PROJECT OVERVIEW

Thesis Question

How can the combination of therapeutic horticulture and equestrian sensory trails promote positive mental health to children and young adults with anxiety, depression and SPD?

Project Justification

A project such as this one is integral in my academic career because of the current social situation of the world and possible the future. Covid-19 is preventing children and young adult from having enriching conversations and physical intractions needed for cognitive deployment. My thesis will provide socially distanced activities that simulate users both cognitively and physically while adding the mental calmness it takes to ride horse. As designers the way we design might be change forever due to this global pandemic and it is important that we start contemplation all the possible design solutions as early as we can starting in the academic realm and this will also lead into the professional world. Knowledge and research should be the base of all design and the experience that I will gain for this project will improve my knowledge of medicinal herbs, horticulture therapy, equine therapy, therapeutic gardens and nature as a form of therapy. In my professional career I would like to work in the realm of healthcare landscape architecture with an emphasis on landscape therapy so polishing these skills now will add to my credentials when looking for companies.

Guiding Priciples

Sight

Sound

Smell

Taste

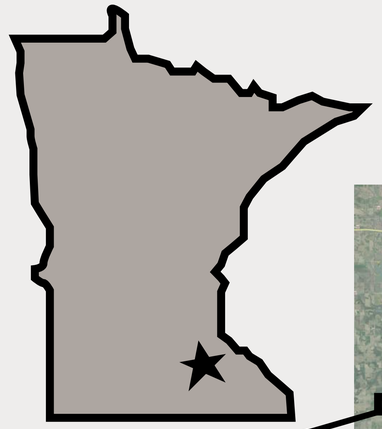
Touch

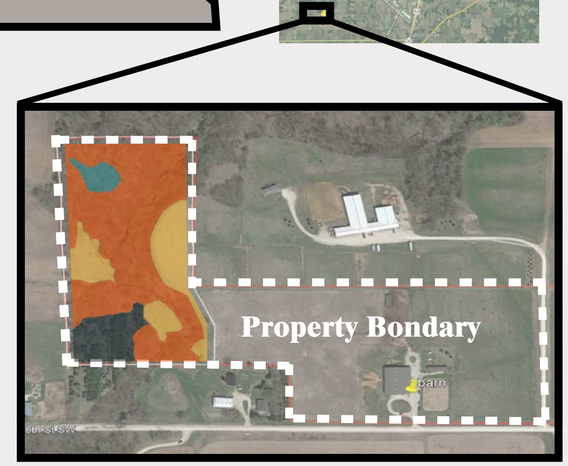
Abstract

This thesis will focus on healthcare and therapeutic design with the major focus being hippo-therapy trails for young individuals with anxiety, depression and Sensory Processing Disorder. Hippo-therapy or equine therapy has been used in Animal Assisted Therapy (AAT) for over forty years and continues to grow and evolve. Anxiety and depression are also growing more than ever in young people due to the societal pressures on their generation. The purpose of this thesis is to create a community program that combines horseback riding and sensory trails. This trail will be an additional element that is applied to an existing equestrian faculty. The trail will consist of multiple spurs, ranging in terrain and material, that will promote mental health and function. These trails will contain natural obstacles that challenge the riders at different levels, as to establish a program that allows for personal growth. Trails will be marked with signage displaying the difficulty level and types of natural obstacles they will encounter. The site location will be discovered through ArcGIS Pro suitability analysis that displays existing slope, soil, and canopy features of existing riding facilities. Standards from associations such as The Anxiety Treatment Center, American Hippo-therapy Association, and Professional Association of Therapeutic Horsemanship International, will guide this thesis project in trail difficulty, trail location and trail width. While case studies such as Pegasus Farm Sensory Trail, Saddle Safari Discovery trail, and Beat Riding Center Sensory Trail will influence the trail activities and material.

SITE INVENTORY & ANALYSIS

Site Location





Address: 6503 80thh Street SW ,
Stweartville MN, 55976

Acres: Total- 27.37 Focus area- 11.7

Typology: Private euqesrtian trails

Planting zone: 4b

This Site is located 7.5 mile away form Mayo Clinc, one of the leaading hospital for mental health. This site could then potentially be used as a form of therapy for patients visting or living in the surrounding areas.

