

INTERPRETATION: EXPERIENCE OF PLACE

by

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A REPORT

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## **Abstract**

The site for the Riverpond Visitor Center is located three miles northeast of Manhattan, Kansas, along K-13 on the eastern end of Riverpond Park. The design of the visitor center addresses four problems: 1) the fact that many families prefer to stay inside their homes rather than experience the outdoors, based on a study done by the Center on Education Policy in 2008, 2) people are uninformed about sustainable design practices and sustainable energies 3) people lack experience and knowledge of the natural environment creating a preference for the visual characteristics of non-native plant species, and 4) interpretive centers that attempt to reconnect people and the landscape use prescriptive interpretive methods that distract the visitor from the interpretive process.

To better understand the relationship of people and the landscape, research was conducted to address the problems stated above. Two articles were reviewed that describe the importance of drawing attention to beauty in the landscape. Two precedent studies were conducted on built projects that use native plant species and vernacular architecture. The program for the visitor center was based on the project research and informed the site inventory and analysis. The site inventory and analysis of existing site conditions creates a strong foundation from which to design the visitor center. The project then went into schematic design and design development.

The design of the Riverpond Visitor Center connects people to the landscape by directing them through the native tall grass prairie, informs visitors about stormwater management, wind and solar energy through demonstration, is designed using native prairie species and native limestone, and focuses visitors' experience on the tall grass prairie by fading the line between architecture and landscape.

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# interpretation

experience of place

riverpond visitor center

luke schooler



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# Abstract

The site for the Riverpond Visitor Center is located three miles northeast of Manhattan, Kansas, along K-13 on the eastern end of Riverpond Park. The design of the visitor center addresses four problems: 1) the fact that many families prefer to stay inside their homes rather than experience the outdoors, based on a study done by the Center on Education Policy in 2008, 2) people are uninformed about sustainable design practices and sustainable energies 3) people lack experience and knowledge of the natural environment creating a preference for the visual characteristics of non-native plant species, and 4) interpretive centers that attempt to reconnect people and the landscape use prescriptive interpretive methods that distract the visitor from the interpretive process.

To better understand the relationship of people and the landscape, research was conducted to address the problems stated above. Two articles were reviewed that describe the importance of drawing attention to beauty in the landscape. Two precedent studies were conducted on built projects that use native plant species and vernacular architecture. The program for the visitor center was based on the project research and informed the site inventory and analysis. The site inventory and analysis of existing site conditions creates a strong foundation from which to design the visitor center. The project then went into schematic design and design development.

The design of the Riverpond Visitor Center connects people to the landscape by directing them through the native tall grass prairie, informs visitors about stormwater management, wind and solar energy through demonstration, is designed using native prairie species and native limestone, and focuses visitors' experience on the tall grass prairie by fading the line between architecture and landscape.



# Introduction

## **Book Structure**

The process of completing this project began by conducting research related to vernacular landscapes. The literature review and precedent studies formed the program for the design. The program established the criteria for taking inventory of the site and analyzing the inventory. The inventory and analysis determined the optimal locations and orientations for design development.

This book is organized to emphasize the Design Solution for the Riverpond Visitor Center by placing the design information at the beginning of this document. All of the supporting information is placed after the Design Solution in order to rationalize the design decisions that were made.

# Dilemma

The problems that the design of the Riverpond Visitor Center addresses are four-fold. 1) Based on a study done by the Center on Education Policy in 2008, the disconnection between people and the land has increased, especially among children due to school curriculum changes. 2) People are uninformed about sustainable design practices and sustainable energies that are appropriate for the residential scale. 3) People are unaware of possibilities for designing with native plant materials, and 4) traditional interpretive methods are too prescriptive.

# Thesis

To address the dilemma, this project will resolve the following points through its research and design.

- Connect people to the landscape with an interpretive system
- Inform visitors about sustainable design and energy systems through demonstration
- Design with native plant species and vernacular construction materials
- Focus on experiential interpretation of the landscape

# Design Philosophy

Driving the design of the Riverpond Visitor Center are four concepts:

- 1) The visitor center will be regionally significant and not exotic to the architectural character of the surrounding region.
- 2) Opposed to traditional interpretive methods found in national parks, the Riverpond visitor center will allow the visitor to use their experience of the visitor center to inform their interpretation of the landscape.
- 3) The nature of the entry into the site and the transition from the parking lot to the visitor center will create a discovery experience by revealing different parts of the visitor center as people get closer to the main facility.
- 4) Finally, in order to reduce the impact of the visitor center on the site, the design will integrate the design elements into the existing landscape.

The design must be regionally significant, because it needs to connect people to the landscape, use native construction and plant materials, educate people about the local area and provide amenities to the community. The regional significance of the visitor center will communicate to people the identification and character of the place they are visiting.

The intention of the Riverpond Visitor Center is to guide people toward interpretation of and connection to the landscape. As much as possible, direct descriptions of landscape elements should be avoided to allow visitors to form their own conclusions. This method allows people to take ownership of their thoughts, so they feel comfortable communicating what they have discovered at the visitor center.

Discovering a new place is a rewarding experience. The process that people undertake when they come to the visitor center allows them to discover the visitor center one piece at a time. From the parking lot, to the trail system, to the main facility, visitors will progress along a continuum of discovery.

As visitors move throughout the project site, it will be apparent that the design is integrated with the landscape. The design elements will follow existing grade and be tucked into the landform to reduce the visual impact of the visitor center on the surrounding area.

# Project Intent and Description

## Location and Size of Project Site:

The site is located northeast of Manhattan, Kansas (See Figure 1.1) just south of Kansas Highway 13 between the Tuttle Creek Reservoir Dam and Spillway. The size of the site is approximately 50 acres (See Figure 1.2).

## Key Issues in Landscape Architecture:

Key issues are issues important to contemporary Landscape Architecture. These issues are presented by leading professionals and educators in the field of Landscape Architecture.

## Aesthetic Richness/Beauty

Elizabeth Meyer states in her article *Sustaining Beauty* that “Beautiful sustainable landscape design involves the design of experiences as much as the design of form and the design of ecosystems. These experiences are vehicles for connecting with, and caring for, the world around us.” This describes what the visitor center should be for its visitors. The most effective way to stir up ideas within the individual is through experience. According to Meyer, these experiences are made more effective through the use of beauty in design, so the design for the visitor center will incorporate ideas of beauty to enhance the visitor experience.

Another key text regarding the issue of beauty in the landscape is Joan Iverson Nassauer’s *Messy Ecosystems, Orderly Frames*. Nassauer says that, “In the everyday landscape, rather than simply designing

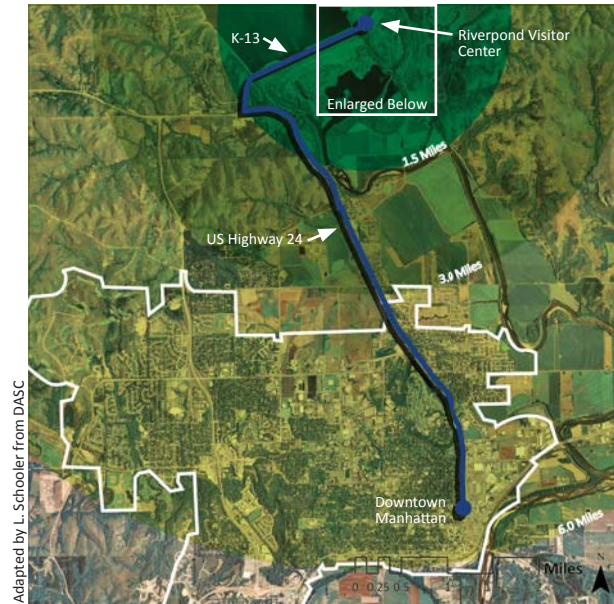


Figure 1.1 Local Context Map

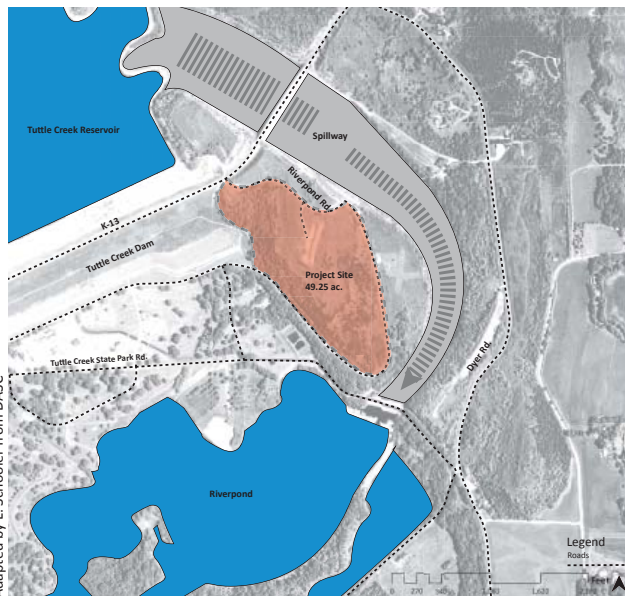


Figure 1.2 Immediate Context Map

to enhance ecological quality or even to express ecological function as form, we must design to frame ecological function within a recognizable system or form.” From this article, Nassauer points out the importance of the obviously designed landscape to inform the audience. Typically if an individual sees a naturalized landscape, no matter the previous state of the land, they will think of it as left over wilderness or unkempt land. Though the designer may have done a marvelous job of converting a highly disturbed parcel back to a more natural functional landscape, the meaning is lost because of its natural appearance. The hope in obvious, intentional design is that the audience will recognize the design and the materials used in the design and where those materials came from, i.e. the vernacular.

### Experiential Interpretation

Interpretation in the context of the Riverpond Visitor Center revolves around the relationship of people with the landscape. People’s thoughts about the landscape form their attitude toward the environment. In an effort across the “green” industry to educate people about sustainable practices, it is important to this project to provoke environmentally responsible thought and action for those people experiencing the visitor center. Traditionally, signs full of text are placed throughout important areas of the landscape to inform visitors about the place they are experiencing, however, experience rather than prescriptive signage is what is needed

to convey environmental responsibility. “*The experience of designed landscape can be a spatial practice of noticing, wandering and wondering in, and caring about the environment. The experience of landscape can be a mode of learning and inculcating values,*” (Meyer, 2008).

An important aspect of any visitor center is the interpretation of some piece of information. As Meyer states, the experience of a place can be the catalyst or aid in this interpretation for users of the visitor center. The goal here is for the user to take something with them when they leave, so the experience they have at the visitor’s center ought to stir up thoughts and emotions about that which needs interpreting.

### **Existing Site Conditions:**

The site is located several miles off of Highway 24. To get to the site from Highway 24, visitors must cross the Tuttle Creek Dam allowing them expansive views of the surrounding landscape. The site is visible from all points along the dam; this feature could be emphasized in the placement of the structures for the interpretive center. The site for this project is currently used by the Army Corps of Engineers. The Corps of Engineers is using the site for a stockpile of rock to aid in case of an emergency regarding the dam. This site was selected for this stockpile because of its location and proximity to the dam. The remainder of the site is unused by people with the exception of the road that

connects Highway 13 to the Riverpond area (the park grounds on the southeast side of the dam). This road is unique due to its change in elevation, winding nature, and passage through stands of trees. The experience of this road is enjoyable to users and should be preserved. The physiography of the site creates three terraces. Each of these relatively flat areas is optimal for programming as far as the pedestrian is concerned. The topographical change lends itself to the incorporation of architecture into the existing landform.





# Design Concept

The purpose of the Design Concept is to show how the design of the visitor center will fulfill the thesis. The Design Concept is divided into four sub-chapters: 1) How the design will connect people to the landscape 2) inform people about sustainable design and energy 3) employ vernacular architecture and native plant materials 4) and focus people on interpretive experiences. The four sub-chapters describe conceptually what the Design Solution illustrates in greater detail.

# Connect

The design of the visitor center connects people to the landscape through several techniques. Visitors will pass through a portal to enter the site, leaving their cars and city lives behind. Buildings that are normally placed on top of the landscape will be integrated into the existing landform. Views from the site to the surrounding landscape will be emphasized by path alignment and the observation tower. The line between architecture and landscape will be faded by the integration of the structures into the landscape and the use of green roofs.

When people arrive at the site, they will either be dropped off at the entry shelter, or will approach the shelter from the parking lot. The shelter acts as a portal (see Figure 2.1) to connect people to the landscape as they take in the view of the surrounding landscape and the observation tower in the distance.

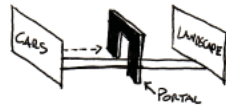
Passing through the portal created by the entry shelter to the landscape creates a disconnect from people's cars to clear their minds and allow them to think about the landscape. Visitors will leave the cares of their day-to-day lives as they become immersed in the landscape surrounding the visitor center.

Instead of using traditional architectural methods, the buildings of the visitor center will be integrated into the landscape. This type of architecture is referred to as earth-shelter (see Figure 2.2). Tucking the buildings into the landscape will reduce the visual and environmental impact of the

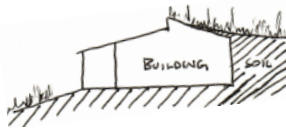
buildings and will foster an experience of discovery for visitors as they approach the facility.

The site for the visitor center is unique in its form and location. The landform slopes downward in all directions from the center of the site creating a high point in relation to the surrounding landscape. This high point allows for visitors to have unobstructed views of Tuttle Creek Reservoir and Dam, Riverpond Park and distant hills. Paths and trails throughout the project site will be oriented to take advantage of the aforementioned views (see Figure 2.3).

The idea of fading the line between architecture and landscape will be accomplished by integrating the visitor center buildings into the existing landform and extending the native landscape across the roofs of the buildings. Using sky lights and clerestory windows within the buildings will fade the line between landscape and building by letting natural light into the buildings (see Figure 2.4).



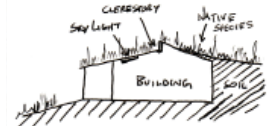
**Figure 2.1 Portal**  
Created by L. Schooler



**Figure 2.2 Earth Shelter**  
Created by L. Schooler



**Figure 2.3 Views**  
Created by L. Schooler

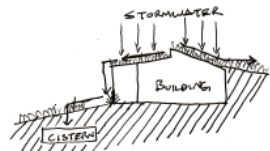


**Figure 2.4 Architecture and Landscape**  
Created by L. Schooler

# Inform

The Riverpond Visitor Center will inform people through experience and interpretive signage. The center will use sustainable design features and energy systems that will be visible to visitors. To facilitate the conveyance of information and avoid confusion, the site will be easy to navigate while maintaining a sense of discovery. Space will be allotted to allow people to learn about natural and cultural history and environmental systems.

The visitor center will also function as a rainwater harvesting system. “*Stormwater management is an essential component of almost every land-planning and site-design project,*” (Echols, 2008). Rainwater will be collected from the green roofs and directed through a series of vegetated swales and retention areas. Finally the water will be stored in an underground cistern. The design features that the rainwater will pass through will attract visitors to the center during storm events (see Figure 2.5).



**Figure 2.5 Stormwater**  
Created by L. Schooler

Sustainable energy sources will power the visitor center facility. There will be a series of wind turbines placed to take advantage of winds year round (see Figure 2.6). Sky lights and clerestory windows will allow sunlight into the buildings and will also contain photo-voltaic cells that collect solar energy to produce electricity. Both of these systems will be observable from several vantage points throughout the site.



**Figure 2.6 Wind Turbine**  
Created by L. Schooler

Way-finding is an important aspect of the visitor center to keep visitors oriented as they move throughout the site. Signage will

be placed at key points throughout the site to eliminate confusion and allow visitors to concentrate on the sustainable features of the visitor center (see Figure 2.7). Because of the use of earth-shelter architecture and green roofs, people will be able to discover more and more of the visitor center as they get closer to the main facility.



**Figure 2.7 Signage**  
Created by L. Schooler

One of the buildings of the visitor center will house a gallery where visitors will be able to learn about natural and cultural history and environmental systems. Having detailed information about the region indoors will allow people to make their own interpretations of the landscape when they are outside, but still provide in-depth information for those that are interested.

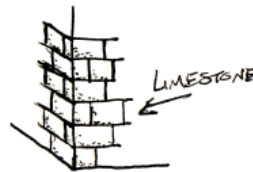
# Design

The function of the visitor center cannot serve its purpose without thoughtful design. From the site entrance to the main visitor center area, several design features were taken into consideration. The materials used for hardscape features will echo the vernacular architecture of the region. Native plant materials will be selected to tie the site into the surrounding landscape. Key views will be taken into consideration when laying out the paths throughout the site and placing the observation tower.

As people enter the site from Riverpond Road, they will immediately notice the character of the architecture in the entry sign made of limestone. As visitors pass through the portal at the drop-off, the observation tower will be in their direct line of site repeating the limestone architectural theme (see Figure 2.8).

Plants used in the visitor center will be native species. Avoiding exotic plants will allow the native landscape to come all the way up to the buildings. This effect will further fade the line between architecture and landscape. Demonstration gardens above the main visitor center facility will transition from naturalistic planting to geometric form, incorporating native plant materials (see Figure 2.9).

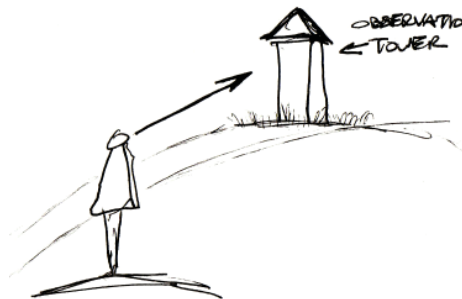
In order to expand the experience of the visitor center beyond the site boundary, the design will use the borrowed landscape. Views of the surrounding landscape will become part of the visitor center. To orient the visitor, views of the observation tower will also be utilized to give people a point of reference as they make their way to the visitor center (see Figure 2.10).



**Figure 2.8 Limestone Construction**  
Created by L. Schooler



**Figure 2.9 Native Species**  
Created by L. Schooler

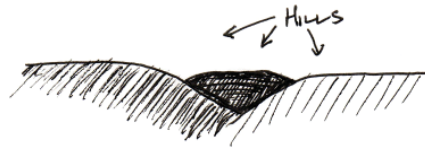


**Figure 2.10 View to Tower**  
Created by L. Schooler

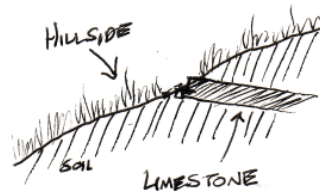
# Focus

Experience will be of utmost importance in the design of the visitor center. The idea behind providing an in depth experience of the landscape is to provoke thought or interpretation in the minds of those visiting. The design of the visitor center will accomplish this by introducing visual cues throughout the site that will force people to think about what they are experiencing. The different areas of the visitor center will allow people to experience many aspects of a typical northeast Kansas landscape which include flat-top hills that crest at or near the same elevation (see Figure 2.11), tallgrass prairies, limestone outcrops (see figure 2.12), invading Eastern Red Cedar (see Figure 2.13) and wooded draws and valleys (see Figure 2.14).

The main facility will be surrounded by native tall grass species and forbs with a meadow-like character. The areas of lower elevation around the main facility's future location exemplify the invasion of Eastern Red Cedar into the prairies of the Midwest. Trails that will circulate through the lower elevations around the project site will provide for education and interpretation based on experience.



**Figure 2.11 Hills**  
Created by L. Schooler



**Figure 2.12 Limestone Shelf**  
Created by L. Schooler



**Figure 2.13 Invasive Cedars**  
Created by L. Schooler



**Figure 2.14 Wooded Valley**  
Created by L. Schooler



# Program

The Program for the Riverpond Visitor Center describes the elements that will be included in the Design Solution. The Program was developed as a result of goals and objectives that were developed to guide the design process for the visitor center.

