a rural garden cemetery without the use of upright markers, but rather flush tablets that denote internments leaving the rest of the open space for public amenities (architecture, art, fountains, etc.). This cemetery type is exemplified by Dr. Hubert Eaton's Forest Lawn Cemetery in Glendale, California which to some has an aesthetically pleasing, uninterrupted lawn and which has now become the standard for most burial sites across the United States, especially after World War II (Jackson & Vergara, 1989). However, as burial preferences changed from burial to cremation, there has been a decline in the use of the Memorial Park Cemetery type because cremation is a way to bypass the potential of soil and water contamination (Sloane, 1995).



Figure 2.24 Anchorage Memorial Park
Cemetery (Dmadeo, 2013)

Commemorative Landscape Design Precedents

Three sites were selected to examine their merits for evoking emotion, creating a narrative, and promoting healing for the bereaved. These landscapes are new or variants of the previous forms of landscape design seen in traditional cemeteries. They illustrate modern approaches to the design of emotive, commemorative places.

The Woodland Cemetery | Stockholm, SE

Located in Stockholm, Sweden, the Woodland Cemetery was designed by Gunnar Asplund and Sigurd Lewerentz as part of a design competition to expand and enhance an existing cemetery. The approximately 225 acre site hosts a variety of experiential spaces to provide visitors with the ability to "...induce fundamental reflections on the temporality and meaning of one's existence; on humanity's proper place within nature and its interrelation to other life forms..." (Hermann, 2005)

The Central Clearing is a large area that makes the user feel small in scale. A gently ascending lawn is interwoven with a rough flagstone path adjacent to a columbarium. This open landscape provides the visitor with an overview of the area with axial views to other defined spaces within the cemetery. Walking through this space clears the mind to create "inner silence", setting the tone prior to moving through the rest of the cemetery (Hermann, 2005).

At the end of one of the axial views in the Central Clearing resides the Way of the Cross. One of the cemetery's designers, Gunnar Asplund, de-emphasized the cross by abstracting the form to appear as a "more anthropomorphic image". The orientation of the cross is such that the arms align with an east-west axis to create a separation of the columbarium and cremation chapel spaces. The cross itself acts as a visual cue to guide visitors down the linear north-south pathway to the next transitional space (Hermann, 2005).

The meditation grove consists of 12 weeping elm trees and resides on a hilltop within the center of the site acting as a focal point for visitors. The stairs leading to the grove accounts for the user's endurance by reducing the height and increasing the depth to create a comfortable experience. Once within the space, the placement of the trees aligns the visitor with the four cardinal directions overlooking the site. The concentric square pattern within the grove contains inward facing benches which guides users towards inward contemplation and visually cues their eyes upward to the sky (Hermann, 2005).

Along the southern edge of the central clearing, a grove of birch trees was planted in a grid to accommodate burials under a forest canopy. The transition to this space is framed by weeping birches and leads visitors into an understory lawn where they can pay respects to the graves. The graves themselves are typically oriented to the east causing the mourner to face the setting sun to the west; a symbolic gesture of renewal and loss. (Hermann, 2005)

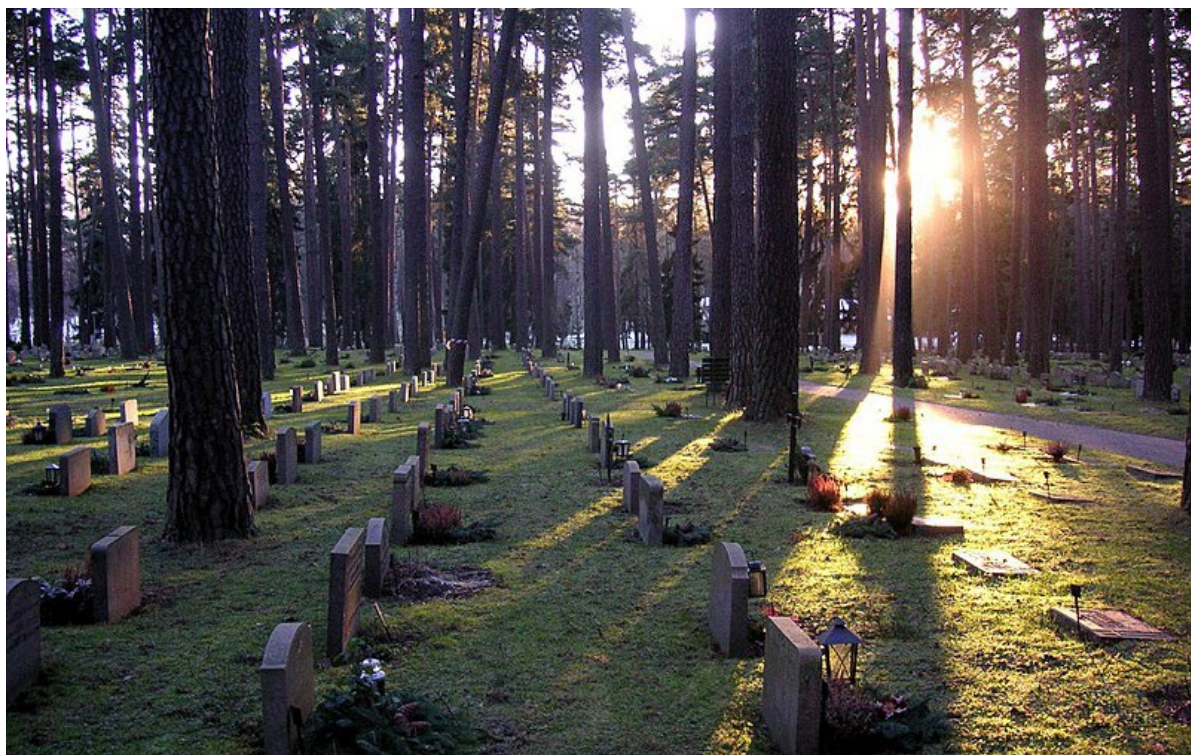


Figure 2.25 Graves at the Woodland Cemetery, Stockholm, Sweden (Holger, 2006)



Figure 2.26 Graves at the Woodland Cemetery, Stockholm, Sweden (Herring, 2007)

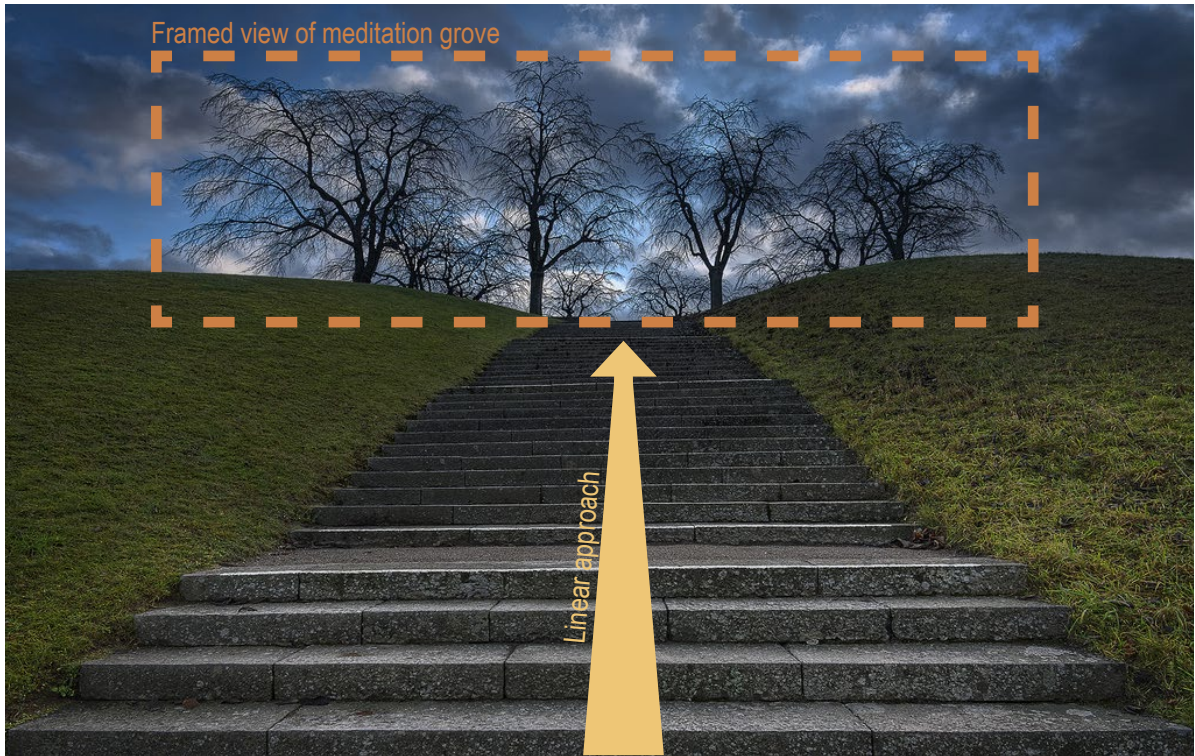


Figure 2.27 Steps leading up to meditation grove
(Lindman, 2011, Modified by Author)

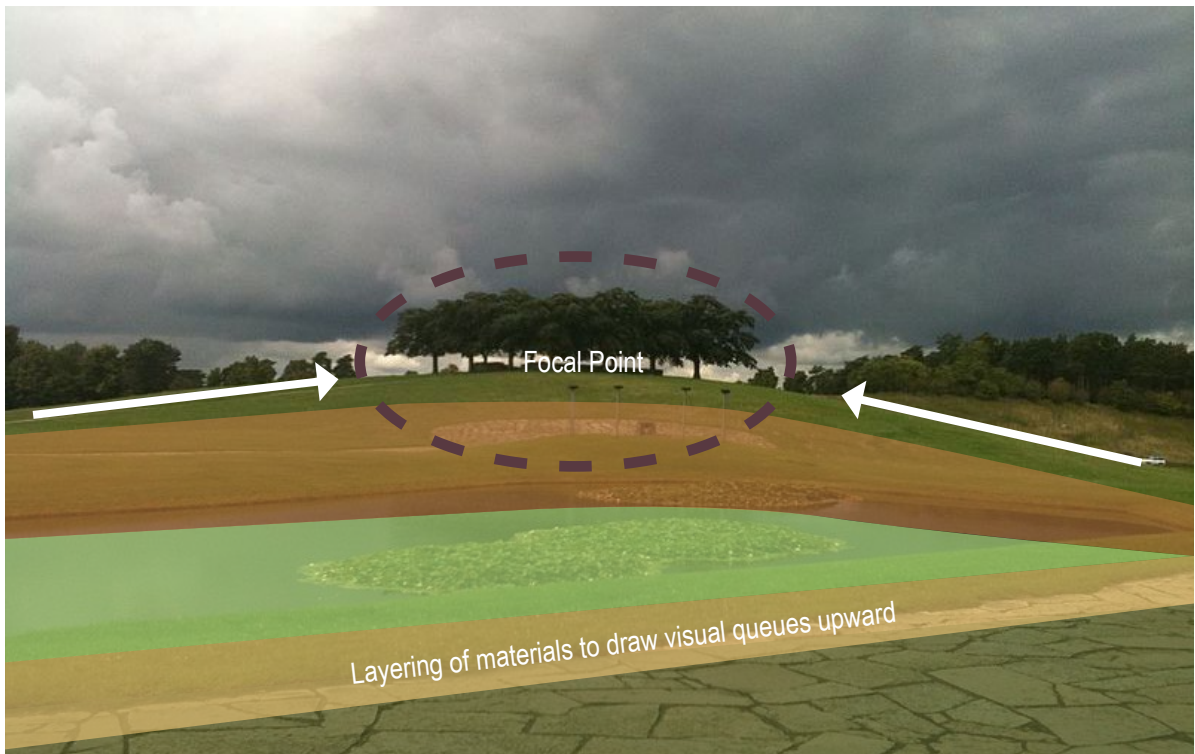


Figure 2.28 View of meditation grove and lily pond
(Javeriya, 2011, Modified by Author)

Figure 2.29 Site plan of the Woodland Cemetery (Corrie, 2018)
Base Data: Google, Landsat, Copernicus





Figure 2.30 Walkway of the Seven Wells
(Svensson, 2003, Modified by Author)



Figure 2.31 Contemplation area in the Woodland Cemetery
(Averater, 2015, Modified by Author)

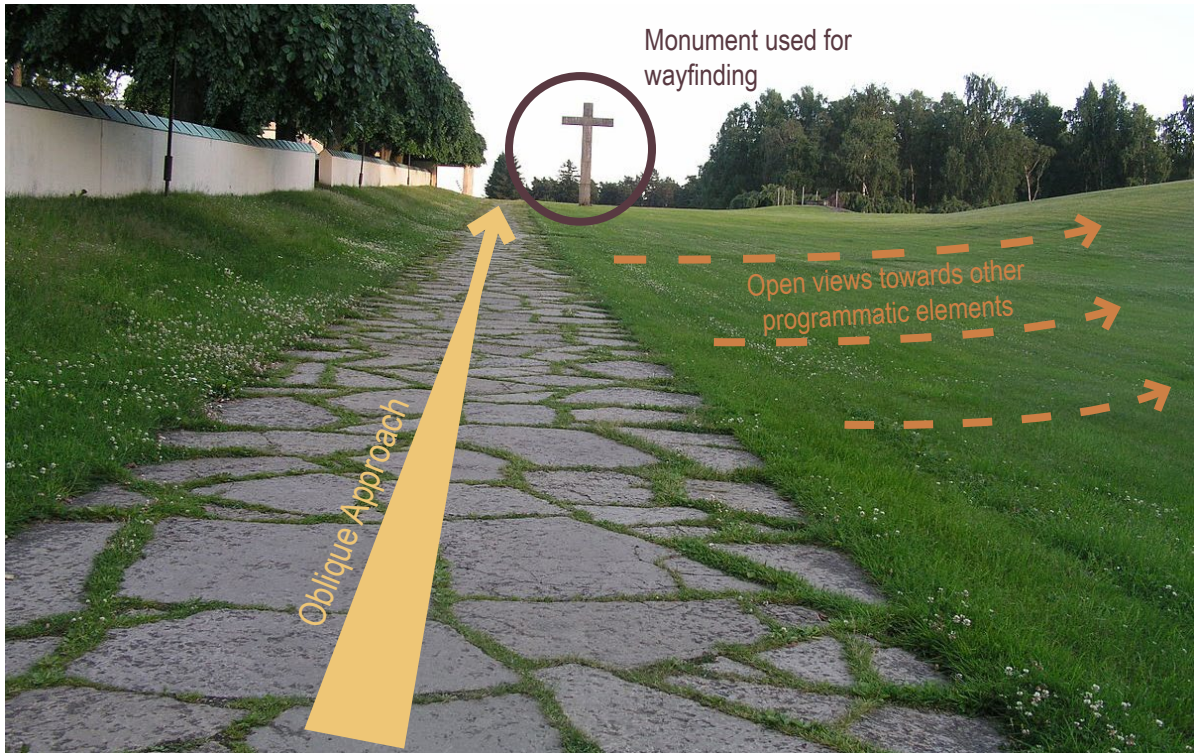


Figure 2.32 Way of the Cross Pathway
(Svensson, 2003, Modified by Author)



Figure 2.33 The Monument Hall of the Woodland Cemetery
(Vågen, 2015, Modified by Author)

(Below)

Figure 2.34 Sir Geoffrey Jellicoe's intended narrative for the John F. Kennedy Memorial
(Corrie, 2018)

(Right)

Figure 2.35 Path leading to the John F. Kennedy Memorial (Smuconlaw, 2015)

John F. Kennedy Memorial | Runnymede, UK

Not long after John F. Kennedy's assassination in 1963, the British Government gifted the memorial site in Runnymede to the United States as a gesture of respect and commemoration. Designed by Sir Geoffrey Jellicoe, this incredibly simply designed landscape offers many emotive cues for visitors to create a holistic experience through varying degrees of spaces. The entrance to the memorial begins with a low-mowed grass path that leads visitors from the main parking area through an open field. The path leads to a wooded edge of the open landscape where a timber gate impedes circulation representing the beginning of life's challenges. As the visitor progresses through the forest, they walk upon a winding pathway made of 60,000 granite cobblestones enclosed by trees (Historic England, 2018).

Upon reaching the end of the path, the materiality changes to granite paver steps leading to a seven-ton block of Portland Stone inscribed with President Kennedy's inaugural address. The axis on which the plinth is based visually separates the asymmetric qualities between open turf landscape and forested areas representing the uncertainty of death. However, a final path leads in the direction of the open landscape down a linear axis terminating in a contemplation area that overlooks Runnymede to symbolize the future.

This narrative prescribed by Jellicoe unfolds in a way that creates a visually impactful experience for visitors, while creating underlying meanings to be interpreted after the fact (Jellicoe, 2009).

Jellicoe's Narrative

Clearing of the mind

- Entry walk through natural landscape to wooded edge

Pilgrimage Path

- Granite cobble stones represent the number of people who would inevitably visit the site to pay respect, there are approximately 60,000
- The walk through the wilderness visitors pass through represents the wildness, even wickedness we encounter in life.

Memorial

- The memorial stone represents the body that will survive the test of time
- Framing of monument with planting on the left, and openness to the right creating a dynamic view representing the balance of life and death

Reflective Overlook

- The very directed, linear walkway represents the law, order, and justice in life.
- Contemplative space at the terminus allows the users to reflect on the narrative as well as their personal life



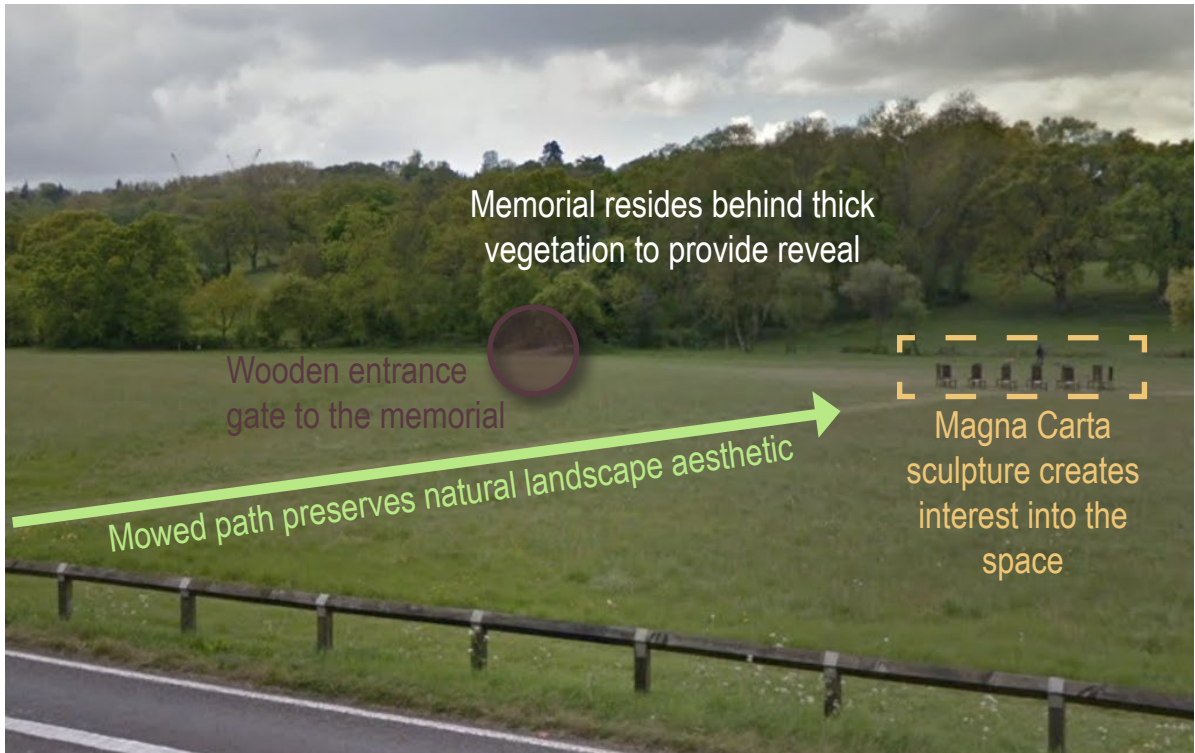


Figure 2.36 Central Clearing leading the memorial
(Corrie, 2018) Base Data: Google



Figure 2.37 Edge conditions of the approach to the memorial
(Smuconlaw, 2015, Modified by Author)

Figure 2.38 Site plan of the John F. Kennedy Memorial (Corrie, 2018)
Base Data: Google

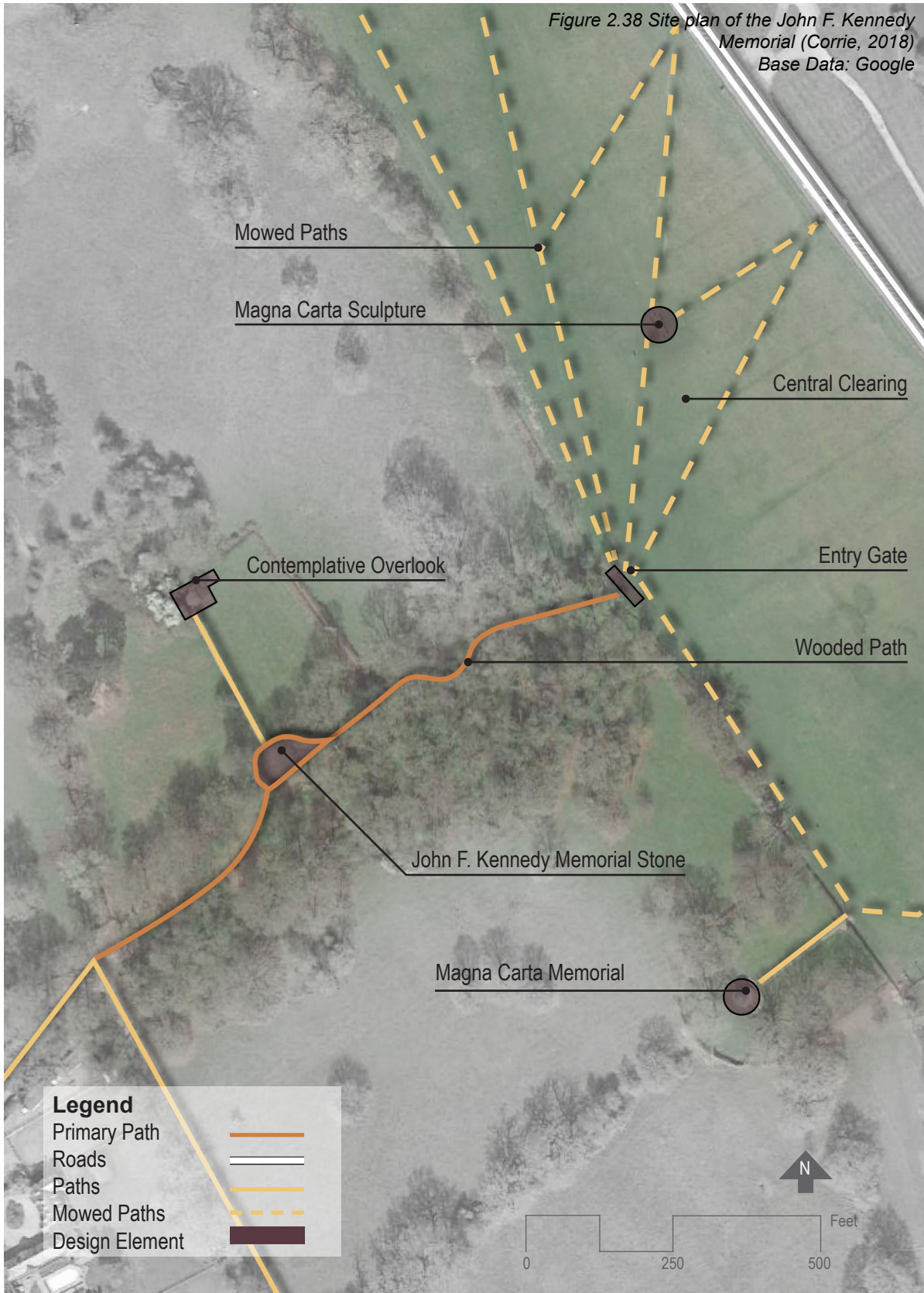




Figure 2.39 Path leading through the forest leading to the memorial (Smuconlaw, 2015, Modified by Author)

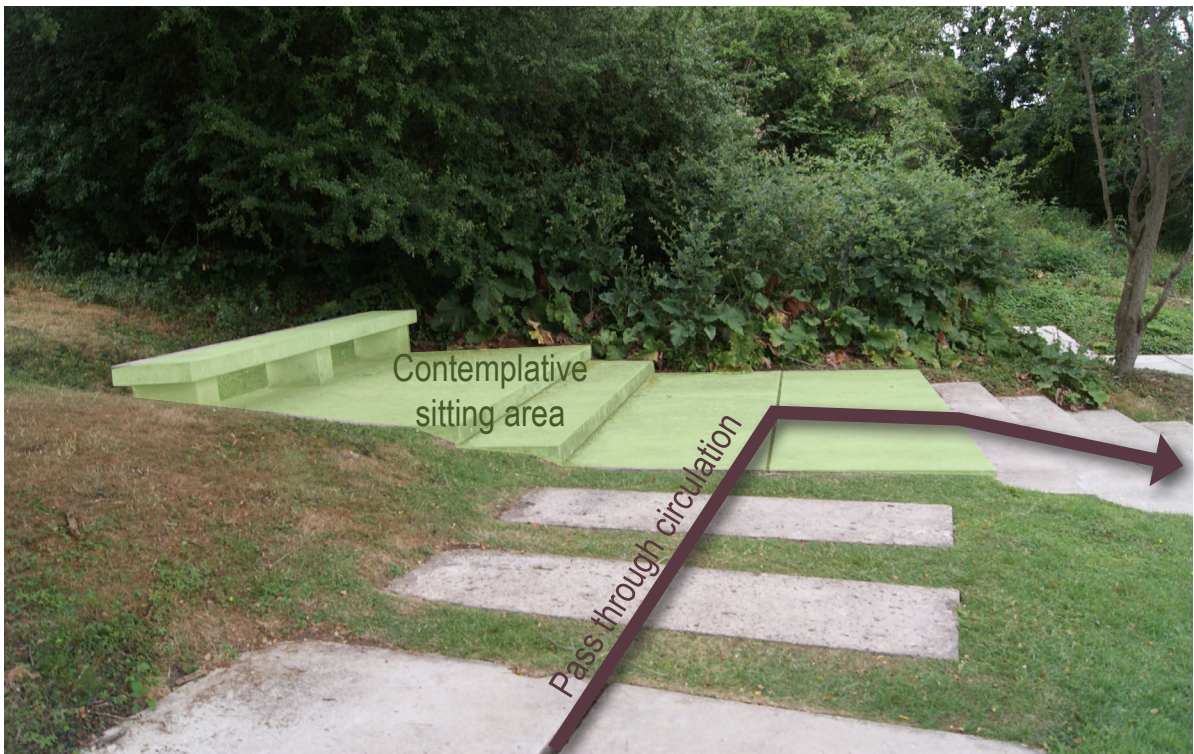


Figure 2.40 Contemplation area upon exiting the memorial space (Smuconlaw, 2015, Modified by Author)



Figure 2.41 Approach to the Memorial stone
(Mathewson, 2010 Modified by Author)



Figure 2.42 View from overlook (Smuconlaw, 2015, Modified by Author)

Mount Auburn Cemetery | Boston, MA

Jacob Bigelow proposed Mount Auburn in 1831 as a way to address the overcrowded burial grounds in city centers and to act as a public green space. The successful design of the cemetery is largely due to its response to topography, axial views, and planting design. Since the cemetery was intended to be used as a park in addition to a cemetery, many park-like qualities provide a relaxing, contemplative experience. Prominent hills provide a means of wayfinding through the winding paths and roads throughout the space (Banta, 2012).