Existing Plant Palette: Sensory Potenial

Eastern red cedar (Juniperus virginiana)

Black raspberry (Rubus occidentalis)

Quaking aspen (Populus tremuloides)

Honey locust (Gleditsia triacanthos)

Red pine (Pinus resinosa)

Black spruce (Picea mariana)

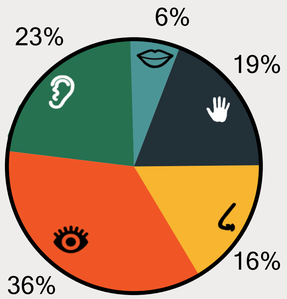
Bur oak (Quercus macrocarpa)

Red maple (Acer rubrum)

Balsam fir (Abies balsamea)

Native praire grasses

Existing Sensory Graph



Forest Clearing Existing Elements

1

Large Clearing

2

Wild berry & plum trail

Coniferous Forest Existing Elements

1

Widest trail

2

Pine tree tunnel

3

Spruce trail

Native Grasslands Existing Elements

1

Sloped grassland

2

Draniage culvert

3

Grassland trails

4

Large prarie view

5

Flat grassland

Hardwood Forest Existing Elements

1

Maximum incline

2

Neighbor's house

3

Raspberry trail

4

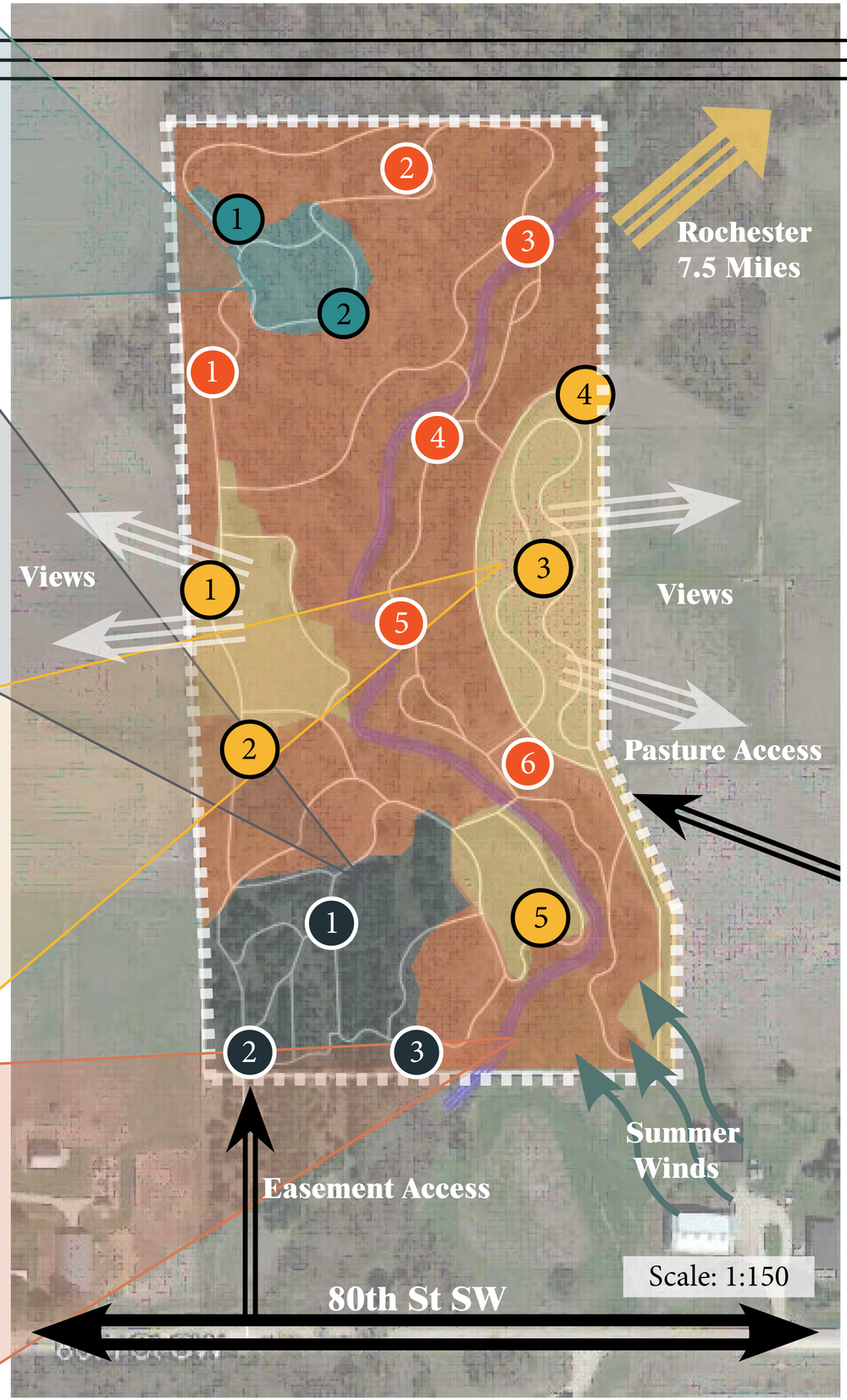
Water crossing

5

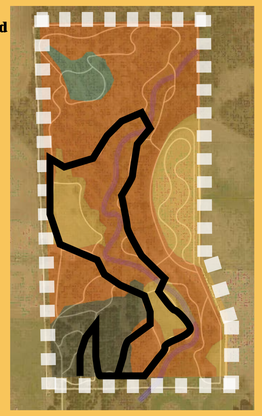
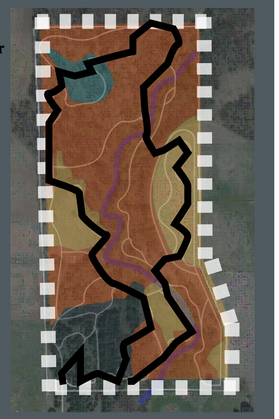
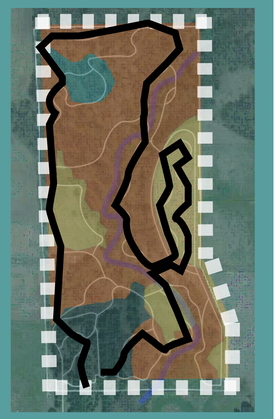
Riverside trail