The tables in this section correspond to each of the four points of the thesis: Connect, Inform, Design and Focus (plus one additional table for the needs of the park staff). The tables show the relationship between the program elements and the goals and objectives. The tables also list the parts of the site inventory that should be analyzed prior to design development.

### Connect people to the landscape

Goals	Objectives	Program	Site Analysis
The entrance to the site should function as a portal/transition to the landscape.	Create physical portal with the use of path and plants	Connect multiple parking areas with pedestrian paths that align with the drop-off structure	Field notes, slope, vegetation and viewshed analysis
Create a disconnection from the hectic nature of city life.	Place parking area so that it is removed from view as much as possible	Parking area will be located at least 100 feet from the main visitor center facility and will include 40 parking spaces, including 4 handicap spaces. The parking spaces should be angled at 45 degrees to reduce the footprint of the parking area	Field notes, slope, vegetation and viewshed
Integrate buildings into the landscape.	Incorporate structure into the slope of the land whether partially or completely	Utilize Earth-Shelter architecture to integrate buildings into the existing landform	Field notes, slope, solar aspect and physiography
Emphasize views to and from site.	Align trails and structures at higher elevations to take advantage of views to the borrowed landscape. Align trails with key design elements	Frame views to the surrounding landscape: Tuttle Creek Reservoir, Tuttle Creek Dam, Riverpond Park, the City of Manhattan and distant hills. Frame views to the observation tower to orient visitors as they move toward the main visitor center facility	Field notes, slope, vegetation and viewshed analysis
Fade the line between architecture and landscape.	Make the transition between building and landscape less noticeable and more coherent.	Through the use of sky lights and clerestory windows, allow natural light into the buildings. Use native plant species on green roofs and in the landscape surrounding the visitor center facility. Use native limestone for the construction of hardscapes and buildings.	Solar aspect, existing vegetation and slope

Table 3.1 Program Table 1  
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## Inform people about sustainable design and energy systems

Goals	Objectives	Program	Site Analysis
Educate people about stormwater management	Integrate stormwater management systems into the design of the visitor center	Collect stormwater from the building roofs into an underground cistern for later use	Slope
Utilize site features to showcase sustainable energy.	Use sustainable energy systems such as wind and solar energy	3 Wind turbines will be located near the visitor center buildings. Sky lights in the visitor center buildings will contain photovoltaic cells	Vegetation and solar aspect
Educate visitors about natural and cultural history and environmental systems.	Educate through the exhibition of systems. Also, provide detailed text that explains the history and systems for those who want to learn more.	Allocate space for outdoor classrooms at the drop-off shelter, near the visitor center buildings and along the trails.	Slope and vegetation
	Provide adequate indoor facilities for interpretive programs	There should be two 750 square foot classrooms, one 900 square foot gallery and one 900 square foot theater	Slope and solar aspect
Make the site easy to access.	Place signage so that the site is easy to find	Signs will be placed along Highway 24, Highway 13 and Riverpond Road	Site access

Table 3.2 Program Table 2  
Created by L. Schooler

## Design using native plant materials and vernacular architecture

Goals	Objectives	Program	Site Analysis
Educate visitors about the use of native plant materials	Create a demonstration garden with native species that visitors can meander through	Locate a 4,000 square foot demonstration garden including naturalistic and geometric form near the main visitor center facility.	Vegetation and slope
Tie the visitor center's architecture into the regional architectural style	Use vernacular building materials in the construction of the visitor center	Use native limestone for building facades and hardscapes	

Table 3.3 Program Table 3  
Created by L. Schooler

### Focus on experiential interpretation

Goals	Objectives	Program	Site Analysis
Provide for both Literal and Experiential Interpretation.	Accommodate experiential interpretation with experiences afforded along paths or near pedestrian spaces.	Paths leading from the parking area to the main visitor center facility should allow visitors views of the surrounding landscape as well as close interaction with the native landscape. There should also be an amphitheater placed near the main visitor center facility with a 50 person capacity	Viewshed analysis, slope and solar aspect
Create trail system for education and interpretation	Trails should include views and experiences that give the visitor something to take home, even a simple thought.	The trail system should stretch 1-2 miles and follow the existing topography to reduce the amount of earthwork required for construction. The trails should also be in close proximity to the limestone shelf to allow visitors to see the native stone. The trails should be accessible from the parking area and the main visitor center facility. The trails should also give people access to the Riverpond.	Slope, geological features, site features

Table 3.4 Program Table 4  
Created by L. Schooler

### Functional Elements

Goals	Objectives	Program	Site Analysis
Provide facilities for park staff.	Provide offices for the Park Manager, Park Rangers and Biologists	There will be open offices with access to natural light and views of surrounding landscape (1200 sq. ft.)	Slope and solar aspect
	Provide service access to buildings	There should be a service area directly adjacent the visitor center buildings. This area should be accessible via the main entrance to the project site. The service area should also include 4 parking spaces for park staff. The service drive should be 12 feet wide with a 20 foot way-by to accomodate on-coming traffic.	Slope

Table 3.5 Program Table 5  
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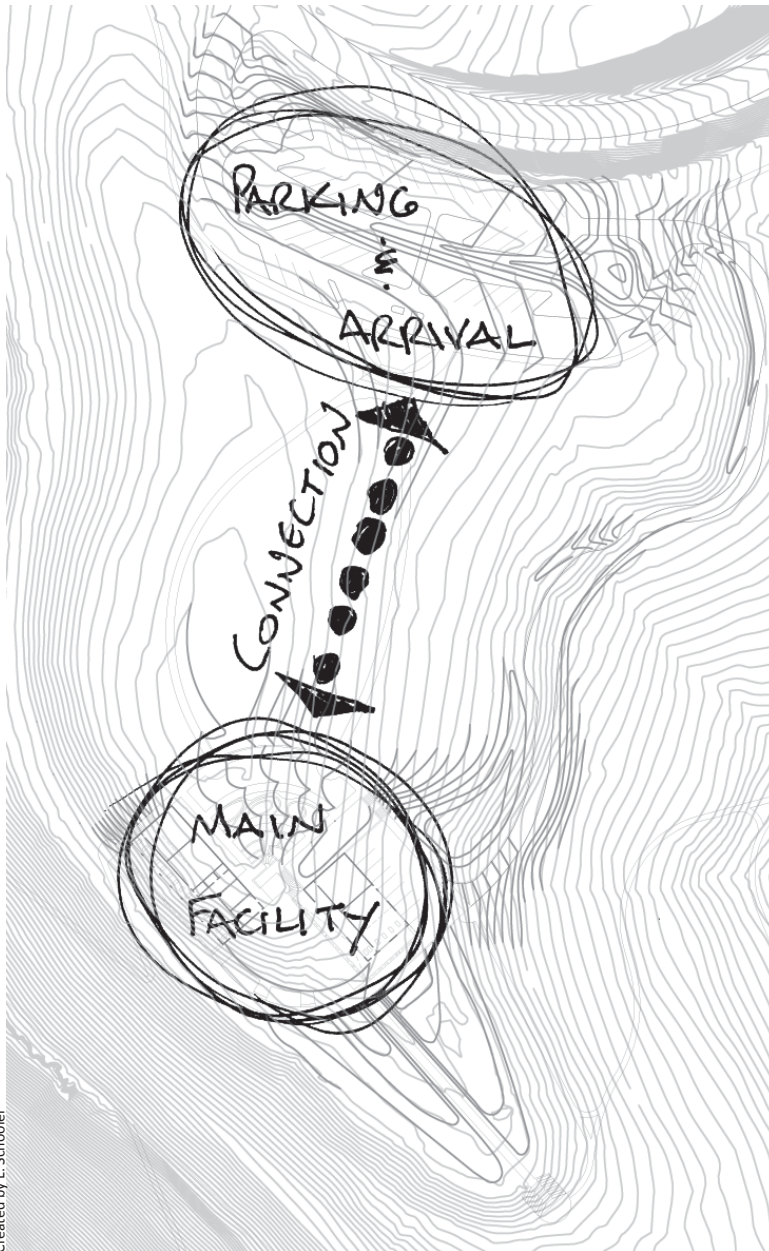


# Design Solution

The Riverpond Visitor Center is a place for people to enjoy the outdoors and is designed to fit into the landscape, so that visitors feel that they have direct access to the native tall grass prairie. The visitor center is a unique experience that affords its visitors a connection to the landscape through experience and education. The visitor center is a place for discovery as people pass across the ridge line from the parking area toward the observation tower. Provided with different educational programs throughout the year, people will want to return to the Riverpond Visitor Center time after time. The design of the Riverpond Visitor Center is wholly focused on enhancing people's experience of the landscape. The design fulfills this goal by addressing each of the four points of the thesis: 1) Connect people to the landscape 2) Inform people about sustainable design and energy systems 3) Design with native plant species and vernacular architecture and 4) Focus people on experiential interpretation.



Connect



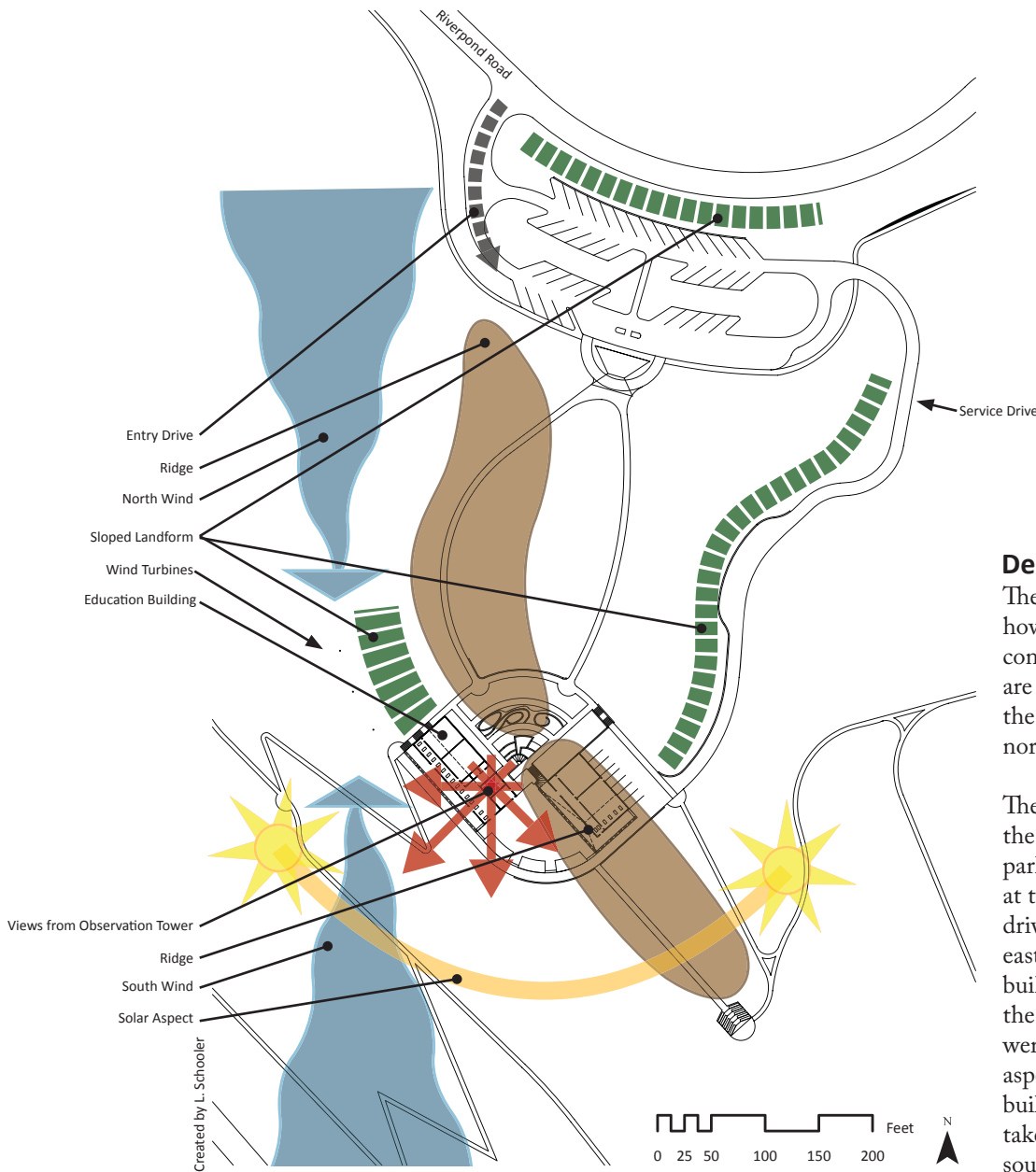
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Figure 4.1 The Big Idea

### The Big Idea

This diagram illustrates the underlying idea that accomplishes the goal of connection by separating the parking and arrival space from the main facility. The connection transition allows people to leave their cars and connect to the landscape (See Figure 4.1).





## Design Analysis

The Design Analysis Diagram illustrates how the design reacts to the existing site conditions. The primary existing site features are landform, solar aspect, wind exposure and the existing drive entering the site from the north (See Figure 4.2).

The existing drive has been maintained as the site entrance for the visitor center. The parking area reacts to the sloped landform at the northern end of the site. The service drive follows the existing landform on the eastern edge of the site and the education building follows the existing landform on the western edge of the site. The buildings were oriented to also take advantage of solar aspect providing light and energy for the buildings. The wind turbines were placed to take advantage of northerly winter winds and southerly summer winds.

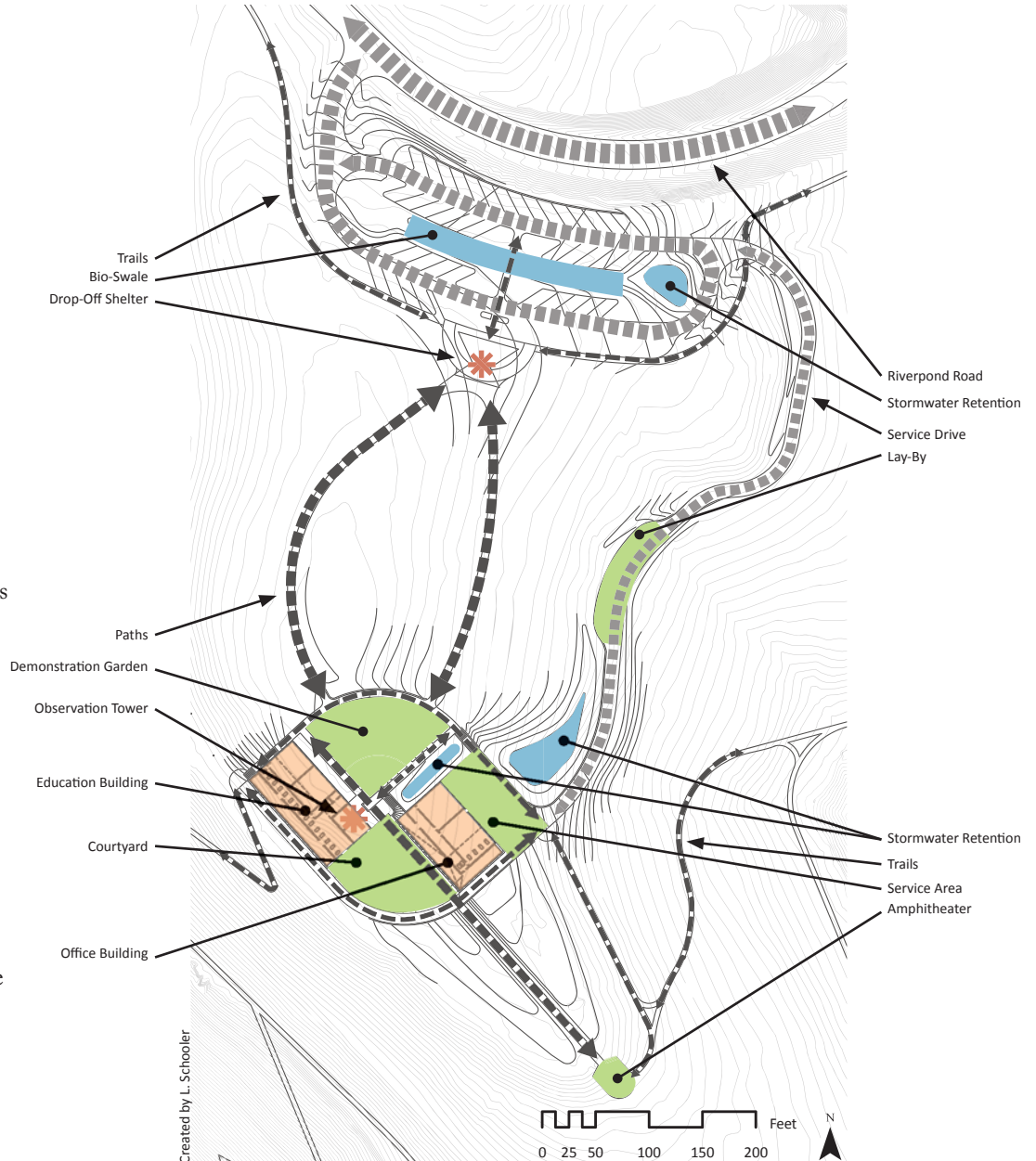
Figure 4.2 Design Analysis

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## Circulation and Space

This diagram of circulation and space shows how vehicles (light gray dashed lines) and people (in dark gray dashed lines) move from one space to another (See Figure 4.3). The red asterisks denote two critical elements of the design. The asterisk labeled as the “Drop-Off Shelter” is the portal through which visitors pass from their cars to the landscape. The asterisk labeled as the “Observation Tower” is a landmark terminating the view-axis between the drop-off shelter and the observation tower.

The demonstration garden is defined by the observation tower and the paths leading to the courtyard. The courtyard is defined by the walls of the education and office buildings. The service area is defined by the office building and a retaining wall for one of the stormwater retention areas.





**Master Plan**

This plan shows the overall site design, how the design fits into the surrounding landscape, the relationship of the design to the proposed trail system and the areas of prairie in comparison to wooded areas (See Figure 4.4).