Washington Tower, which resides atop Mount Auburn at a height of 62 feet, acts as an overlook, contemplation space, and a regional marker for the resting place of thousands (Friends of Mount Auburn, 2011). There is a variety of garden spaces that provide different experiences for users as they move through space.



Figure 2.43 Washington Tower view over Mount Auburn (Swampyank, 2008)



Figure 2.44 Mausoleum of Boston merchant Charles Freeland (Daderot, 2008)

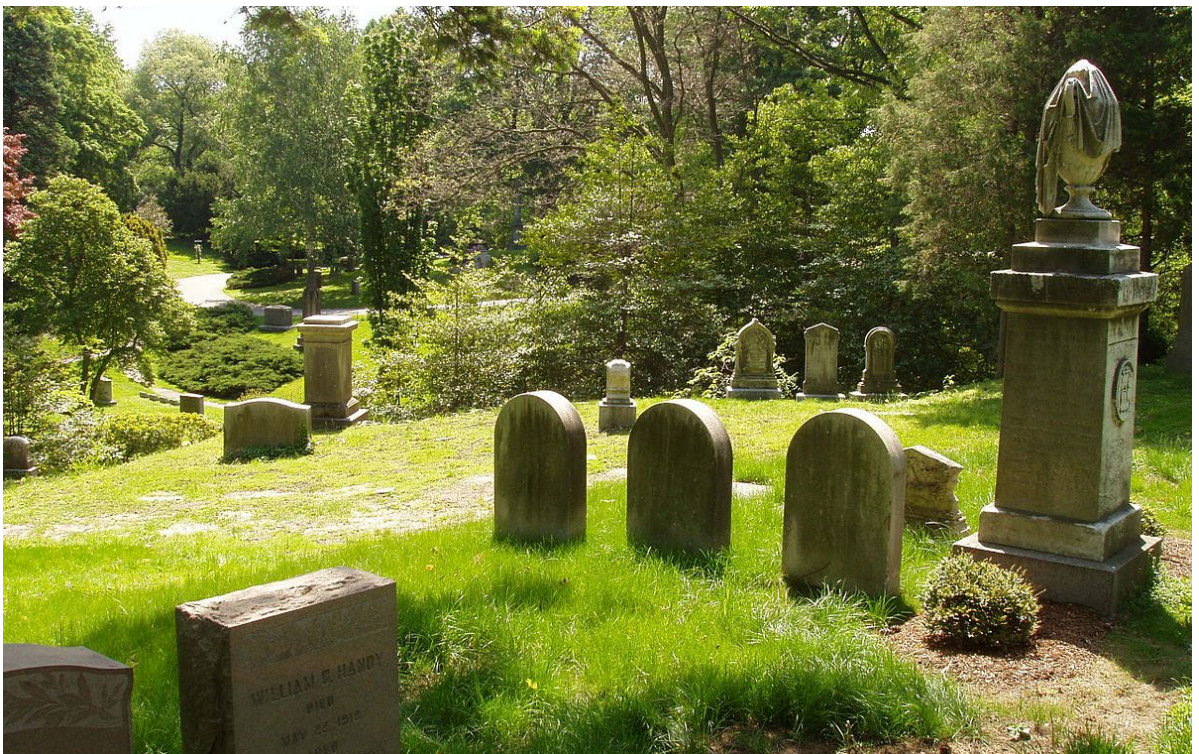


Figure 2.45 View over historic graves in Mount Auburn (Daderot, 2005)



Figure 2.46 Seating area next to Halcyon Lake
(Friends of Mount Auburn, 2007)



Figure 2.47 A depiction of the terrain in Mount Auburn Cemetery (Harvardmed1, 2016)



The planting design of Mount Auburn closely follows the rural garden aesthetic. Many of the areas contain manicured lawns, views of the undulating hills, and sculpted shrubs. However, the cemetery landscape has evolved since its opening almost 200 years ago. Older parts of the cemetery have begun to be reclaimed with more wild vegetation. Other areas incorporate ornamental or specimen trees near wild growth to create visually distinguishable graves. Curator of Historical Collections, Meg Winslow, describes the horticultural work at Mount Auburn

Cemetery thus: “The variety of materials provides a rich historical context to the ways in which generations of landscape architects, gardeners, and horticulturists have contributed to continual transformations in the character and design of the Cemetery.” (Friends of Mount Auburn, 2011). This knowledge and precedent is vital to Hybrid Natural Burial landscapes as they are typically incorporated into existing rural garden designs. By highlighting aspects of planting design in this precedent, the techniques can be applied to hybrid natural burial landscapes.

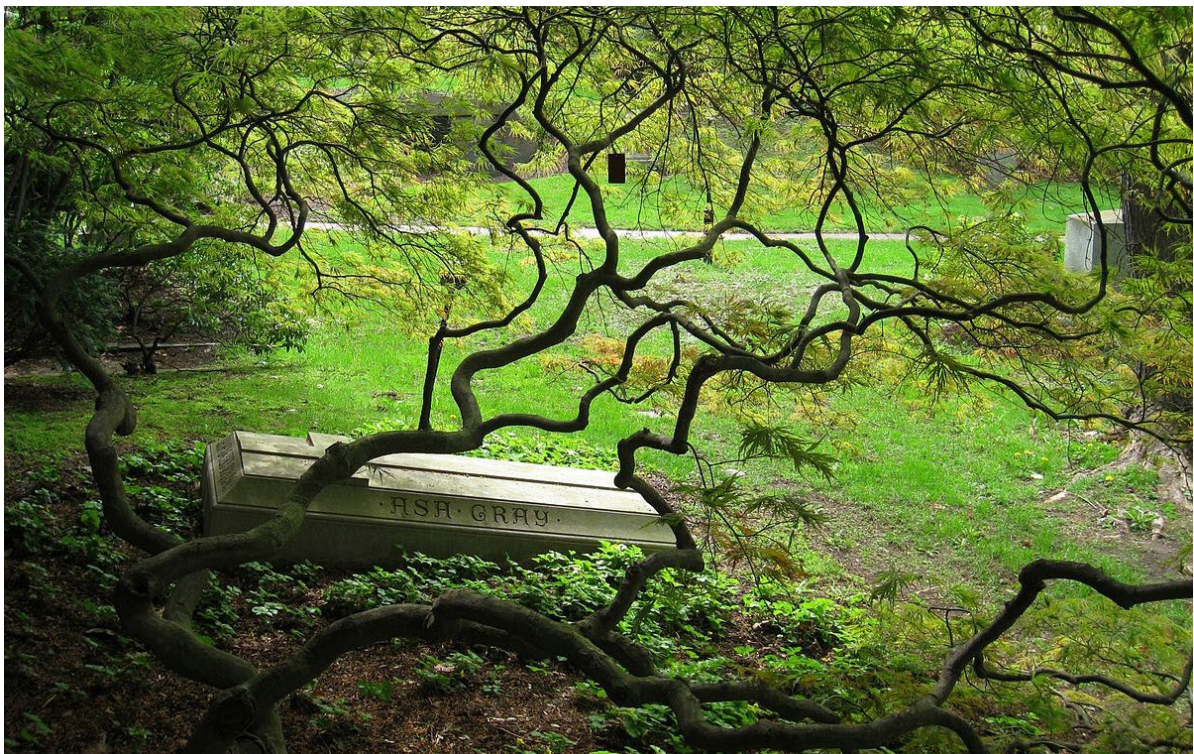
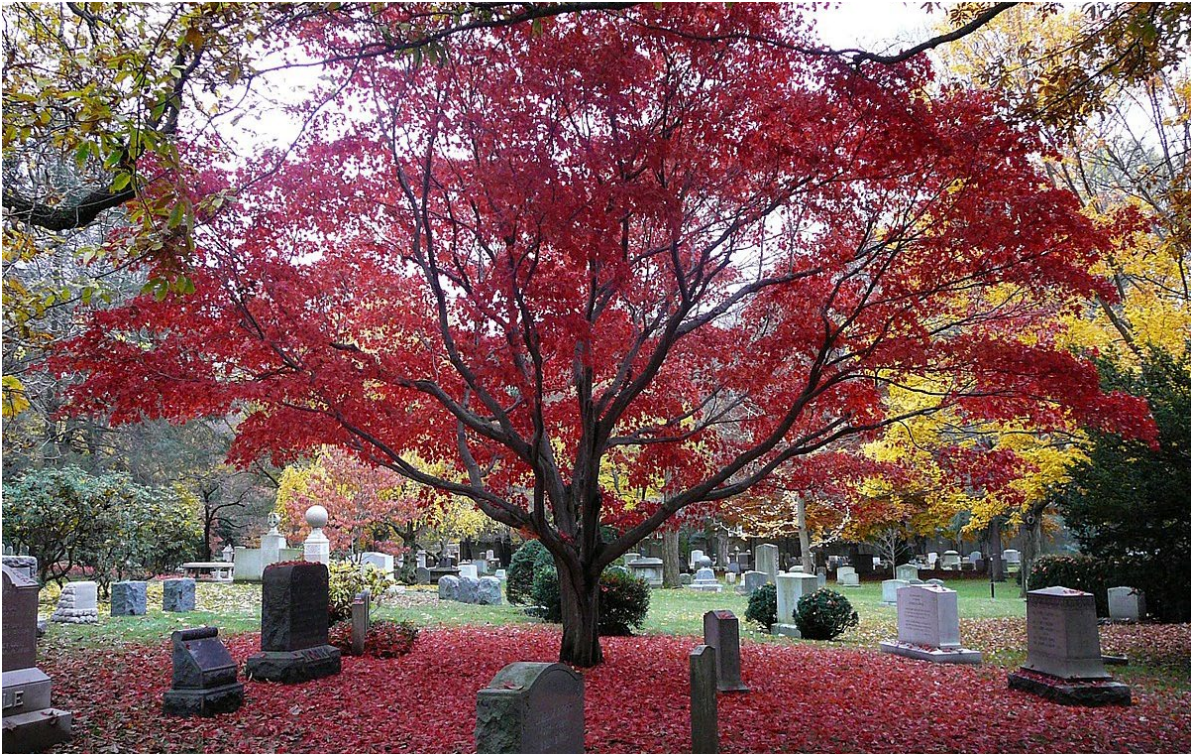


Figure 2.49 Grave site of American botanist Asa Gray (Daderot, 2008)



*Figure 2.50 Fall in Mount Auburn Cemetery
(Berg999, 2008)*



*Figure 2.51 Valley in Mount Auburn Cemetery
(Rizka, 2014)*

NATURAL BURIALS



(Left)

Figure 2.52 *Marching Bear Mounds, Effigy Mounds National Monument, Iowa* (Maxfield, 2009)

Natural Burial

There are over 130,000 cemetery sites in the United States, many of which are neglected (Schuler, 2015). Because we are such a mobile society, many families do not stay near their ancestors' burial grounds leading to even more forgotten spaces over time (Stephanie McDougal as cited by Schuler, 2015). The increased number of cemeteries in the United States will contribute to the problem of wasted (or rather forgotten) land unless a new approach to their design is taken (Basmajian and Coutts, 2010; Cheng, 2013).

Natural burial is by no means a new method of body interment. However, regulations which vary from state to state, have been enacted to mitigate any chance of contamination. Natural burials are often conducted on private ground that meets a minimum acreage and are away from any major water sources (Relyea, 2013). The benefits of natural burial cemeteries include: reduced land consumption, reduction of burial materials, less pollution from embalming chemicals and cremation, as well as the return of organic material from the body which, in turn, benefits the soil (GBC, 2018).

Natural burials began essentially as an alternative to the popular casket-embalming system commonly seen in the United States. However, as more and more people become aware of the ecological implications of embalming, global environmental issues, and the overwhelming cost of traditional burial, natural burials have become more (but not fully) accepted by society. A 2007 AARP Funeral and Burial Planners survey showed that people with higher educational levels, socioeconomic status, and those of a younger age demographic were more

accepting of green burial as an alternative (Gonzales, 2009). There are approximately 93 registered natural burial sites in the U.S. in addition to some states that allow burial on private land (U.S. Funerals, 2016). According to a Kates-Boylston Publication study conducted in 2008, 43% of respondents were open to considering green burial as an alternative whereas in the previous year, an American Association of Retired Persons (AARP) study found only 21% of respondents would consider it (Reuters, 2013).

Typical natural burials are rather simple to accommodate as long as they meet the requirements of local and state laws. Some natural burial grounds are classified as conservation areas in order to meet the needs of their burials. "In natural burial, the body is buried, without embalming, in a natural setting. Any shroud or casket that is used must be biodegradable, nontoxic, and of sustainable material. Traditional standing headstones are not permitted. Instead, flat rocks, plants or trees may serve as grave markers" (NFDA, 2018). Natural burial is a simplified process for burial in which graves are typically dug between 2 ½ - 6' deep depending on the regulations, setting, and type of natural burial that is occurring. A true natural burial should range on the shallower side of grave depth since decomposition would benefit the organic matter soil layer ideal for healthy ecologies. Natural burial services more often involve mourners in the physical burial than the traditional burial by lowering the body, assisting in burial, or demarcating the grave after the fact. These markings are often made from natural materials such as boulders, vegetation, or even with GPS (Global Positioning System) coordinates (GBC, 2018).



Figure 2.53 Buddha statue residing in tree cavity (Schulenburg, 2016)

Natural Burial Ground Precedents

As a way of understanding the conditions of natural burial grounds in the United States, three sites were studied for their quality of design elements, burial techniques, commemorative qualities, and visual aesthetic.

Fernwood Cemetery | Mill Valley, CA

As one of the only natural burial cemeteries in California, it is located adjacent to the Golden Gate National Recreation Area in the San Francisco Bay area. The area is a National Wildlife Federation Habitat and hosts both natural and traditional burials as well as cremation. This promotion of sustainable practices has separated Fernwood from many cemeteries in the country by incorporating all forms of burial within a single site (Fernwood Cemetery, 2018). This has created an interesting combination of pristine ecological landscapes with monuments and traditional cemetery design.

Graves are dug by hand and incorporate small boulders as burial markers. Since some choose to have no marker, Fernwood uses GPS to mark every burial so they may document burial sites for future generations. The cemetery's landscape is a combination of forest and meadows. Within the site is a loop circulation access road, interconnected trail system, on-site office and remembrance room, and a variety of vegetation (Fernwood Cemetery, 2018).

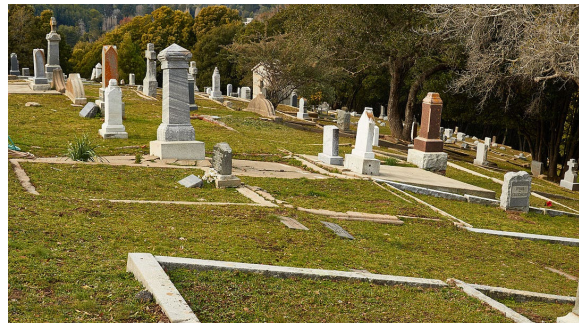


Figure 2.54 Traditional headstone markers (Schulenburg, 2016)



Figure 2.55 Mausoleum surrounded by headstones (Schulenburg, 2016)

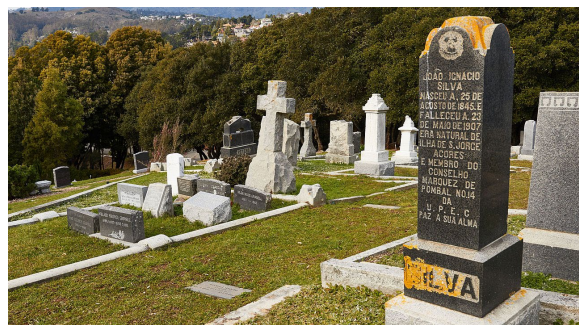


Figure 2.56 Burials plots terraced along slopes (Schulenburg, 2016)

Figure 2.57 Site plan of Fernwood Cemetery
(Corrie, 2018)
Base Data: Google, CSUMB SFML. CA OPC

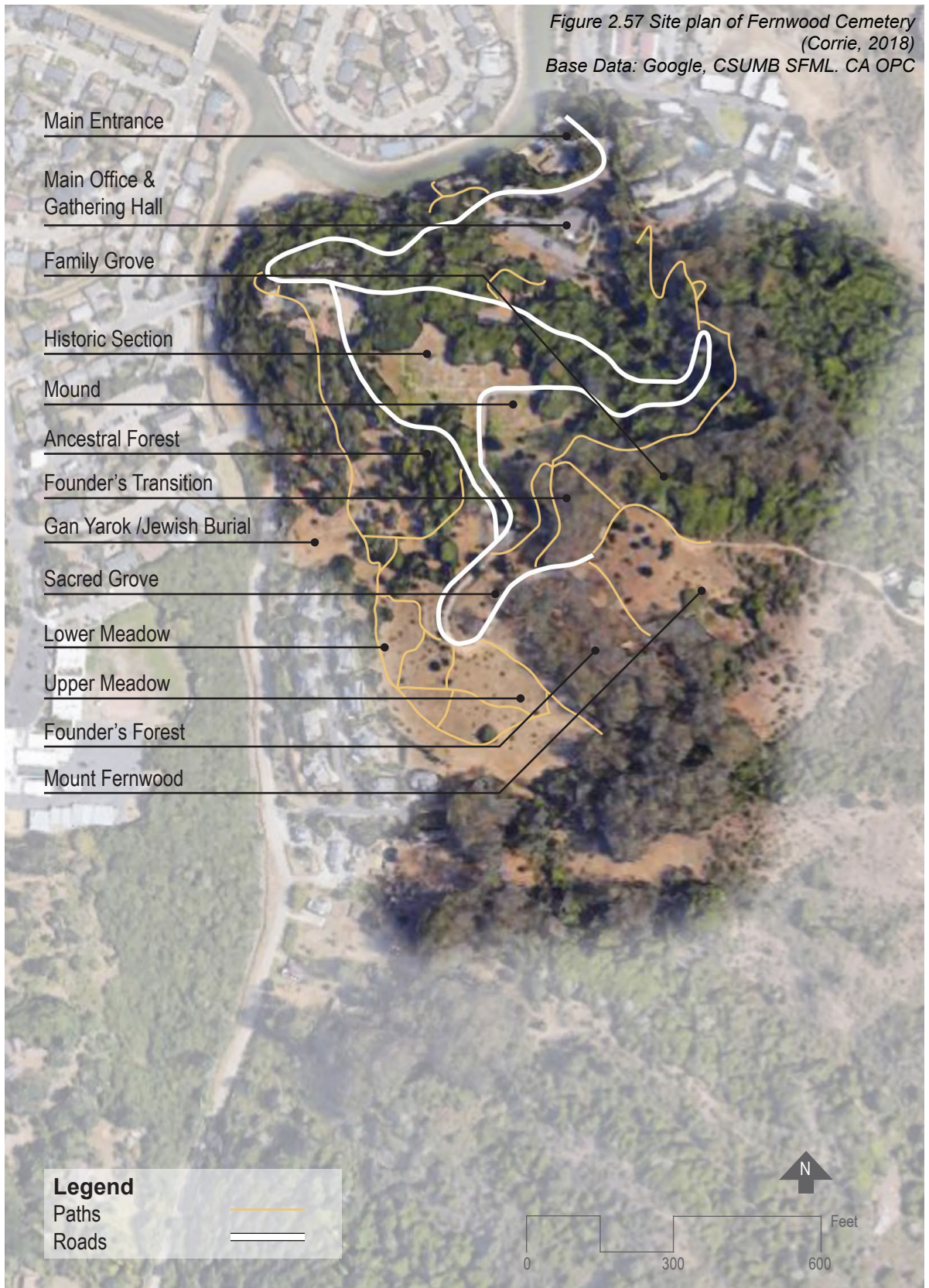




Figure 2.58 Natural burial plot (Sadiq, 2016)



Figure 2.59 Burial plots along slope (Schulenburg, 2016)



Figure 2.60 Road through Fernwood Cemetery
(Schulenburg, 2016)



Figure 2.61 Gravel and wood steps along slope
(Schulenburg, 2016)

Ramsey Creek Preserve | Westminster, SC

Located in Westminster, South Carolina, the Ramsey Creek Preserve is known as the first “green cemetery” in the United States. Opened in 1996, the Preserve utilizes burial as a means to enhance land stewardship and restoration while providing a cost-effective alternative to interment (Memorial Ecosystems, 2018). The preserve currently has approximately 500 graves in the 33-acre site.

The graves themselves are dug by hand while bodies are preserved with dry ice. Bodies are lowered into the ground by facility workers or by the mourners themselves. There are few to no markers on the Preserve. Stones demarcate some graves and temporary decorations can be found on newer burials such as floral arrangements or wooden markers. However, unlike traditional cemeteries, money earned from funerals is not used for the perpetual care of graves but rather for continued site conservation efforts and non-profit organizations (Blakemore, 2016).

The site itself is a series of meadows, and Appalachian woods with trails connecting the site. Since the preserve is a conservation site, it does not look like a traditional cemetery. This allows for mourners to create their own healing narrative as they move through and experience the variety of spaces within the preserve. The goal of the burial methods seen at Ramsey Creek Preserve is to make death and interment a normal, natural process compared to traditional casket-embalming methods (Blakemore, 2016).



Figure 2.62 Decorating a grave (Photo courtesy of Memorial Ecosystems, 2018)



Figure 2.63 Funeral ceremony (Photo courtesy of Memorial Ecosystems, 2018)



Figure 2.64 Signing of wood casket (Photo courtesy of Memorial Ecosystems, 2018)

Figure 2.65 Site plan of Ramsey Creek Preserve
(Corrie, 2018)
Base Data: Google Earth





Figure 2.66 Family and friends helping bury the grave
(Photo courtesy of Memorial Ecosystems, 2018)



Figure 2.67 Lowering of a grave (Photo courtesy of
Memorial Ecosystems, 2018)



Figure 2.68 Grave decorated with flowers (Photo courtesy of Memorial Ecosystems, 2018)



Figure 2.69 Prepared grave for funeral service (Photo courtesy of Memorial Ecosystems, 2018)

Carolina Memorial Sanctuary | Mills River, NC

The Carolina Memorial Sanctuary was established with a religious-use zoning exemption allowing the area to be considered a Buddhist conservation ground. This allows the facility to operate as ecologically responsible as possible without the limitations of traditional cemetery zoning and regulations. The land also acts as a public park to visitors and hosts memorial services, weddings and other celebrations.