6

Bridge across creek



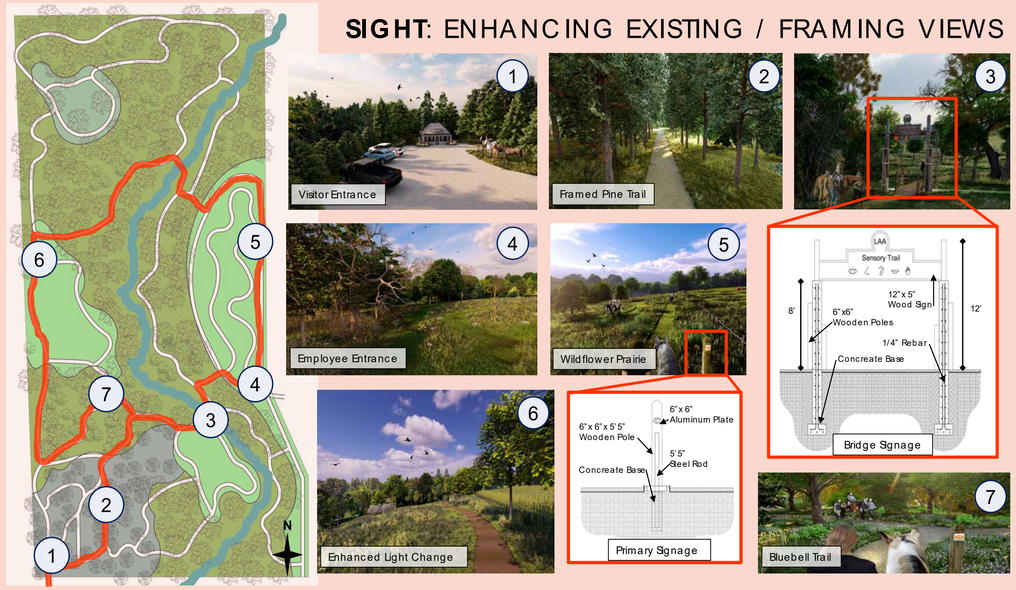
SENSORY ANALYSIS

	Sight	Sound	Smell	Touch	Taste
Inspiration					
Anxiety	**Positive:** Blood pressure, heart rate muscle tension, and the production of stress hormones all deceased when nature is experienced by young people with anxiety. Nature and scenes of nature are associated with a meaningfulness, and vitality. **Negitive:** Lack of connection with nature can lead to stressfull and negitive experices in urban settings.	**Positive:** Experiencing pleasing sounds and repetitive tones is greatly associated with lowering stress and anxiety, helping drive down blood pressure and enter into a state of relaxation. Sound and/or music therapy are being utilized to practice deep meditation as well. **Negative:** Noise is 'unwanted sound' that can be a stressor to individuals with anxiety. The main source of this noise annoyance comes from aircraft noise and prompts a minimun distance requirment of 2.5 miles from airports.	**Positive:** Aroma molecules affect human behavior and physiology, as well as memory activation and mood reducing stress and relaxing young individials with anxeity. **Negitive:** Preferences for odors seem to be associated with the value we place on the objects associated with that smell, and can trigger any of the positive feelings we have about nature.	**Positive:** The benfits of touch related specifically to the natural environment reduce stress when measured by blood pressure and heart rate of individuals. **Negitive:** Most of the current research has to due with animal touch and not non-aminal nature, so do to this there are limitations to the current literature.	**Positive:** Emotional effects of eating natural food help reduce stress and encourage cognative function. Unknowingly we consume micro-partical that also lead to immune system activity. **Negitive:** These micro-particals emitted by plants typically are directly ingested by visitors but they are not smelled or tasted because of the size.
Depression	**Positive:** Childern and young adults with depression are positivly effects by sights of nature, creating a strong emotional response that contrubutes to phyiscal and mental health. **Negative:** Urban location tend to weight down individuals with depression, provide little to no emotional restoration/ recooperation.	**Positive:** Natural sounds influence the brain connectivity to reflect an outward-directed focus of attention and is associated with relaxation of the body. **Negative:** Artificial sounds influence the brain connectivity to reflect an inward-directed focus of attention, similar to states observed in anxiety, post-traumatic stress disorder and depression	**Positive:** Essential oils typically obtained from plant material have been show to decrease drepression and plants like lemongrass were shown to increase cognitive function. **Negitive:** Certain aromatic plants have conntridicion reasreach preventing true knowleges of every benficial plant or herb.	**Positive:** Touch stimulation is very important for people with depression, especially the connection with nature encourages motivation and concentration in children. **Negitive:** Without this stimilation it they can become psychologically deprived. Tend to mostly focus on human and amial interactions.	**Positive:** The growing and consuming natural foods have been linked with a range of health and well-being benefits for young people with depression. **Negitive:** Unfortunatly taste is highly neglected in the context of nature experiences but is one of the most crucuial senses.