Figure 4.4 Master Plan

# Connect

## Design Response to Existing Conditions and Arrival Sequence

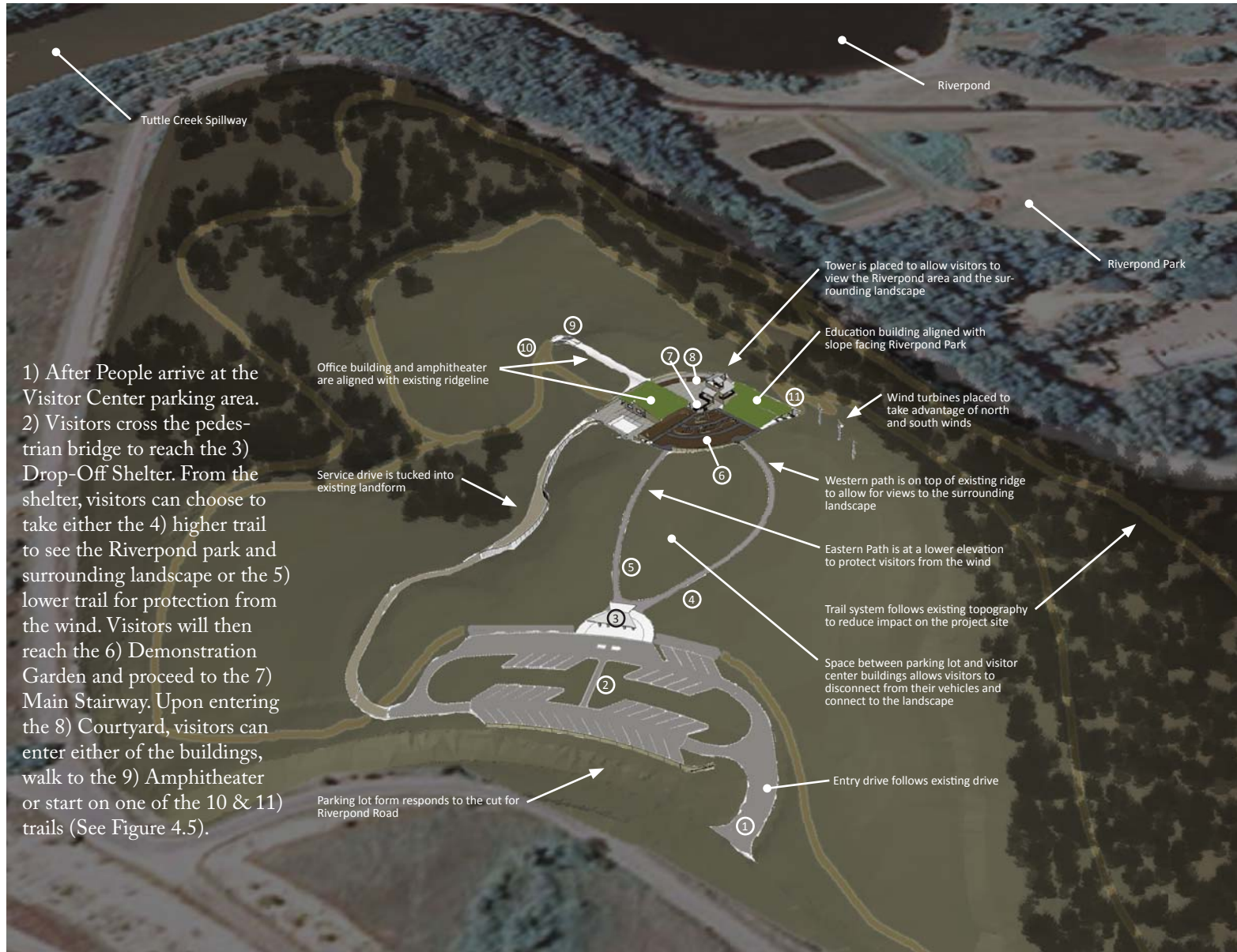


Figure 4.5 Design Response to Existing Conditions

## Grading Plan

The grading plan shows how the site design ties into the existing landform and how stormwater is handled throughout the site (See Figure 4.6-4.8). Gray lines represent existing topography, and blue lines represent proposed topography.

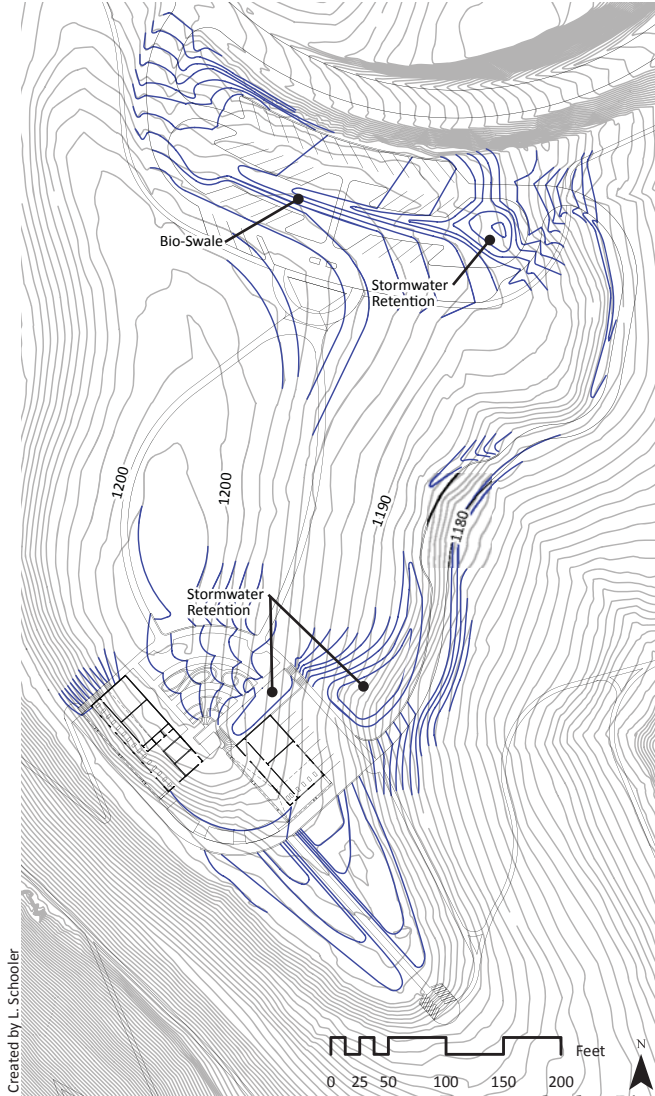


Figure 4.6 Grading Plan

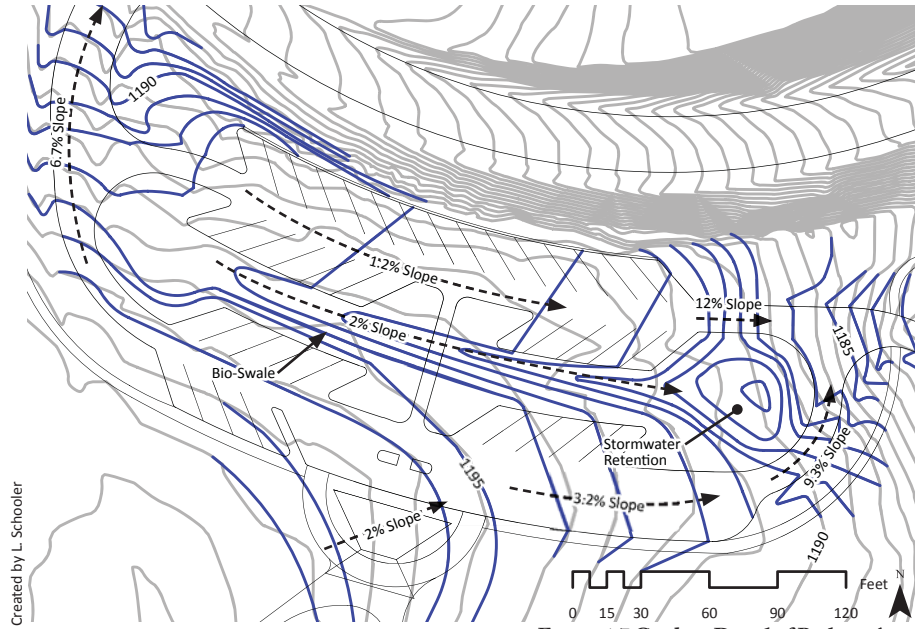


Figure 4.7 Grading Detail of Parking Area

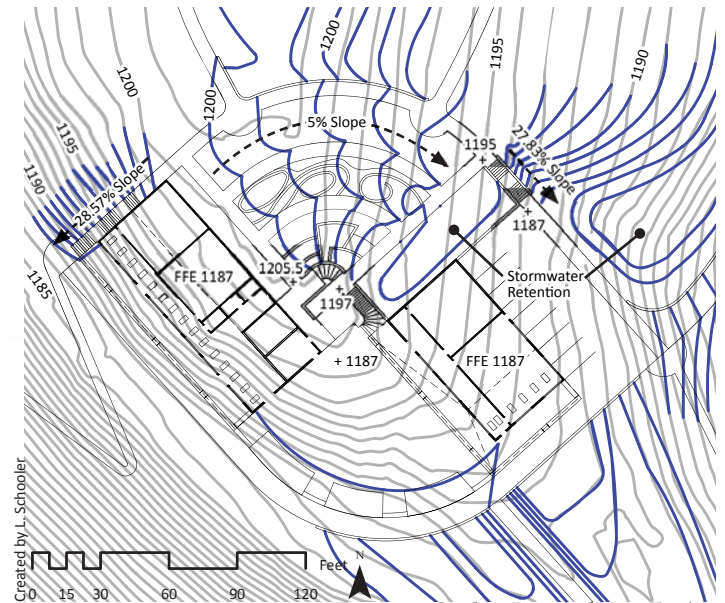


Figure 4.8 Grading Detail of Main Facility

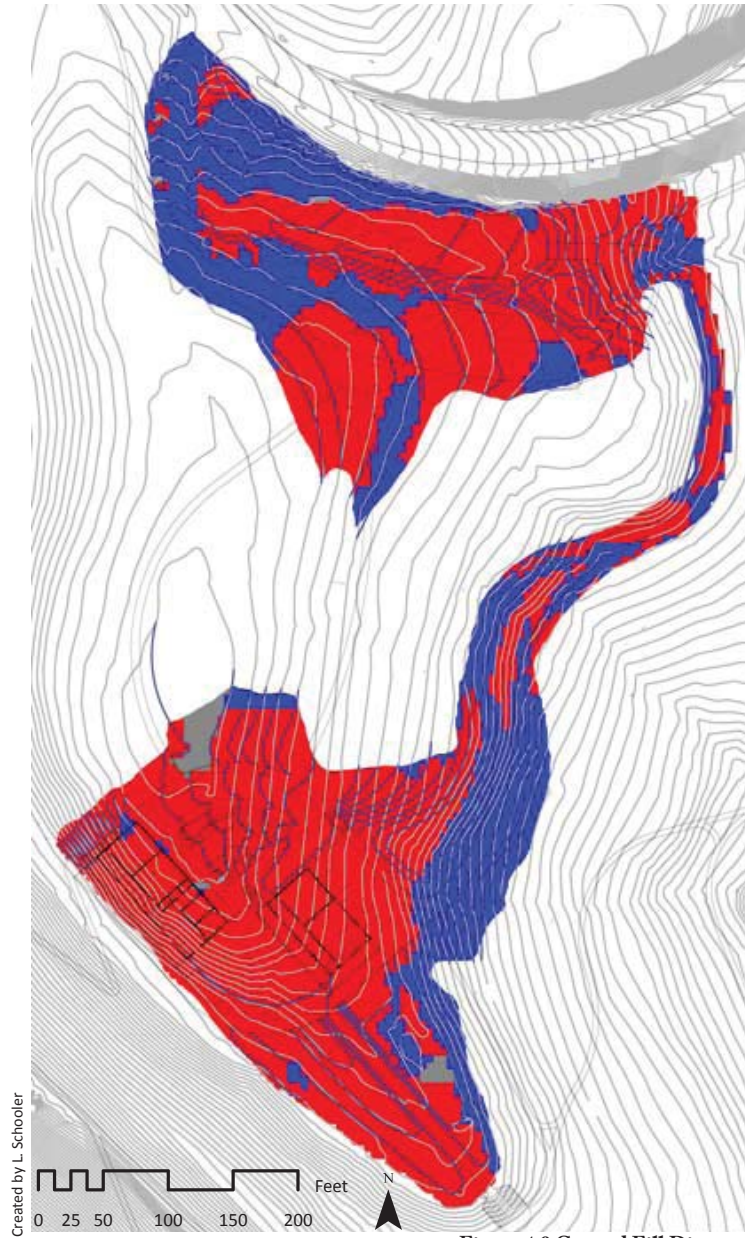


Figure 4.9 Cut and Fill Diagram

### Cut and Fill

The Cut and Fill Diagram shows where earthwork will cut into the existing landform (in red) and where earthwork will fill on top of the existing landform (in blue). This diagram is useful for determining the level of balance between cut and fill for the project (See Figure 4.9).

## Entry Experience

The entry sign is incorporated into a limestone retaining wall. The wall allows the parking area to slope inward and all stormwater runoff to be drained into a bio-swale between the two parking areas. Visitors immediately have a sense of where their first destination is, the drop-off shelter, and their ultimate destination, the observation tower in the distance (See Figure 4.10).



Figure 4.10 Initial Entry Experience





Created by L. Schooler

Figure 4.11 Primary Axis

### Primary Axis

As people arrive at the visitor center, they are connected to the site via the axis starting with the pedestrian bridge over the parking lot bio-swale, extending through the portal created by the drop-off shelter, with the observation tower as the axis terminus (See Figure 4.11).

## Detail Plan of Arrival Experience

This plan shows the spatial relationships of the various design elements. Vehicle circulation is one-way in a counter-clockwise direction. Visitors are taken through the southern parking area and drop-off, and then to the northern parking area. The drop-off shelter serves as a gathering space for visitors as they arrive at the visitor center as well as an access point for the trail system. Staff and service vehicles have access to the service drive on the eastern side of the parking area.

After visitors have left their cars from the northern parking area, they cross the pedestrian bridge that spans the bio-swale and pass through the drop-off shelter as they make their way to the main visitor center facility (See Figure 4.12).

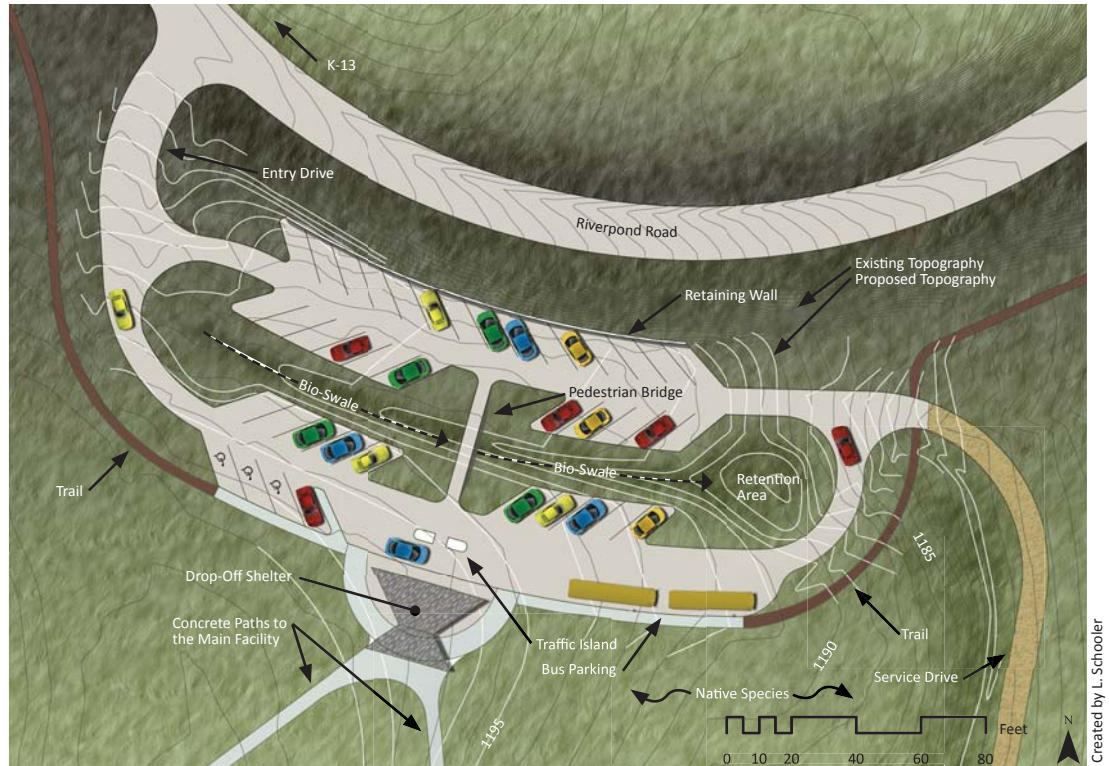


Figure 4.12 Detail Plan of Arrival Experience

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Inform

# Inform

## Green Roofs

The green roofs of the visitor center serve several roles. The roofs capture and treat rainwater, extend the prairie over the structures and insulate the buildings.

The green roofs are the starting point for the stormwater management system. From the roofs, water is directed through the site and collected in an underground cistern.

As visitors pass through the demonstration garden, they will be able to look across the native prairie without the obstruction of building roofs.

The extra thickness added to the buildings by the green roof materials adds to the insulation of the buildings (See Figure 4.13).



Figure 4.13 Diagram of Green Roof System

Created by L. Schooler



Figure 4.14 Green Roof-Stormwater System Process

The relationship of the roofs to the vegetated strips and pedestrian areas optimizes the interpretive experience. The trench containing the vegetation is unbroken, however, stone is used to allow people to cross over the trench. The gutter overhead carries the water to the vegetated strip (See Figure 4.14).

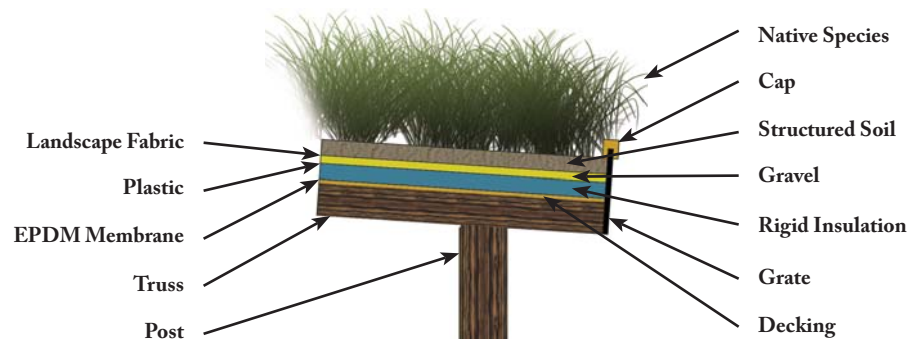


Figure 4.15 Green Roof Detail Section

This section shows the makeup of the green roof system. Structured soil and rigid insulation were used to reduce the load on the structure (See Figure 4.15).

## Stormwater Management

During a storm event, water is harvested from the 1) green roofs and 2) directed across the gardens to a 3) retention area. Once the retention area is full, water passes through a 4) water feature, across the service area, and into 5) a second, larger retention area. After the larger retention area is full, 6) the water is carried into an underground cistern where it is stored for later use (See Figure 4.16).

