

NC STATE  
UNIVERSITY

# SEREP

SOUTHEAST EQUINE RESEARCH & EDUCATION PARTNERSHIP

## PROGRESS REPORT

JULY 2017





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## SEREP BACKGROUND

The Appalachian Foothills of the North and South Carolina border claim a centuries-old equine history whose cultural contributions are a continual, growing, and integral part of regional identity. Recent private-sector investments have established an international equestrian presence and sparked local community leaders' vision of an equine-based economy that would fuel and direct regional growth. Local leaders believe that collaboration will be essential in:

- Developing research, education, and training programs to support this burgeoning equine economy;
- Ensuring a strong connection to the local community; and
- Providing the innovation necessary for sustained success.

The Southeast Equine Research and Education Partnership (SEREP) extends from a contract between North Carolina State University (NC State) and Isothermal Community College via a grant the latter received from the Appalachian Regional Commission. The project is designed to explore the feasibility of creating a multidisciplinary research and education center where private industries and local and regional academic institutions can work in partnership on enhancing the regional equine-based economy.

Over an 18 month period beginning in March 2017, an interdisciplinary team of researchers from NC State is meeting with stakeholders across the area, researching comparable equine research and education facilities across the country, identifying the types of research, education, and training programs that a center could support, and generating physical design scenarios that would best fit the local area. The broader goals will be to determine opportunities for equitable and sustainable local development, the potential for broader regional and international linkages, and identify options for partnerships between local and regional institutions.

This July 2017 progress report provides our preliminary analyses in each of these areas. The contents of this report represent knowledge derived through interaction with the local community, supporting NCSU faculty, academic research, and analysis. The physical sites chosen were suggested by community members and are not exhaustive. We look forward to receiving the feedback from all community stakeholders. Comments and questions should be directed to the NC State SEREP team via email at [serep@ncsu.edu](mailto:serep@ncsu.edu) or via the project website: <http://go.ncsu.edu/serep>.

## SEREP TIMELINE

FROM MARCH 1 2017 TO MAY 31 2018

	Apr-Jun 2017	Jul-Sep 2017	Oct-Dec 2017	Jan-Mar 2018	Apr-Jun 2018
<b>Partnership Building</b>					
Visits with stakeholders to clarify expectations, objectives, and action plans					
Collaboration and mutual learning with ICC faculty and students					
<b>Community Engagement and Appraisal</b>					
Secondary data gathering about local assets and local needs					
Participatory appraisal meetings with community and civic organizations					
Writing of technical reports and public information materials					
<b>Feasibility study</b>					
Interviews with local businesses and institutions about demand for services					
Interviews with institutional stakeholders about revenue sources					
Engagement with communities and local businesses to assess needs					
Writing of technical reports and public information materials					
<b>Design Work</b>					
Analysis of the context; mapping assets; gathering stakeholder input					
Planning/design visioning workshop					
Development and evaluation of alternative plan/design strategies					
Development and refinement of final physical development plan					
Writing of technical reports and public information materials					
<b>Scholarship and future funding</b>					
Production of reports, manuscripts and presentations					
Identification and application for additional funding opportunities					