SPD	**Positive:** New experiences with sights encourge and promote a stable relationship between the individual and the enviroment they exist in. **Negitive:** Sudden changes in light and scenery can over stimulate the individual, possible resulting in over whelming and upsetting the child.	**Positive:** Sounds influence young people with SPD in extreme ways, but gentle nature sounds help decrease the overeacitve and overstimulation these individuals have. **Negitive:** Loud artificial noises tend to over stimulated children with SPD and cause meltdowns and tempertanturms due to there in ablity to process the sound well.	**Positive:** Activities for exploring the olfactory system are recomemed with children with SPD. This experience allow children to receive and process smells. This system also is close to the nervous sytem and thus evokes memories **Negitive:** Children with this disoder tend to be hyper-sensitive to smells and can be distracted by smells that most people dont notice.	**Positive:** Experiencing a large variety of natural materials through touch will provide significant benefits to the childs growth and sensitivity to touch. **Negitive:** Children with SPD can either be hyper or under sensitive to touch creating different challenges for bothe sides of the spectrum in a natural setting.	**Positive:** Learning about and tasting fresh fruits, herbs, and vegtablies allow the children to interact with the food in other senses before tasting, encorageing more stimulation. **Negitive:** They have a defensivc response to oral input, causing them to be resistant to oral sensory experiences like trying new foods
Case Study Design Considerations	**1. Long continuous pathways to encourage users to engage with elements** **2. Combination of soft and hardscape and sensory activities ajacent to path** **3. Visual accessability for watfinding that encourage movement** **4. Avoid sudden changes in lighting** **5. Bright mixed colored blossom utiled for stress relief/ encourage butterflies** **6. Natural path material such as wood or natural grass cover are prefered** **7. Landmarks and signage for navigation, memorable and recognizable features** 	**1. Encourage local bird populations and over local wildlife and consider overall noise compilation** **2. Trail should aid in locating areas with suficiate water sounds and guide the user through that obstical** **3. Ground cover under hooves compared to people should be sound absourbing as to not over stimulate users** **4. Screens, strategic location of elements, vegitation for noise reduction, separate sound trail from group activites to avoid over stimulation** **5. 2.5 mile minimum distance from airport, and avoid direct path with runway** **6. Acustic properties of site materials, soft soil absorbs sound, topo change** 	**1. Provide and cultvate smell calender as formal element in sensory trail** **2. Use fragrant plants and shrubs to stimulate senses** **3. Consider wind direction for smells** **4. Consider intensity of fragrance, not to overwhlem users** **5. Consider how rain can create/encourge a particular scent** **6. Consider smells as wayfinding tools** **7. Use natural scents and avoid artificial, lemongrass, mint, and verbena are prefered** 	**1. Texture should be used carfuly not to over stimulate or provide discomfort to user** **2. Soft pine tree will replace the use of pool noodle obsticale commonly found in mounted sensory trails** **3. Avoid direct contact with spruce trees** **4. Provide plant touch activity for users to experience plants such as lambs ear and moss** **5. Avoid and consider potential threat of wild parsnip burns and other hazardous plants** 	**1, Find edible berries, vegtables, herbs, and flowers and implent along path** **2. Rasied planting beds for access to low growing food plants while riding** **3. Consider fruits trees, vines, and raised beds for mounted riders/users** **4. Consider taste calender along to path or located in gathering area where dismount and remount would be available** 