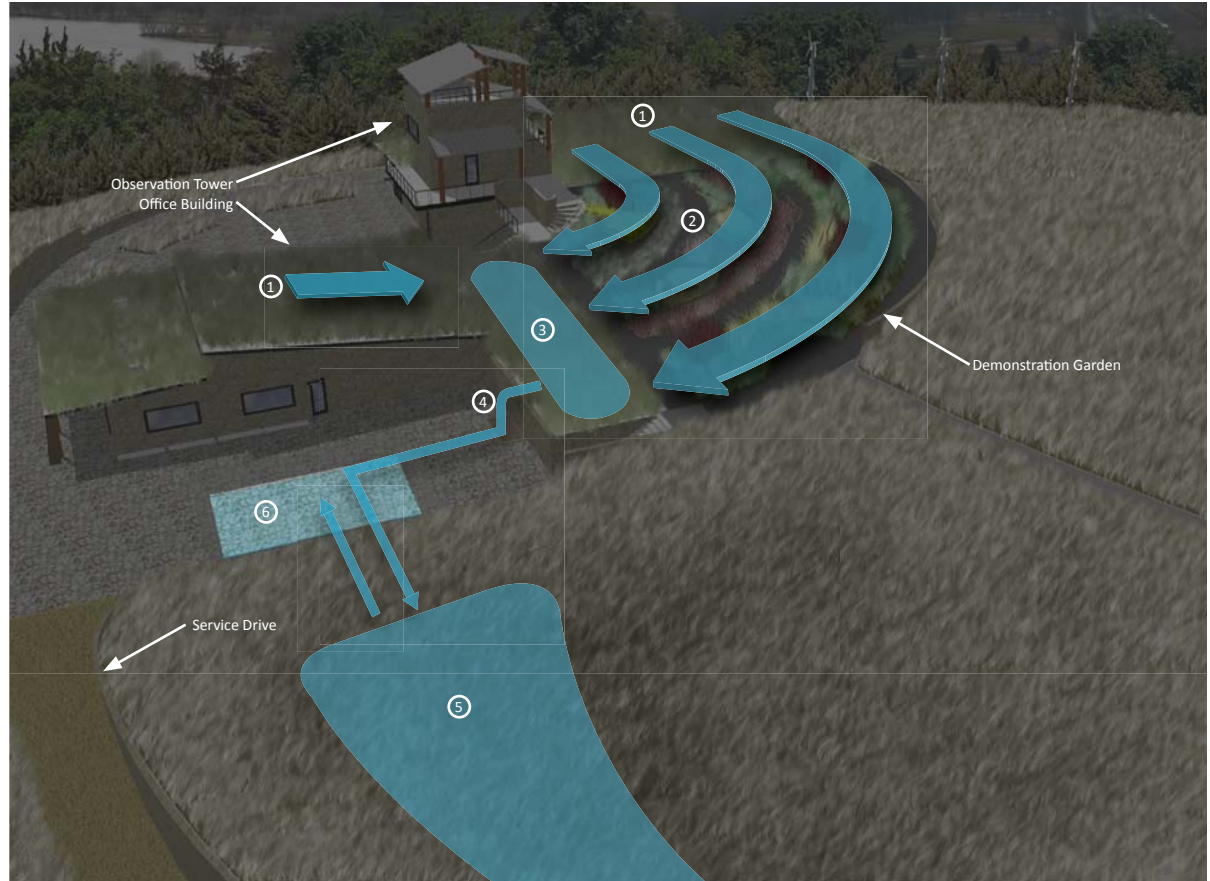


Figure 4.16 Diagram of Stormwater Flow through the Demonstration Garden

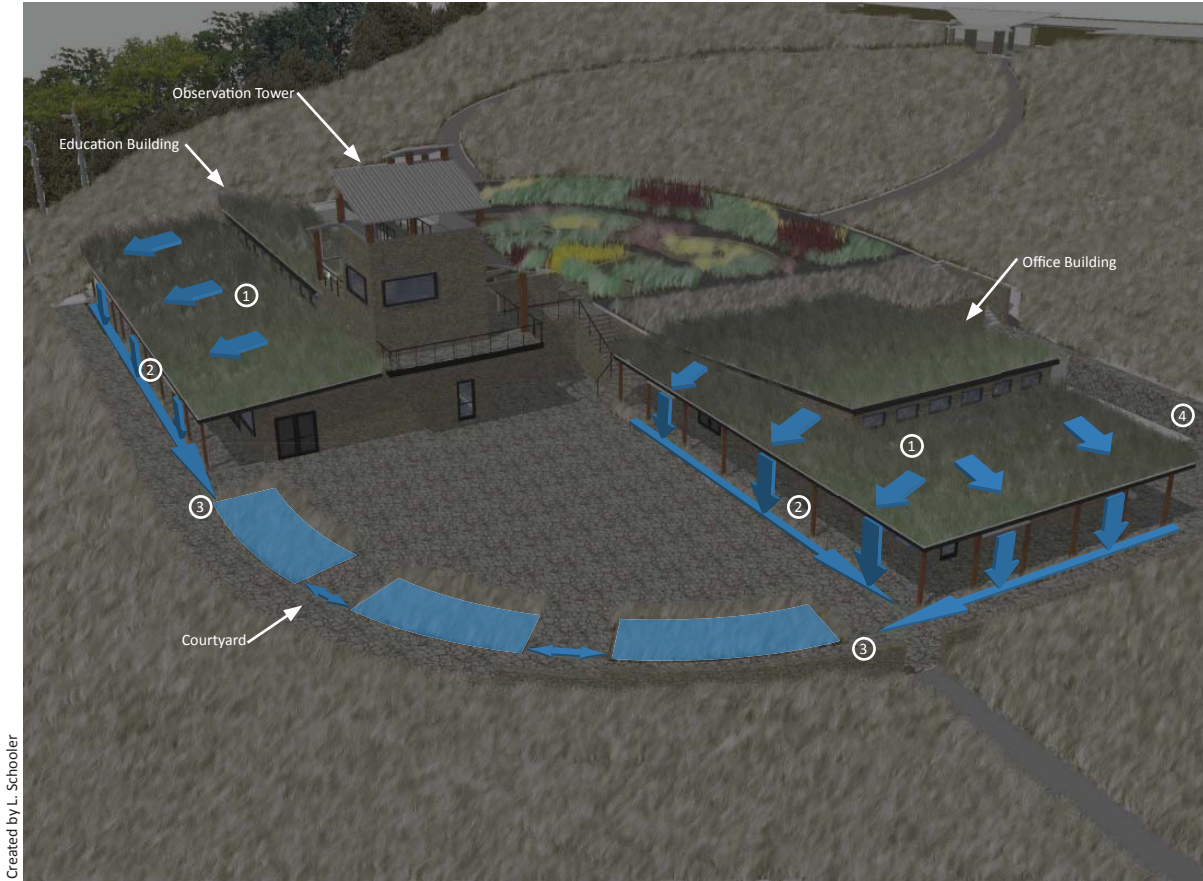


Figure 4.17 Diagram of Stormwater Flow through the Courtyard

Within this second rainwater harvesting system, 1) water is collected from separate portions of the green roofs. After the water has infiltrated the green roofs, 2) it drips into vegetated strips on the ground plane. 3) Then the water moves into depressed planting areas in the courtyard before 4) it enters the cistern below the service area (See Figure 4.17).

## Sustainable Energy

It is important to the visitor center that the facility be powered by sustainable energies. Wind turbines and photovoltaic cells are both used for electrical energy. The sky lights and clerestory windows provide natural light to the facility as well (See Figure 4.18).

If I were to further develop this topic of sustainable energies, I would research the energy requirements for the visitor center buildings and how many wind turbines and solar panels would be needed to supply adequate electrical power to the facility.

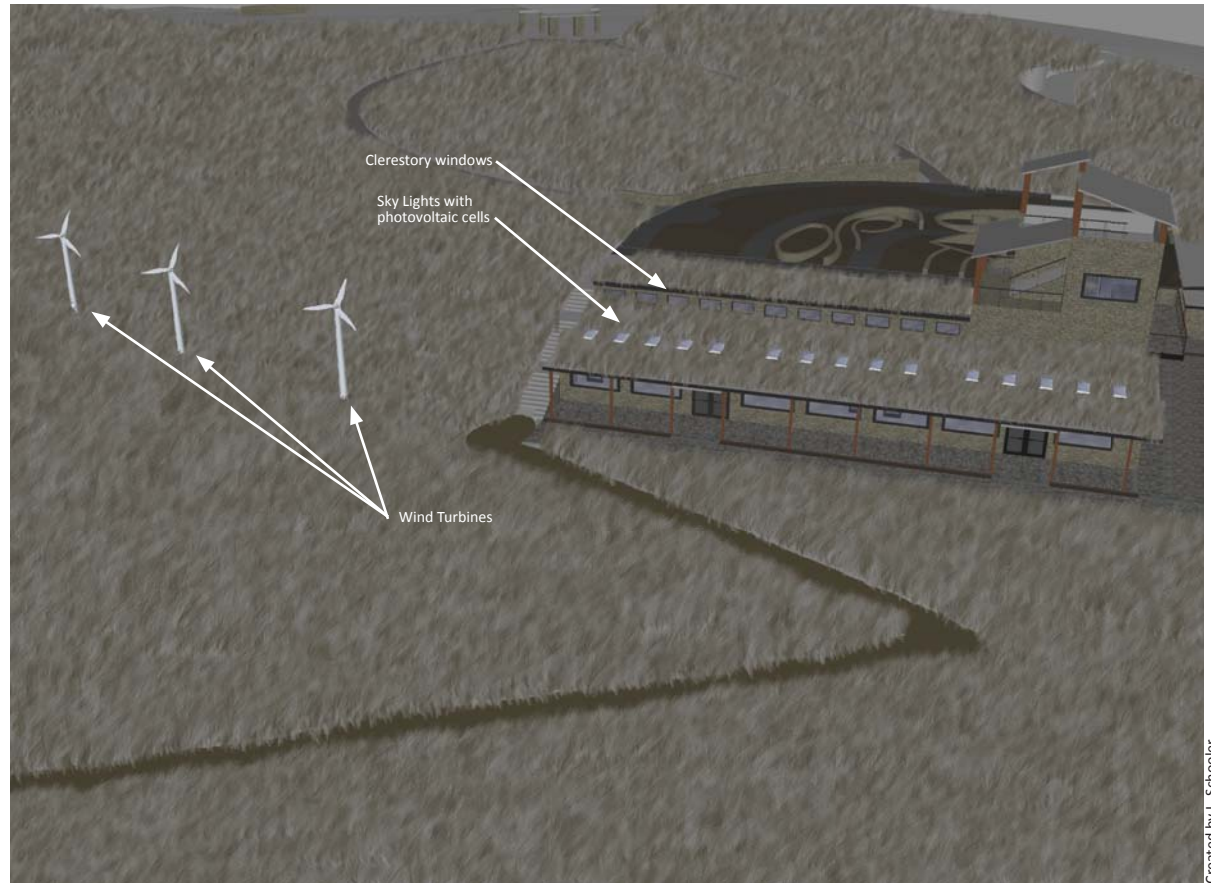


Figure 4.18 Sustainable Energies Diagram





Figure 4.19 Presentation at the Amphitheater

### **The Amphitheater**

One of the spaces used to inform visitors is the amphitheater. The amphitheater can seat approximately fifty people and orients them so that they can take in views to the southeast and avoid direct sunlight in their eyes in the afternoon and evening (See Figure 4.19).



# Design

## Detail Plan of the Main Facility

This detail plan illustrates the relationship of the site features immediately surrounding the visitor center buildings. The demonstration garden functions as an arrival area for this portion of the site. Visitors move from the garden to the courtyard via the outdoor stairway or the observation tower. Visitors also have the option of going directly to the service area or the trail system via the stairways on either end of the demonstration garden. The service area allows the park staff to drive up to the main facility, but keeps their vehicles out of site (See Figure 4.20).

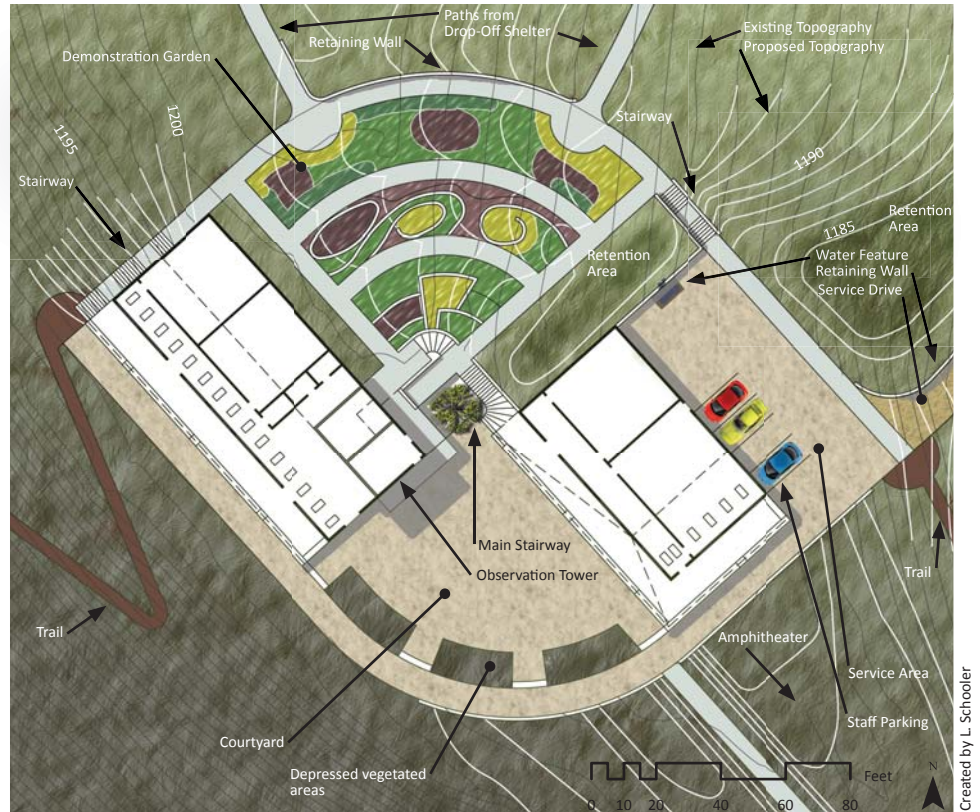


Figure 4.20 Detail Plan of the Main Facility



Figure 4.21 Demonstration Garden and View to the Southwest

## Demonstration Garden

1) As visitors reach the demonstration garden, they are directed to one of two paths. 2) The near path to the left, aligns the visitor with 3) the observation tower. 4) The far path aligns visitors with the amphitheater along an existing ridge line (See Figure 4.21).

The demonstration garden is organized into three separate areas to cater to the visual preferences of different visitors. Area A is naturalistic with no defined lines. Area B is curvilinear with spirals and sweeping lines. Area C is geometric with straight lines and defined arcs.

Table 4.1 lists several native plant species that will be used in the Demonstration Garden. The list consists of shrubs, grasses and forbs that can be found in the native landscape. No trees have been included to allow visitors' sight lines to be unobstructed to the observation tower.

### List of Native Plant Species to be used in the garden:

<u>Common Name</u>	<u>Scientific Name</u>
Smooth Sumac	<i>Rhus glabra</i>
Big Bluestem	<i>Andropogon gerardii</i>
Little Bluestem	<i>Schizachyrium scoparium</i>
Yellow Indiangrass	<i>Sorghastrum nutans</i>
Downy Goldenrod	<i>Solidago puberula</i>
Annual Sunflower	<i>Helianthus mollis</i>
Golden Currant	<i>Ribes odoratum</i>

Table 4.1 Native Plant List



# Focus

# Focus

## Building Circulation

The educational building is comprised of the observation tower, two classrooms, an open gallery, rest rooms and a storage closet. Visitors will have easy access to building egresses from any point in the building.

People entering the education building via the upper entrance from the demonstration garden can choose to either go up into the observation tower or down into the gallery. There is also an elevator for physically disabled visitors (See Figure 4.22).

The office building holds the park staff office area and the theater. The theater is in the rear of this building so that light can be controlled, because there are no clerestory windows or sky lights. The office area is open to reduce the amount of space needed for individual office space and to facilitate communication between staff members See Figure 4.23).

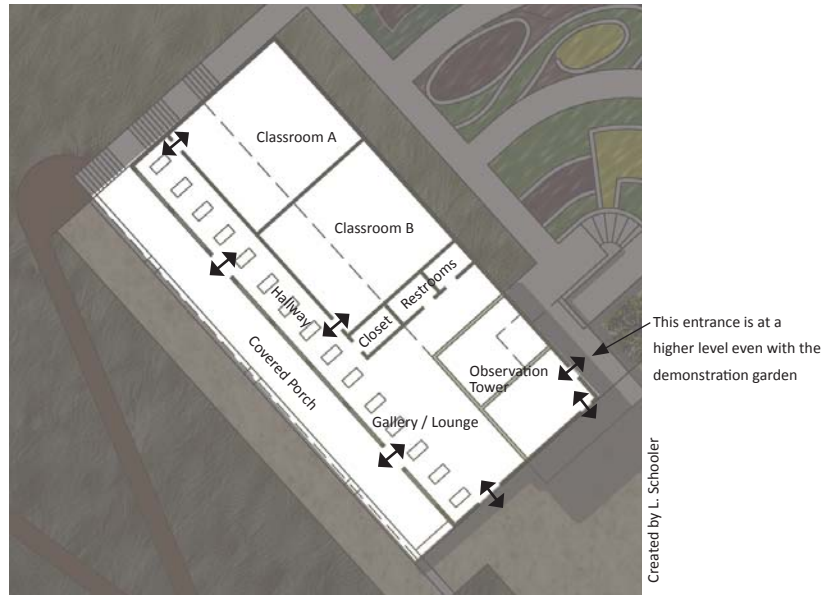


Figure 4.22 Education Building Circulation Diagram



Figure 4.23 Office Building Circulation Diagram





Figure 4.24 Trail Experience

### Trail System

The trail system allows visitors to explore the entirety of the project site (See Figure 4.24). There are two miles of trails with access points at various locations along the trails (See Figure 4.25). The main purpose of the trails is to allow for experiential interpretation. There are seven points along the trails with interpretive signage to provide information about 1) Tallgrass Prairie 2) Woodlands 3) Limestone Outcrops 4) the Riverpond 5) Tuttle Creek Dam 6) Tuttle Creek Spillway and 7) Tuttle Creek Reservoir. Each of these features are present in and around the project site and are typical of the regional landscape. These interpretive stops supplement the information presented in the Education building to further connect the visitors to the landscape.

### Interpretive Stops Along the Trail System:

- 1) Tallgrass Prairie
- 2) Woodland
- 3) Limestone Outcrop
- 4) Riverpond
- 5) Tuttle Creek Dam
- 6) Tuttle Creek Spillway
- 7) Tuttle Creek Reservoir



Figure 4.25 Trail Map



Created by L. Schooler

Figure 4.26 View from Observation Tower

### View from Observation Tower

There is no substitute for first hand experience of the landscape we are a part of. Many times all that is needed is the framing of a view (See Figure 4.26).

# Conclusion

The goal of this project is to connect people to the landscape, inform people about sustainable design and energy systems, design using native plant materials and vernacular architecture and focus on experiential interpretation. The design of the Riverpond Visitor Center accomplishes connection by disconnecting people from modern life and connecting them to the native landscape with trails and views. The design informs people about sustainable design principles through the demonstration of native plant gardens, stormwater management, wind turbines and the use of solar energy. The design of the site centers on the use of native prairie species and vernacular architecture with limestone construction. The experience that people will have at the visitor center is at the forefront of the design. By immersing people into the landscape from the beginning of their experience at the visitor center, they will have opportunities to make their own interpretations of the landscape.

The Riverpond Visitor Center is a place for people to realize their potential for improving the environment of which they are a part. The center seeks to establish a connection between people and the landscape that will last far beyond their immediate experience of the visitor center.



# Site Analysis

The site analysis of the project site shows why decisions were made for the design of the visitor center. Suitability for design development within the project site was determined by the consideration of the site inventory (see appendix) and program. The findings resulting from this consideration helped to inform the design of the visitor center.

## Site Access

The greatest opportunity for access to the visitor center is from Kansas Highway 13. It is the largest of the adjacent transportation corridors and passes by the northwestern part of the site. The issue or constraint with K-13 is that it is not as heavily used as nearby Highway 24 to the west. It will be important to place signage at the junction of Highway 24 and 13 to direct visitors to the site. A benefit of this route is that visitors will cross the dam which gives them views of the reservoir, the Riverpond and the site for the entire length of the dam. Depending on the design and placement of the visitor center building, it could be very easy for visitors to navigate to the site.