As a part of their dedication to conservation, the Carolina Memorial Sanctuary has several projects underway including: wetland restoration, bioswales, healing plant communities, and habitat creation (Barrett, 2018). This diverse programmatic approach to natural burial separates the Carolina Memorial Sanctuary from the conventional, contemporary cemetery. These ecological projects also creates the opportunity for education aimed at teaching the community about land conservation, natural interment and death (Barrett, 2018).

The natural function and aesthetic of the Sanctuary creates a place of refuge, healing and contemplation for visitors. The facility allows and encourages family involvement during burial as part of the healing process in order to achieve a sense of peace or closure. After the burial, mourners can walk through the network of trails and landscapes to benefit from the psychological healing associated with the outdoors (Barrett, 2018).



Figure 2.70 View of McDowell Creek (Photo courtesy of Carolina Memorial Sanctuary, 2018)

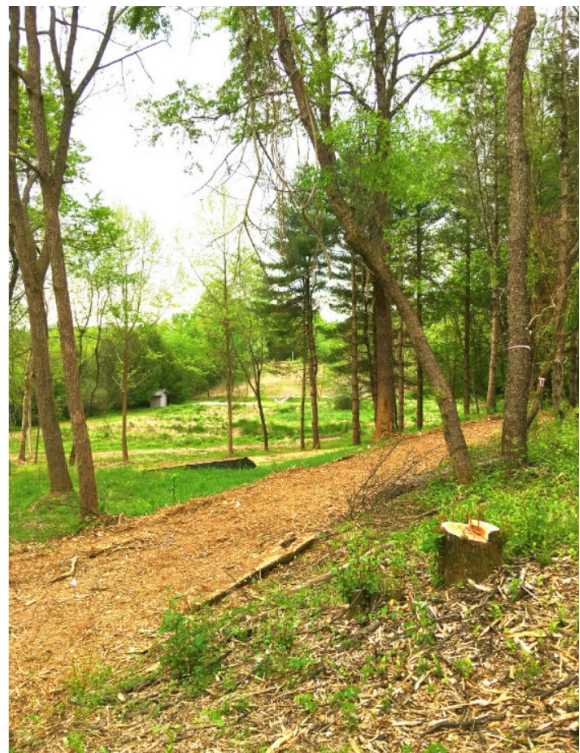


Figure 2.71 Trail through the Preserve (Photo courtesy of Carolina Memorial Sanctuary, 2018)

Figure 2.72 Site plan of the Carolina Memorial Sanctuary (Corrie, 2018)
Base Data: Google Earth





Figure 2.73 Bridge over the wetlands (Photo Courtesy of the Carolina Memorial Sanctuary, 2018)



Figure 2.74 Decorated grave (Photo Courtesy of the Carolina Memorial Sanctuary, 2018)



Figure 2.75 Stone marker for GPS (Photo Courtesy of the Carolina Memorial Sanctuary, 2018)



Figure 2.76 Clearing of invasive plants (Photo Courtesy of the Carolina Memorial Sanctuary, 2018)

A large, mature tree with a thick trunk and sprawling branches dominates the center of the image. The leaves are in various stages of autumn, showing shades of brown, orange, and red. The sun is positioned high in the sky, partially obscured by the tree's branches, creating a bright, hazy light. Long, dark shadows are cast by the tree onto the grassy ground in the foreground. In the background, a cemetery is visible with several tombstones scattered across a grassy field. Other trees, some bare and some with autumn foliage, are scattered throughout the landscape. The overall scene is peaceful and serene, capturing a beautiful autumn day in a cemetery.

SUNRISE CEMETERY

(Left)

Figure 2.77 Graves at Sunrise Cemetery
(Corrie, 2017)

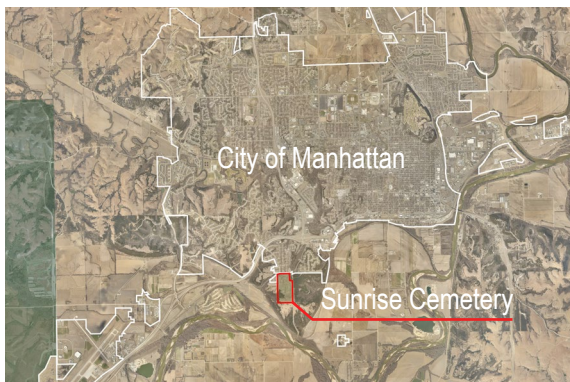
Site Background

Sunrise Cemetery was established in 1960 to provide the City of Manhattan, Kansas with burial space for decades to come. The cemetery itself is approximately 80 acres, with roughly 20 acres plotted (half of which are sold). The remaining tract of land is available for future expansion of the cemetery as needed.

Sunrise Cemetery is located southwest of downtown Manhattan on the south side of a major road, Fort Riley Boulevard. This has separated the site from much of the city and adjacent communities compared to its counterpart, Sunset Cemetery to the northwest. The design of the cemetery closely follows the traditional rural garden typology with rows of headstones, manicured turf landscapes with sporadically placed old-growth trees. A more detailed description of the site and its conditions can be found on page 125.

(Below)

Figure 2.78 Context map
(Corrie, 2018)



Introducing Natural Burial to Manhattan

City officials have expressed interest in introducing natural burial as an option for Sunrise Cemetery and began to consider areas in the site for these interment practices. The initial proposal was for burial plots similar to traditional burial, in a row alongside a road to allow visitors easy access to the grave sites. These plots would be delineated with simple plaques inset into the curb along the road every 10 feet. The graves themselves were to be 4 feet wide x 10 feet long x 4 feet deep and dug with excavation machinery. The area was intended to be planted with ornamental trees such as Redbuds (*Cercis*) and native grasses. In all, the planned natural burial plot would accommodate approximately 90 graves on roughly 1 acre.

Although this effort aims to provide a more sustainable, ecologically friendly alternative to burial, the proposal lacks the core elements seen in modern natural burial grounds and commemorative landscapes. The city's proposal simply accommodates the interment practice rather than embracing its values and benefits to both visitors and the local ecology.

This project illustrates how the remaining unplotted land in Sunrise can be transformed into a modern natural burial ground that reflects successful commemorative practices for mourners.

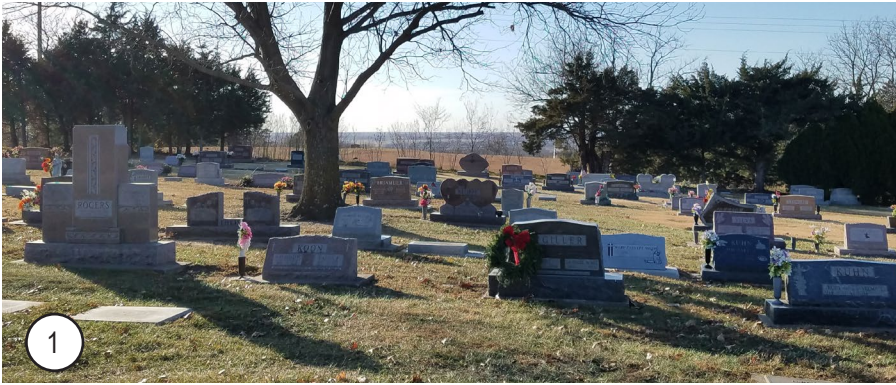


Figure 2.79
Existing aesthetic
(Corrie, 2017)



Figure 2.80
Undeveloped land
(Corrie, 2017)

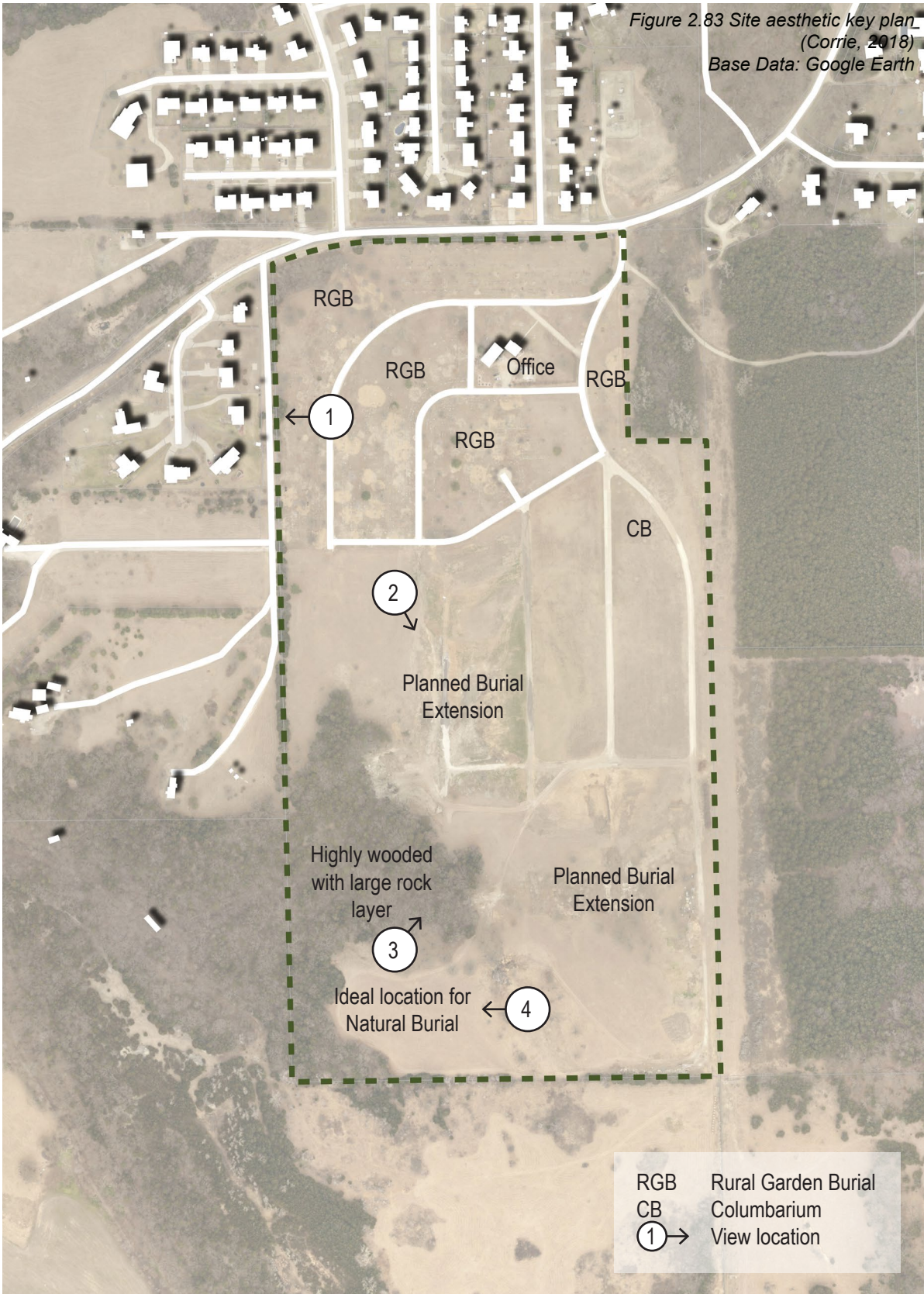


Figure 2.81
Drainage channel
(Corrie, 2017)



Figure 2.82
Ideal natural burial area
(Corrie, 2017)

Figure 2.83 Site aesthetic key plan
(Corrie, 2018)
Base Data: Google Earth





METHODOLOGY



Overview

The intent with this chapter is to thoroughly explain the specific methods used in this project to answer the research questions, generate new concepts, and confirm theories identified in the literature review. This provides an understanding of the rationale behind the research approach, the population from which information was gathered, the type of information to be gathered, and how data was analyzed.

Precedent Studies

Precedent Studies were conducted in two different ways. The first type was illustrated in the Background chapter as examples of both Commemorative Landscape Design and Natural Burial precedents. These studies were conducted by using secondary data collection methods such as photo analysis and literature review. In contrast, the second type, Experiential Precedent Studies, were constructed from first-hand experiences on site. This allowed for a larger variety of projects to be reviewed across the country while still having the experience of visiting regional precedents.

Survey

The purpose of the survey was to gather both qualitative and quantitative information regarding natural burial cemeteries across the United States. This allowed for a variety of participants to share their experiences with maintenance, commemoration practices, site programming, and trends in burial.

Interviews

As a way to gain specific information about varying types of natural burial sites, interviews were conducted with three selected individuals. The locations that these participants represented showcased qualities of three levels of natural burial design:

1. Early planning stages of natural burial integration
2. Hybrid natural burial ground
3. Conservation burial ground

The variety of stages and level of design in which these natural burial grounds were created provided for a holistic understanding of the implications of various planning decisions.

Design Framework & Application

The final method used in the research process involved illustrating the application of the derived conclusions from the literature review and other methods. This was accomplished through the derived design framework which guides readers through the planning and design process of a natural burial cemetery. This framework was then applied to Sunrise Cemetery in Manhattan, Kansas to illustrate the framework's effectiveness.

(Previous)
 Figure 3.1
 Aerial of existing conditions
 (Corrie, 2018)
 Base data: Google Earth
 (Below)
 Figure 3.2
 Precedent study process
 (Corrie, 2018)

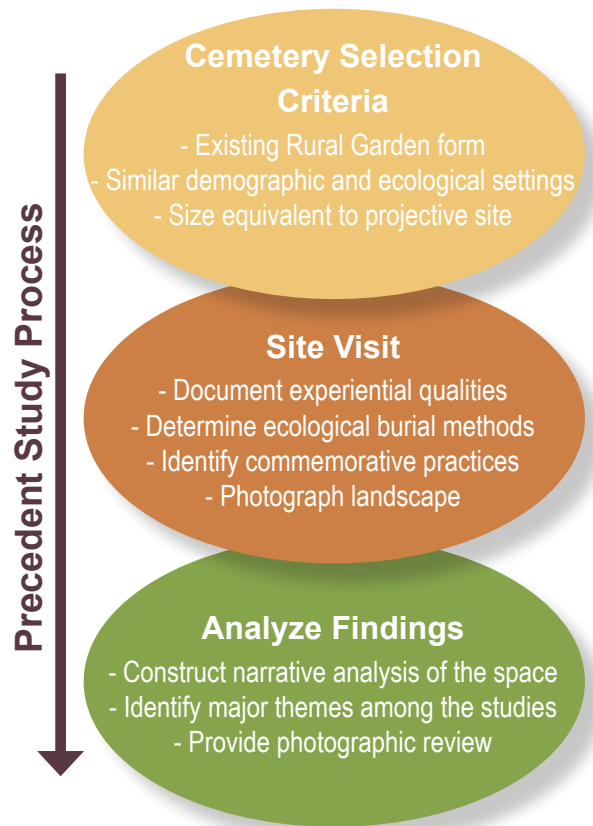
Precedent Studies

To understand how the people, use cemetery spaces (in terms of commemoration, social activity, if any, or contemplation), precedent studies were conducted to identify how the dead are currently being remembered in three ecological cemeteries in the United States that are incorporated into existing rural garden cemeteries.

The tools used included document analysis and site observations. The intent was to identify the most effective methods in creating a commemorative natural burial landscape in the Midwest region. The three natural burial cemeteries selected for this analysis were chosen because natural burial interment was incorporated into an existing rural garden design, and similar conditions to the projective design site, Sunrise Cemetery in Manhattan, Kansas. Site observations were conducted on following cemeteries:

1. Oak Hill Cemetery, Crawfordsville, IN
2. Windridge Memorial Sanctuary, Cary, IL
3. Oak Hill Cemetery, Lawrence, KS

These site observations were conducted either independently or with an employee to see first-hand the kind of commemoration activities people are using in natural burial cemeteries (floral arrangements, rock markers, etc.). Site photographs and observations documented each visit. These studies analyzed form and space, and commemorative activities. Concerns expressed by employees were noted at each site. Site circulation, physical design elements, material choice, and planting design were also documented for their effectiveness.



Survey

The use of an online survey provided the opportunity for professionals in the natural burial and traditional burial industries to provide input regarding their cemeteries. The questions focused on a variety of subjects such as maintenance, remembrance qualities, user programming, site facilities, practice trends, and their perception of natural burial. The survey provided a means of collecting both qualitative and quantitative data.

The survey was conducted using Survey Monkey, an online host for surveys. The invitation for participation began on January 17, 2018 and concluded February 28, 2018. Of the 25 invitations to natural burial cemeteries in the United States, there were 12 responses at a rate of 48%. The surveys allowed the interviewee to provide their input with varying levels of confidentiality as selected by the participant. The 15 question survey combined both open-ended and multiple selection questions to provide a breadth of data that could be synthesized into definitive conclusions. The average completion time for the survey was approximately 30 minutes. (For a list of survey questions, see Appendix 1)

(Below)

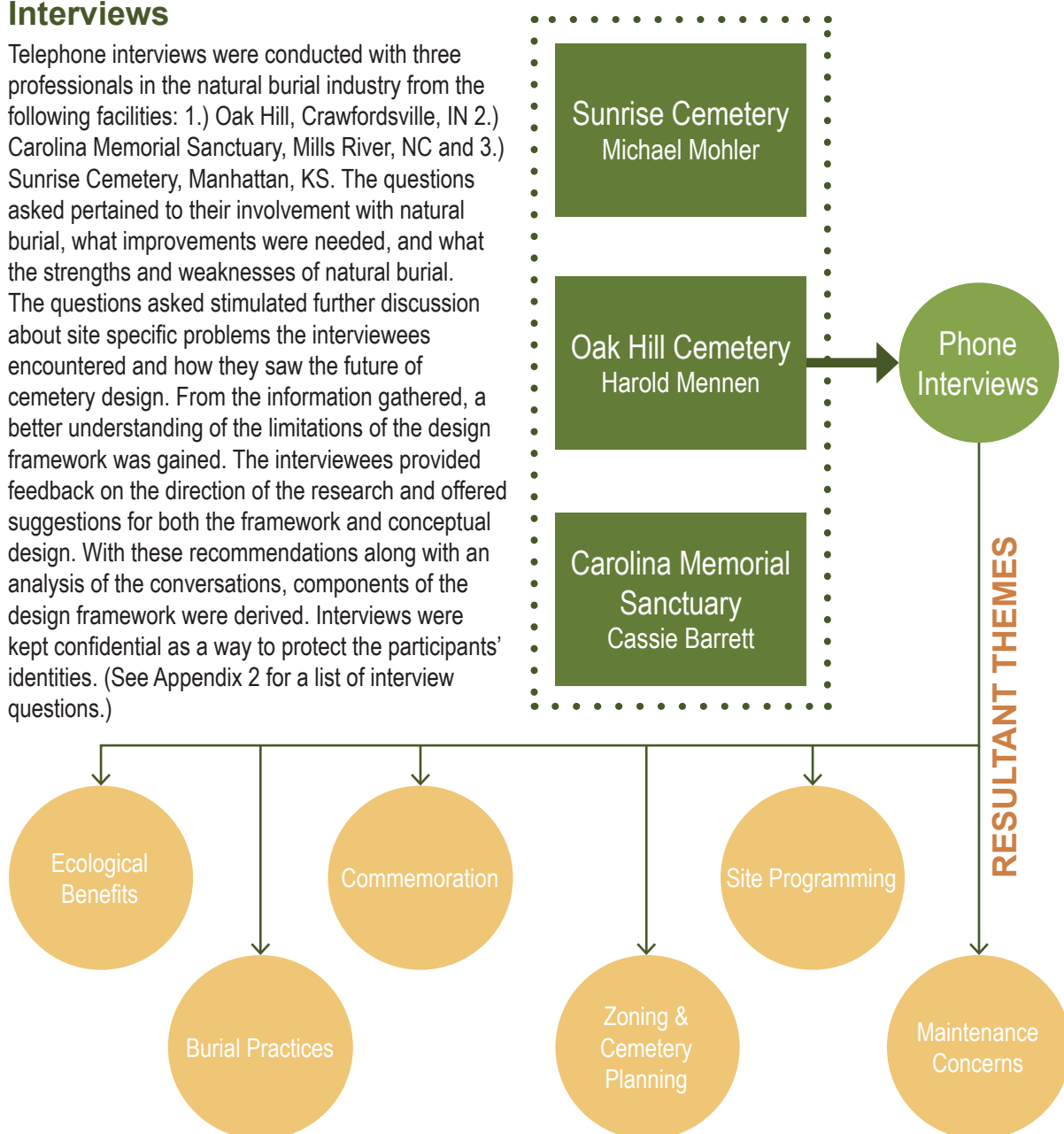
Figure 3.3

Interview process diagram

(Corrie, 2018)

Interviews

Telephone interviews were conducted with three professionals in the natural burial industry from the following facilities: 1.) Oak Hill, Crawfordsville, IN 2.) Carolina Memorial Sanctuary, Mills River, NC and 3.) Sunrise Cemetery, Manhattan, KS. The questions asked pertained to their involvement with natural burial, what improvements were needed, and what the strengths and weaknesses of natural burial. The questions asked stimulated further discussion about site specific problems the interviewees encountered and how they saw the future of cemetery design. From the information gathered, a better understanding of the limitations of the design framework was gained. The interviewees provided feedback on the direction of the research and offered suggestions for both the framework and conceptual design. With these recommendations along with an analysis of the conversations, components of the design framework were derived. Interviews were kept confidential as a way to protect the participants' identities. (See Appendix 2 for a list of interview questions.)



Design Guidelines & Application

The ultimate objective of this research was to create guidelines for the commemorative and design practices of natural burial cemeteries. This framework was then applied to an existing cemetery site to illustrate how the design may function and look. The goal with this research was to provide a series of guidelines for those in the funeral industry, cemetery planners, and landscape architects for memorial practices that can be used by ecological cemeteries to commemorate more meaningfully. More importantly, the aim was to investigate how these spaces can be utilized by a variety of cultures and religions to further promote and grow the green burial industry as a way to combat environmental degradation and overwhelming land use in a socially sensitive way. By using the literature review and methods (interviews, surveys, and precedent studies) a design framework was created to inform the projective design at Sunrise Cemetery.

The site selected for the theoretical application of the proposed design was to be Sunrise Cemetery located in Manhattan, KS. This cemetery was selected due to its ample space for growth, proximity to the research setting and its character as a typical rural garden cemetery. In addition, the City of Manhattan has indicated interest in creating a space dedicated for natural burial. The size and type of this cemetery is ideal to showcase the design framework's ability to transform common, existing funerary sites into commemorative ecological places. There is extensive undeveloped land within the cemetery bounds that is planned to be used for continued traditional rural garden burial which, for the purposes of this research, was re-imagined as a natural burial ground.

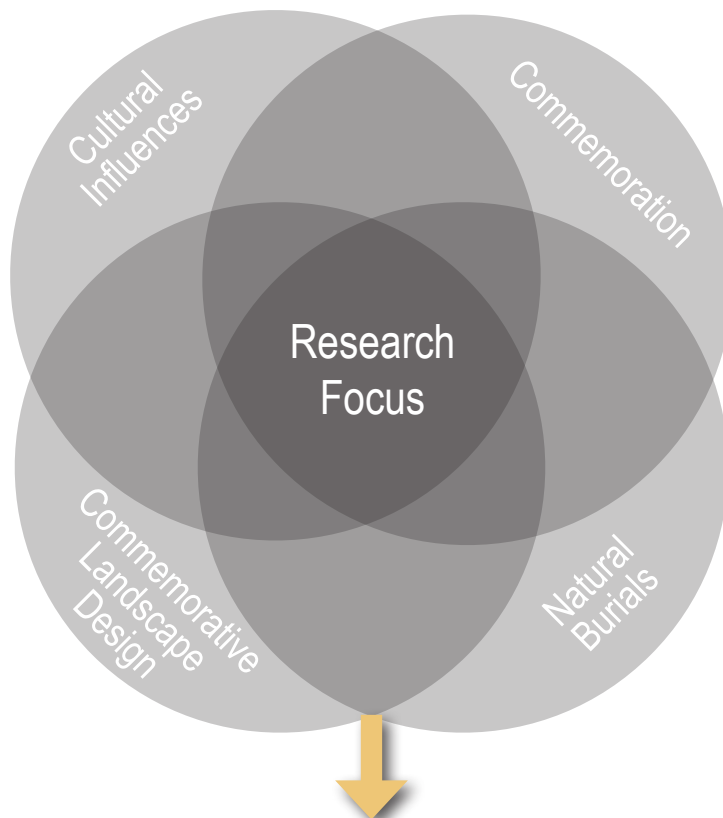


Figure 3.4
Design guideline
application diagram
(Corrie, 2018)



RESULTS



PRECEDENT STUDIES



Experiential Precedent Studies

Windridge Memorial Park — Cary, IL

The Windridge Memorial Park in Cary, Illinois exemplifies the hybrid traditional-natural burial cemetery design. The cemetery was originally a private summer estate of a local family but was established as a memorial park in 1965. Due to its proximity to the Fox River, abundant wildlife, and diverse planting, the memorial park is designated as a nature sanctuary.