SIGHT PLAN

Sight: Enhancing existing / Framing views

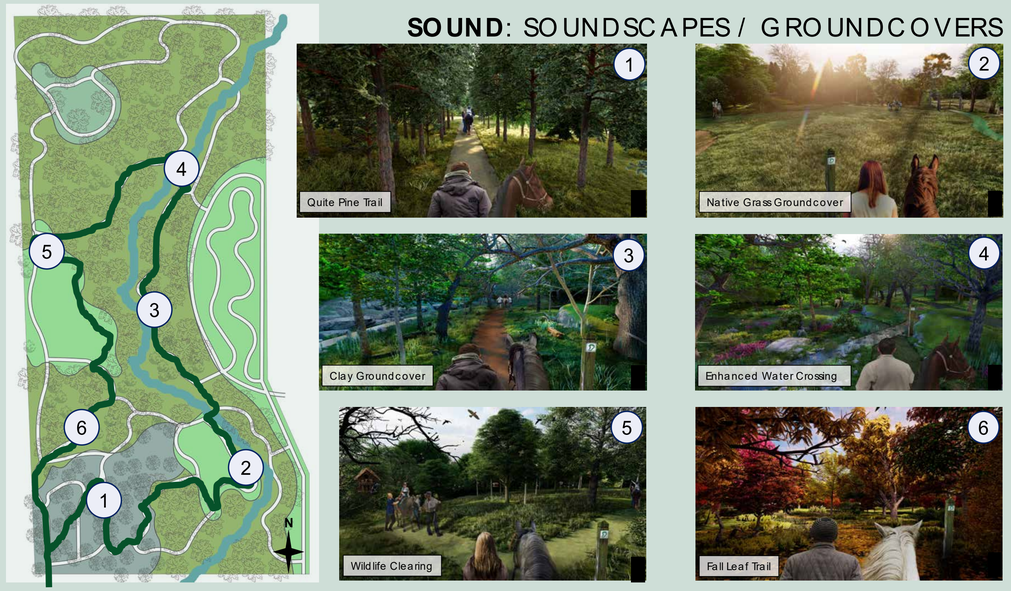
The sight trail plan will emphaise esiting elemtnts as too not overwhelm the children with sensory processing disorder. this will be done by framing views on site and enhancing natural features.