# TIME, PLACE, & IDENTITY





# REGIONAL HISTORY

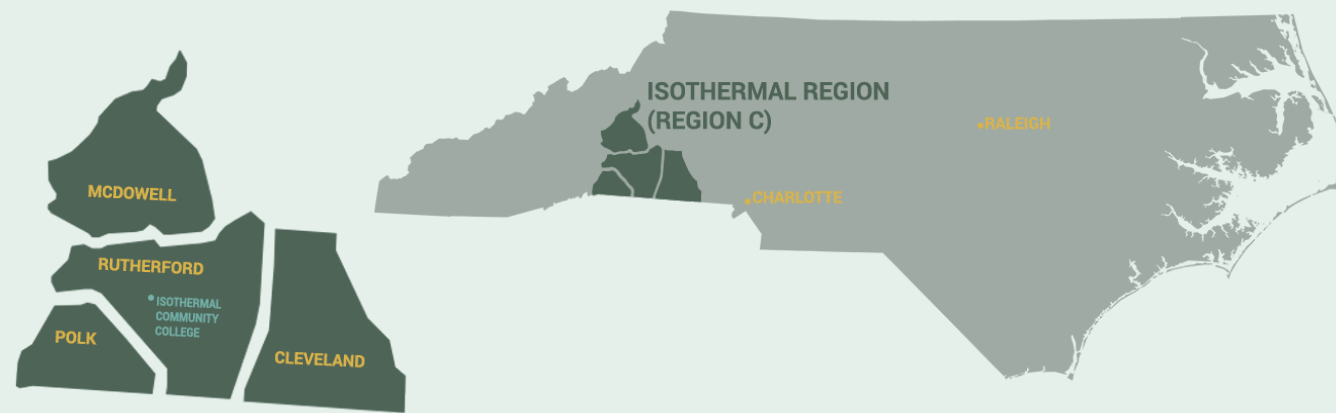


The history of equine activity in the Polk/Rutherford area dates back hundreds of years and created the foundation for an equine-based economy. Horses became important recreational animals with the establishment of the first local racecourse in 1836<sup>1</sup>. Throughout the 20th century the equine community continued to grow beginning with the establishment of [Harmon Field](#) in 1927 as a playground and recreation center, but which eventually became the venue for a variety of horse competitions. In addition, the [Tryon Riding and Hunt Club](#) founded and hosted the Tryon Hounds fox hunt, Tryon Horse Show, and Steeplechase Races<sup>2</sup>.

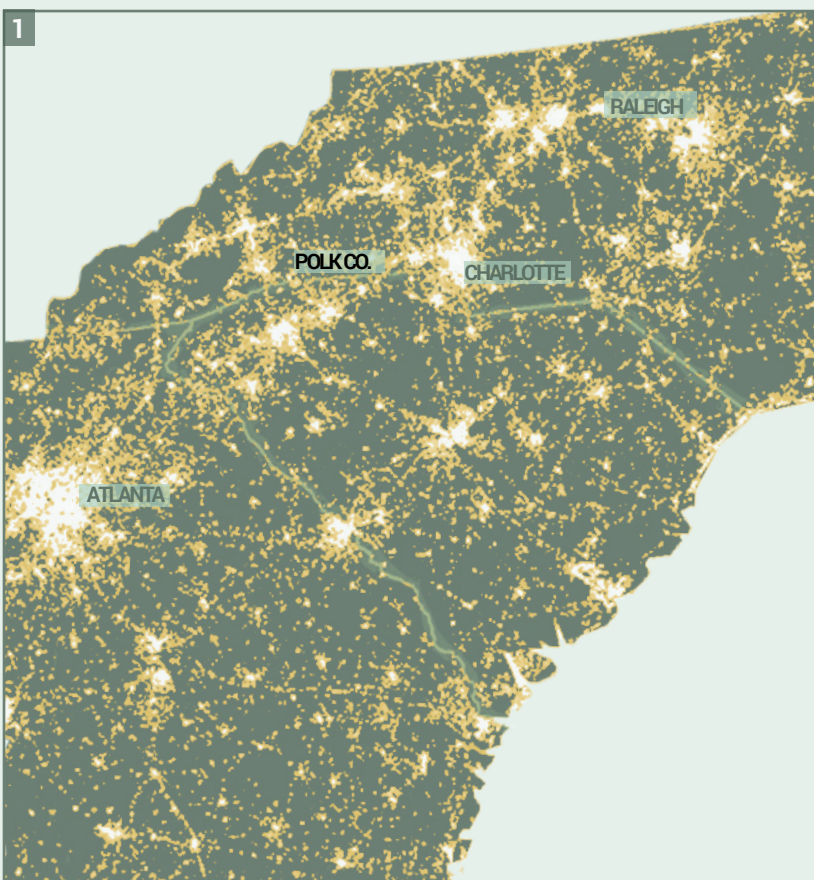
The next big development happened in 1985 when the [Foothills Equestrian Nature Center](#) (F.E.N.C.E.) was established as an education and conservation based non-profit<sup>3,4</sup>. F.E.N.C.E. eventually became the new host of the Steeplechase Races and the primary location in the region for horse shows. F.E.N.C.E. remains at the center of local equine culture. However, in 2014 this region's largest equine investment to date created the [Tryon International Equestrian Center](#) (TIEC). TIEC is a world class facility for horse competitions and the largest in the United States<sup>5</sup>. TIEC's regional and international presence was instrumental in being selected as the host for the [2018 World Equestrian Games](#). Maintaining the rural equestrian culture and heritage that gave rise to the recent and ongoing development will be critical to sustaining it for generations to come.