An access route that will be important for visitors more familiar with the Manhattan area will be from Dyer Road. There are two points from which one can access the site from Dyer Road. The first is to follow Dyer Road north until it reaches Highway 13 and then take Highway 13 to Riverpond Road. This route takes visitors across the upper part of the spillway before reaching the site. The other possibility is via one of the Tuttle Creek State Park roads that is currently closed off by a gate from Dyer Road to the southeast of the site. This route takes visitors through a wooded area and then across the lower end of the spillway and next to the Riverpond. The constraints with this route are that it is currently closed to the public from Dyer Road and because there is a fee to enter the park area, there would need to be some kind of check point installed. Another constraint is that a connection

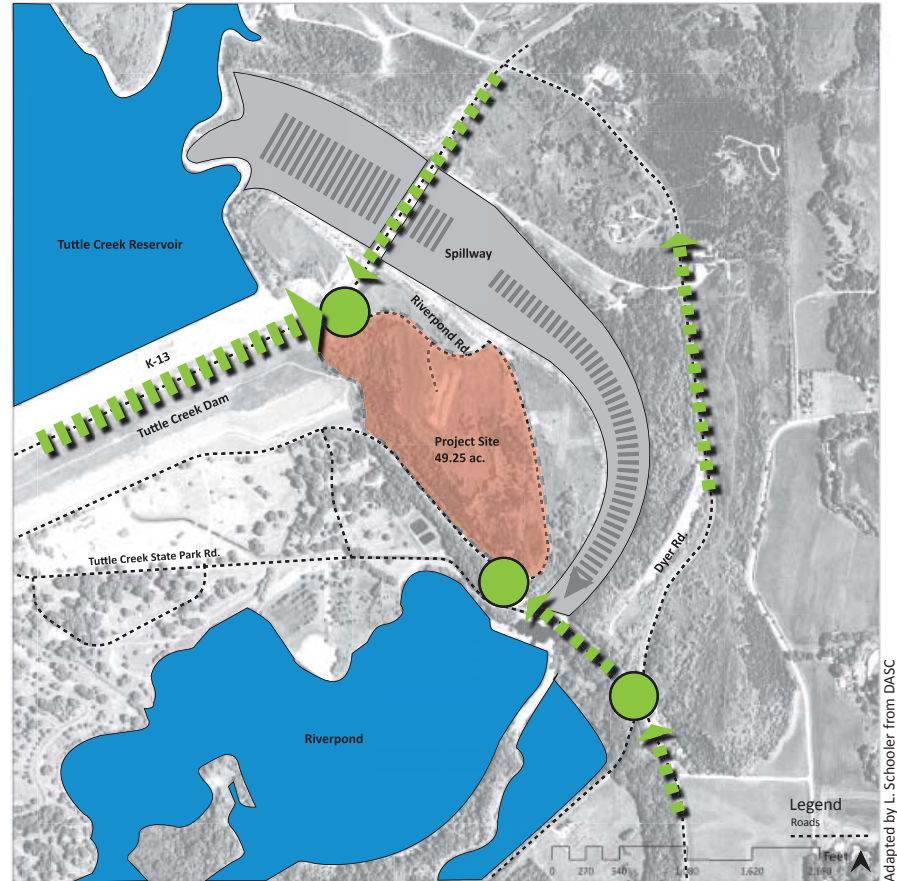


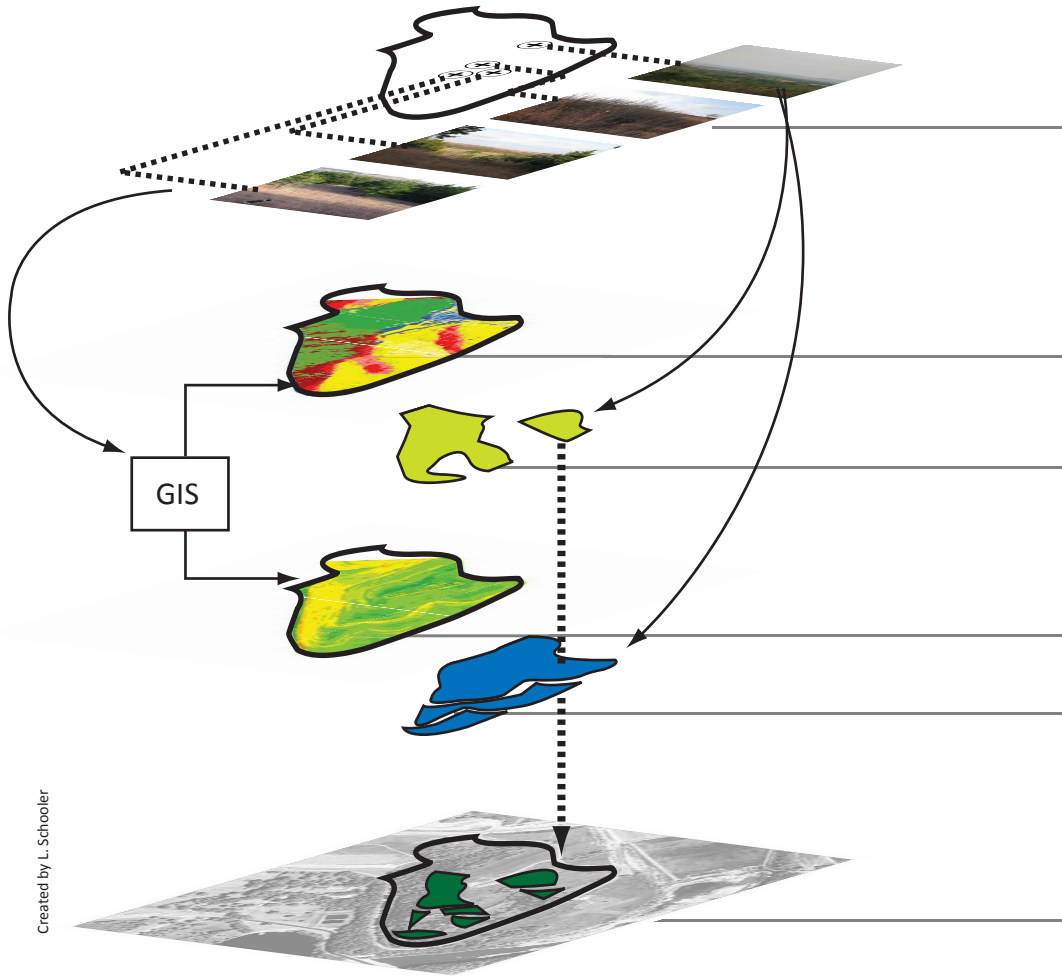
Figure 5.1 Site Access Diagram

would need to be made between the Tuttle Creek State Park road and Riverpond Road on the west side of the spillway. Another access point that will be important for traditional users of the park is from the Riverpond park area. Because the current users are typically visiting campers, the visitors center will provide valuable activities for the visitors to experience and enjoy during their stay. Again, signage will be very

important for this access route because of the confusing nature of the park road system. Not only is it disorienting to enter the park from the west, but once one enters the park, it is difficult to decipher the best route to get through the park. See Figure 5.1.

## Slope - Solar Aspect Process of Analysis

The slope - aspect analysis began by evaluating field notes. Then the field notes were compared to the slope and solar aspect maps developed using Arc GIS. Optimal areas for slope and solar aspect were determined and compared in order to reveal the areas of suitability.



Created by L. Schooler

**Field Notes** - a set of notes and photographs taken from the site that are important to the project.

**Solar Aspect** - map generated in ArcGIS illustrating the direction slopes are facing.

**Optimal Aspect** - areas of the project site that face a southerly direction.

**Slope** - map generated in ArcGIS illustrating slope percentages across the site.

**Optimal Slope** - areas of the project site that have a slope appropriate for the various program elements.

**Suitability** - areas of the project site where the optimal solar aspect and optimal slope coincide.

Figure 5.2 Slope-Aspect Process Diagram

## Slope and Solar Aspect Analysis

There are several significant opportunities and constraints related to slope and building placement in the site. The major constraint is the 20 to 40 percent slope along the southwest edge of the site. This slope is vegetated and provides a buffer from cars along the lower portion of Riverpond Road and visual interest to passersby.

A great opportunity with the site topography is the breaks in grade that occur periodically as the site decreases in elevation toward the southeast. These breaks provide opportunity to integrate, either in part or in whole, the buildings of the visitor center into the earth. This is traditionally known as earth-sheltered architecture.

In order to reduce energy consumption by the visitor center buildings, structures should be oriented toward the south. This orientation allows for the maximum amount of sunlight to enter the building throughout the day since Manhattan is north of the equator. Nearly the entire southern half of the site is, at least in part, facing south. See Figure 5.3-5.4.



Figure 5.3 Optimal Slope-Aspect Diagram





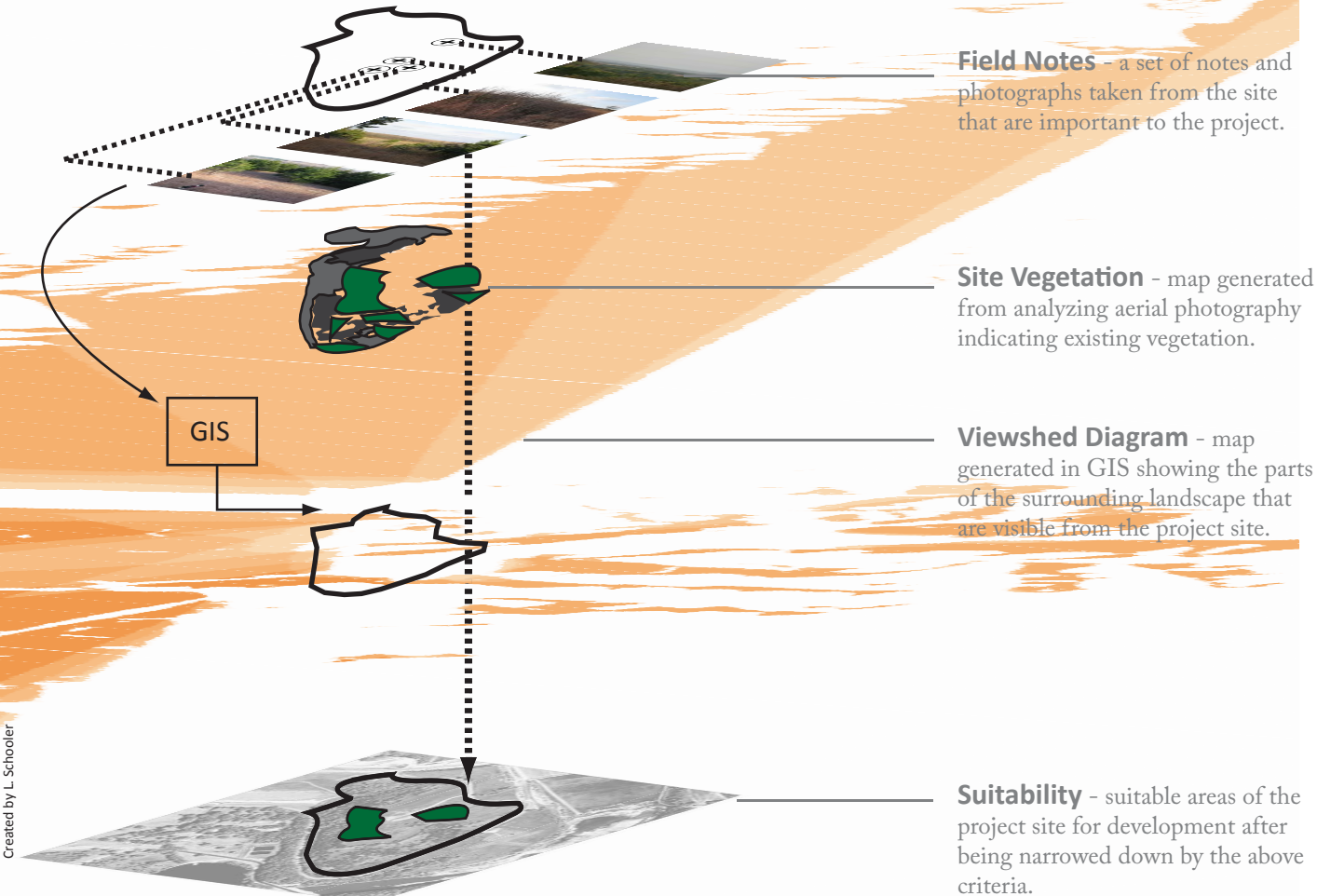
Figure 5.4 Slope-Aspect Suitability Diagram

The comparison of optimal areas of slope and solar aspect revealed the areas most suitable for design development. Optimal areas of slope were determined from site visits. Optimal areas of solar aspect were determined by the selection of slopes facing a southerly direction.



## Vegetation and Views Process of Analysis

The vegetation and views analysis also began by evaluating field notes. The field notes were compared to a map of the areas of suitability determined by the slope and solar aspect analysis and the existing vegetation within the project site. Comparing the vegetation and viewshed diagram narrowed down the areas most suitable for design development.



Created by L. Schooler

Figure 5.5 Vegetation-Views Process Diagram

## Vegetation and Views Analysis

The site is a typical example of a landscape in the Flint Hills of Kansas. There are areas of healthy native grasses and forbs scattered across the site and concentrated mostly at higher elevations. Then as wind cover increases and elevation decreases, invasive cedars mixed with desirable tree species take over. Although invasive, the cedars do provide valuable shelter from the sun in the summer and from wind in the winter. These stands of cedar also provide the experience of a wooded area to the visitor.

I don't think it will be necessary to remove all or many of the cedars from the site because of the benefits they provide, as well as the fact that they are a part of the Midwestern landscape. If the visitor center is to serve as an interpretive center, what better way to let interpretation happen, than to allow visitors to experience the Eastern Red Cedar. Having said that, it will be critical to expose visitors to the native vegetation as well as non natives. There may be opportunity to somehow overwhelm visitors with the vegetation either by sinking paths partially below grade, or by placing breaks in the paths and directing visitors through the grass. The latter is probably not feasible because the plants would not survive being walked on very often, but the concept is important. See Figure 5.6.

Views are an important part of this project, because there are several interesting landscapes adjacent to the site that will provide interest to visitors. From the viewshed generated at elevation 1185, more than half of Tuttle Creek Reservoir is visible as well as the dam and Riverpond area. A view common to all three of the viewsheds is the surrounding Flint Hills. In siting the building, it is apparent that a higher



Figure 5.6 Vegetation & Slope-Aspect Suitability Diagram



Figure 5.7 Overall Suitability Diagram

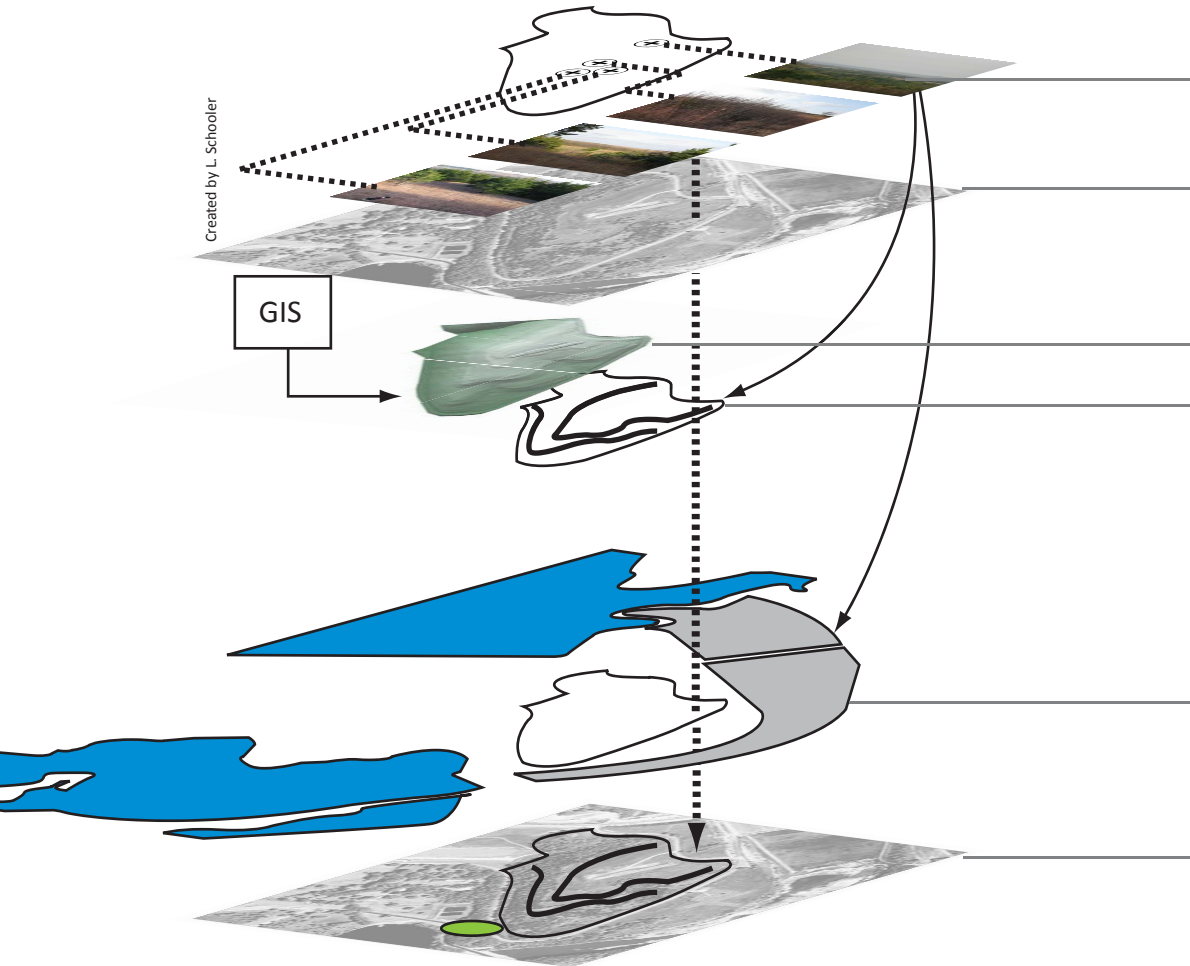
elevation would be best, because the views are substantially better. In the progression of viewsheds as elevations decrease the views also decrease. The diagram at elevation 1120 indicates that views of the reservoir are non-existent and views of the surrounding area are also decreasing.

Another consideration that needs to be accounted for is vegetation. Because the viewsheds were generated based on topographic information alone, there is no account for vegetation obstructing views. As was stated in the vegetation portion of this analysis, vegetation becomes more dense as elevation decreases, therefore views from the site decrease in frequency and quality as elevation decreases. This means that the best views for visitor center buildings will be at higher elevations where trees are not obstructing views and the views themselves are better from higher elevations.

Analysis up to this point has suggested that optimal locations for building placement be where the views are best anyway, so no further graphic analysis is needed. See Figure 5.7.

## Site Features Process of Analysis

After evaluating the field notes and an aerial photo of the project site, the notes were compared to a topography model created in Arc GIS to locate the limestone shelves. The field notes were then compared to the aerial photo to determine the proximity of the project site to nearby bodies of water.



**Field Notes** - a set of notes and photographs taken from the site that are important to the project.

**Topography Map** - map generated in GIS showing the project site topography.

**Limestone Outcrops** - map showing the location of the limestone outcrops in the project site.

**Proximity to Water** - map showing the relationship of the site to nearby bodies of water.

**Interpretive Opportunities** - map showing site features that were utilized in designing for the interpretive experience.