The natural burial spaces that occur along trails provide users with a contemplative experience while moving through the forest. The mulch paths are flanked on either side by small boulders which complement the natural stone grave markers along the trails. Mourners hang decorations and wind chimes next to the graves, which create a visual and auditory experience, especially during the winter when there is a stark contrast in colors. Other elements in the site such as contemplative spaces, gathering areas, water features, and manicured gardens illustrates how traditional and natural burials can incorporate and combine overlapping programmatic elements to create a cohesive funerary landscape.

(Results chapter cover)

Figure 4.1

*View of undeveloped area in Sunrise Cemetery
(Corrie, 2017)*

(Left)

Figure 4.2

*Natural burial trail, Windridge Memorial Park
(Corrie, 2017)*



Figure 4.3 Gathering space (Corrie, 2017)



*Figure 4.4 Fountain which runs through cemetery
(Corrie, 2017)*



Figure 4.5 Ornaments hanging in trees (Corrie, 2017)



*Figure 4.6 Pet cemetery [Foreground] Gathering
Space [Background] (Corrie, 2017)*



Figure 4.7 Natural stone grave marker (Corrie, 2017)



Figure 4.8 Natural burial wooded pathway (Corrie, 2017)



Figure 4.9 Diagrammatic site plan (Corrie, 2017)

Scale: 1" = 1,000'



Figure 4.10 Graves residing adjacent to mulch pathway (Corrie, 2017)

Oak Hill Cemetery — Crawfordsville, IN

The Oak Hill Cemetery Company was created in 1875 by a group of private investors who purchased over 100 acres of land in Crawfordsville, Indiana that was developed into three separate cemeteries. Oak Hill – North has recently introduced natural burial as an option. This site was selected as a precedent study due to its similarities with Sunrise Cemetery in Manhattan, KS. The similar plant communities, topographic conditions, available area for natural burial development, and existing rural garden cemetery match the conditions of the projective design site.

The landscape of Oak Hill Cemetery is topographically challenging as there is a drainage ravine that bisects part of the site. Roads wind through the cemetery creating a simple, but vehicular-oriented circulation pattern. The traditional, historic nature of the cemetery paired with the introduction of natural burial makes this landscape an example of a hybrid natural burial landscape.



Figure 4.11 Mausoleum (Corrie, 2017)

After visiting the site it became apparent that although natural burial was being offered, it was not resonating with the surrounding community quite how the owners had anticipated. The natural burial is currently designated to occur along the northern edge of the site in a native planting area. Memorial walls, when appropriate, will be erected adjacent to this area to commemorate those buried there. However, there are few existing or proposed ideas for improving on the commemorative experience.



Figure 4.12 Meditative walk (Corrie, 2017)



Figure 4.13 Diagrammatic site plan (Corrie, 2018)

Scale: 1" = 800'



Figure 4.14 Natural burial area with native planting (Corrie, 2017)

Oak Hill Cemetery - Lawrence, KS

The cemetery design was based on the rural-garden model with headstones, winding roads, no pedestrian paths, undulating topography and large, majestic trees. However in 2008, the City designated a small corner of the cemetery to be used for natural burial, the first of its kind in the state of Kansas.

Upon entering the cemetery, you see a large hill with oak and coniferous trees. Below are the traditional headstones, obelisks, monuments, and mausoleums of hundreds of individuals. The road leading to the natural burial ground terminates with an unpaved parking area, from which visitors complete the journey on foot. A dirt trail leads to a naturally enclosed space along the edge of a forest where the area contains approximately 20 large stones demarcating graves.

The site is poorly maintained with no evident design. Grave markers were entirely covered with fallen leaves and overgrowth. There was no designated walking paths other than the muddy remnants of previous visitors, and most striking was the lack of narrative. As shown in the literature review, natural burial is an immensely personal, meaningful experience for the living as well as the deceased. The state in which the natural burial plot stands in the Oak Hill cemetery is dismal in every sense. Rather than promoting commemoration through design or narrative, the aesthetic of the landscape is that of abandonment rather than remembrance.



Figure 4.15 Entrance to Natural Burial area (Corrie, 2017)



Figure 4.16 Unmanaged natural burial grave (Corrie, 2017)

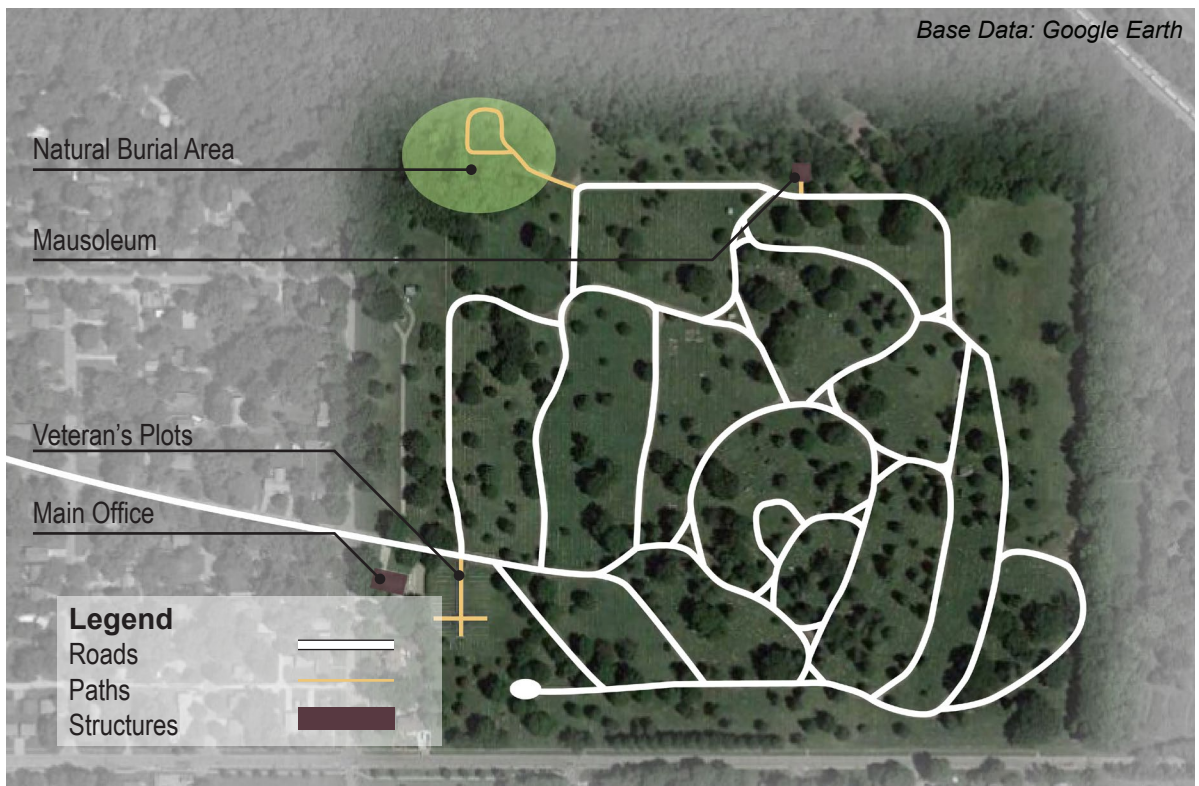


Figure 4.17 Diagrammatic site plan (Corrie, 2017)

Scale: 1" = 500'



Figure 4.18 Overview of natural burial area (Corrie, 2017)

SURVEYS & INTERVIEWS



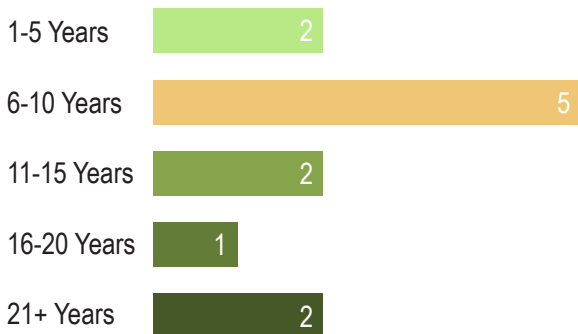
Survey Results

The online survey provided valuable information regarding the commemorative, ecological, and design qualities of natural burial cemeteries across the country. Each question asked in the survey is provided in this section with the accompanying responses and the conclusions that may be drawn from. Of the 25 surveys sent out to businesses, there were 12 responses (48% response rate) with a range of completion levels.

Background Information of Participants

How long have you been in the funeral or green burial industry? (n=12)

Less than a Year



This provides a good range of experience in the funeral industry and insight into how the natural burial trend has evolved over the years.

What is your role with the company? (n=12)

- Overseer of the 1st Natural Burial Municipality site in the United States, Licensed Funeral Director, and Embalmer
- Vice-President of Cemetery Board and Volunteer
- Founder and Burial Coordinator
- President and Head Mower
- Funeral Director and Green Burial Coordinator
- Cemetery Manager of non-profit organization
- Municipal Cemetery Manager
- Director
- Director of Planning and Cemetery Development
- Director of Operations and Marketing
- Office Manager and Sexton
- Owner

The range in occupations surveyed within the funeral industry provides an understanding as to how varying positions describe natural burial in terms of client interactions, maintenance, planning, and ownership of green burial cemeteries.

(Left)
Figure 4.19
Gathering area, Windridge Memorial Park
(Corrie, 2017)

Natural Burial Definition

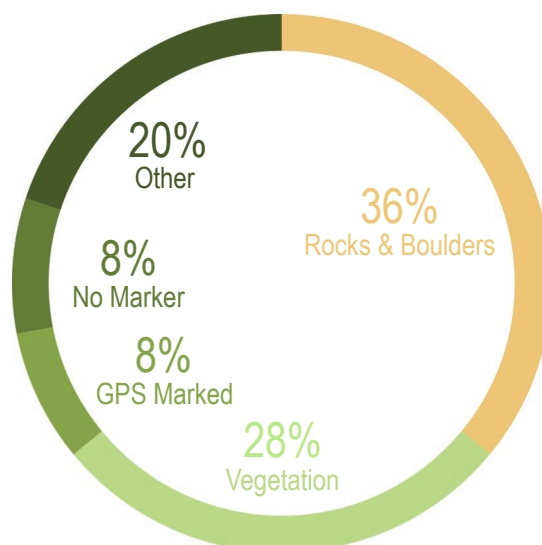
In your own words, please describe natural burial.
(n=11)

- “Something that is not new to the death industry. Been practiced forever, we just put an new name to it.”
- “No formaldehyde embalming, no steel or exotic wood caskets, biodegradable containers (wood, wicker, etc.), no herbicides or pesticides used in the area, no gas or diesel mowers used, sheep and goats contained by solar fence forage the area for maintenance, wild flower (perennial) meadow is the landscape design, pollinator friendly plants, small flat memorial markers allowed.”
- “A natural return to the earth completing the cycle of life/death.”
 - Sustainable
 - Simple
 - Better closure and healing for the families who participate in the burial
 - Affordable
- “Natural burial is the opportunity for people to re-occupy the earth in a dignified, environmentally-sensitive, sustainable manner.”
- “It is a spectrum starting at the most basic, placing the unembalmed body directly in the earth for burial. If any additional items are used (casket, shroud, etc.) these items as well must be made from natural products and fully biodegradable”
- “Burial without embalming, or outer burial container, in a biodegradable burial container. Natural burial is also a vehicle for ecological restoration and conservation. Furthermore it provides an excellent template for crafting contemporary, relevant meaningful ritual activities around a death to invite in a sense of the divine and to engage healthy grieving and healing.”
- “We dig graves by hand, work with funeral homes and with families directly, to hand lower unembalmed people in biodegradable containers into the earth, and empower people to bury their loved ones themselves, with our support.”
- “Natural burial is a simple, beautiful statement reflecting what you have valued in your life. It offers families a meaningful farewell, and secures a parcel of the natural world as a lasting legacy.”
- “Everything going into a grave needs to be non-toxic and biodegradable from the body, to the clothing and the outer container including any paints used on the container.”
- “Burial of a deceased person with as minimal impact on the environment as possible. No embalming, no hard-to-degrade caskets”

- “A natural way to return the body back to the earth without inhibiting the natural decomposition process by not using any harmful chemicals or products that are not 100% natural and biodegradable. No concrete or metal vaults, no metal caskets or synthetic or chemically treated caskets. No quarried Monuments. The cemetery should somehow protect and preserve (or restore) the natural environment and the creatures that live in it. In our cemetery we restore the native forest on top of every burial.”

This question was vital in understanding how the modern funeral industry markets green burial in the United States. Green burials are commonly meant to be sustainable and only use natural methods of interment including caskets, no embalming, and with minimal disruption to the land. However, some unique answers included utilizing animals such as sheep for mowing, promoting pollinator plants, a way of creating meaningful ritual practices around death, and digging graves by hand. Layering these elements in addition to the standard perceptions of green burial will provide a more substantial design framework.

What types of markers do you use to designate a natural burial site? (n=12)



Other markers identified:

- Small flat metal/granite plaque
- Natural flat fieldstones (400 sq. in X 3" Deep)
- Local field/quarry stone laid flat
- Biodegradable markers are under consideration
- Listing stone with several unrelated people provided in some nature areas. Graves are also marked with aluminum number plate for interment crews.

Natural rocks are the most common method of commemoration for the deceased, especially flat stones. Vegetation such as plantings and trees can provide a temporary means of remembrance for families and are ideal for the sustainable practice of natural burial.

Natural Burial Maintenance

What are the challenges in maintaining or permitting ecological cemeteries in your area? (n=10)

- “The land still available to do it. Educating the general population about it. Funeral Directors who misinform and / or overcharge for the services required to try and discourage people from choosing it. They see it as a threat to their income.”
- “In the state of North Carolina, there are laws that would prohibit most people from starting a green cemetery, especially a conservation burial ground, such as ours. We were able to create our cemetery because we are a legal 501(c)3 religious organization, which doesn’t have to follow all of the same laws.”
- “Funeral directors selling embalming services as if it is required. Most people don’t realize that virtually every cemetery in the state has in their bylaws a requirement that a grave liner is required. The DEP is onboard with green burial so the problem is finding land and ensuring neighbors their groundwater will not be polluted.”
- “Lack of cemetery space - trying to incorporate ‘greener’ burial within existing manicured cemeteries”
- “Those who wish to establish a cemetery which offers exclusively natural burial are most often challenged by obtaining the funds necessary to purchase a parcel of land and create a perpetual care trust.”
- “Weed management and other stewardship practices are important.”
- “Invasive flora management and eradication. Managing unapproved non-native memorial planting.”
- “Providing access to the grave sites by mowing paths. Since we also consider our cemetery a nature preserve, we mow all burial areas once per year and other parts of the property once every three years to promote grassland bird and pollinator habitat. We are a non-profit so it is a challenge to show sites for prospective buyers and provide staffing for burials.”
- “NONE”
- “We mow all burial areas once a year in the Fall. Marking graves so they can be avoided by the mower is probably the most challenging and time-consuming.”

There are three prominent themes derived from this survey question. The first, is land obtainment. Many of the survey answers (5) provided some form of answer describing how difficult it is to find land available for such use whether it be a new parcel, or incorporating natural burial into an existing cemetery. One response from North Carolina suggested using a religious-use exemption in order to achieve their goals as a green burial cemetery. Although this method is technically legal, it may be difficult in many municipalities to get the full support of planning committees and residents to support or even use the

space. The second theme related to maintenance arises from mowing and weed management to preserve the natural aesthetic and ecological health. Therefore it is imperative to create a site-specific maintenance plan prior to any implementation of a green burial site to avoid excessive costs in upkeep. The last theme focuses on educating the general population on the benefits of ecological burials and their low risk for detrimental effects such as groundwater pollution. In many cases, green burial cemeteries promote themselves by creating park-like amenities and seminars to teach the average layperson about the ecological cycle and challenge the preconceived notions of traditional rural garden burials.

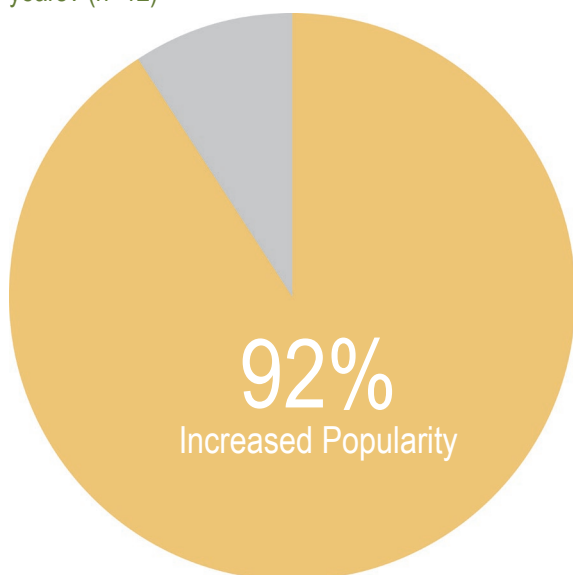
What are some challenges in grave preparation of natural burials? (n=7)

- “Avoiding the use of gas or powered machines”
- “Our soil is made up of glacial fragipan which is mainly clay and rocks, for this reason the graves can not be hand dug.”
- “We hire a local person to dig the graves with a backhoe and use our own small tractor with volunteers to fill them in. Winter burial is not possible in the hilly part of the cemetery so we have a winter burial section as a backup.”
- We dig all of the graves by hand, so clay, rocks, and roots can be very challenging. For our location, poison ivy is a big problem, in terms of maintenance.
- “If using equipment for excavation of graves, laying out plots in a manner that allows access to them without running over existing burials, allows families to choose and purchase multiple adjacent plots and maintains a economically responsible burial density.”
- Our only maintenance challenge is in regularly attending to the burial site following the interment to ensure that the earth remains somewhat even as natural settling occurs.
- “The grave preparation is simple, but probably more beautiful. There is no tent, greens, chairs or lowering device. We built are own platforms out of oak and hand lower, we use a old fashion cart to take the deceased to their resting place, We line the bottom of the grave and pathway with leaves, flowers, branches and pine boughs off our grounds.”

It is apparent that the biggest concern with grave preparation is with the actual excavation of the plot. Green burials should strive to mitigate the use of large excavation equipment and encourage hand-dug graves. However, rock layers and difficult soils make such methods impossible. Therefore it is imperative in these cases to provide accessible paths or roads to accommodate such equipment.

Popularity of Natural Burial

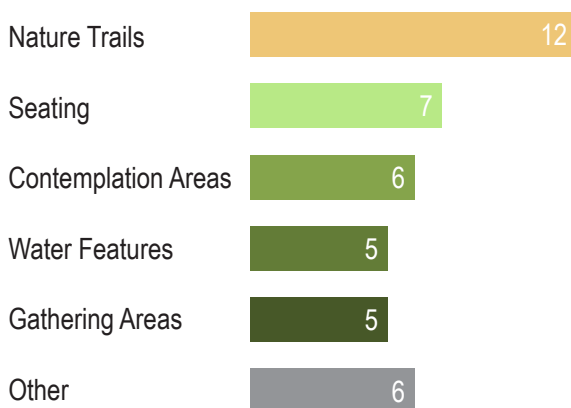
How has the trend of natural burial changed over the years? (n=12)



Ten of eleven responses suggested they had seen a growth in the popularity of green burials as an option or desire in their cemeteries. The last response had not seen an increase, but rather a consistent 2-3 natural burials per year. This strongly promotes the case for studying the design and amenities provided in green burial spaces as a way to maintain this trend, and promote future desire to use this in lieu of traditional casket-embalming methods.

Facilities

What types of facilities do you provide in natural burial cemeteries? (n=12)



Other Facilities include:

- "Nature preserve, especially for grassland bird species and pollinators like monarch butterflies and native bees."
- "Wilderness, we provide access to wild space with no facilities, this is also important."
- "Depends on the area. Some have very little (completely natural) others - within established cemeteries - may have plenty of amenities to enhance or provide context for the area."
- "...certified hybrid cemetery so it offers a lot!"
- "We're still a startup and have it in our plans to have contemplation areas, a pavilion for celebrations (including weddings and other types of celebrations), and an amphitheater for screening films. We have a creek and wetland on the property so have natural water features."

These results illustrate the primary need and desire to retain natural aesthetics in these funerary landscapes. Seating, contemplation areas, water features and gathering areas are also provided in green burial cemeteries, but are secondary to ecologically functioning space. The 'wild' aesthetic of green burial cemeteries is, in itself, an amenity.

Commemoration

How would you describe the act of commemoration in natural burial cemeteries? (n=8)

- "Simpler"
- "Families and friends visit, hike, cross-country ski and enjoy the over all beauty of the cemetery. Many have reported that they love visiting for these reasons."
- "It is more participatory, mourners handle the casket (or shrouded body), often sing songs, read poems, or tell stories. There is less reliance on the funeral home and religious leaders. Some mourners help fill in the grave. People seem to like to help their deceased loved one, one last time."
- "Natural burial services and commemoration are simple but highly personalized."
- "Most hold the entire service at the green burial site instead of in a room somewhere. It usually is a very personal ceremony. Beautiful surrounded by nature. Very fitting."
- "It varies. The wishes of the person who choose to be in a natural area may not mesh with those who remain to remember them. The wider the range of options available the better but this requires much more attention to design, detail and maintaining the integrity of that intent into the future."
- "Difficult. Most people want a marker; and natural burial grounds that do allow a stone native to area look a bit 'littered' to me. That is a personal opinion. So, I think no marker is best, but there's a difficult hurdle to get there."
- "Simple, dignified and with family involvement."

The response listed above culminates the overarching theme of these responses regarding commemoration in natural burial cemeteries. These funerary landscapes provide the means of holding simple, dignified services that encourages family involvement. This takes the form of self-reliance in body preparation and leading the ceremony without the need of a funerary service to lead. Families of the deceased like to utilize the site as if it were a park, bringing them together to celebrate the life of their loved ones rather than dwell on the passing. Providing a range of commemorative options in natural burial cemeteries is vital to provide clients with the space they are looking for.

Commemoration

What types of activities do you observe mourners participating in? (n=12)

Respondents provided a variety of answers to this question which were consistent with what can be observed in any type of cemetery. Contemplation, meditating, talking to grave markers, walking through the cemetery, decorating, and picnicking were identified. Creating similar conditions in natural burial cemeteries to those in the typical rural-garden form provides a transition in perception to those considering the use of natural interment.

Do you have any suggestions in improving the quality of experience for visitors to natural burial cemeteries? (n=5)

- “Ease of finding a grave in a place that doesn’t look at all like a cemetery would improve the experience. Though we offer to meet people to help them locate graves their first visit, we are in process of getting a GPS system so this will be easier to locate graves.”
- “We need to GPS each site rather than relying on confusing survey markers and paper maps.”
- “Plan for the visitor as much (or more) than the occupant.”
- “Breathe in the beauty all around you and be imbued by the spirit of place and, as Thoreau said, I paraphrase here - see the trees as spires of a sacred place.”
- “Believe in what you are doing 100% and everything will fall into place.”

User Types

Do you believe there are opportunities for these types of cemetery spaces to be more inclusive of other religions? (n=9)



Creating religious inclusiveness is a vital part to this research effort as a means of creating. As shown from this question, it is imperative that more opportunities are provided to promote natural burial across religions.

Interview Results

Three interviews were conducted as part of this research effort. These interviews were distilled into themes and summarized for comparison. The questions asked during the interviews can be seen in Appendix 2

The first interview conducted was with **Cassie Barrett**, the Director of Operations and Marketing for the Carolina Memorial Sanctuary in Mills River, North Carolina. The Sanctuary is a conservation burial ground certified by the Green Burial Council for its efforts in preserving and restoring the natural landscape while providing the services of natural interment.

Harold Mennen, an overseer of Buildings and Grounds at Oak Hill Cemetery in Crawfordsville, Indiana provided his perspective on a newly created Hybrid burial ground. Oak Hill began as a traditional rural garden cemetery and has introduced natural burial within the last 3 to 4 years. Since then, approximately 4 plots have been sold with only one actual burial. Mennen's perspective on the challenges of starting a new interment type in an existing cemetery was vital to understand the projective site which is similar to Oak Hill.

The final interview was conducted with the cemetery sexton **Michael Mohler** of Sunrise Cemetery in Manhattan, Kansas. Sunrise Cemetery was selected as the site on which the design guidelines would be applied. Therefore, understanding the needs of the City and operators of the cemetery was crucial.

Natural Burial

How would you describe the Natural Burial Process?

Barrett: Natural burial is the traditional way of interment involving hand dug graves (typically dug 2-1/2' to 3-1/2' deep), no embalming, biodegradable containers or shrouds, the use of renewable materials set in a natural aesthetic. The most important aspect identified by Barrett was the family and friend-centered involvement with natural burial.

Mennen: Natural burial is exactly what it says, the natural way in which we are interred. As we are born from the Earth it is apparent that the destination in which we return is naturally to the ground.

Mohler: The whole purpose of natural interment is to bury bodies in an undisturbed setting. There should be no embalming, hardwood casket, or vault used in this method.

Interview Results

Demarcation

What are the types of burial markers used at your location?