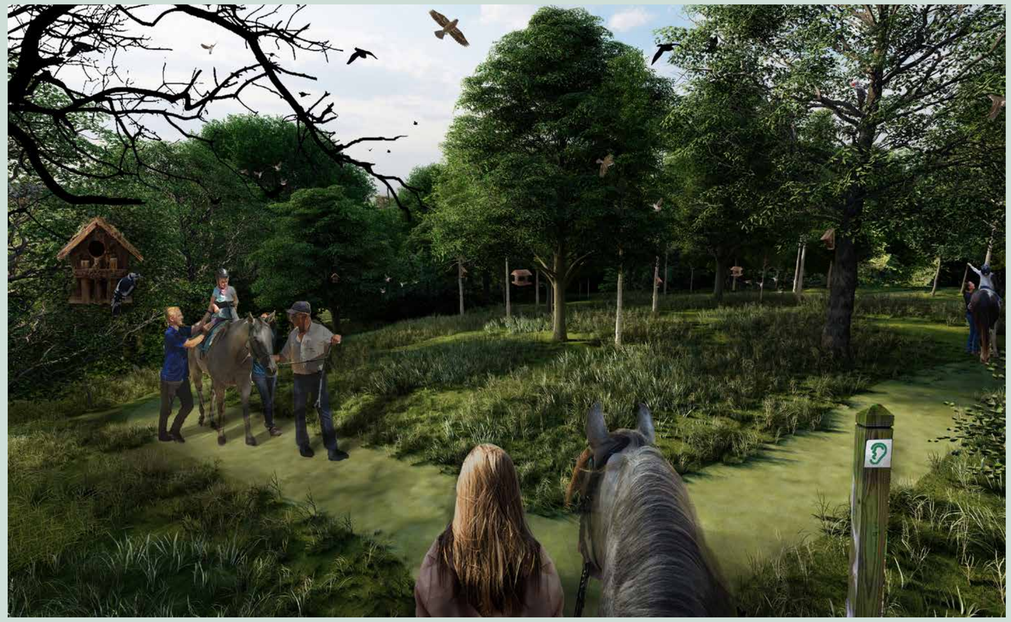


SOUND PLAN

Sound: Soundscapes / Groundcovers

The sound trail plan will create soundscapes by encouraging wildlife and exaggerating natural features. A variey of different ground covers will be used to help with placemaking, an important skill for the children.