Figure 5.8 Site Features Process Diagram

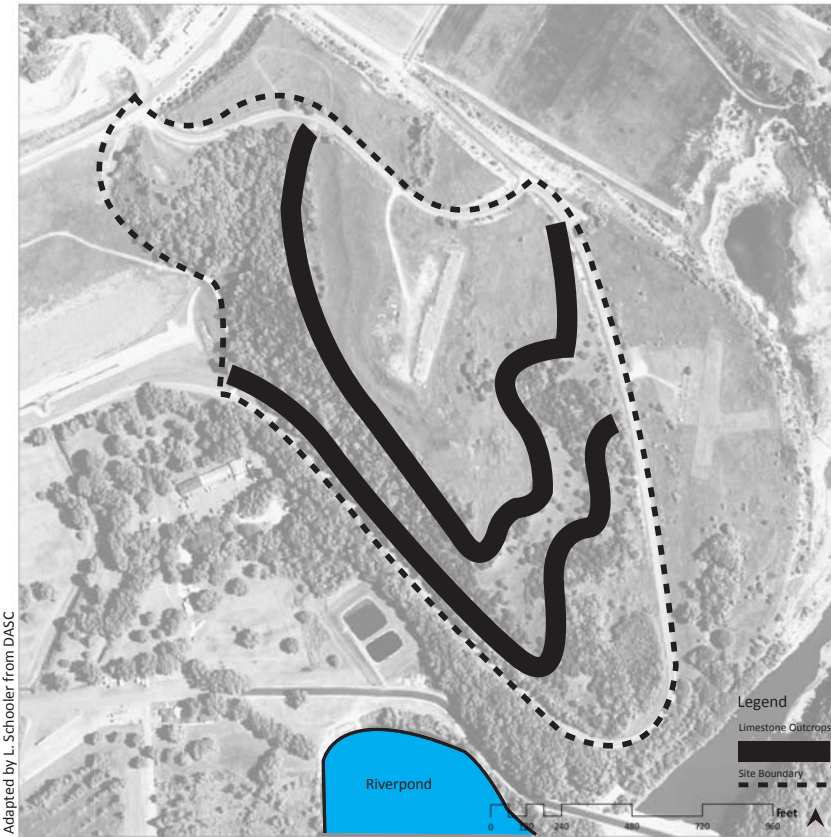


Figure 5.9 Site Features Diagram

## Site Features Analysis

There are two limestone outcrops in the site which provide opportunities for education and interpretation to visitors. These outcrops display geological structure, hydrological function and provide vernacular building materials. Forcing visitors safely over the outcrops and directing their views toward the outcrops as they pass along trails will emphasize the nature of the stone. Allowing visitors to see evidence of water seepage, especially during the spring time when there is greater rainfall, will show them how water is affected by these outcrops.

Major constraints regarding the outcrops are their effect on buildings. Depending on the depth necessary for the building structure, there may be added cost in excavating stone. This excavation, depending on its severity, could include blasting. Another issue is the military artillery training that takes place at Fort Riley to the west of Manhattan. If the building structure is resting on the limestone shelf, vibrations from the artillery will disrupt the building, possibly compromising structural systems of the building. The educational opportunity regarding the artillery, is in the experience of the vibrations. If visitors are exposed to this, it will create memories of the place, whether good or bad, that will stick with them and cause them to think of the experience. See Figure 5.9.





# Research

The purpose of the research done for this project was to lay the framework for the design program. The features of the visitor center design were inspired by literature and precedent studies. These works exemplify the qualities the design of the visitor center is reaching for. In the effort of this project to connect people to the landscape, inform people of sustainable systems, design with native materials and focus on interpretive experience, the following pieces were the skeleton upon which this project was built.



# Literature Review

## **Sustaining Beauty. The Performance of Appearance**

Elizabeth Meyer

Elizabeth Meyer's manifesto introduces beauty into the equation of sustainability. She argues that historically, sustainable design has ignored aesthetics and has focused on the functionality of sustainable systems instead. Meyer states that we as designers must include beauty in our considerations of design, so that people who experience altered landscapes will notice the design and realize the need for human interaction with the landscape. Examination of this manifesto may be approached from the four points of the thesis of this project.

Meyer believes that in order for people to be connected to the landscape, they must first leave the distractions of modern life. "Sustainable landscape design should be form-full, evident and palpable, so that it draws the attention of an urban audience distracted by daily concerns of work and family, or the over-stimulation of the digital world," (p. 17). This idea was accomplished in the design of the Riverpond Visitor Center by the disconnection created from visitors passing through the gateway of the drop-off shelter and walking across the native landscape to the main visitor center facility.

Radical changes are needed in today's society

regarding environmental ethic. In order to accomplish this change, people need to be informed about how landscape systems work and how human interaction can benefit the environment. Meyer states in the manifesto that, "What is needed are designed landscapes that provoke those who experience them to become more aware of how their actions affect the environment, and to care enough to make changes," (p. 6). The visitor center provides several sustainable elements for visitors to learn about and emphasizes these elements to get their attention.

The key to informing people about the landscape is by getting their attention. The way to do this is through design. People notice and ponder beautiful things. So if sustainable systems are beautiful, people will begin to notice and ponder sustainability. Meyer said that, "I have come to believe that the experience of certain kinds of beauty – granted new forms of strange beauty – is a necessary component of fostering a sustainable community, and that beauty is a key component in developing an environmental ethic," (p. 9). Geometric form, wide-open views and vernacular architecture were employed in the design of the visitor center to provoke thought into people at the visitor center.

People's experience of a place is in fact what they will remember of that place. When they think back to a certain landscape, they recall the experience they had when they were there. In order to guide the thoughts of visitors to a landscape, experiences must be designed. Meyer stated that, "Beautiful sustainable landscape design involves the design of experiences as much as the design of form and the design of ecosystems," (p. 18). The Riverpond Visitor Center focuses on the experience of interpretation. Visitors are taken throughout the project site and exposed to many different landscape elements and sustainable systems.

## Messy Ecosystems, Orderly Frames

Joan Iverson Nassauer

Joan Iverson Nassauer is writing from the perspective that environmental design needs to be put into a cultural frame or context to educate the public. To the untrained eye, some elaborate and creative designs to restore natural systems are perceived as neglected or messy. The landscape by itself will not educate the public left alone or in a “pristine” condition, we must design to inform. Design should take the unfamiliar material and place it in a familiar frame. People, property owners specifically, appreciate landscapes that appear to be cared for, so if we as designers can package environmental design in such a way that comes across as cared for, we will have succeeded. Another issue to deal with is that landscapes that are designed and are perceived as messy will most likely be misinterpreted. People might look at a “natural” landscape and feel that it is as healthy as it is because of the absence of man, when in fact human interaction is what is keeping it in good order. Nassauer finishes the article by describing several different “cues” that can be used in designing with native vegetation to make sure that people see the design and influence of the professional.

# Precedent Studies

## Lady Bird Johnson Wildflower Center

**Mission:** “The mission of the Lady Bird Johnson Wildflower Center is to increase the sustainable use and conservation of native wildflowers, plants and landscapes.” (Anonymous2007)

**Physical Context and Site Analysis:** The wildflower center is located just off of the Mopac Expressway on La Crosse Avenue southwest of Austin, Texas. The wildflower center is a reclaimed ranch sitting on top of the Edwards Aquifer (endangered). The center collects 450,000 gallons of rainwater each year. (Dillon 1995, 66-67-75)  
The site lies in the US Hardiness Zone 8b. Average annual rainfall is 33.65 in. Average annual high temperature is 95.6 degrees in August; the average annual low is 40.0 degrees in January.

**Theoretical Context:** Landscape architects Darrel Morrison, Robert Anderson and Eleanor McKinney were the landscape consultants for the wildflower center, because of their expertise in designing with native plant palettes. At the wildflower center, natives were used both informally and formally. Informal plantings were used from the main entrance of the campus to the formal demonstration area half way through. Although the entire campus was designed, many visitors feel that weeds have sprung up everywhere except for the formally planted demonstration area.(Dillon 1995, 66-67-75)

**Project History and Background:** In 1982 the center was founded by Lady Bird Johnson and actress Helen Hayes as the National Wildflower Research Center in a house on undeveloped land east of Austin. After an article was published in the March 1986 issue of Reader’s Digest about the research center, thousands



Figure 6.1 Observation Tower

wrote the center requesting seed sources. The center gained in popularity until finally in 1995, property was acquired on La Crosse Avenue for the construction of the new campus.(Anonymous2007)

Program Elements: In the early stages of planning for the wildflower center, the owners knew that it would be a landmark to the public, a visitor attraction.

Initially Lady Bird Johnson envisioned the center to be one building with surrounding gardens and meadows. The architects had different ideas of a campus setting. The program became a series of outdoor spaces and facilities to improve the spatial development. The campus became a visitor's gallery, auditorium, classrooms, gift shop, tea room, conference facility, administrative offices, botanical library, research labs, and rain water harvesting system.

In order to protect the existing vegetation, the owner tagged and priced every tree and shrub and set a price per yard on native grasses. Trees were marked from \$10,000 to \$25,000 and grass was priced at \$40/yard. As a result, no more of the existing vegetation was touched than what absolutely had to be removed for construction.

#### **Application of Design Principles:**

- Native plant palette
- Vernacular architecture
- Rainwater harvesting
- Formal / informal design
- Interpretive elements
- Parking layout

**Project Significance:** The wildflower center is significant on several different layers. As many of our nations native landscapes disappear, the wildflower center has developed its collection of native plant materials to preserve the past. These plant collections can be used in the center's research, such as the green roof demonstrations. They have constructed several small sections of roof at waist

height to educate the public and try out different plant materials in a green roof growing condition. Another cutting edge feature of the center is its rainwater harvesting systems. The system is one of the largest in the United States collecting 450,000 gallons each year. Maybe one of the most important aspects of the center is the education of the visiting public. Visitors are able to see the process of rainwater harvesting by the exposed nature of the system. At the entrance to the campus is a large cistern with a stone aqueduct leading to the campus gateway. The most prominent architectural feature, the observation tower, also functions as a storage cistern. The roof of the auditorium is pitched inward to channel rainwater to another aqueduct that dumps into the observation tower cistern. There are also three home gardens that show visitors different design schemes that they can use on their own yards with native plant materials.

#### **Project Relevance:**

##### Architecture

Use of regional building materials

Building Use

Offices

Education

Gallery

Auditorium

Framing of Spaces

##### Vegetation

Native plant materials

Homeowner demonstration gardens

Informal and formal plantings

##### Sustainability

Rainwater harvesting / management

Vegetation (water requirements)

Regional building materials

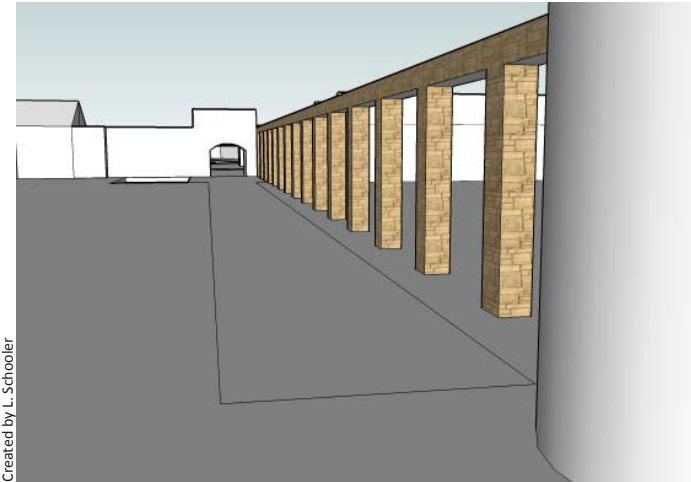
Preservation of existing site features

In the design of the interpretive center at Tuttle Creek, I want to look at the relationship of structure to the landscape and attempt to fade the line between the two. The purpose of this idea is to draw people out of the indoors into the landscape. See Figure 5.1.

Space: The LBWC is a prime example of the use of structure and plant materials to form path and space. When visitors first enter the site, they are guided along the entry path by the structure of an aquaduct on their right and a woodland pond on the left. The duct terminates at the main entry gate that creates a strong portal into the primary campus space. The main space is framed by buildings on three of its four sides. On the fourth side, the side that leads to the rest of the campus, there is an arbor structure that allows the visitors to see into the next space but defines the main plaza. The main plaza is a formally designed square that is open to the hot Texas sun with shade structures around the periphery. See Figures 6.2-3.

After passing through the main plaza, the landscape turns to informal design with curved paths and less ordered plantings. This is the most shaded area of the campus because of the many shade trees. This informal space is still defined by structure. There are offices to the north and a wall to the south. The path through

this space is edged by plant material to direct the user to the observation tower or on the terminus of the campus.



Created by L. Schooler

Figure 6.2 Entry Experience



Adapted by L. Schooler from D. Dillon

Figure 6.3 Site Plan





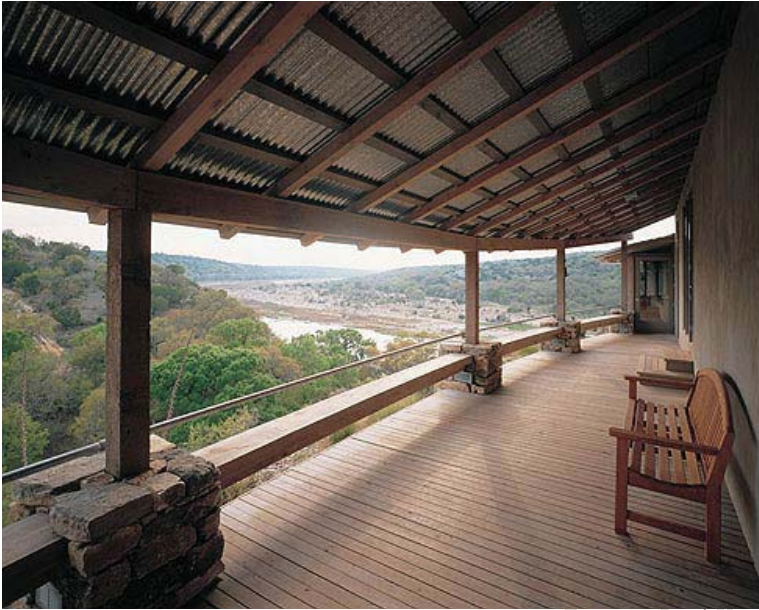


Figure 6.4 Porch View

## The Chandler Ranch House

The Chandler Ranch House designed by Lake Flato Architects is located near Mason, Texas. It is designed to fit into the existing landscape while giving the owners an incredible view (See Figure 6.4). The Chandler Ranch House is a good example of using vernacular architecture and protecting the native landscape.

The design of the Riverpond Visitor Center pulled from the Chandler Ranch House, because of the ranch house's position on the slope of a hill (See Figure 6.5) and the use of native building materials (See Figure 6.6).

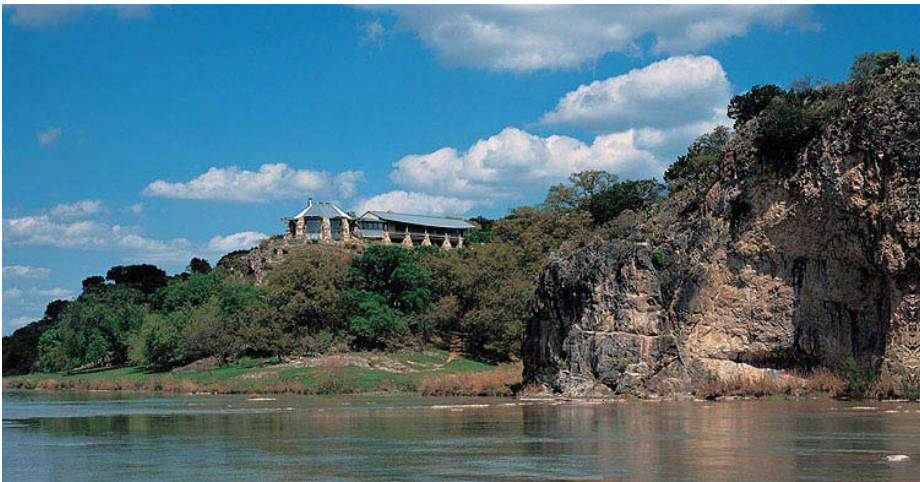


Figure 6.5 View of the Ranch House



Figure 6.6 Native Stone Piers



# Site Inventory

The Site Inventory consists of field notes collected from the project site and information that was generated using Arc GIS from data provided by the Army Corps of Engineers office in Kansas City. The Site Inventory was used in the Site Analysis to inform design decisions.

## Location and Size of Site

The site is located three miles Northeast of Manhattan, Kansas at the Northeast end of the Riverpond Area of Tuttle Creek State Park. The site is bounded by Kansas Highway 13 to the North and Riverpond Road around the remainder of the site. The site is approximately forty-nine acres. See Figure 7.1

## Users and Landuse

Currently the only users for the project site are the Army Corps of Engineers. They have a large pile of boulders close to the highest point of the site in case the Tuttle Creek Dam was to fail. For purposes of this project, the rock pile will be relocated according to the Army Corps of Engineers' discretion.

The surrounding landuse consists of the Riverpond park area to the West, Tuttle Creek Reservoir to the Northwest, Tuttle Creek Spillway to the East, Riley County Fliers Airstrip to the immediate East and the Kansas State Forest Service research area to the Southwest.

The users of the Riverpond Park area consist of two major groups: camping and general recreation users and attendees of the Country Stampede festival during the summer. The campers and general recreation users are generally older people with the exception of disc golf players. The disc golf course in the Riverpond Park area is the only one in Manhattan with chain traps which function as the "hole" for the disc.

This information is important to note because it describes the users that will be within visible distance of the visitor center and are potential users of the visitor center.

## Circulation

Circulation on site consists of one access road leading to the rock stockpile for the Army Corps of Engineers. This access road is closed to the public. Riverpond

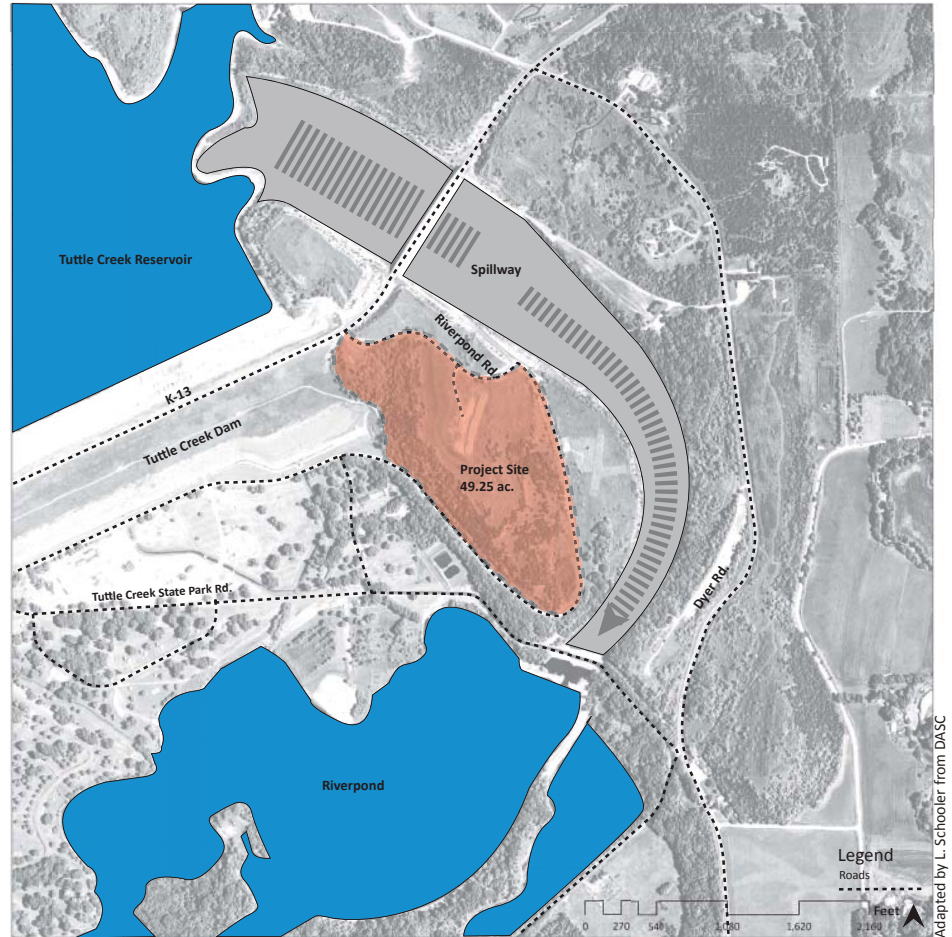


Figure 7.1 Site Access

Road creates the perimeter boundary for the site. It is a 22 foot wide road with ditches on one or both sides. There is a small stretch of the project site to the North that is bounded by Kansas Highway 13.