Barrett: The Carolina Memorial Sanctuary uses native stone markers in most cases that can be inscribed for the client. Some clients prefer memorial plantings which is acceptable as long as they conform to the requirements of the micro-habitats of the site. In some cases, no grave markers are used, but instead GPS coordinates locate the plots.

Mennen: There are currently no markers used in the cemetery Oak Hill cemetery since there are very few burials on site. If the burial method becomes more popular, Oak Hill intends to build a memorial wall to commemorate the people buried in the natural burial area.

Mohler: The current interest for the proposed natural burial area in Sunrise Cemetery is to utilize curb plaques along the road adjacent to the plots to designate where people are buried. Flat stones have also been considered as an option, but is believed to go against the natural aesthetic and create maintenance issues.

Maintenance

What are some of the challenges in maintaining a natural burial ground?

Barrett: Since the Sanctuary strives to restore and preserve healthy plant communities, there is a high level of maintenance required to keep invasive species out. As a conservation burial ground, the team is unable to spray or use chemicals to reduce weed and invasive growth which means that the majority of the plant management is done by hand. The goal with this method is to restore habitats efficiently in hopes to reduce maintenance in the long-term.

Mennen: Invasive species and preserving the natural aesthetic of the natural burial area are a big concern with the maintenance team. Oak Hill does utilize chemical spraying to suppress these plants though it is discouraged by the Green Burial Council, but not disallowed for their accreditation. The planting design was outsourced to a landscape company in order to determine a successful plant mix, but is expected to continue to change in upcoming years to help lower maintenance requirements.

Mohler: There is a great concern with the maintenance of the native plant species intended to be used in the proposed natural burial area since it will have to be done by hand. As planning continues, it will be certain that access points are available to excavation and maintenance equipment. It is anticipated that the cost of the burial plots will be the same as traditional plots in order to guarantee their perpetual care.

Cultural Influences on Burial Design

Do you believe there is a need for natural cemeteries to incorporate religious amenities in regards to burial practices?

Barrett: The Sanctuary was started by a Buddhist religious organization as a way to achieve the quality of natural burial they desired. However, their religious beliefs do not inhibit their ability to embrace all other types of religion. If there were to be highly designed elements related to religion, it would be important that they are flexible, with no agenda such as promoting one religion over the other. This is evident with the Sanctuary's efforts to promote natural burial to multiple faith communities.

Mennen: The natural burial process is typically the same across all faith groups in terms of interment. However, there is still an opportunity to promote such cultural elements, but a challenge in plotting a cemetery in an economic way.

Mohler: Although the concept of designing for multiple religions is interesting, it may not be pertinent in places such as the Midwest, especially in areas of intense Christian faith. It may not be necessary in most cases unless a desire from the local community is evident.

Conclusions

- Natural burial has the potential to be designed rather than just being a natural landscape, while still preserving ecological functions and promoting healthy habitats as a priority.
- The use of burial markers can vary depending on the desire of clients but should conform to the requirements of being natural or from a sustainable source.
- Focusing on creating low-maintenance burial plots would be ideal as it is the most pertinent issue facing natural interment.
- Cultural practices are a secondary, if not tertiary consideration for cemetery design. Most of the cultural practices of clients come from individualized acts. However, the concept of creating multifaceted design elements that can be read in a variety of narratives could provide an interesting dynamic to the natural burial form.

DESIGN GUIDELINES

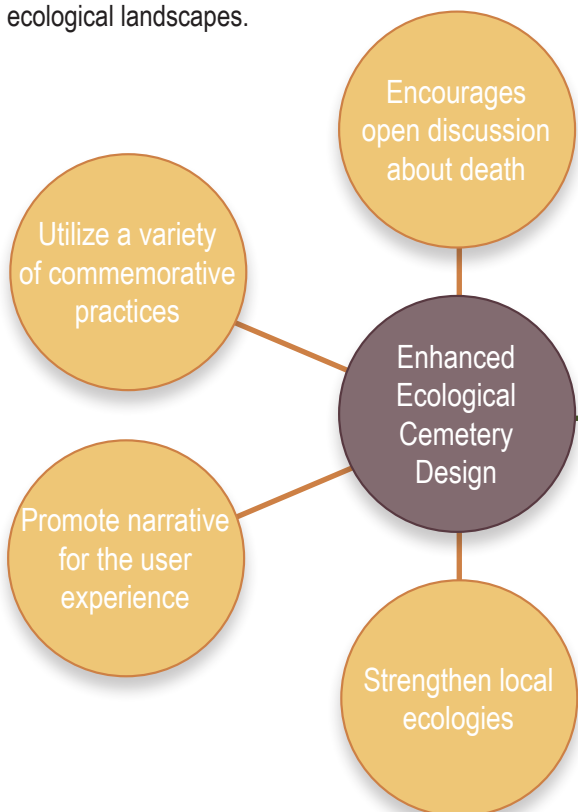


(Left)
Figure 5.1
Undeveloped land in Sunrise Cemetery
(Corrie, 2017)

(Right)
Figure 5.2
Guideline structure
(Corrie, 2018)

Structure

The purpose of the design guidelines is to provide designers and cemetery operators a process in which to plan and design a natural burial cemetery under varying circumstances. The design guidelines derived from the research are broken up into four major groups: Site Type, Site Inventory, Site Analysis, and Programming. Each portion of this framework identifies pertinent information about the planning, design, implementation, and maintenance decisions for natural burial cemeteries. By following these guidelines, designers can make better informed decisions to ultimately create more commemorative ecological landscapes.



1. Decide Site Type

What is the desired result of the proposed cemetery space?

- Integrate natural burial into existing cemetery
- Create a new cemetery that utilizes natural burial
- Utilize natural burial as a foundation for greater conservation efforts

2. Conduct Site Inventory

What exists on site?

- Provides reasons and value behind design decisions through documenting site features and aesthetics
- Identifies what to be conscious of when planning a natural burial cemetery

3. Analyze Site Conditions

What are the suitable locations for design elements?

- Burial locations
- Major roads, trails and access points in and around the site
- Suitable locations for buildings and large gathering spaces
- Preservation areas

4. Determine Programming

What are the tools in creating highly design natural burial cemeteries?

- Burial marker styles such as stones, commemorative walls, or GPS
- Culturally significant areas for burial alignments, consecrated ground, or interment style
- Additional amenities for services and visitors

1. Decide Site Type

This initial decision aims to identify what type of cemetery space the client wishes to pursue. There are 3 basic types of natural burial cemeteries identified by the Green Burial Council, a certifier of ecological interments in the United States:

- Hybrid Natural Burial Grounds
- Natural Burial Grounds
- Conservation Burial Grounds

Each type has designated criteria that outline the expectations for the land use, maintenance, and ecological benefits (Green Burial Council, 2018).

Hybrid Burial Grounds

This burial landscape is conducive with existing conventional burial practices that use headstones, embalming, vaults, and hardwood caskets. The intent of a hybrid burial ground is to provide more sustainable, ecologically friendly alternatives to interment within the bounds of an existing cemetery structure. The funerary provider will not require embalming and provide alternative burial containers that are ecologically responsible.

This landscape requires the least amount of deviation from traditional rural garden cemetery design and should be used in existing funerary landscapes. This burial type is also very versatile in terms of management and is based upon what clients and cemetery operators wish to have in terms of aesthetic. This burial form can occur both in highly maintained or in naturally planted areas but should remain mindful of the sustainable intent of natural burials. Hybrid burial grounds can be useful in

determining whether the interment type would be accepted by the local community since they can mimic the typical aesthetic of traditional cemeteries in the United States.

Natural Burial Grounds

Natural burial grounds aim to be more conscious of the existing landscape, use less energy, and are maintained to promote a natural aesthetic and native vegetation. In addition to the basic requirements of hybrid landscapes, natural burial grounds must undergo an ecological assessment to determine high-risk areas of degradation. These grounds are also concerned with the types of burial markers, disturbance of land, and easements used to preserve the landscape.

The first step in planning a natural burial ground is to conduct an ecological assessment that identifies the geology, soils, topography, hydrology, and existing vegetation. From this information, a well-informed site selection can be conducted within a larger site for optimum burial locations. This also helps to create a maintenance plan to enhance plant diversity and reduce invasive species. Excavation of burial plots should primarily be hand-dug to minimize soil health impacts and destruction of plant materials. Sensitive areas in the ecological assessment should also be planned to be low to zero use from visitors. This can be accomplished through fencing areas, signage, or using prominent circulation paths to mitigate off-path travel. Lastly, a deed restriction, conservation easement, or legal agreement must be enacted to preserve the landscape for future generations as a natural area.

Conservation Burial Grounds

The primary difference between Conservation and Natural burial grounds is an expanded effort to improve the local ecology. This is typically accomplished through establishing a conservation organization dedicated to improving the landscapes health. This includes restoration efforts, maintaining a minimum of 10 acres (or 5 acres if contiguous to other protected lands) and operate under a non-profit or government agency that is responsible for the continued observation of the conservation easement policies throughout the future.

It is critical that cemetery planners select sites that occur in areas that can provide aesthetic, functional, and ecological value to the local communities as the conservation policies will have a long-term effect on the preserved area. This burial landscape also requires a high-level of maintenance as to preserve, promote, and correct plant and wildlife communities.



Figure 5.3 Green Wood Cemetery, Hybrid (Shankbone, 2007)

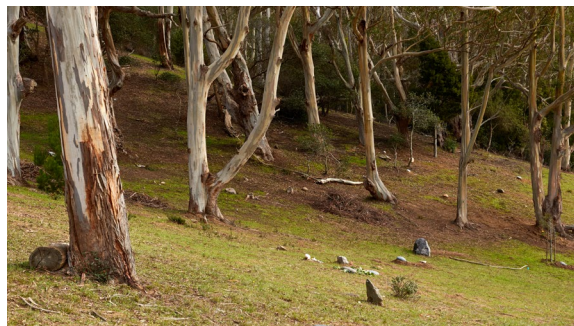


Figure 5.4 Fernwood Cemetery, Natural Burial (Shankbone, 2007)

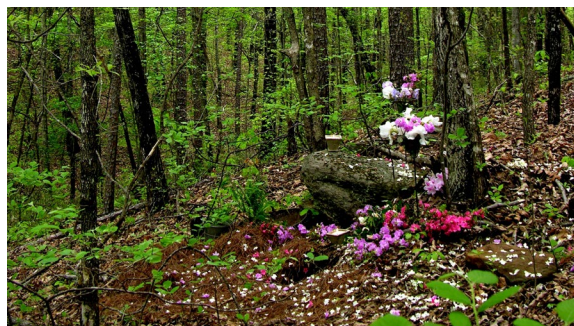


Figure 5.5 Ramsey Creek Preserve, Conservation (Shankbone, 2007)

2. Undertake Site Inventory

The following sections outline the important physical, biological, and cultural attributes that should be accounted for when conducting a site inventory (Adapted from LaGro, 2008).

Physical Attributes

Soils

Optimal soils for natural burial are sandy, loamy soils with permeability coefficients of more than 3-10 m/s. Avoid soils that can be waterlogged such as clay. These soils slow down decomposition and can redirect water to undesirable locations. The top layer of soil (<12") is where majority of microbial activity takes place so it is important to have a healthy topsoil layer. Identifying areas that are difficult to excavate or have high erosion rates is necessary in order to avoid improper development. A thorough soil analysis should be conducted before any site planning decisions are made as this effects plot availability, structural integrity, and ecological health conditions.

Topography

The topographic conditions of a site can provide many design opportunities and challenges. Identifying slope percentages and aspect, buildable areas, environmental features and landscape forms can be delineated. Flat areas are ideal for buildings, parking, roadways and aesthetically traditional burial styles. Natural burials can occur on an array of slopes but requires reasonable access for safe excavation. Areas of high grade change should be left for natural aesthetic, trails, and forming spaces.

Hydrology

Although there is no evidence to suggest natural decomposition in designed cemeteries affects water quality, there has yet to be a study to collect specific data related to natural burial grounds. General practices regarding water easements should be followed and when, if possible, should plan graves away from major drainage ways. This will mitigate the chance of erosion and contamination issues with graves. When conducting a thorough examination, a hydro-geologic study should be conducted to verify acceptable chemical levels in waterways to ensure no detrimental imbalance can occur.

Climate

Climatic conditions effect the rate of decomposition of bodies in natural burial cemeteries but generally has little effect on design. Rising sea levels and frequent large weather events should be considered in areas that are applicable. Annual rain and snowfalls are also important to understand in terms of hydrologic discharge rates and increased erosion potential.

Biological Attributes

Vegetation

In order to meet the requirements of the Natural Burial and Conservation grounds, a dedicated service of ecological restoration or preservation is required. This includes the removal of invasive plant species present while promoting natives. Identifying these plant types on site will help determine the amount of maintenance that will be required to operate. Identifying old-growth, 'sick', and specimen trees will allow design elements to be incorporated to use these natural features or remove them for aesthetic or safety reasons. However, plant removal other than invasives should be offset through additional restoration efforts (Carolina Memorial Sanctuary, 2018).

Wildlife

Understanding the local wildlife communities is vital to creating ecologically viable landscapes. Identifying animals and insects that are common, rare, or endangered can create the argument for conservation funding to promote the return or population of these species. A particular focus should be on bees as their national population is on the decline. Creating pollinator gardens in these landscapes would provide both aesthetic and ecological function. However, other animal species should be planned for, especially scavengers. Natural burial usually occurs between 2.5-6'. The first 24" is considered to be a smell-barrier for scavenger animals so it is therefore crucial to understand if there are any outliers that may require deeper graves to avoid disruption.

Cultural Attributes

Sensory

Sensory inventories include visibility, visual quality, noise, odors, and any unique experiences a person may have. It is important to document the positive and negative qualities of each of these factors as a way to plan for a site design that responds to those conditions. Sight lines outside of the property are vital since a person in a funerary landscape should be focused on the healing qualities of the space and less on the distractions of the surrounding context.

Circulation

The vehicular and pedestrian circulation should be thoroughly examined in the hybrid sites that have an existing infrastructure. If the site is to be a Natural Burial or Conservation grounds, there may not be any planned access to the site. Therefore it is important to recognize potential areas or informal paths that may exist in these conditions. If the site occurs near an urban center, it may also be necessary to conduct an inventory of traffic crossings, nearby parking, and traffic volumes. Factors to be considerate of include: volume, noise, accessibility (user), connectivity (to site), and their function.

Land Use

Knowing previous land uses of a site as well as adjacent areas can affect many different aspects of site selection. Sites may be contaminated from their previous use and may require a higher level of treatment prior to incorporating natural burial as to avoid adverse secondary effects. Adjacent land uses can vary but should be considerate of the activities that occur near the cemetery space. Problems related to sight lines or concerns of contamination can arise from these adjacent properties so it is vital to prepare the design in a way that responds to these adjacent concerns.

Utilities

It is important to locate all subsurface utilities and their positions as precisely as possible. Above-ground utilities should also be identified but play a less significant role in site planning burial plots. Sanitary, storm, electric, gas, water and telecommunications are the primary data layers that should be examined. Most of these utilities come with predetermined easements and should be followed accordingly for subsurface changes.

Legal

The legal aspects of the site inventory involve property lines, political boundaries, land ownership, land use regulations, easements, and deed restrictions. This portion of the analysis is essentially the initial guide to land planning as these restrictions are in place for a predetermined reason. However, these boundaries can be subject to change so identifying them early can be beneficial so the process can occur early in the site design process. It is especially important to examine these regulations if the intent is to be a natural burial or conservation ground. It is much easier to incorporate a natural burial space in an existing cemetery, but for these new burial ground types there may be much stricter regulations which vary from state to state.

Historic

Since cemeteries contain collective history of a community's past it is vital to understand what historic value exists on the site. This includes demarcating significant graves, religious grounds, archaeological sites (unlikely), and previous site events. Understanding how a site came to be the way it is provides opportunities to enhance the historic narrative or simply call attention to site elements that communicate a sense of place.

Prominent Cultural Practices

Added to LaGro's site analysis methodology, identifying prominent cultural practices in the surrounding context is vital to create more responsive landscapes that can provide desired amenities to the identified groups. However, gathering demographic data related to religion is a sensitive subject and is difficult to find reliable information regarding religious center locations and their membership counts. Geospatial data may be available for religious places of worship in some cities but is generally not the case. Therefore, during the analysis phase it is important to utilize multiple resources to create an educated assumption for the prominent cultural groups in a given area. The Association of Statisticians of American Religious Bodies (ASARB), is similar to the U.S. Census, provides general locations of religious centers. However, this data may not be entirely accurate or current so planners should cross-reference this information with city officials and simply searching for local worship centers online.

3. Analyze Site Conditions

After conducting the initial site inventory, the next step is to combine the data layers into a legible format to conduct an analysis. This analysis is to essentially designate areas for their ideal uses based upon the inventory. For instance, areas with good soils, low slopes and consistent drainage would be ideal for burial. On the other hand, placing a maintenance road in an area with steep slopes and solid rock layers may be less ideal. The following are the major identifiers one should generally locate on site before moving into the design phase:

1. Ideal burial locations

- Well drained soils
- Low to moderate topographic change
- No geologic barriers such as rock layers
- Locate way from drainage channels or water sources
- Does not impact adjacent land uses (i.e. visual site lines)
- Accessible
- Occurs in natural setting with aesthetic value

2. Structures & Gathering Spaces

- Large, flat areas are ideal for building structures or gathering spaces upon.
- Should not impede natural drainage of the site
- Occur in areas with easy pedestrian and vehicular access

3. Major roads, trails, & access points

- Connect to existing infrastructure
- Provide easy access on relatively low slopes
- Create easy wayfinding
- Roads to natural burial areas should terminate prior to designated area with parking, trail, and amenity access as to not drastically disrupt the natural aesthetic.
- Structures & Gathering Spaces
- Large, flat areas are ideal for building structures or gathering spaces upon.
- Should not impede natural drainage of the site
- Occur in areas with easy pedestrian and vehicular access

4. Areas to be preserved or restored

- Preservation areas should be identified for their plant community health, soil composition, water quality, and natural aesthetic
- Restoration areas should occur outside of the delineated burial areas and should have some level of disruption or contamination that can be resolved through natural processes.

5. Additional Facilities

- This includes any site specific or organization-required programming such as open air cremation, body preparation facilities, or other means of body interment.

4. Determine Programming

Programming the site is typically a reiterative process between clients and designers. However, utilizing the research and methodology chapters of this book, a list of guidelines can be established to help determine programmatic elements during this phase. These guidelines are based upon the research framework which responds to commemoration, cultural influences, landscape design, and natural burial.

Commemorative Elements

The commemorative programmatic elements of natural burial cemeteries reflects how the deceased will be remembered in the future. This includes the experience of the space as well as the designation of the grave itself.

Designated Space & Tangible Medium

Cemeteries are designated spaces for remembrance by mourners. As a global society, every culture has created some form of designated space for the commemoration of the dead. Church graveyards, Native American burial mounds, and the pyres of the Ganges River in India are just some examples of these commemorative spaces. Natural burial cemeteries already act as a designated space for remembrance, but are often difficult to perceive as such since they maintain a natural aesthetic. Rather than showing a man-made environment with headstones, natural burial cemeteries can utilize natural elements in a designed way.

In order to create a designated space in a natural burial cemetery, some methods include:

- Groves of trees

- Contemplation areas
- Architectural structures such as pavilions or gazebos
- Outdoor gathering spaces for services

The term tangible medium refers to the physical element used to designate a grave. In the rural garden form, this was accomplished by using rows of headstones or monuments. Although an effective tool, the use of such markers goes against what defines natural burial cemeteries. Therefore alternative methods of demarcating graves is necessary. Some alternative tools to consider when determining what types of burial markers are to be used on site include:

- Native stones laid either flat or erect
- Memorial walls or listing stones created with natural materials
- Vegetation such as memorial trees
- Temporary decorations or floral arrangements

There are merits and deficiencies to each of these types of markers but the selection is ultimately determined by the client. Since each one is naturally sourced, there are no real impacts to the land's ecology, but does shape the visual aesthetics of the space. In areas where there are directed views or preserved natural aesthetics, vertical markers may detract from the value. In this case, using flat stones would preserve the visual values while still providing a tangible medium for remembrance. Another example would be in forested areas. Because deciduous trees lose their leaves, its not uncommon for markers to become covered and lost. Vertical native stones would allow for mourners to find plots much more effectively in conditions such as forests or tall vegetation.

Creating a Narrative

In terms of commemoration, the most effective memorials and cemeteries identified in the precedent studies and literature review showcased some form of narrative. The term “narrative” refers to the experience or story told while moving through a space. This is exemplified by the John F. Kennedy Memorial design precedent (see page 44) in which the landscape architect used materials, circulation, and spatial definition to create a series of evocative experiences ultimately leading to a sense of closure.

In the case of natural burial grounds, the narrative can reflect on the greater eco-region, the history of the area, or even the healing process. The important conclusion from the research findings is that narratives can enhance the overall experience of the user. The story that unfolds should be subtle as not to overwhelm or detract from the user’s interpretations, but help guide emotional responses.

Cultural Design

Using the findings from the literature review, several prominent burial practices were identified that can be accommodated in a natural burial cemetery. It is vital that the design decisions of this nature are not prominent as to designate certain areas of the cemetery space from others. Instead, creating spaces that subtly respect burial traditions while remain open to interpretation or use by those of other faiths is crucial. The objective of incorporating these elements is to promote the use of natural burial cemeteries by all faiths while not excluding or separating others if avoidable.

Christianity

Catholics are typically buried on “holy ground” or consecrated ground by a priest. If there are a large number of Catholic places of worship in the surrounding context, it is suggested that an area of the cemetery is blessed by a priest. Since this is not a physical demarcation but rather a religious one, there are no real detriments to the design aesthetic.

Those of the Eastern Orthodox practices typically orient bodies facing the East. Therefore, planning areas of the cemetery space with oriented design elements (whether it be circulation paths, vegetation, or placement of the plots) would encourage the use by these Christian denominations.

Islam

In the Islamic faith, body orientation is critical to a successful burial ritual. The face of the deceased is to be laid in such a way that they face Mecca, the holiest city and birthplace of the prophet Muhammad. Since this is a critical component to the final burial rites, it is critical that cemetery spaces plan plots to accommodate this orientation. There are many tools for determining Qiblah (the direction of the Kaaba, a building at the center of the Sacred Mosque in Mecca) such as Google's Qibla Finder. This online tool allows a user to find the true direction of Qibla from anywhere in the world (See Appendix 4 for internet link)

Similar to the Eastern Orthodox principles of body orientation, using design elements such as paths, vegetation, or plot placements can accommodate this Islamic burial tradition.

Other practices in Islamic burials include the separation of male and female plots into designated areas. Planning for such practices can be difficult, but through the use of subtle design moves, there can be physical separation (such as by a circulation path) but occur in the same spatial enclosure such as a forested canopy. In this scenario, the burial rites are respected while leaving the interpretation of the space to the user.

The last burial ritual that can be planned for is related to mourner participation. The burial rites encourage that those involved in the interment place three handfuls of soil on a grave before it is completely filled. Although this seems to be arbitrary and does not require any additional planning, it is important to remember that there are often restrictions on traditional burials that limit how close mourners can be to an excavated grave for safety reasons. Locating graves for Muslims should ideally be placed on smooth, level surfaces as to mitigate any hazardous conditions as people partake in this ritual.

Hinduism

Hindus typically cremate the remains of the deceased on a pyre rather than bury them. Traditionally, the remains would then be scattered in the Ganges River in India, a sacred spot for cremations in the Hindu faith. Since this practice is perceived as taboo in the United States, Hindus in the U.S. typically use a crematorium for this burial rite, some of which will allow the families to be present. When planning for Hindu scatterings in natural burial cemeteries, it is important to provide designated spaces for families to gather and partake in the ritual. There are no Environmental Protection Agency guidelines or restrictions to scattering ashes in waterways (there are however some regulations for scattering in the ocean), so creating spaces near hydrologic drainage ways or man made water features may be a design solution to pay homage to the Ganges River.

Judaism

Similar to Islamic burial rituals, it is encouraged that mourners participate in the physical burial. Therefore it is important to have burial spaces on relatively flat surfaces to avoid hazardous conditions for participants near open grave plots. Since natural burials are typically shallower than casket-vault burials, there is usually no need for barriers or lowering systems, however this can vary from state to state.

The more prevalent burial rite for Jews is actually a mourning practice. Placing pebbles on the graves of the deceased during each visit is a common practice to show that people still care for the burial site. Not only does this demarcate a grave but symbolizes the longevity of commemoration for the dead. In terms of design and planning decisions for natural burial cemeteries, placing containers of pebbles near burial sites can allow for Jews, or anyone for that matter, to easily access and place them on graves. These containers can be made from natural stone or wood with the pebbles themselves either collected nearby or crushed from larger native stone.