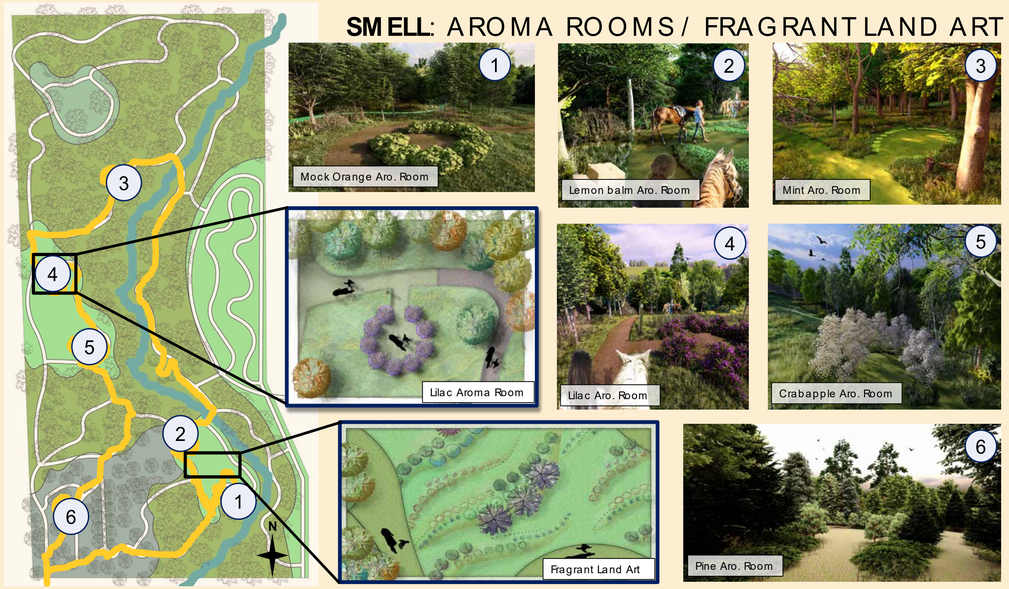
Hippotherapy Sensory Trails

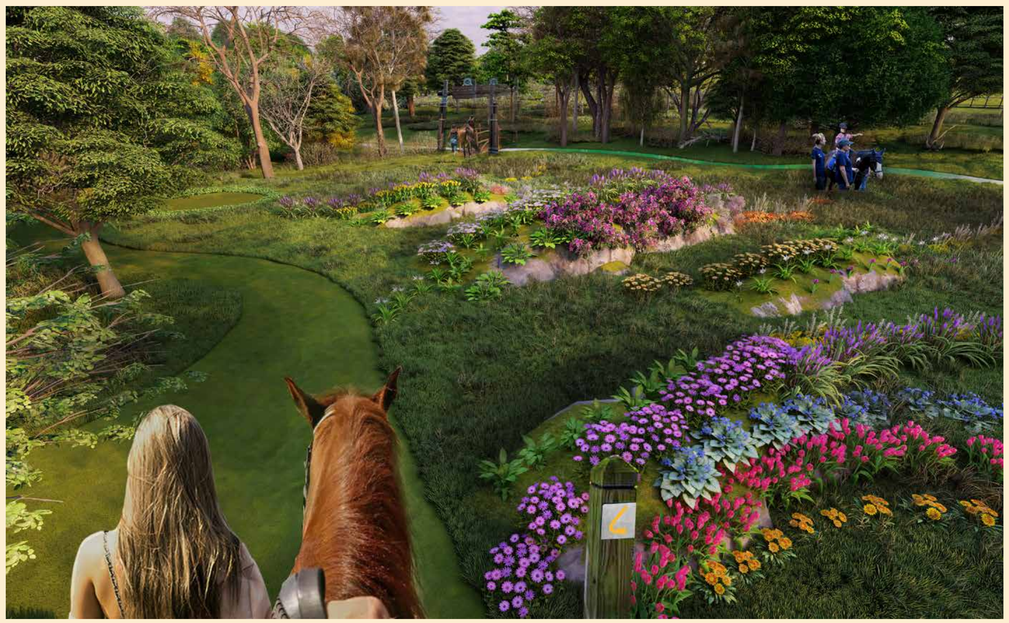
By: Madison Long

Smell: Aroma Rooms / Fragrant Land Art

The smell trail plan will focus on aroma room to allow the kids to interact directly with one scent at a time as to not over stimulate the kids with SPD. An instillation of fragrant land art will be experienced via a natural dismount station near the element.