## THE ISOTHERMAL REGION



Located in the foothills of the Appalachian Mountains, the Isothermal Region is comprised of four predominantly rural counties known for their natural beauty and temperate climates: Cleveland, McDowell, Polk, and Rutherford. Polk and Rutherford Counties are also located at the heart of the regional economic triangle that includes the major urban areas of Charlotte and Asheville (in North Carolina) and Spartanburg/Greenville (in South Carolina).

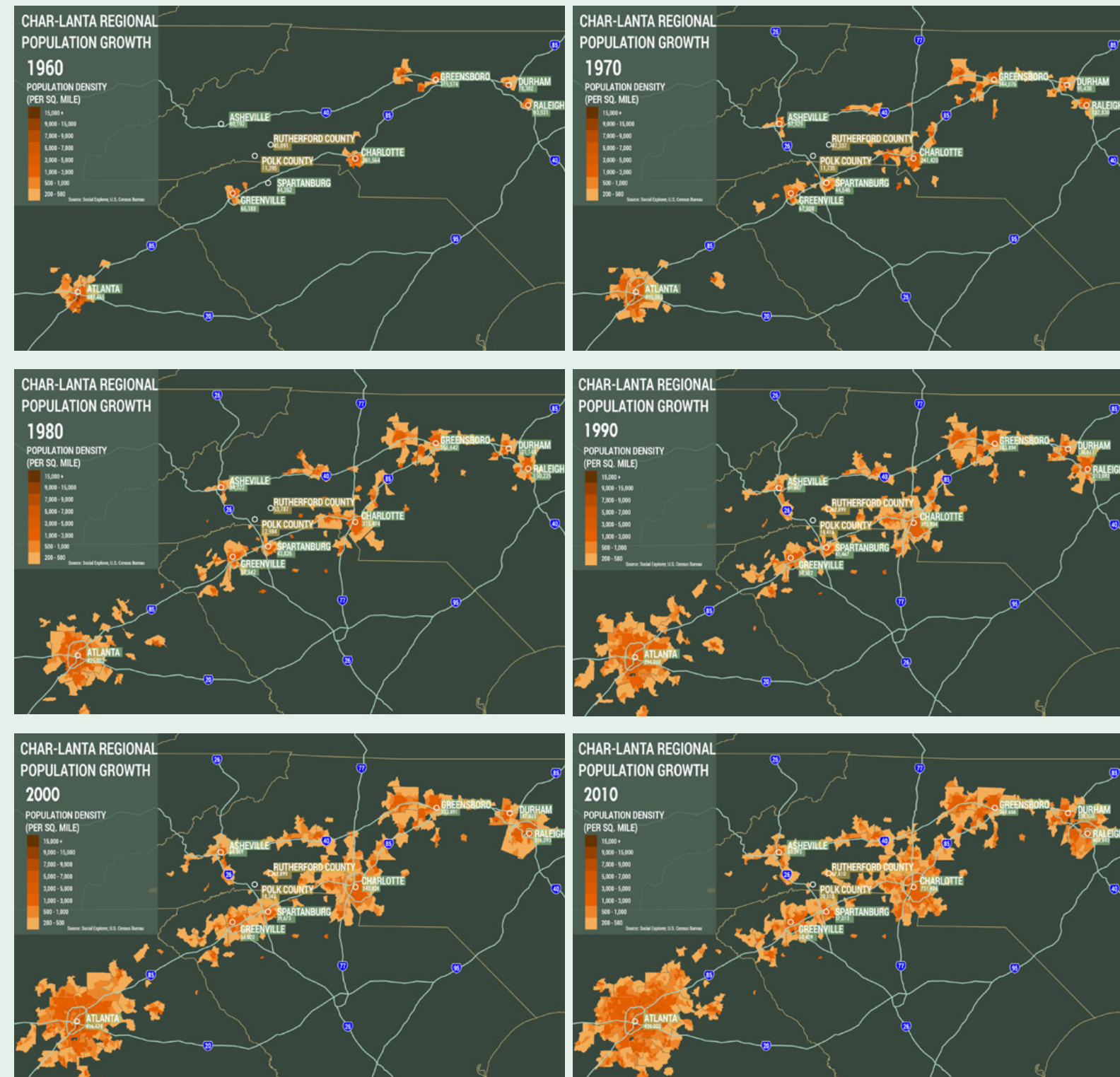


Current Urbanized Development  
2060 Projected Urbanized Development

This area is also at the heart of the “Char-lanta” region, which spans from Raleigh North Carolina to Atlanta Georgia and has been identified as the [third largest mega-region](#) in the country<sup>6</sup>.

According to a 2014 study “[The Southern Megalopolis](#),” urbanized development will increase substantially across the Char-lanta corridor<sup>7</sup>. This is backed up by population data increases over the past 50 years.

## "CHAR-LANTA" GROWTH



The data was produced by Social Explorer and retrieved from the U.S. Census Bureau.