Buddhism

As with Hindu traditions, Buddhists typically cremate the remains of the deceased instead of using burial. However the cremated remains can be commemorated in a variety of ways. Some Buddhists will scatter the remains which can be accommodated in a scattering garden in a natural burial cemetery. Others will bury the remains or put them in urns which can then be placed by a tree or enshrined. There are no real design or planning decisions that are prevalent for Buddhist traditions, but simply dedicating areas of the cemetery for cremated remains is important.

Native American Practices

Of the many different burial traditions across the Native American tribes, there are only two that can be appropriately incorporated into a natural burial cemetery. The first is cremation, which can be accomplished through similar methods seen in the Buddhist or Muslim sections.

The second practice involves the use of burial mounds. Mounds themselves can act as a form of demarcation and would not require a headstone. However, pairing burial mounds with other markers such as flat field stones could provide a more personal place for remembrance within the larger landscape form. The burial mounds used by the Native Americans were of course man-made which allows flexibility in the formal design of modern burial mounds. The shapes, sizes, and planting of these mounds should be determined by the designer to enhance the narrative experience of the user.

Landscape Design Principles

The following section outlines the design principles identified in the research findings. These principles can be applied in limitless ways, but the descriptions provided explain their function and potential application in the design of natural burial cemeteries.

Approach & Entry

There are three primary types of approaches in architectural (Ching, 2007) and landscape design:

1. Frontal approaches lead users directly to a change of space along a straight path. Visual sight lines are clear and well defined. This type is ideal for entry ways, axes, and formal spaces as it is clear, well-defined and uncluttered with physical and visual obstacles.
2. Oblique approaches typically use secondary paths to lead to destinations in an indirect manner. This creates a prolonged sequence of approach compared to the directness of frontal approaches. Oblique approaches can be used along burial paths or for connecting sub spaces in the natural burial cemetery. The most common use would be for rest, contemplation, and burial areas along circulation paths.

3. Spiral, the last of the approaches, intentionally increases the sequence for dramatic effect. Ideally, the initial approach identifies the entryway to the next space for way finding and is then followed with a circular path leading to the destination. Spiral approaches are ideal for focal points or major architectural elements. This allows visitors to fully capture the aesthetics of the surrounding environment and destination.

After the approach to a destination has been determined, next is the entry into the space. There are limitless ways to create an entrance to a space, but there are four basic principles that should be considered. The first is that entry plane should occur perpendicular to the approach to suggest a transitional space. There are also three types of entryways including:

1. Flush entrances maintain the aesthetic of a plane such as walls, architecture, or planted areas.
2. Projected entrances are used to create a protruding transition space from the approach to the destination. This prominently indicates an entryway while also providing overhead shelter.
3. Recessed entrances pull parts of the approach aesthetic into the destination space. In the use for architecture, recessed entrances use ground plane materials to connect the entry to the inside of the building form.

Circulation

There are three primary forms of site circulation in cemetery spaces:

1. Vehicular
2. Pedestrian
3. Maintenance

Vehicular circulation is the most common type in the traditional rural garden cemetery as many designs utilize roadways to connect mourners directly to the burial sites. However, the mandate of natural burial cemeteries is limited development of the land which reduces the amount of road surfaces. Utilizing trail head parking is ideal in these situations in order to allow mourners to drive, park their vehicles, and walk to their destinations while minimizing the disruption of land.

Pedestrian circulation is the most important of the three as it allows people to move through the spaces. After identifying areas for burials in the Site Inventory and Analysis section of the guidelines, placing interconnecting pathways that mitigate topographic changes will provide a well connected, ecological trail system through the natural environment.

All cemetery spaces including natural burial require some form of maintenance. Although it is discouraged to use heavy equipment for natural interment, some areas in the U.S. may require them for difficult soil conditions. Therefore, identifying a maintenance road system that connects to major areas of the site will allow for crews to move equipment, transport bodies to the interment site and help those with disabilities avoid difficult trail conditions.

Other things to consider when planning circulation paths include general accessibility requirements, the function of the path, and how circulation can affect the narrative or experience of space.

Framing of Views

A common design move used in commemorative landscapes is the framing of views. This entails using vertical and horizontal elements to create a visual cue to focus on the intended element. This enhances the focal points on a site and can create impactful moments in the design's narrative. For use in a natural burial cemetery, framing significant design elements with vegetation or natural elements can create a well designed space while preserving a naturalistic aesthetic.

Degrees of Enclosure

Varying types of volumetric enclosures directly affect a user's experience and perception of space. Spatial definition can be accomplished in many different ways but for natural burial cemeteries it will most likely be accomplished through planting since there is minimal architectural development allowed. Fully enclosed spaces with planes on six sides of a volume are used to create private and intimate spaces. Open spaces allow for the surrounding environment to define a larger area creating freedom of movement and vision. The varying degrees of enclosure between open and closed allow for a more versatile environment. In these cases, people can have their backs to a plane while overlooking an open space creating a comfortable environment for contemplation. It is critical to determine how a space is going to be used prior to determining its level of enclosure as it has a drastic affect on comfort, vision, and access.

Surface Materiality

The materials used in natural burial cemeteries typically involve ground plane elements such as circulation paths and gathering spaces. Regardless of what needs material assignment, it is critical to select sustainably sourced materials and, if possible, ones that promote water permeability. Impervious surfaces negatively impact soil health, hydrology, and flooding. Accessibility also needs to be considered carefully.

Asphalt and concrete are ideal for areas that are disturbed, parking, and building entryways to provide easy access. They are smooth, relatively cheap, and easy to maintain in low-use conditions such as cemeteries. However, these are not pervious surfaces and require excessive excavation to implement.

Permeable pavers offer an American Disability Act (ADA) approved surface similar to concrete and asphalt while also allowing water to permeate the surface. However, there are concerns with general maintenance of these surfaces as they tend to become clogged with various debris reducing their effectiveness. It is best to use this type of material in places with little surrounding vegetation to mitigate blockage.

Surface Materiality

Dirt and gravel surfaces are by far the most ideal surface material to use in natural burial cemeteries as they are extremely permeable, low cost, and preserve the natural aesthetic of the landscape. However these surfaces are difficult to maintain with high use and erosion. Typically, they are not ADA compliant but can be used with proper compaction. It is best to use these surface types on ridge lines, away from drainage ways to mitigate erosion and where there is lower anticipated use.

Architectural Elements

There is often a dedicated building or structure for ceremonies, meetings, or for memorials. The architectural design of these buildings should reflect the local aesthetic and be located in areas of high existing disturbance or centrally located for ease of access. The buildings themselves can help define external sub-spaces such as courtyards or porches and can visually interplay with other design elements on site. If possible, building designs should strive to be certified by the Leadership in Energy and Environmental Design (LEED) certification to reduce the environmental impacts.

Planting Design

In most cases, the planting design of natural burial cemeteries will be focused on the natural local plant communities. Prior to any additional planting, invasives should be removed from the site to encourage selective growth. A viable tool for determining native plants in an area is the Native Plant Finder created by the National Wildlife Federation (See Appendix 4 for an internet link to this resource).

When selecting plants there are some variables that should be considered. As clearly defined in the survey and interview results, maintenance of native plants is the most difficult, time-consuming aspect of natural burial grounds. Since heavy equipment and sprays are generally discouraged, a vast majority of the maintenance has to occur by hand. Therefore, selecting resilient plants that can outgrow invasives identified in the initial removal process will create a much more effective transition of plant communities. Shade and soil conditions also should be considered when determining plant mixes.

Natural burial cemeteries promote the use of native looking aesthetics which can often be perceived as unkempt and wild to the layperson. A good way to combat this notion is to use ornamental natives or specimen plants to highlight important areas such as contemplation areas, entryways, or commemorative spaces.

Natural Burial

Natural burial landscapes are rather simple in their design, utilizing native plantings, sustainable materials and little development. However there are aspects related to natural burial design and maintenance that were derived from the survey and interviews.

Grave Markers

As mentioned in the commemorative elements section of the design guidelines, grave markers act as a tangible medium on which mourners can project emotions. Natural burial cemeteries are very intentional with the materials used and must be sustainably sourced. Natural stone, memorial walls, and plantings are all physical ways in which to demarcate a grave. However, GPS is used in some natural burial locations as a way to record its location while preserving the pristine aesthetics of the site.

When planning a natural burial ground, it is important to designate the types of markers used in the burial sections as to maintain relative consistency. However all of these options should have very minimal visual impact and can also be intermingled in the same space.

Body Transportation

Moving the body from the entrance to the burial plot can be a difficult task without a defined road system. Maintenance paths can be used for vehicles to move the bodies, but in many cases with natural burial cemeteries, carts or family members will move the deceased. When designing the circulation of the site, it is important to consider the methods used in body transportation and how they can be accessible in the site. The use of carts or family members to carry the body would require extremely flat surfaces with appropriate grip and width for safety considerations.

Excavation Methods

Excavating graves is a labor-intensive task that can be difficult if there are poor conditions. Natural burial cemeteries promote hand-dug graves rather than using heavy machinery as it degrades the surrounding environment. Hand-dug graves should only be 2-1/2 feet to 3-1/2 feet deep compared to the traditional 6 feet which began as a health and safety response to the Black Plague. In truth, bodies need to only be buried 18 inches or lower to avoid the “smell barrier”, a term used to describe scavenger animals’ abilities to locate decomposition. Before plotting burial locations, it is critical to determine the excavation method to be used as to appropriately provide accessibility.

Maintenance Considerations

The ultimate goal with natural burial grounds is to create a sustainable landscape with as little maintenance as possible. Maintenance tasks are difficult since heavy equipment and chemical spraying is not allowed in many cases. The following are some considerations to bear in mind when creating a maintenance plan for a natural burial cemetery:

- Select drought tolerant natives is ideal as to reduces watering costs
- Newly planted prairie grasses should be cut to 6-8 inches twice annually
 - Once established, cutting may be reduced
- Fertilizers should be avoided on native plants as it can degrade the plant's health
- Some natural burial cemeteries use sheep for mowing to reduce maintenance costs
- Prescribed burnings of native prairie plants can be conducted under the supervision and approval of City officials
- Newly planted trees will need to be inspected for health, growth, and pruning during the initial establishment period

Ecological Services Provided

In order to be considered by the Green Burial Council as a natural burial ground, there are a series of parameters that need to be met regarding ecological health. In short, promoting native plant growth, creating wildlife habitat, and improving stormwater management conditions are the primary goals of the ecological effort. In the case of a conservation burial ground, there also needs to be an enacted easement or conservation organization to oversee the continued progression of the conservation grounds. Depending on the site type selected in the first set of design guidelines, there are many tools that can promote ecological growth including: insect gardens, rain gardens, native plantings, and bird sanctuaries.

A large, mature tree with thick branches and some autumn-colored leaves (brown and orange) stands in the foreground. The tree's shadow is cast long and dark on the grassy ground. In the background, a cemetery is visible with several tombstones and other trees, some bare and some with autumn foliage. The sun is shining through the branches of the tree, creating a bright, hazy effect. The sky is a pale blue.

GUIDELINE APPLICATION

(Left)

Figure 6.1

*Existing cemetery conditions of Sunrise Cemetery
(Corrie, 2017)*

Site Selection

The existing conditions of the selected site dictate that the site be classified as a hybrid natural burial ground. However for the purposes of creating stronger commemorative qualities using ecological design, this project assumes that it is a natural burial ground. The proposed design essentially creates a separate space from the existing cemetery providing a unique experience to visitors compared to the existing burial sections. The site is eligible to be considered as a conservation burial ground, but would need to have a long-term conservation strategy that the City has not expressed interest in.

Site Inventory & Analysis

Soils

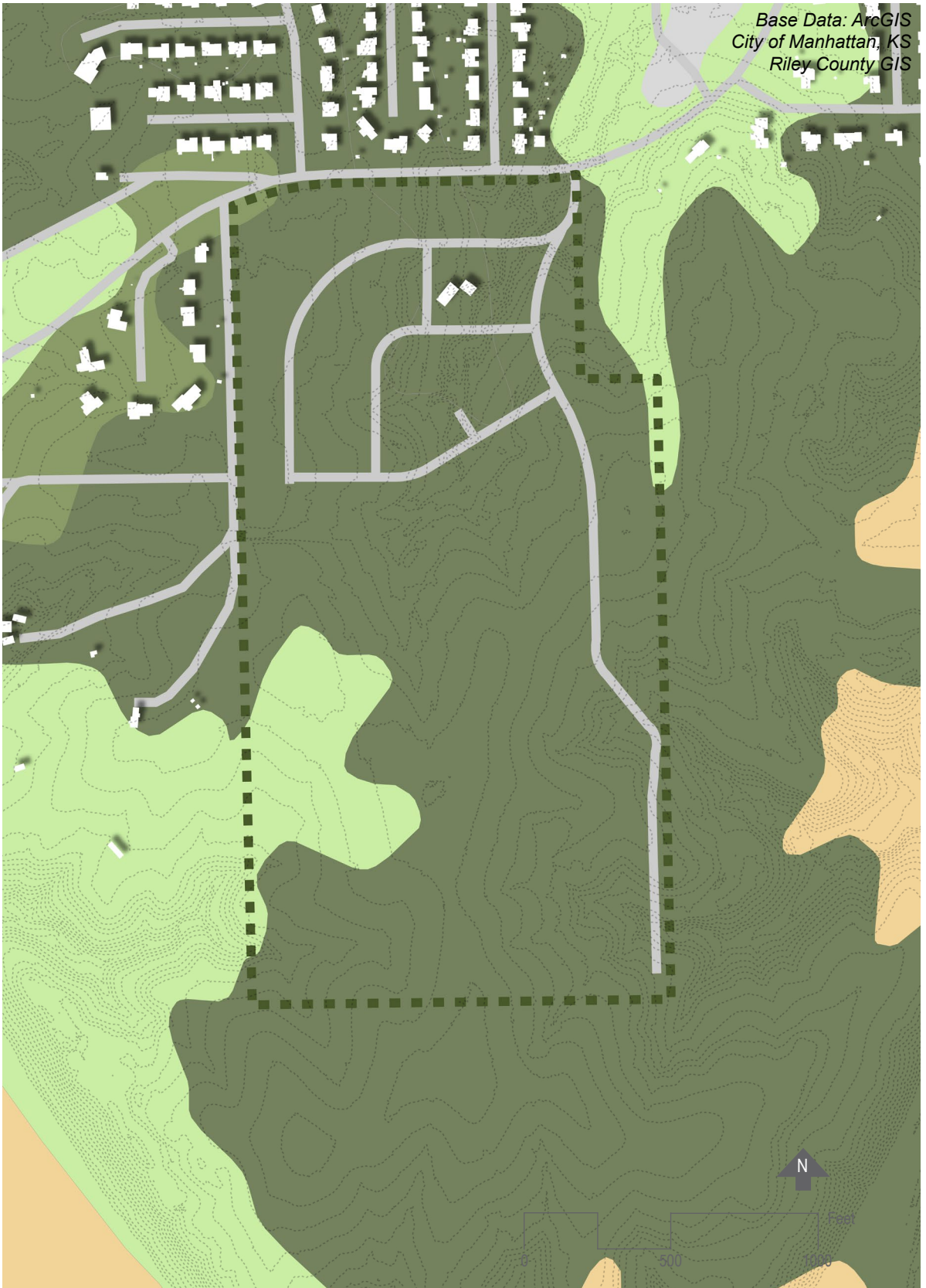
The site consists primarily of a Geary Silt Loam soil which is ideal for agriculture land. It is known to have very deep, well-drained soils ranging between 0-30% slope. The vegetation found in this soil are primarily tall prairie grasses. With this type of soil, almost the entire site is suitable for burial, both traditional and natural, except in the area that consists of Clime Silty Clay Loam.

This soil type was created by a shale parent material making this soil very difficult to excavate. This soil type also appears on steep slopes that are not usable for typical development. Therefore, this area of the site is excluded from future cemetery plans unless a major soil fill operation were to take place. However, this is still usable land that can be re-purposed for less intensive development such as trails, gathering areas and recreation.

Legend

-  Geary Silt Loam
-  Kenesaw Silt Loam
-  Clime Silty Clay Loam
-  Zeandale Silt Loam
-  Wymore Kennebec Complex
-  Site Boundary
-  Roads
-  Existing Contours (10')

Base Data: ArcGIS
City of Manhattan, KS
Riley County GIS



Site Inventory & Analysis

Topography

Since only a third of the site is currently used as a traditional rural garden cemetery, a majority of the site has already been graded to be relatively flat for future expansion. However, there is a natural drainage channel on the western edge of the site that has dramatic slope conditions. This area is anticipated to be filled by the City of Manhattan for additional burial space when the time is appropriate.

Areas deemed too steep (10% +) in the slope analysis are best suited for trails and natural amenities rather than for burial. The rest of the site is suitable for any type of development in regards to slope.

Legend

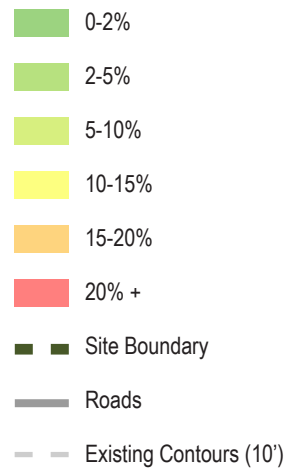
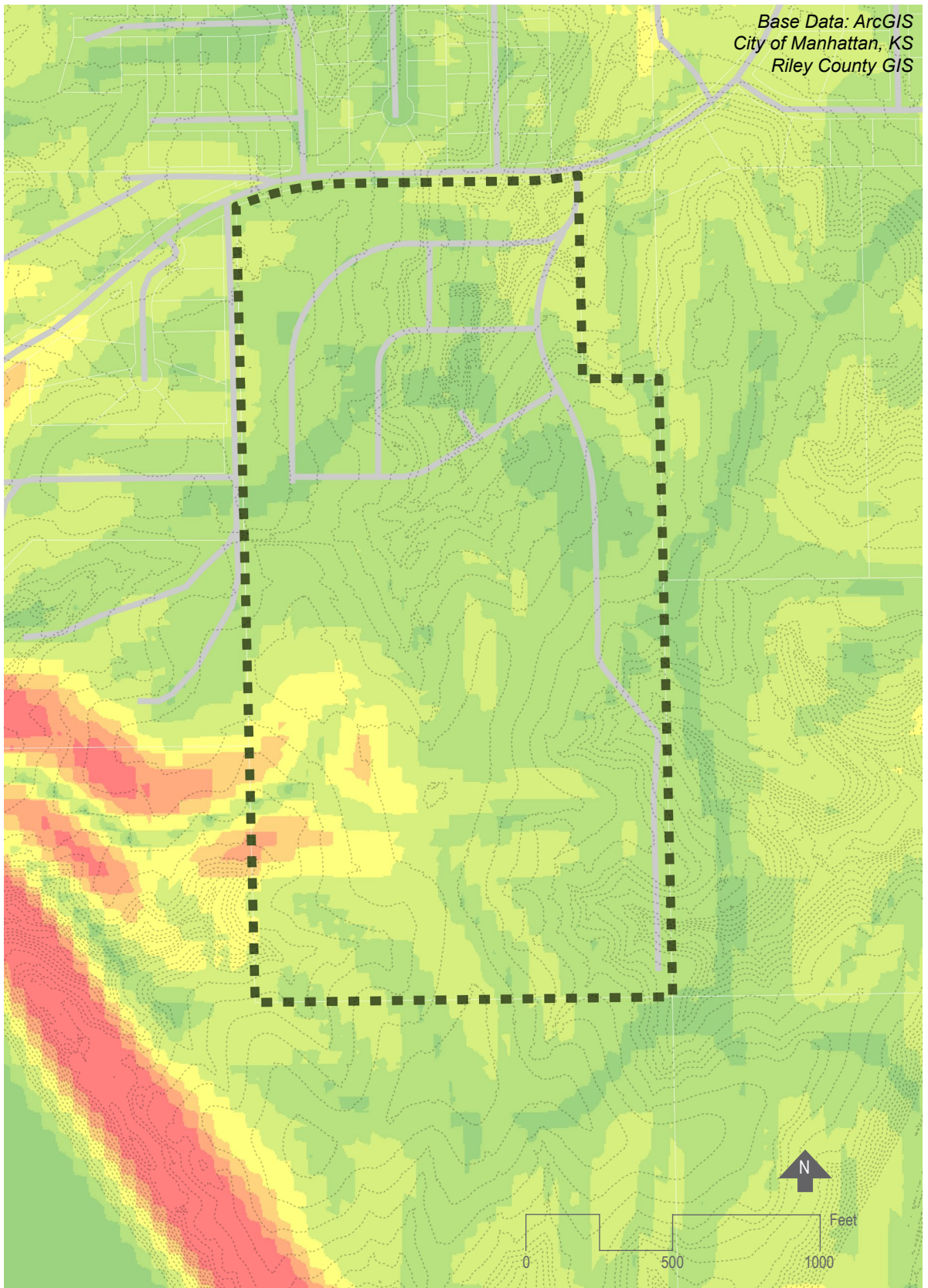


Figure 6.3 Undeveloped land at Sunrise
(Corrie, 2017)



Site Inventory & Analysis

Hydrology

There is a primary drainage shed for the site in the southwest corner of the site. This wooded ravine collects majority of the water from the site with the exception of the northeast corner which divides towards the northern road and into the storm system.

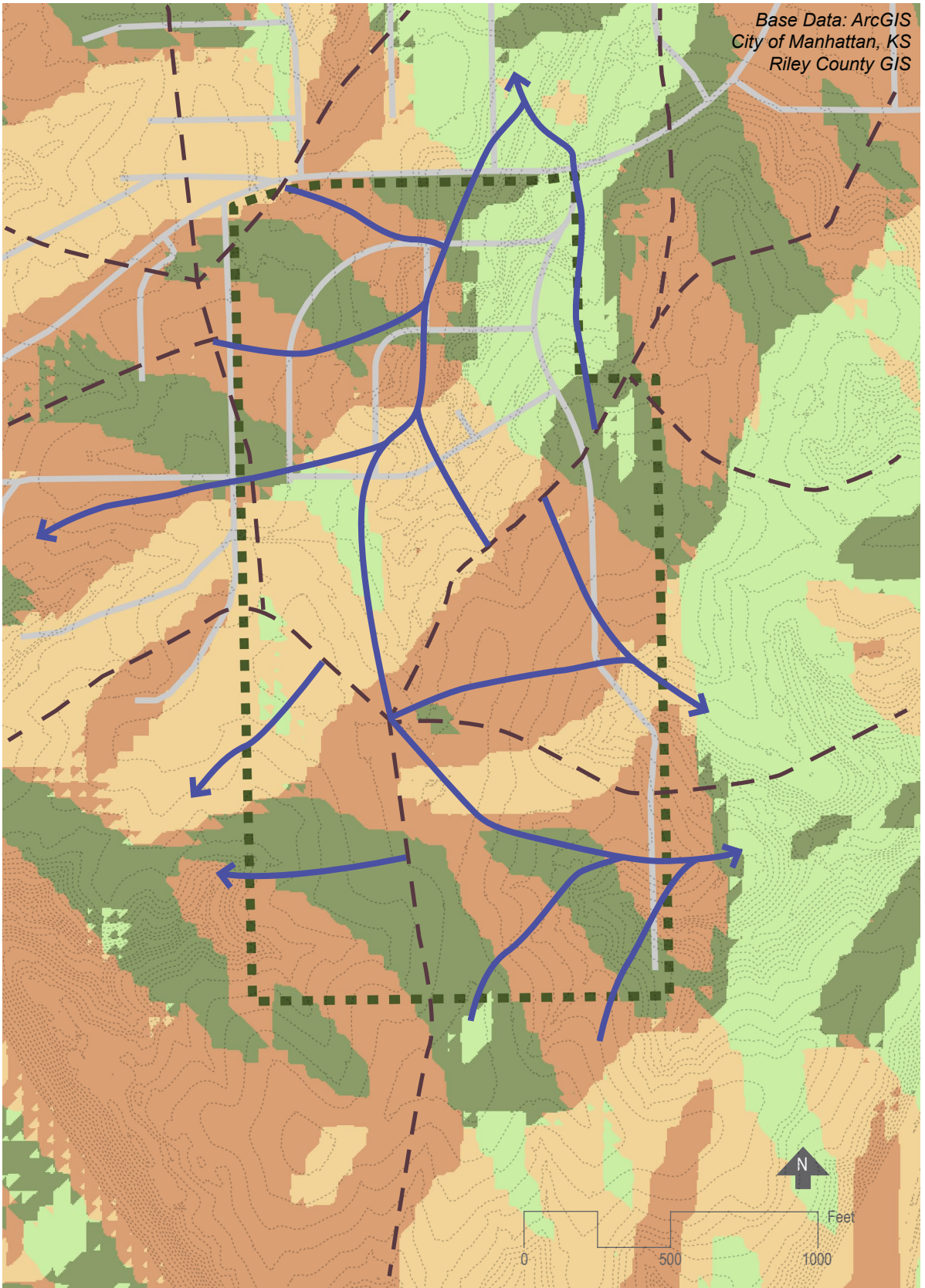
This creates the opportunity for stormwater management interventions along these drainage channels to help slow water during large storm events.