Plan



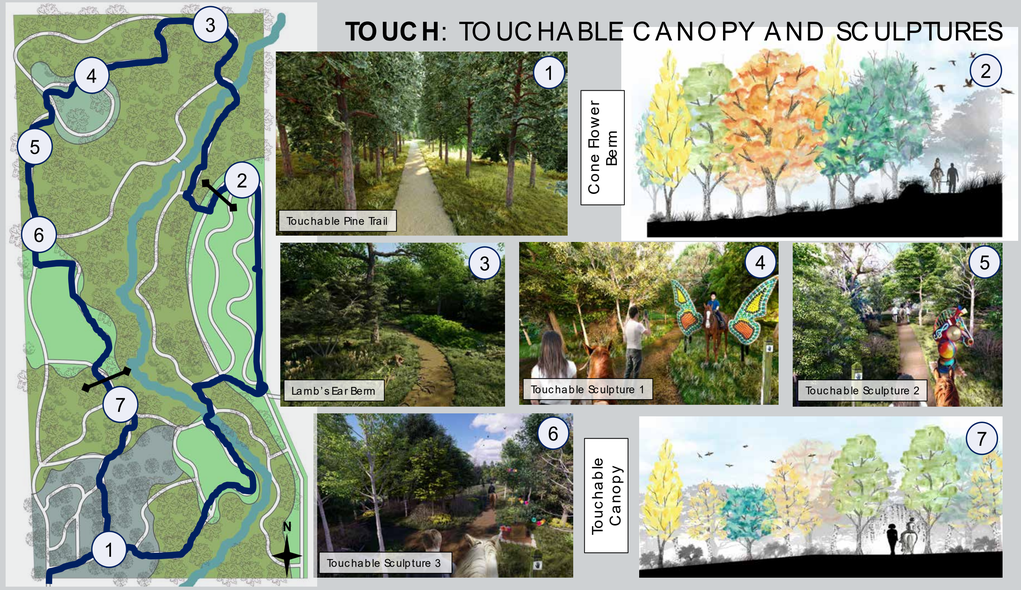


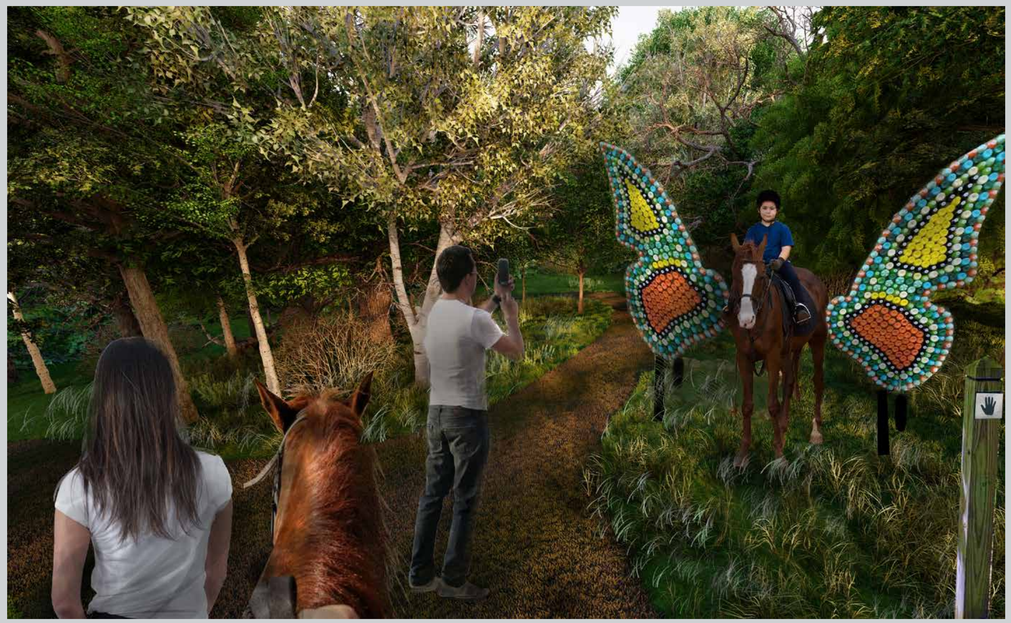
Smell Plan

Touch: Touchable Canopy and Sculptures

The touch trail plan will allow kids to experience the trail totally mounted by providing a touchable canopy consisting of vines, trees, and bermed planting beds accessible to the riders. Sculptural elements will encourage interactions and display texture as art.

Plan





Touch Plan

PLAN

TASTE PLAN

RESULTS

SENSORY RESULTS

Taste: Edible Canopy / Taste Calendar

The taste trail plan will incorporate an edible canopy featuring plants such as pear trees, plum trees, and apple trees. A taste calendar will riding ang use of trail through all seasons even utilizing the space in winter.

Sensory Graph / Results

The final combination and calculation of the new plant materil, and the new program elements has resulted in a well rounded and consistant design that does not have a main focus on one sensory elemnet. The sensory graph depicted below shows the imporve sensory percentages and how they combine to show the final sensory percentages.