## REGIONAL ECONOMICS

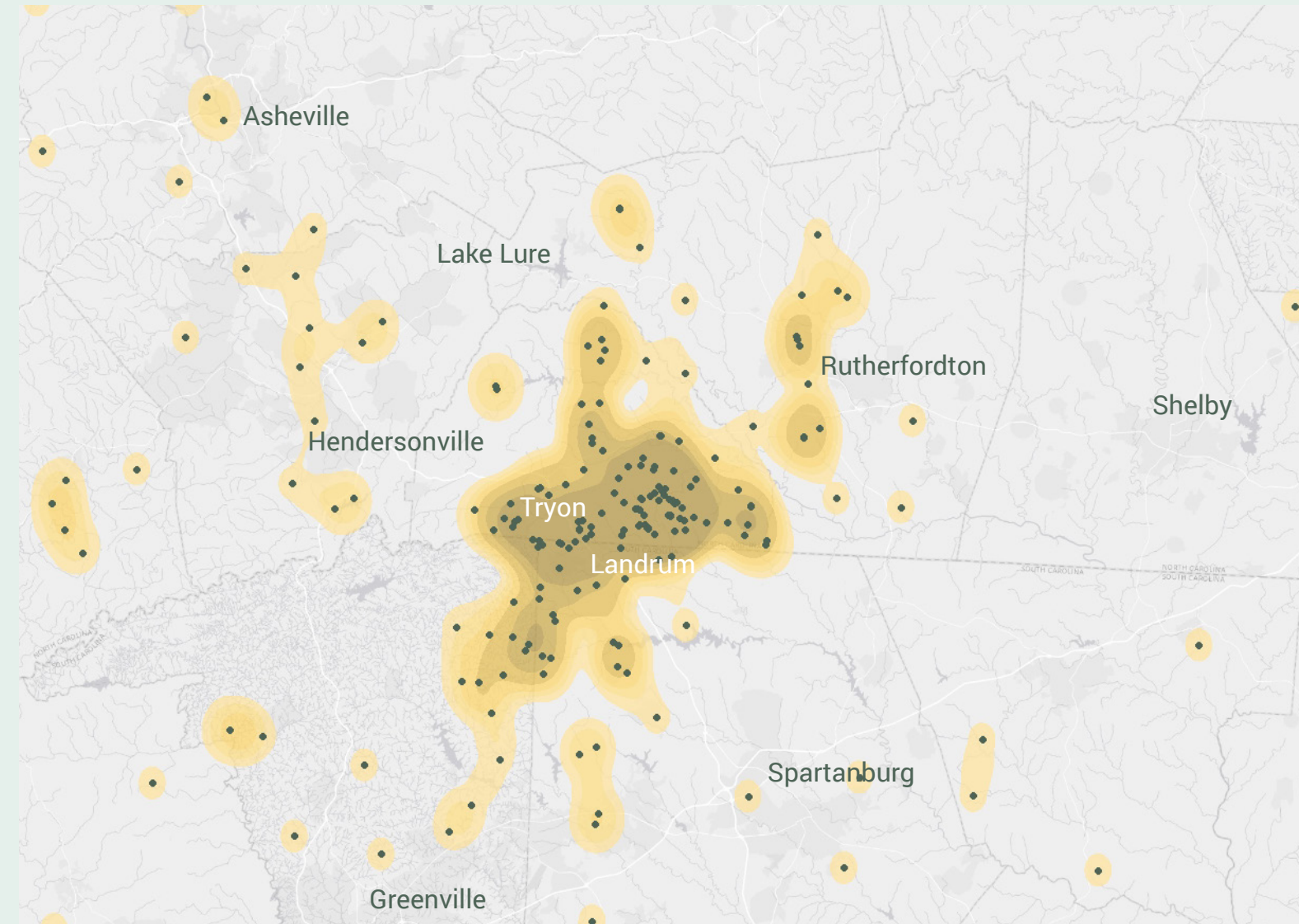


A number of economic analyses over the past few years have pointed to the strengths and assets of the Isothermal Region, as well as the challenges and potential areas for growth<sup>8-11</sup>. In recent years, the area has struggled with poverty and job security. The unemployment in the area is consistently above the state average. Although the job diversity is lower than the state average, the main employment sectors include manufacturing, healthcare, hospitality, education, and public administration. This has led to a greater focus on economic and workforce development opportunities in the following five areas:

1. Work with neighboring regions
2. Keep up with changing manufacturing needs
3. Diversify economic opportunities
4. Diversify education and training opportunities
5. Succeed an aging workforce<sup>8</sup>

To assist in these efforts and to combat poverty, unemployment, and emigration of the community's younger citizens, the SEREP project seeks to capitalize on the region's strategic location by further developing its historically rich equine-based economy.

## EQUESTRIAN ECONOMY



This is a map of equine related businesses, facilities, trainers, etc. retrieved from the Tryon Equestrian Directory, First Edition<sup>12</sup>. Each dot on the map represents addresses and locations of equine related businesses and facilities. This map was generated using a GIS tool known as Kernel Density, which measures and calculates the density of features such as address points and locations. It makes it easier to understand the spatial extent of the industry in this region. Each dot represents individuals and/or businesses and their relative location. Later on in the report, this graphic will be broken down into more detail and will help generate the extents of our geo-spatial analysis.