The primary means of access to the site are from Kansas Highway 13 via Kansas

Highway 24 from the West, Kansas Highway 13 from the East and Dyer Road from the south. The most prominent route is by Kansas Highway 24. There is also a Tuttle Creek State Park road that passes near the site at the Southern end that is a possible access point to the site.

## Field Notes

You can see one of the major access roads to the site in this image. Some trees will need to be cleared so that passersby will have unobstructed sightlines to the visitor's center. This image also shows the possibility of using the slope to incorporate earth-sheltered structures.



Photographed by L. Schooler  
Figure 7.2 Site Photo 1

The Tuttle Creek Dam has been under construction improvements for stabilization purposes. This view is important because it includes the reservoir, the dam and the Riverpond State Park. Not only can these features be seen from the site, but the site is very visible from each of these.



Photographed by L. Schooler  
Figure 7.3 Site Photo 2

The slope in certain areas of the site is ideal for incorporating structures into the hillside.

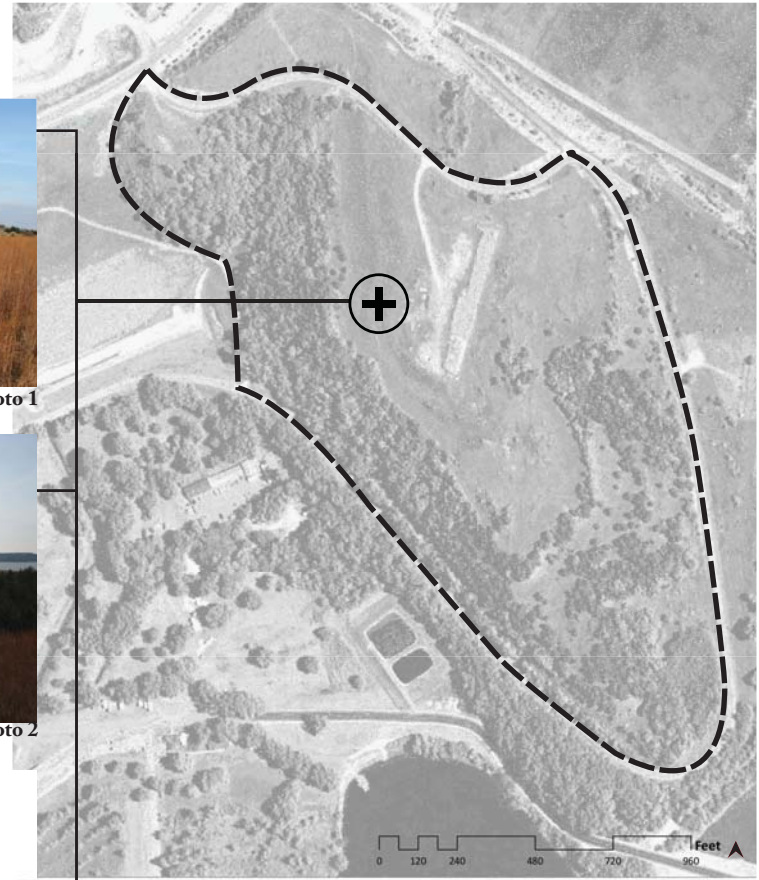


Photographed by L. Schooler  
Figure 7.4 Site Photo 3

This is an important view from the site to the Riverpond. This pond is an important recreational area for the Manhattan area. The design of the visitor's center will incorporate the pond, whether by view only or by direct access as well.



Photographed by L. Schooler  
Figure 7.5 Site Photo 4



Adapted by L. Schooler from DASC  
Figure 7.6 Aerial Photo

Utilization of the borrowed landscape, or views to surrounding landscapes, is critical to establishing the beauty of the site. Areas across the site that have these views are prime locations for locating major program elements.



Photographed by L. Schooler

**Figure 7.7 Site Photo 5**

Much of the vegetation throughout the site is native and will be preserved as much as possible. This stand of sumac is a good example of what can be found in the area.



Photographed by L. Schooler

**Figure 7.8 Site Photo 6**

This is a view to the east across the spillway. Framed views such as this will be important in creating the visitor's experience.



Photographed by L. Schooler

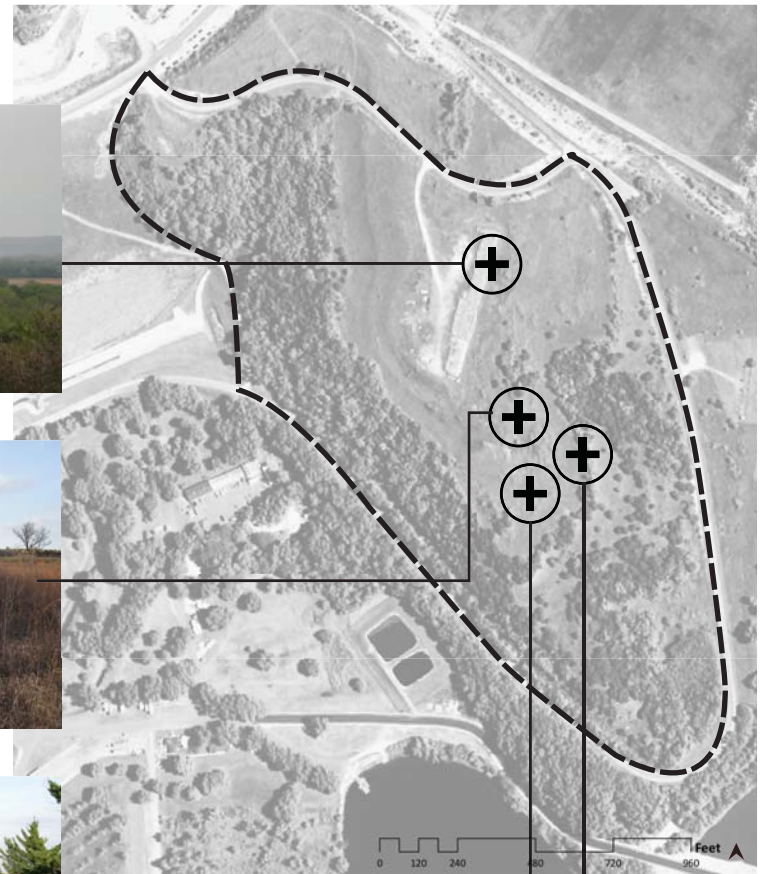
**Figure 7.9 Site Photo 7**

On the downhill side of the limestone outcrop, there is a large population of cedars across the gently sloping topography. Several large open spaces lend themselves to gathering areas and trail systems.



Photographed by L. Schooler

**Figure 7.10 Site Photo 8**



**Figure 7.11 Aerial Photo**

Adapted by L. Schooler from DASC

This site was mentioned by the client as a possible location for the visitor's center. There is good access from the road, but I think the selected site should have better access to borrowed views.



Photographed by L. Schooler

Figure 7.12 Site Photo 9

The limestone outcrop that is exposed across the site is a feature that should be emphasized for interpretation in the design of the visitor's center.



Photographed by L. Schooler

Figure 7.13 Site Photo 10

Trees along this road should be preserved to maintain the driver's experience and because the slope is too steep for development.



Photographed by L. Schooler

Figure 7.14 Site Photo 11

It is at this point that the site is closest to a body of water, however there is a great deal of elevational difference to get to the water's edge. Also, this body of water is merely a small pool at the bottom of the spillway. A more desirable connection would be to the Riverpond.



Photographed by L. Schooler

Figure 7.15 Site Photo 12

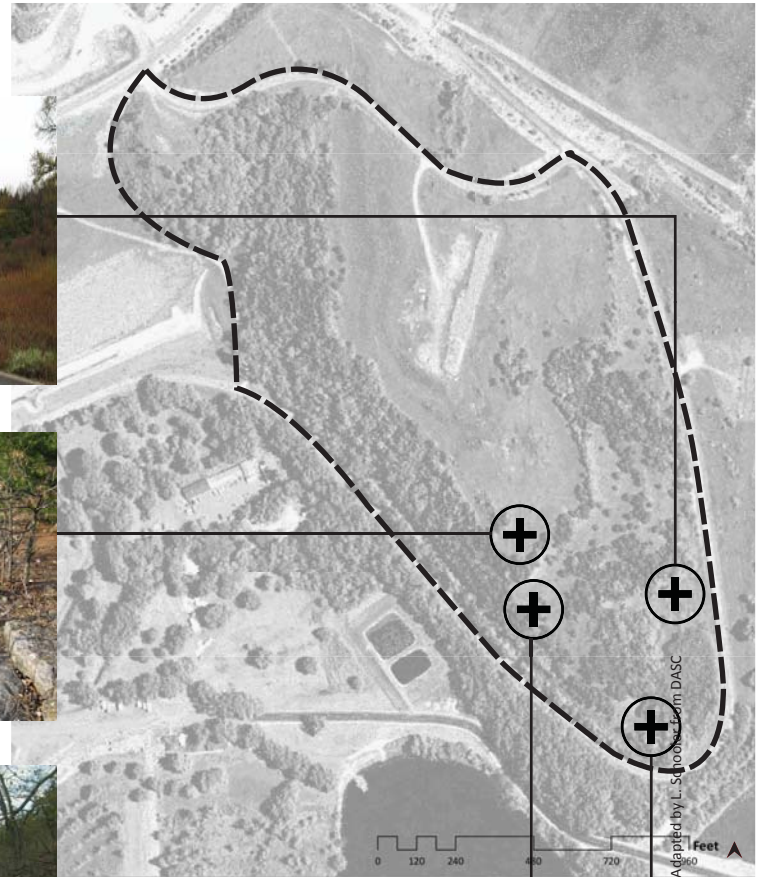


Figure 7.16 Aerial Photo

Most of the site drains to this southern point where a culvert carries the stormwater under the road and dumps it in the lower portion of the spillway.

## Geology

The most obvious geological features of the site are the two limestone outcrops. These outcrops indicate limestone shelves that are within the site.

There are three major geological make-ups of the site. The uppermost is Easley Creek Shale and Bader Limestone. The next is Sterns Shale and Beattie Limestone, then Eskridge Shale and Grenola Limestone and finally Roca Shale and Red Eagle Limestone. The Southeastern part of the site includes some Loess and Colluvium deposits. (Anonymous2008b)

It will be important to note the location of the outcrops in locating structures as well as emphasizing site features for education and interpretation. See Figure 7.17.

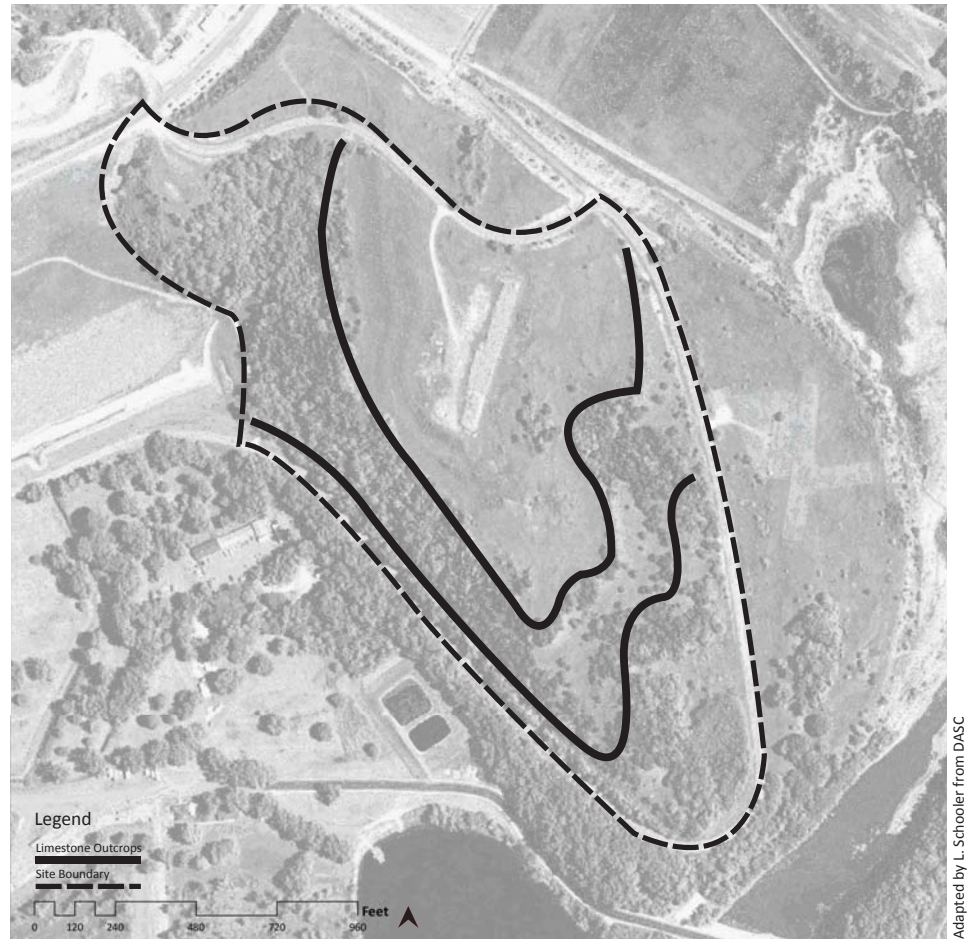


Figure 7.17 Geological Features Diagram

Adapted by L. Schooler from DASC



## Soils

There are two types of soil within the site. Soil 4590 is a Clime-Sogn Complex that occurs on 3 to 20% slopes. This soil type is located on the upper portion of the site as shown in Figure 7.18. Soil 4545 is a Clime silty clay loam that occurs on 20 to 40% slopes and is stony. This soil is located on the lower part of the site. The divider of these soil types seems to be the prominent limestone shelf through the middle of the site. (Anonymous2008c)

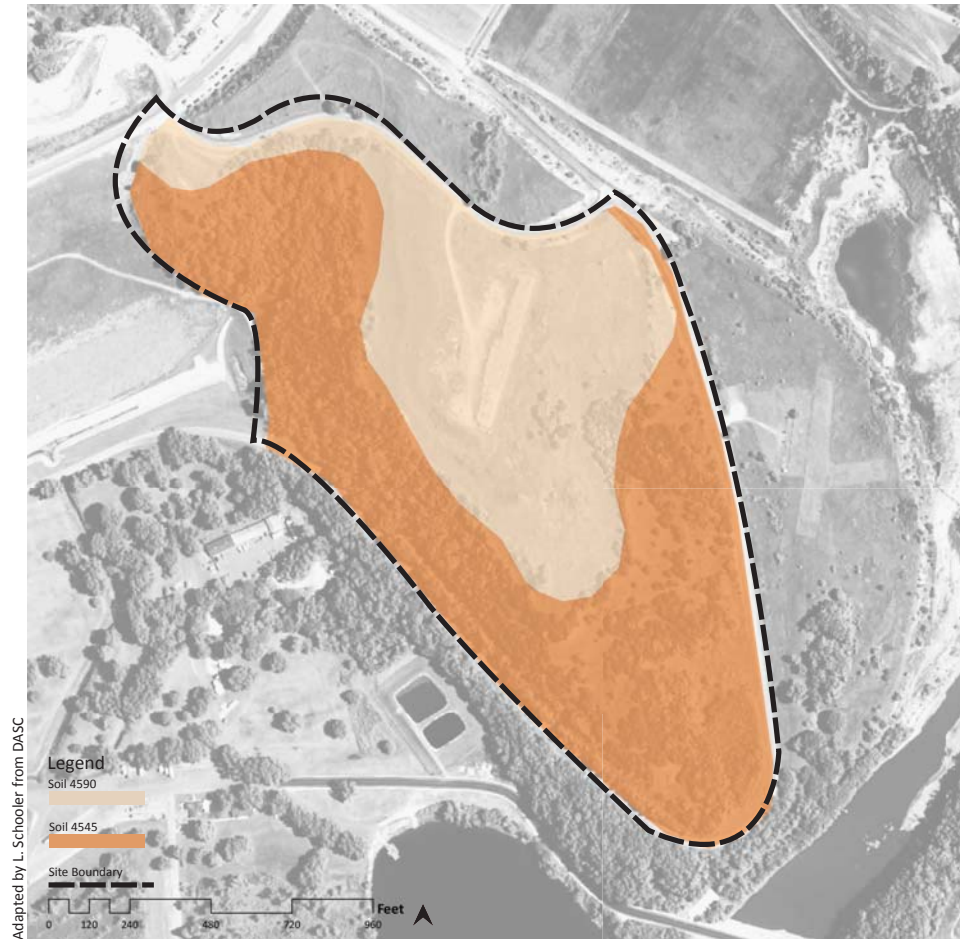


Figure 7.18 Soils Diagram

## Slope

Elevations for the project site range from 1055 to 1200. The site is terraced into four levels with a limestone outcrop nearly dividing the site in half. The terraces range in slope from 2-15% slope. The steepest area of the site is located along the Southwestern edge and extends the length of the site from the Northwest edge to the Southern end. This slope ranges from 20-40%. See Figure 7.19.

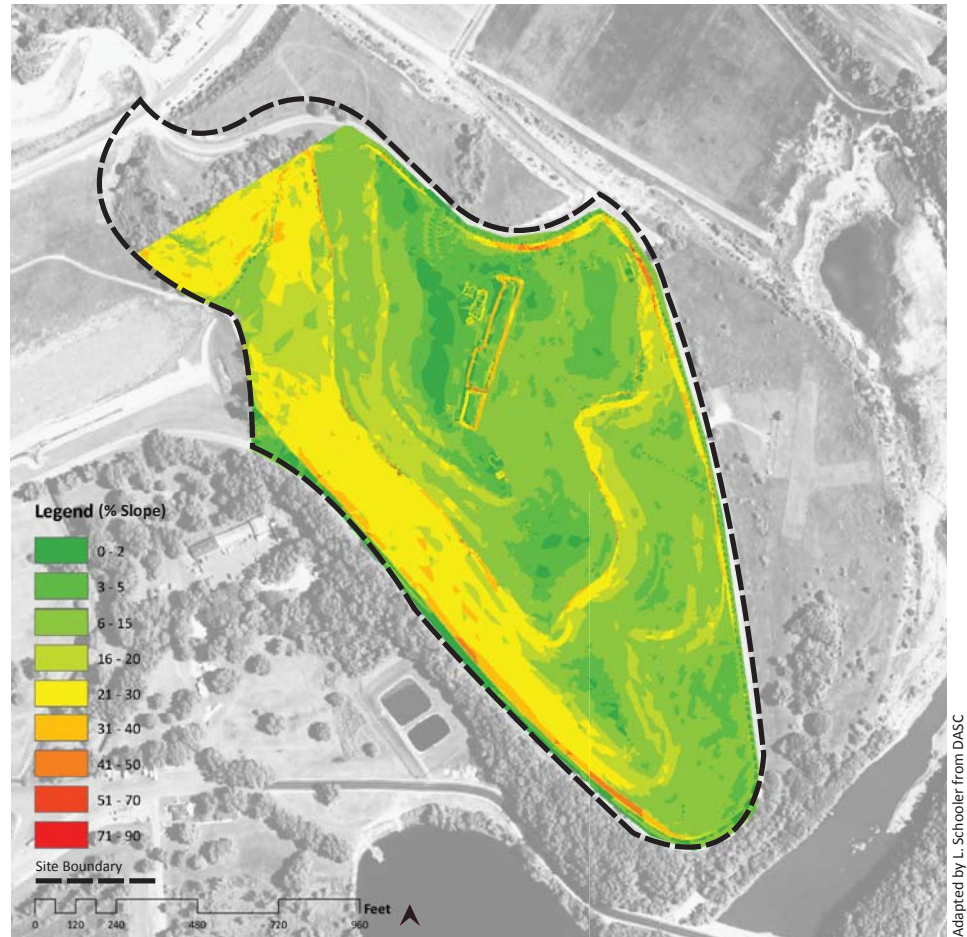


Figure 7.19 Slope Diagram

Adapted by L. Schooler from DASC

## Vegetation

The most prominent vegetative feature is the cedar population. Cedars mixed with a variety of deciduous species occupy portions of the site at lower elevations as well as the large slope to the Southwest. The ground plane is covered with a mixture of prairie grasses consisting mostly of Big Bluestem and Yellow Indiangrass. See Figure 7.20.