Legend

- Ridge Line
- ← Drainage Line
- North Aspect
- East Aspect
- South Aspect
- West Aspect
- Site Boundary
- Roads
- Existing Contours (10')



Figure 6.5 Steep slope conditions and prominent rock layer (Corrie, 2017)



Site Inventory & Analysis

Climate

Manhattan, Kansas resides in the Flint Hills Uplands physiographic location. The area receives approximately 30-35 inches of rainfall a year with an annual average temperature of 64-68 degrees Fahrenheit. The average annual freeze date is between October 13th and 19th which is important in regards to planting patterns. Overall, the summers are quite warm (75-77 degrees) and the winters can be considered mild (29-31 degrees) (Goodin et al, 1995).

Vegetation

A thorough identification of the plants present at Sunrise Cemetery was not conducted. Majority of the existing site consists of turf grass with old-growth trees, typically oak, elm, cedar, and cottonwood. The undeveloped portion of the site consists of tall grasses such as *Panicum virgatum* (Switchgrass), *Andropogon gerardii* (Big Blue Stem), and *Bouteloua curtipendula* (Sideoats Grama). However, there are many invasives also growing in the same area which will need to be removed prior to any additional planting.

Wildlife

There were no observations while on site of a prominent wildlife presence. It is assumed that birds, squirrels, rabbits, deer, coyotes, prairie chickens, snakes, and other various animals may be present or pass through the site. None of these animals pose a threat or design concern to a cemetery space.



Figure 6.7 Southern edge conditions (Corrie, 2017)



Figure 6.8 Forested areas along edges provide habitat for woodland animals (Corrie, 2017)

Site Inventory & Analysis

Sensory Experience

Upon entering Sunrise Cemetery, visitors are greeted by the typical stone gates found in many rural garden cemeteries across the United States. The sloped incline of the entrance hides most of the site from view creating a reveal when approaching the crest. The main office and maintenance building draw the eye to the center of the site as they are the only vertical structures other than the old growth trees scattered throughout the burial areas. The still feeling and quietness of the site creates a sense of aloneness for better or worse.

As someone visiting the site for mourning, the emotive response may be peaceful but to the average person could be uncomfortable. The internal views to the south are contained by the bordering tree line, yet vast as the prairie landscape rolls until it meets the edge of the site, one of the most valuable sensory resources. Exterior views are disrupted by power lines on the north and east edges of the site.



Figure 6.9 Sensory experience diagram
(Corrie, 2018)



Site Inventory & Analysis

Circulation

The existing site circulation is relatively simple as it is designed in the traditional rural garden form. There are no sidewalks or defined pedestrian paths connecting the various elements on site. The only walking surfaces are the vehicular streets that connect different sections of the cemetery.

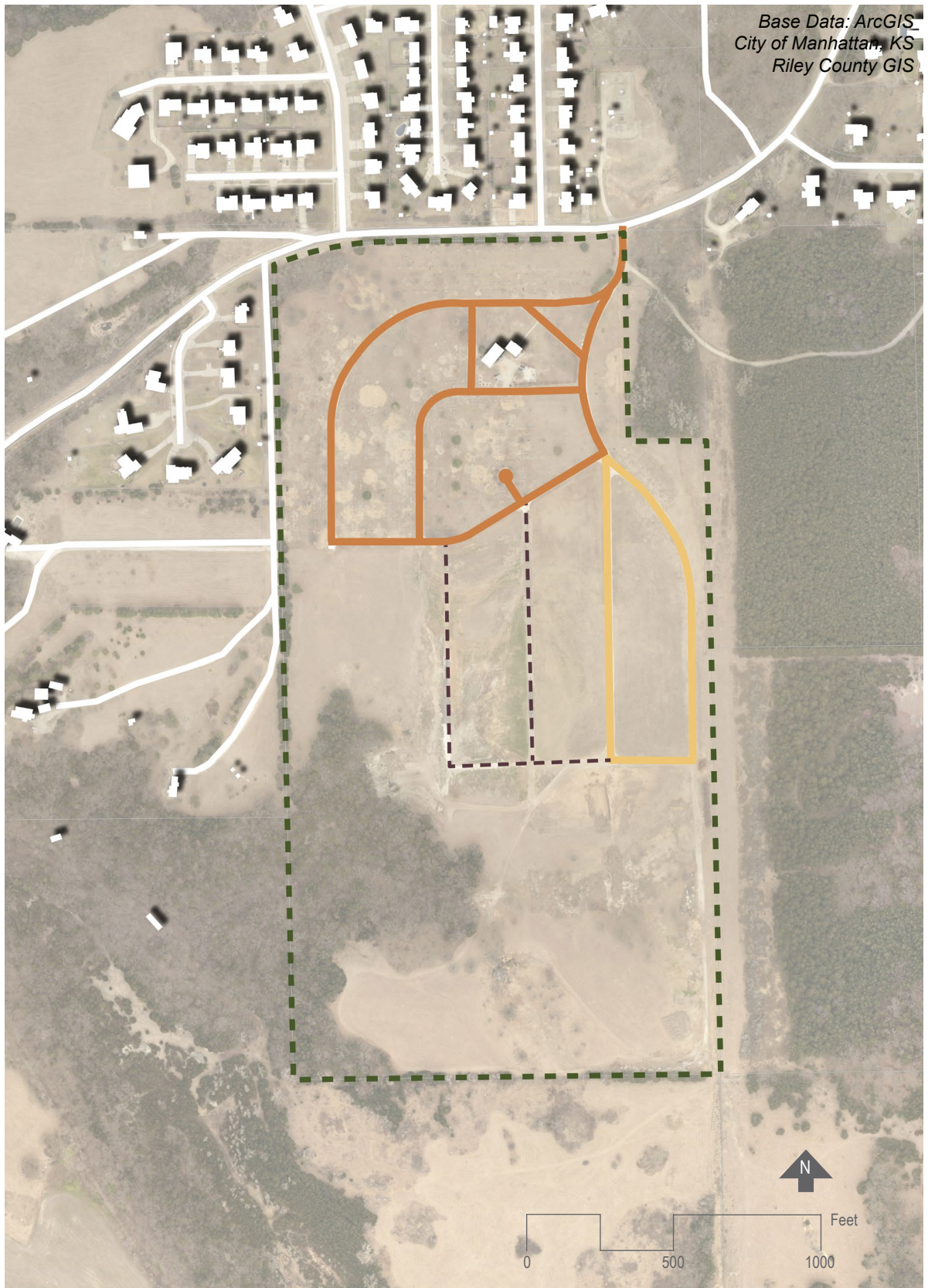
There is planned expansion of the roads to the south but no current intention of including pedestrian paths to accompany them. The road network will continue to grow as more plots are created in the future.

Legend

- Existing Vehicular Road
- Temporary Gravel Road
- Planned Expansion Road
- Site Boundary
- Roads



Figure 6.10 Road network through the site
(Corrie, 2017)



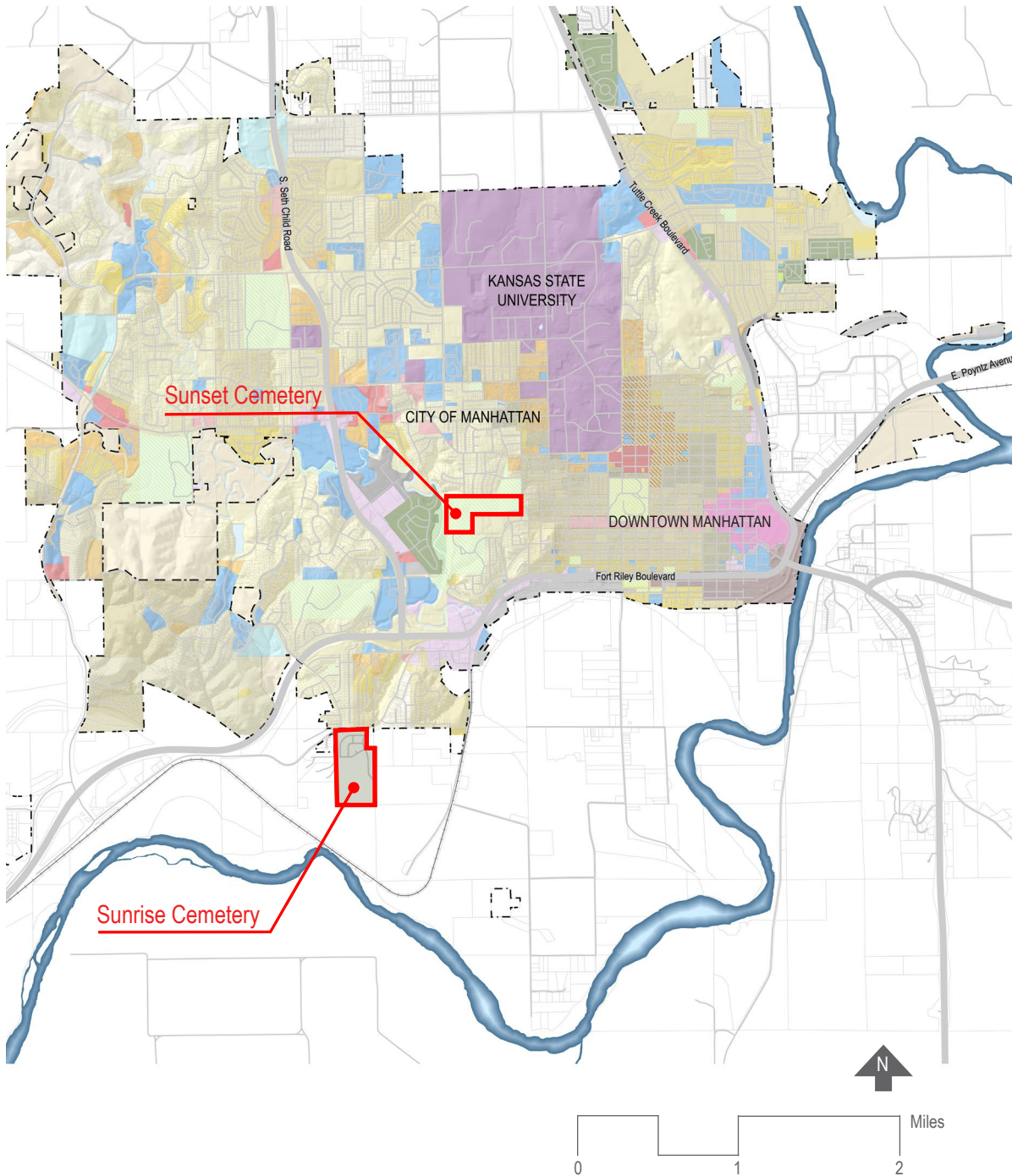
Site Inventory & Analysis

Existing Zoning

Since Sunrise Cemetery lies on the fringe of the incorporated Manhattan, Kansas area, there are not many conflicting zoning uses adjacent to it. The site resides among mostly residential development making the area quiet with low traffic volumes. The site itself is zoned as a part of the City's park system since it is owned and operated by Manhattan Parks and Recreation department.

Legend

	Single Family Residential - Suburban
	Single Family Residential
	Single Family Residential
	Two-Family Residential
	Four-Family Residential
	Multi-family Residential
	General Residential
	Manufactured Home Park
	Light Manufacturing
	Planned Unit Development
	University
	Restricted Business
	Neighborhood Shopping
	Aggieville Business
	Central Business
	Highway Service Commercial
	Heavy Commercial
	Research Park
	Industrial Park
	Light Industrial
	Heavy Industrial
	Business Park



Site Inventory & Analysis

Utilities

There are three primary utilities that run through or adjacent to Sunrise Cemetery: overhead power lines, water and sewerage. Most of these occur along the site edges within easements with the exception of some water lines in the cemetery for hand irrigation. The overhead power lines detract from the views looking out from the site. The northern power line is hidden by dense vegetation whereas the eastern line is in plain sight. Water lines will be extended south for the future expansion of the rural garden burials. These water lines can be further extended to provide hand irrigation for the natural prairie restoration plantings. Electric lines will need to be extended into the site if the cemetery were to stay open after dusk, which is currently not the case.

Legend

-  Water Line
-  Sewer Line
-  Overhead Power Line
-  Site Boundary
-  Roads

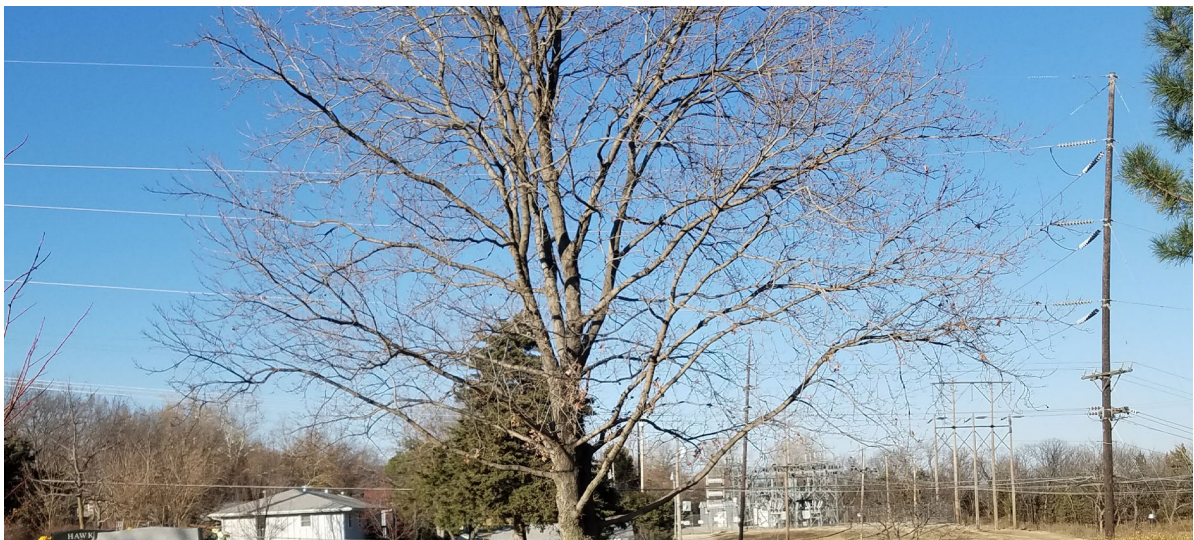


Figure 6.13 Overhead power lines adjacent to the site
(Corrie, 2017)

Base Data: ArcGIS
City of Manhattan, KS
Riley County GIS



Site Inventory & Analysis

Legal

There are no known legal restrictions for the site itself but there are laws regarding burial standards for the state of Kansas. In this state, embalming is not necessary unless the final interment occurs after 24 hours. Embalming is also required if the body was transported without being placed in a metal container or the body is to be placed in a mausoleum. Caskets are also not required unless specified otherwise by the cemetery operator. There are also no state laws governing the scattering of ashes (Kansas Administrative Regulations § 63-3-11) . Therefore, under these circumstances, natural burial can occur within the site provided the proposal goes through the proper channels for approval.

Historical

In order to accommodate more burial plots in the City of Manhattan, Sunrise Cemetery was established in 1960 to relieve the number of burials at Sunset Cemetery located to the northeast. Since its founding, the City has established ten burial sections and a columbarium for ash interment.



Site Inventory & Analysis

Prominent Cultural Practices

In order to determine what cultural practices are prevalent in the surrounding area of the cemetery space, an online search was conducted to identify places of worship within the City of Manhattan. This not only identifies the types of commemorative qualities and programming that should be present in the projective design, but also give an indication as to the number of worshipers who may seek a burial location that reflects their religious beliefs.

From this inventory, it is apparent that the most prominent religious group in the Manhattan area is Christian-based. There is also an Islamic mosque and Jewish synagogue located within Manhattan. There are however no Hindu or Buddhist places of worship but this is because these regions are typically practiced by the individual rather than with a congregation.

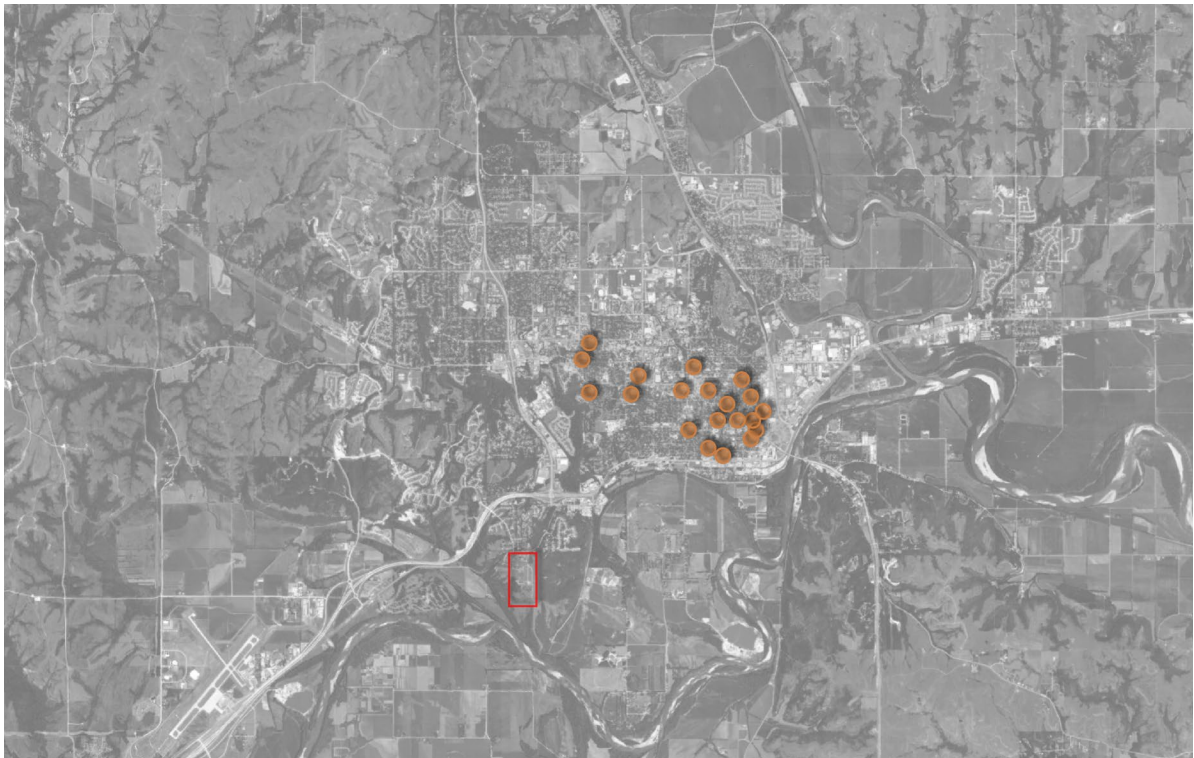


Figure 6.16 Christian places of worship (Corrie, 2018)

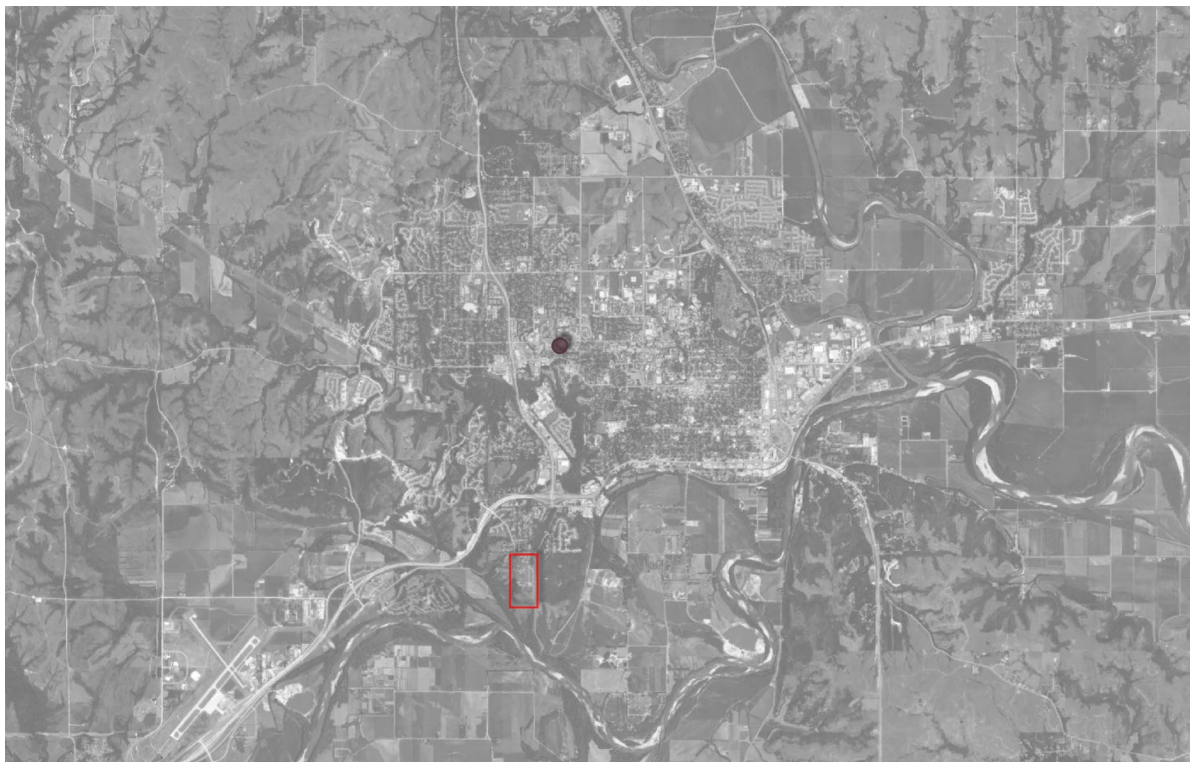


Figure 6.17 Islamic places of worship (Corrie, 2018)



Figure 6.18 Jewish places of worship (Corrie, 2018)

Site Analysis Summary

After conducting the initial site inventory, the next step was to combine the data layers into a legible format to conduct an analysis. This analysis is essential to designate areas for their ideal uses based upon the inventory. For instance, areas with good soils, low slopes, and consistent drainage would be ideal for natural burial. On the other hand, placing a maintenance road in an area with steep slopes and solid rock layers may be less ideal. The following are the major identifiers one should generally locate on site before moving forward with the design phase.

1. Ideal burial locations

- Well drained soils
- Low to moderate topographic change
- No geologic barriers
- Away from drainage channels or water sources
- Does not impact adjacent land uses (i.e. visual site lines)
- Accessible
- Occurs in natural setting with aesthetic value

2. Structures & Gathering Spaces

- Large, flat areas are ideal for building structures or gathering spaces upon
- Should not impede natural drainage of the site
- Occur in areas with easy pedestrian and vehicular access

3. Major roads, trails, & access points

- Connect to existing infrastructure
- Provide easy access on relatively low slopes
- Create easy wayfinding
- Roads to natural burial areas should terminate prior to designated area with parking, trail, and amenity access as to not drastically disrupt the natural aesthetic

4. Structures and Gathering Spaces

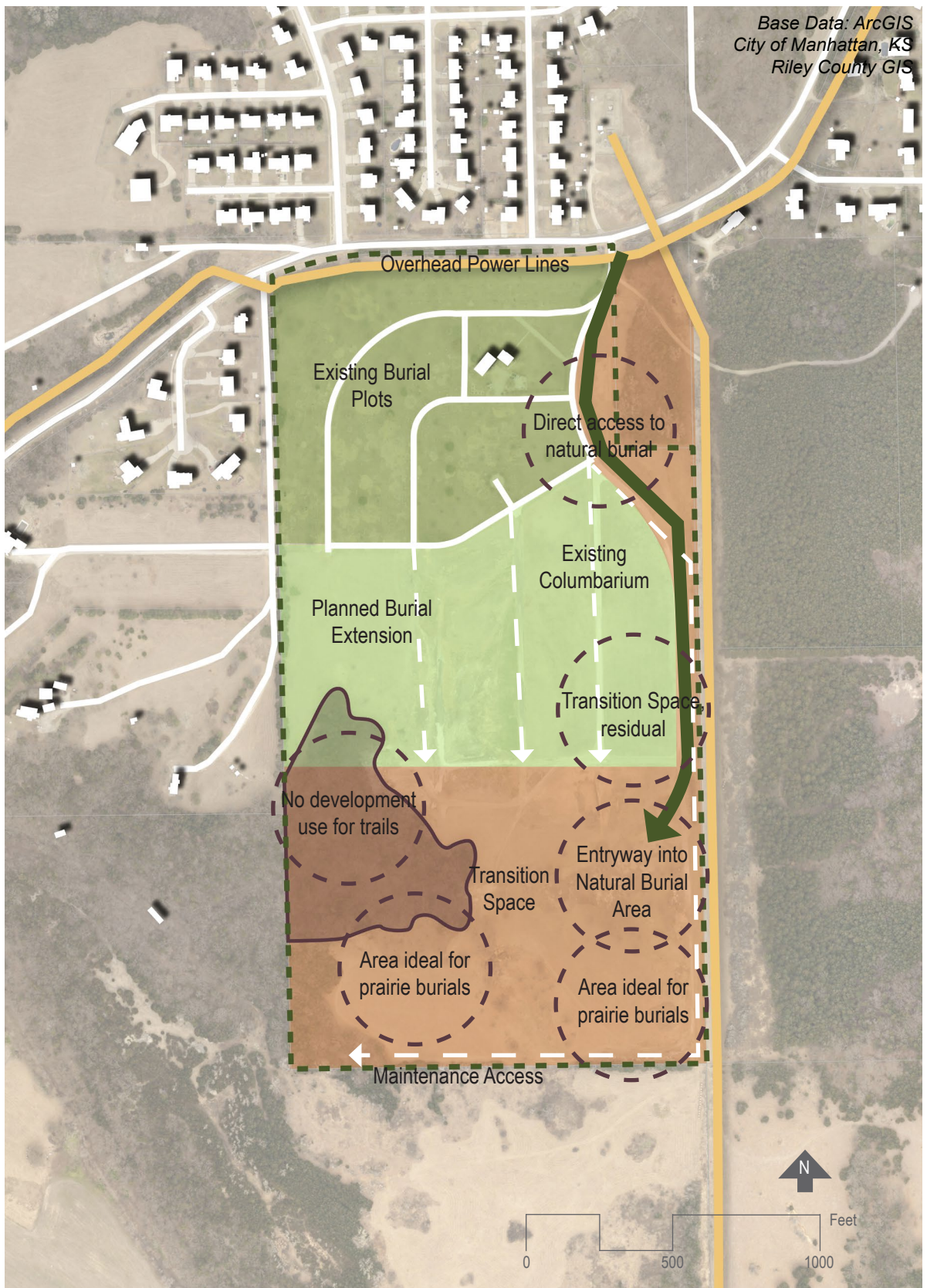
- Large, flat areas are ideal for building structures or gathering spaces upon
- Should not impede natural drainage of the site
- Occur in areas with easy pedestrian and vehicular access

5. Areas to be preserved or restored

- Preservation areas should be identified for their plant community health, soil composition, water quality, and natural aesthetic
- Restoration areas should occur outside of the delineated burial areas and should have some level of disruption or contamination that can be resolved through natural processes.