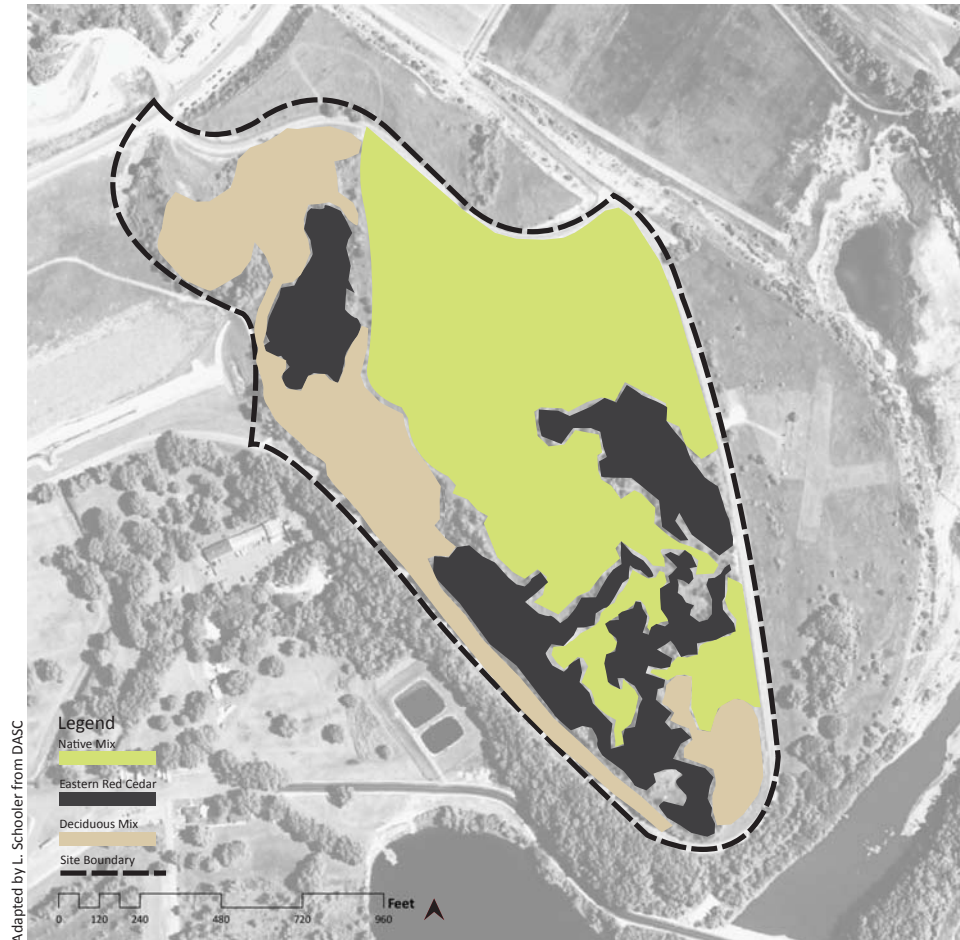


Figure 7.20 Vegetation Diagram

## Stormwater

The site is fairly isolated from the surrounding landscape as far as hydrology goes. Because it is a highpoint in the immediate area and slopes down to the surrounding area on all sides, the only water to be dealt with is on site. Along Riverpond Road on the Eastern edge of the site, there is a drainage ditch that directs water to a culvert at the Southeastern tip of the site. The culvert pipes the water into the lower end of the spillway.

Another hydrological feature within the site is the limestone outcrop. Along this outcrop there is a seepage area. As water infiltrates into the soil, it stops at the limestone shelf. At this point it seeps to the exposed outcrop creating a slightly higher concentration of water than areas up or downhill. See Figure 7.21.

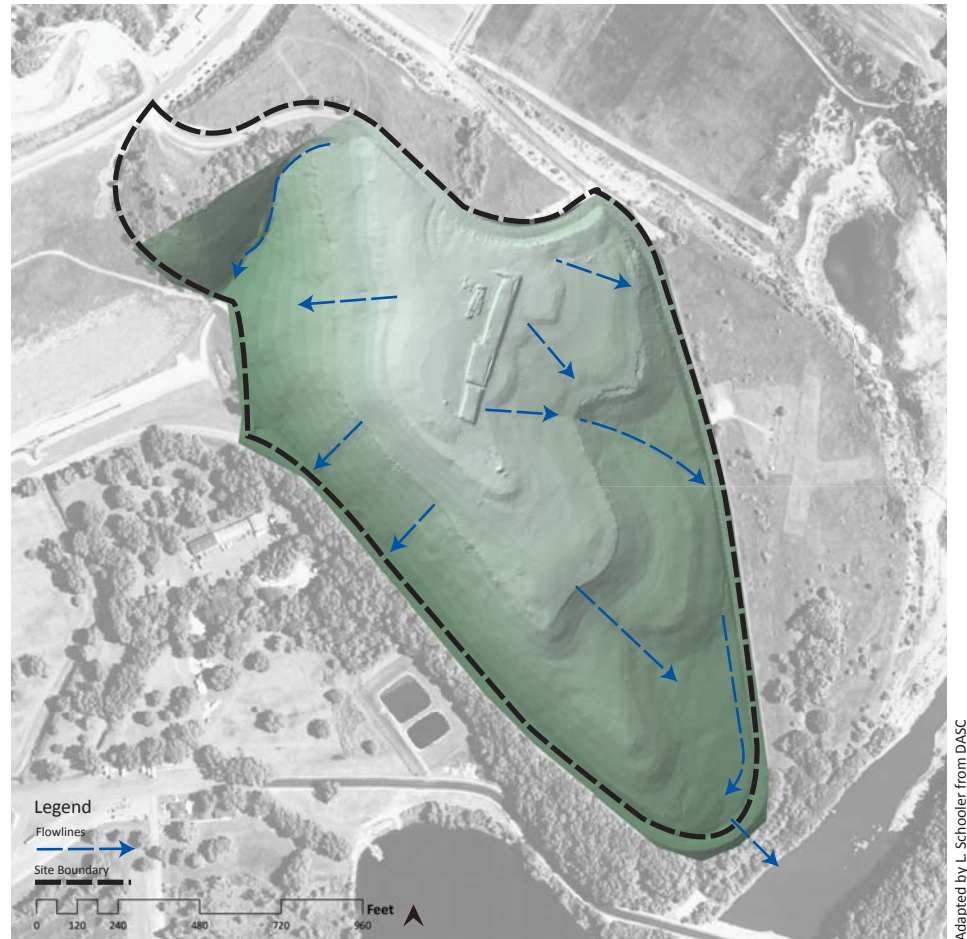


Figure 7.21 Stormwater Drainage Diagram

Adapted by L. Schooler from DASC

## Solar Aspect

Solar aspect is a way of representing which direction slopes are facing. The slopes of the project site are facing mostly to the East and West. There are two large areas on the East side of the site that face the south, as well as an area on the southern portion of the site. There are a few areas that face the North along the Northern part of the site. This information will be important to the visitor center design because of the importance of the building orientation in relation to the solar aspect. See Figure 7.22.

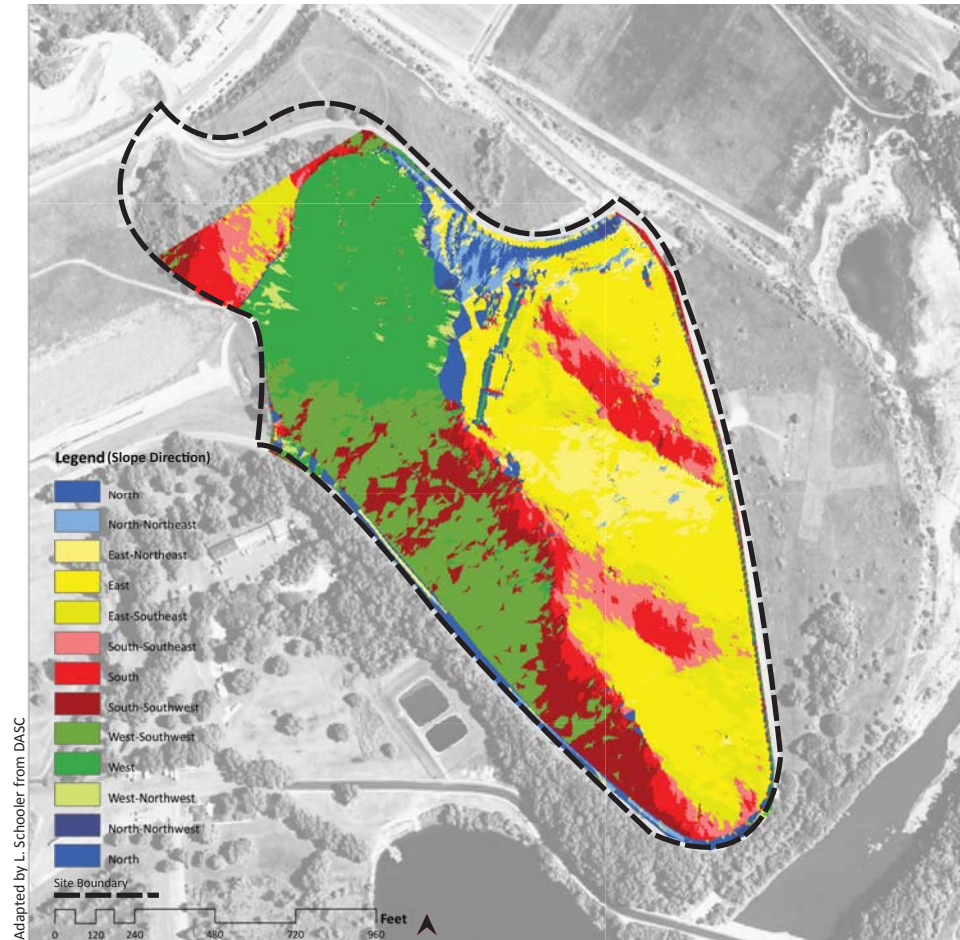


Figure 7.22 Solar Aspect Diagram

## Views

There are several available views from the site: Tuttle Creek Reservoir, Tuttle Creek Dam, Tuttle Creek Spillway, the Riverpond Park area, and the surrounding Flint Hills. The reservoir is mostly visible from the upper portions of the site. The Dam and the Riverpond are visible from most of the Southwestern half of the site. The spillway is visible only from the Northeast side of the upper portion of the site and is littered with machinery. Distant hills are visible to some degree at most points on the site.

The viewshed diagrams were generated from GIS each from five points at a different elevation. The concept of having these diagrams is to show how the views decrease as elevation decreases, therefore revealing the best possible locations for the visitor center building and other buildings/shelters. See Figures 7.23, 7.24

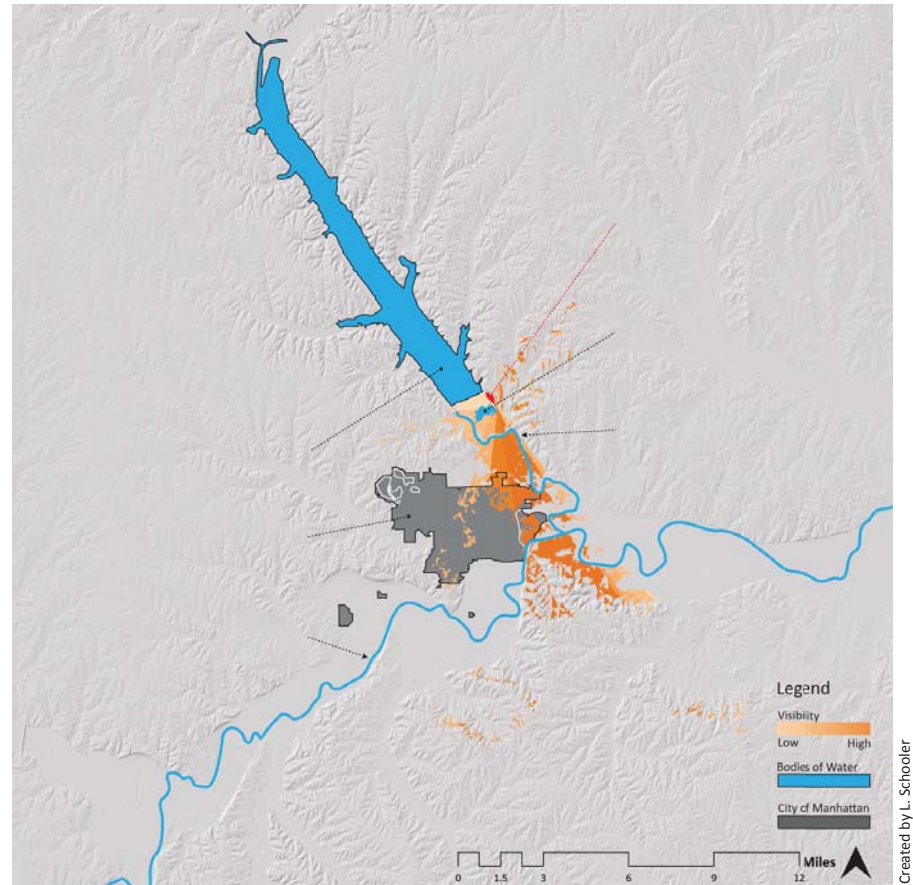


Figure 7.23 Viewshed Diagram from Elevation 1170 Feet

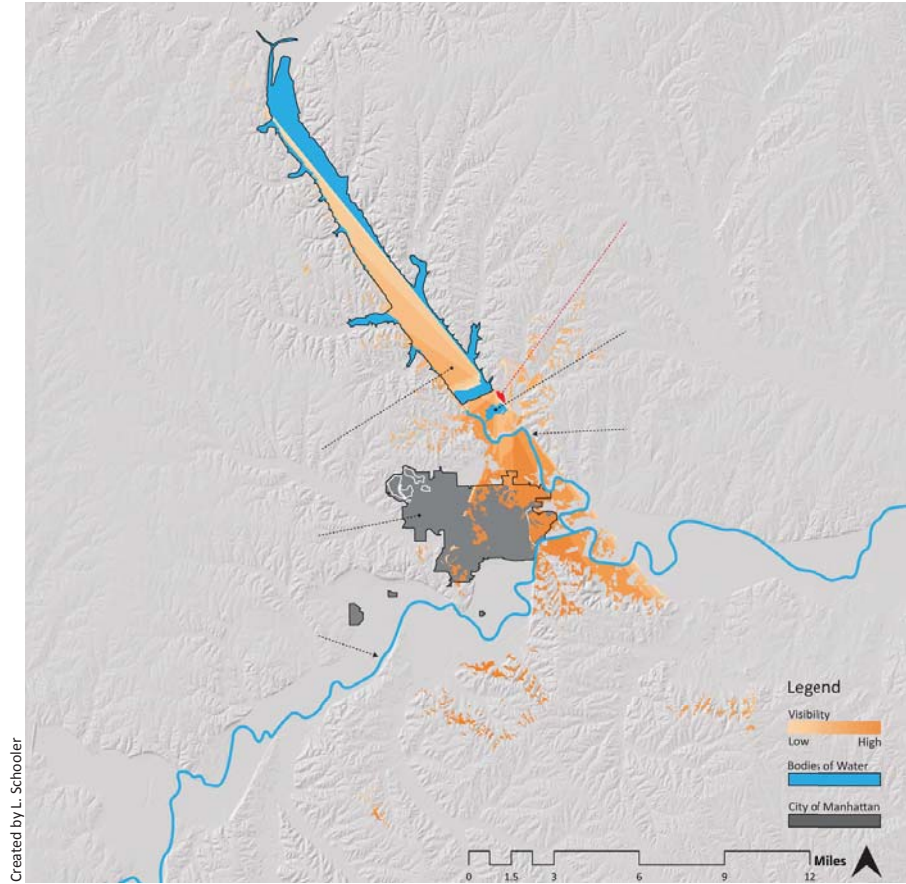


Figure 7.24 Viewshed Diagram from Elevation 1200 Feet





# Glossary

## Beauty:

That quality or combination of qualities which affords keen pleasure to other senses (e.g. that of hearing), or which charms the intellectual or moral faculties, through inherent grace, or fitness to a desired end.(Anonymous)

## Ecology:

The science of the interrelationships of organisms in and to their complete environment.(Barnes )

## Ecotourism :

Responsible travel to natural areas that conserves the environment and improves the well-being of local people.(Anonymous)

## Environmental Art:

It is art that helps improve our relationship with the natural world. Much environmental art is ephemeral (made to disappear or transform), designed for a particular place (and can't be moved) or involves collaborations between artists and others, such as scientists, educators or community groups (distributed ownership).(Anonymous)

## Interpretation:

Translates or brings meaning to people about natural and cultural environments.(Knudson, Cable, and Beck 2003)

Interpretation is a communication process that forges emotional and intellectual connections between the interests of the audience and the inherent meanings in the resource.(Brochu 2000)

The job of interpretation is to open the minds of people so they can receive – on the world's best receiver, the human brain – the interesting signals that the world is constantly sending. And the messages sent, when added up, tell what the world is all about.(Edwards 1979)

## Landscape:

“For more than twenty five years I have been trying to understand and explain that aspect of the environment we call the landscape, and yet I must admit that the concept continues to elude me. Perhaps one reason for this is that I persist in seeing it not as a scene or ecological entity, but as a poetical or cultural entity, changing in the course of history.” (Jackson 1984)

Native Plants :

Species that are best suited for specific environments and geographic regions; they are better equipped to tolerate the regional climate and local conditions.(O'Brien 1997)

Sustainable:

To keep up: prolong; to bear up under: endure.(Anonymous)

Sustainable development of the environment means to ensure that it meets the requirements of present generations without endangering the opportunities for coming generations to do the same.(Anonymous1989)

Sustainable Landscape Design:

A cultural act, a product of culture made with the materials of nature and embedded within and inflected by a particular social formation; it often employs principles of ecology, but it does more than that. It enables social routines and spatial practices, from daily promenades to commutes to work. It translates cultural values into memorable landscape forms and spaces that often challenge, expand, and alter our conceptions of beauty.(Meyer)

Synthesis :

the combining of the constituent elements of separate material or abstract entities into a single or unified entity (opposed to analysis ) (Dictionary).

Type:

The formal configuration of a particular kind of building, often independent of use.(Dutton 2000)

Vernacular:

Using a language or dialect native to a region or country rather than a literacy, cultured, or foreign language.(Anonymous)

Xeriscape :

Quality, water-efficient landscaping.(Ellefson 1992)

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