6. Additional Facilities

- This includes any site specific or organization-required programming such as open air cremation, body preparation facilities, or other means of body interment



A landscape photograph of a cemetery at sunrise. The foreground is a field of tall, golden-brown grass. In the middle ground, a row of mature, green trees stands against a bright sky. The sun is low on the horizon to the right, creating a lens flare and casting a warm glow. The sky is filled with soft, white and pinkish clouds. A bare tree branch hangs from the top right corner.

SUNRISE CEMETERY



Design Inspiration

As identified in the design guidelines, creating a narrative in a landscape can be an effective tool to improving the user's experience. For this project, the Kübler-Ross Model acted as the inspiration for the project design. The Kübler-Ross Model is a progression of emotional experiences one faces during the death of a loved one, also known as the five stages of grief. The proposed narrative seeks to designate five areas of the site to represent each stage of grief. In these spaces, spatial and programmatic elements were designed to help visitors cope with each stage as they move through the site. There are no markers or identifiers to explain this narrative to the user, but rather is implied through design elements. It is ultimately up to the user to experience the site how they see fit, but using a narrative as an inspiration provides a strong conceptual foundation to build a design from.

The Kübler-Ross Model

1. Denial

This area provides users with alternate paths or cyclical path representing the failure of acceptance to enter the cemetery space. This area is the entry and transition into the cemetery and is protected from views of the rest of the site as a way of easing this transition. An oval open lawn resides in the center to create an enclosed space that with vegetation that directs the eye upwards to the sky. The mowed lawn can be used as a gathering space or recreational area.

2. Anger

The intent of this linear connecting trail is to provide users with direct, fast-paced movement to exert

energy that can be associated with anger. The trees running parallel to this space provide repetition, direction and interest as to what lies at the end of the trail.

3. Bargaining

After moving through the allée of trees there is a circulation node that creates a decision situation for the visitor. This is where they must choose or "bargain" their destination even though they ultimately lead to the same destination.

4. Depression

This portion of the site is where the dedicated natural burial areas occur. Since this is typically the longest phase of the grieving process, it was appropriate it be represented by the graves where loved ones would visit frequently. This area does not promote the emotion but rather is a way with coping and finding resolution with death through the visitation of the grave.

5. Acceptance

The terminating point of the narrative ends with a contemplation area overlooking the natural burial grounds. It has a direct sight-line overlooking the prairie burial area towards the secular monuments and southeastern gathering space. The burial mounds act as a visual framing element for the gathering space. The intent with this space is to provide a moment of contemplation, clarity, and resolve to the visitor's narrative prior to leaving the site either through the drive or a path leading through the pollinator garden that promotes a sense of life through wildlife activity and olfactory responses.





Figure 7.3 Early design phase aerial (Corrie, 2018)



Figure 7.4 Proposed site plan (Corrie, 2018)





Meditative Loop

The meditative loop is meant to be a space for mental preparation. The loop provides visitors a space to find internal strength before entering into the natural burial areas. The surrounding trees define the space and draw visual queues upwards towards the sky. The mowed lawn represents the transition between manicured rural garden design and entering the wilderness that encompasses the ecological landscapes ahead.

Linear Trail

The linear trail is a directed pathway that utilizes stone walking pavers that create a sense of repetition and encourage rapid movement through the space. The strong directionality is meant to hasten the movement of the visitor and exert physical force to clear the head and body of any remaining hindering emotions.

(Left)
Figure 7.5
Northeast plan enlargement
(Corrie, 2018)

(Above)
Figure 7.6
Meditative Loop
(Corrie, 2018)

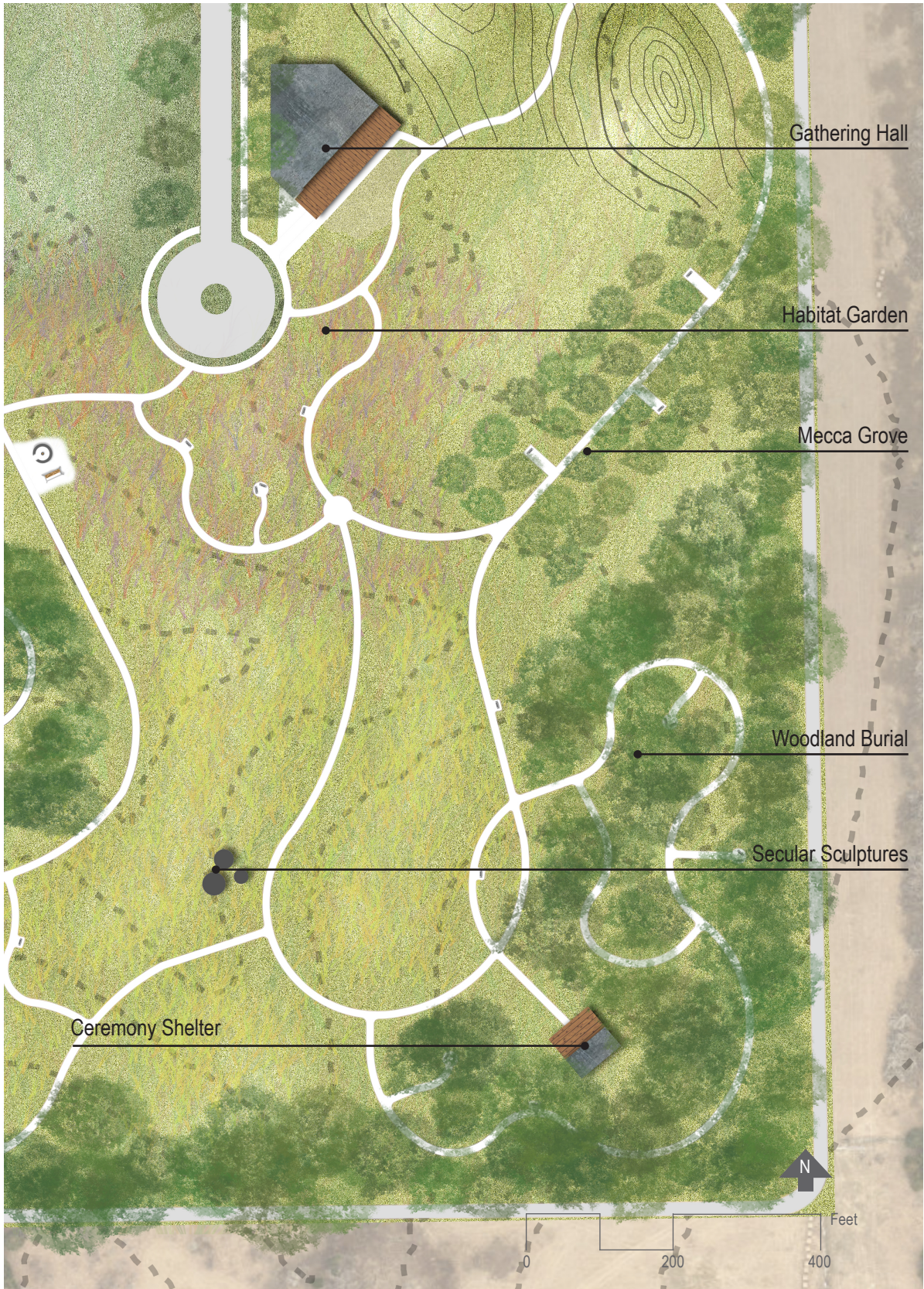


Burial Mounds

The burial mounds create a sense of discovery and reveal as they hide the view of the Gathering Hall and the open prairie until a zen view frames the spaces that lie ahead. The mounds themselves also provide another means of natural interment and act as a physical natural feature to utilize as an overlook to gather directionality over the site.

(Above)
Figure 7.7
Burial Mounds
(Corrie, 2018)







Gathering Hall

The gathering hall is a proposed structure to provide families with an interior space to gather prior to burial. The centrally located building is adjacent to the main entry road which connects to the service path around the site. The hall can be used for other events such as education, weddings, and other large gatherings. The burial mounds that reside behind the building hinder views towards the existing cemetery to the north leaving the views over the natural landscape.

Habitat Garden

The habitat garden brings life into the funerary landscape with pollinator insects, birds and other wildlife. Adjacent to the Gathering Hall, the Habitat Garden creates visual, olfactory, and auditory responses from visitors so when they arrive to the hall, they are given a pleasant sense of nature before entering any funerary services or gatherings.

The Habitat Garden is also where the narrative comes to an end after visitors have moved through the site. This is meant to represent the life after death and bring the narrative of the landscape to an end before returning to the entry path as well as the gathering hall. Visitors can either walk back to the entrance of the park or leave directly at the circle drop off.

(Left)
Figure 7.8
Southeast plan enlargement
(Corrie, 2018)

(Above)
Figure 7.9
Gathering Hall and Wildlife Garden
(Corrie, 2018)



Mecca Grove

The grove is aligned in the direction of Mecca, a very strong connection for those of the Muslim faith. Since the religion practices natural burial as a norm, it was important to provide a space that has significance to the culture. The view aligns with the secular sculptures on the site to not exclude the use of the space from other religions. The extended paths that run perpendicular to the central walk contain pavers with the names of the deceased to not disrupt the aesthetic with vertical elements.

(Above)
Figure 7.10
Mecca Grove
(Corrie, 2018)



Woodland Burial

The woodland burial is typical of many natural burial cemeteries across the country. The area is to be planted with native hardy trees that will provide a dense canopy on the southeastern edge of the site further defining subspaces in the landscape. The undulating paths within the forested area will provide users with a walk through a natural setting to their loved one's grave site.

(Above)
Figure 7.11
Woodland Burial
(Corrie, 2018)





Prairie Burial

As the most natural and pristine area of the site, this space is dedicated to the Kansas tall grass prairie aesthetic. The layout of this plot is intended to maximize the number of burials while retaining a natural aesthetic. The height of the native plant material allows for the paths to blend into the landscape creating uninterrupted views across the prairie aesthetic.

(Left)

Figure 7.12

Southwest plan enlargement

(Corrie, 2018)

(Above)

Figure 7.13

Prairie Burial

(Corrie, 2018)





Woodland Walk | Contemplative Overlook

The Woodland Walk marks the end of the natural burial grounds and acts as a way to clear the mind before reaching the contemplative overlook which opens to an expansive view of the wildlife garden, secular sculptures, and prairie landscape with the wooded burial area as a backdrop in the distance. This final space is meant to provide closure to visitors and provide a defined space to either talk with one another or simply overlook the entirety of the site.

(Above)
 Figure 7.14
Contemplation Overlook
 (Corrie, 2018)

(Above)
 Figure 7.15
Woodland Trail
 (Corrie, 2018)



CONCLUSIONS



Summary

The goal with this research was to create a process where by landscape architects and cemetery owners could design natural burial cemeteries with enhanced commemorative qualities for a range of religious preferences. The purpose was to promote the use of this cemetery type over the traditional rural garden form. To accomplish this, a thorough investigation of four principles: commemoration, cultural influences, commemorative landscape design, and natural burial were explored to derive methods in which would enhance user experiences.

The purpose of commemoration is to not only remember the departed, but also provide a sense of closure for the living. There is an inherent desire to create monuments so that we may “live on” forever. This has lead to casket-embalming burial methods surpassing natural burial as an interment option in the United States.

Research has shown that the casket-embalming method of burial is a wasteful, unecological method compared to natural burial or even cremation. The analysis of commemoration and religious preferences set the foundational argument as to why we need well designed memorials while that also reflect a variety of personal religious beliefs.

With an understanding of commemoration, religious preferences, and identified design principles, a set of design guidelines were created. They were then applied to make a natural burial cemetery that promoted an experiential healing narrative.

The guidelines were also derived from a survey and interviews. The input from professional cemetery workers across the United States showed that the growing trend of natural burial cemeteries have the potential to incorporate stronger commemorative qualities and a more flexible design to meet the needs of a range of religious preferences.

Ultimately, the connections between the argument-building foundational knowledge, survey, interviews, and discoveries made from analyzing burial design led to a holistic design approach. The design proposal illustrates the possibility of being more inclusive of all faith groups.

Design Outcomes

The design guideline application illustrated the affects of incorporating the four research themes: commemoration, cultural influences, commemorative landscape design, and natural burial into an enhanced ecological burial design. However this project was conducted in an academic setting which allowed the freedom to create a design without the input of a client, budget, or detailed site constraints. However, by showing the design potential that can be derived from the guidelines application, there is reason to continue the conversation on natural burial design and explore for even more innovative ways to sustainably remember the dead.

From this research, it is apparent that the modern funeral industry should consider and promote natural burial as a more effective way of interment. Shown in the research, the current cemetery model used by the funeral industry is detrimental to local ecologies and is unsustainable. With this new approach to the design of natural burial cemeteries, the conversation of burial preferences can be influenced to promote this type of interment over the traditional casket-burial method. However, with the funeral industry being rightfully concerned with the profit impacts natural burial has on funeral services, it is unlikely that natural interment methods will be the first consideration when offering services to clients. But with modern shifts in burial preferences indicating that natural burial is becoming a more popular option, this report may act as a way to help incorporate sustainable practices into all cemetery types in the future.

Project Limitations

One limitation to this research effort was the lack of evaluation of the design proposal in regards to its successful application of the guidelines. If allotted more time, it would have been more substantial if the design was evaluated by those in the funeral industry to ensure the design would resonate with the general public and growing natural burial trends.

Due to the sensitive nature of this project, it was difficult to gain input from the general public regarding burial preferences and varying religious backgrounds. If this information were to be obtained, the resultant proposal could have been more reflective of local user preferences. Therefore, the design guidelines took a more general approach in addressing these subject matters.

Religion is a complex, multifaceted subject with many different interpretations and sects. This research approached the studying of religion by generalizing major faith groups and their burial rituals in order to derive design guidelines reflecting those practices. A more thorough investigation into these different sub-sects may have provided even more methods of commemoration on a natural burial site.

The last identified limitation to this report was that the guidelines were only applied to a single site. The project would be more substantial if the guidelines were applied to multiple sites across the country to illustrate its effectiveness under a variety of circumstances such as different prominent faith groups and physical site attributes.

Future Research

Although the methodology's structure was strong in terms of focusing on the primary themes related to death, burial rituals, and mourning, there is still layers of research and design that could have been investigated. Gathering metrics on ecological cemetery sites would create benchmarks however, such metrics are difficult to find for these cemetery types. This would also add more quantitative evidence to the success of the design rather than strictly qualitative, which is what a majority of the research methods derived. Therefore it is difficult to say the design was a complete success unless it was implemented and evaluated.

This project would also benefit from an evaluation from other design and cemetery professionals to identify gaps in knowledge. It is acknowledged that this report does not capture the full breadth of research related to cemetery design, but may act as a foundation for future scholars to build from.

Reflections

Overall, the project design and guidelines are satisfactory from a personal standpoint. As someone who is avidly interested in the sustainable burial practices in the United States, I believe that there is great potential in projects such as these to promote the conversation of death as a norm. The Sunrise Cemetery design represents a personal belief in the ability to create a multi-cultural space that respond to the local ecology in a beneficial way.

As the United States continues to grow, urbanize, and lose valuable resources, it is vital to aim to improve virtually all aspects of life, including death. The current rural garden cemetery model does not meet the needs of contemporary society in terms of commemoration, ecology and overall design. The guidelines and design derived from this research effort will hopefully act as a stepping stone to more real-world applications greater interest in natural burials.



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APPENDICES



Appendix 1

Survey Questions

Welcome to the Survey!

Thank you for participating in this survey for green burial practices. The information you provide will be used to inform a conceptual cemetery design in Manhattan, KS. This research is for a capstone project with Kansas State University's Department of Landscape Architecture conducted by the graduate student, Brian Corrie.

There are 15 questions included in this survey, please answer as many as you can.

Background Information

1. How long have you been in the funeral or green burial industry?

2. What is your role with the company? Please describe.

Ecological/Green Cemeteries

3. In your own words, please describe natural burial.

4. What types of markers do you use to designate a natural burial site?

- | | |
|---|--|
| ☐ Traditional headstone | ☐ Natural materials (such as trees, plantings, renewable materials) |
| ☐ Rocks or boulders | ☐ No marker, graves are identified with GPS coordinates |
| ☐ Plaques | ☐ No marker |
| ☐ Other (please specify) | |

5. What are the challenges in maintaining or permitting ecological cemeteries in your area?

6. What are some challenges in grave preparation or in maintenance of natural burials

7. How has the trend of natural burial changed over the years?

8. What types of facilities do you provide in natural burial cemeteries?

- ☐ Nature trails
- ☐ Seating
- ☐ Contemplation areas
- ☐ Water features
- ☐ Gathering areas
- ☐ Other (please specify)

Commemoration

9. What types of activities do you observe mourners participating in?

- ☐ Contemplation or meditating
- ☐ Talking (to others or grave markers)
- ☐ Walking through the funerary landscape
- ☐ Decorating burial site
- ☐ Other (please specify)

10. How would you describe the act of commemoration in natural burial cemeteries?

11. What do clients find appealing about natural burials in terms of the process or how they will be remembered?

12. Do you have any suggestions in improving the quality of experience for visitors of natural burial cemeteries?

User Types

13. Is there a specific user group (age, ethnic or religious) that find natural burial more appealing than other types of burial?

14. Do you believe there are opportunities for these types of cemetery spaces to be more inclusive of other religions?

☐ Yes

☐ No

If yes, do you have any suggestions for more inclusive religious experiences?

15. Have there been or are there any designations for commemorative festivals such as Día de los Muertos (Mexican traditional practice of commemoration, Day of the Dead) in cemetery spaces? Is there a desire for such events?

Thank you!

Once again thank you for your time and input on this subject. If you have any further questions or comments, please contact Brian Corrie at the following email address: bpcorrie@ksu.edu

Informed Consent Form

Project Title: Remembering the Dead: Enhancing the Remembrance Qualities of Ecological Cemeteries

Project Approval Date:

Project Expiration Date:

Length of Study: 15 - 45 minutes

Principal Investigator

Anne Beamish
abeamish@k-state.edu

Co-Investigator

Brian Corrie
bpcorrie@ksu.edu
219-798-9297

IRB Chair

Rick Scheidt
rscheidt@ksu.edu
785-532-1483

Contact Information: For questions regarding the interview, participant rights, or research-related injuries, you may contact one of the following.

Purpose and Procedures: The information gathered from the following interview will be used as part of a research effort aimed at improving the commemoration qualities in ecological cemeteries. The duration of this interview is anticipated to take between 15-45 minutes depending on the participants willingness and availability. A scripted interview will be conducted allowing the participant to answer each question thoroughly and allow for additional questions to be asked to gain more insight on participant responses.

Alternative Procedures: All interviews will be conducted either in-person or through a digital means (phone, email, etc.) but will not provide an advantageous situation for the participants.

Risks and Benefits: There are no foreseeable risks or discomforts towards the participants or the interviewer. In terms of subject benefits, participants may discover new ways that they can improve or incorporate commemoration in their funerary landscapes as a result of this interview discussion.

Extent of Confidentiality: There are three levels of confidentiality provided in this interview process that may be selected by the participant: 1) No confidentiality, all pertinent information may be included in the research. 2) Partial confidentiality, individual information will be protected but the business or relevant affiliations may be disclosed. 3) Full confidentiality, all information will be coded to prevent any associations between participant and resultant data. Please select your level of confidentiality below.

☐

No Confidentiality

☐

Partial Confidentiality

☐

Full Confidentiality

Compensation or Medical Treatment: None

Parental Approval for Minors: Not Applicable

Terms of participation: I understand this project is research, and that my participation is voluntary. I also understand that if I decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time without explanation, penalty, or loss of benefits, or academic standing to which I may otherwise be entitled.

16. Please choose your level of confidentiality

- ☐ No Confidentiality
- ☐ Partial Confidentiality
- ☐ Full Confidentiality

17. If you would like to provide any contact information to be associated with the results, please do so below. This information will only be used by the graduate student to associate data with cemetery locations for further analyses.

Name	
Company	
Address	
Address 2	
City/Town	
State/Province	
ZIP/Postal Code	
Country	
Email Address	
Phone Number	

Appendix 2

Interview Questions

There were 4 general questions asked to start dialogue with participants. The list of questions used in the online survey were also used to supplement conversation if need be. Together, they created a holistic interview process that related to design, ecology, culture, and commemoration.

Demarcation

What are the types of burial markers used at your location?

Natural Burial

How would you describe the Natural Burial Process?

Maintenance

What are some of the challenges in maintaining a natural burial ground?

Cultural Influences on Burial Design

Do you believe there is a need for natural cemeteries to incorporate religious amenities in regards to burial practices?

Appendix 3

IRB Approval



University Research Compliance Office

TO: Dr. Anne Beamish
Landscape Architecture/Regional and Community Planning
2099 Seaton Hall

Proposal Number: 9015

FROM: Rick Scheidt, Chair
Committee on Research Involving Human Subjects

DATE: 11/07/2017

RE: Proposal Entitled, "Remembering the Dead: Enhancing the Remembrance Qualities of Ecological Cemeteries"

The Committee on Research Involving Human Subjects / Institutional Review Board (IRB) for Kansas State University has reviewed the proposal identified above and has determined that it is EXEMPT from further IRB review. This exemption applies only to the proposal - as written - and currently on file with the IRB. Any change potentially affecting human subjects must be approved by the IRB prior to implementation and may disqualify the proposal from exemption.

Based upon information provided to the IRB, this activity is exempt under the criteria set forth in the Federal Policy for the Protection of Human Subjects, **45 CFR §46.101, paragraph b, category: 2, subsection: ii.**

Certain research is exempt from the requirements of HHS/OHRP regulations. A determination that research is exempt does not imply that investigators have no ethical responsibilities to subjects in such research; it means only that the regulatory requirements related to IRB review, informed consent, and assurance of compliance do not apply to the research.

Any unanticipated problems involving risk to subjects or to others must be reported immediately to the Chair of the Committee on Research Involving Human Subjects, the University Research Compliance Office, and if the subjects are KSU students, to the Director of the Student Health Center.

Appendix 4

Additional Resources

Carolina Memorial Sanctuary <https://carolinamemorialsanctuary.org>

Funeral and Burial Planners Survey. November 2007.
https://assets.aarp.org/rgcenter/consume/funeral_survey.pdf

Green Burial Council <https://greenburialcouncil.org/>

Green Burial Council Survey <http://greenburialcouncil.org/wp-content/uploads/2015/04/2015-GBC-Survey.pdf.pdf>

Memorial Ecosystems <http://www.memorialecosystems.com/>

Mount Auburn Cemetery <https://mountauburn.org/>

National Cemetery Administration (NCA)
Facilities Design Guide. March 2010.
<https://www.nist.gov/sites/default/files/documents/2017/04/28/NCA-FacilitiesDesignGuide-March2010.pdf>

National Wildlife Federation - Native Plant Finder
<https://www.nwf.org/NativePlantFinder/Plants>

Qiblah Finder <https://qiblafinder.withgoogle.com/>

Taharah Jewish Burial Rite. <https://www.youtube.com/watch?v=V4bWpbvhHXw>