## LOCAL EQUESTRIAN STAKEHOLDERS



### TRYON RIDING & HUNT CLUB

Founded in 1925 by Carter Brown, this organization became the backbone upon which Tryon's rich equestrian culture was built. The original vision was to foster the growth of the region's equestrian population as the area became a magnet for out of town visitors looking for the mountain experience<sup>13</sup>. This club gave rise to the Tryon Hounds, the Steeplechase race, and the Tryon Horse Show and really put Tryon on the map. Today, the mission of the Tryon Riding & Hunt Club is to encourage, support, and promote all types of horse activities which will enhance the equestrian tradition of the Tryon area. This is achieved through programs of education; demonstrations of equestrian skills; cooperation with allied programs of nature conservation; promotion of youth in equestrian endeavors through scholarships and mentoring, recreational and sporting events, and such other equestrian activities that will benefit the entire community.



### FOOTHILLS EQUESTRIAN NATURE CENTER (F.E.N.C.E)

Originally envisioned as a non-profit nature center focused on conservation, F.E.N.C.E. (Foothills Equestrian Nature Center) evolved to include varied equine activities and competitions. The Center currently stands at 380 acres and serves roughly 65,000 people each year<sup>3</sup>. Until recently F.E.N.C.E. hosted the local Steeplechase Race, and it continues to host horse shows for more than 30 weeks of the year<sup>4</sup>. F.E.N.C.E. also serves the community through youth camps and partnerships with local schools to teach science-based programs that use traditional classroom education and active-learning nature field trips. One of F.E.N.C.E.'s most successful community programs is [Therapeutic Riding of Tryon](#) (TROT). Established in 2004, TROT is an equine-therapy program for youth and adults that provides benefits to both the service-users and the volunteers who run the programs. F.E.N.C.E. staff is also interested in exploring other avenues through which the non-profit can support the community<sup>4</sup>.



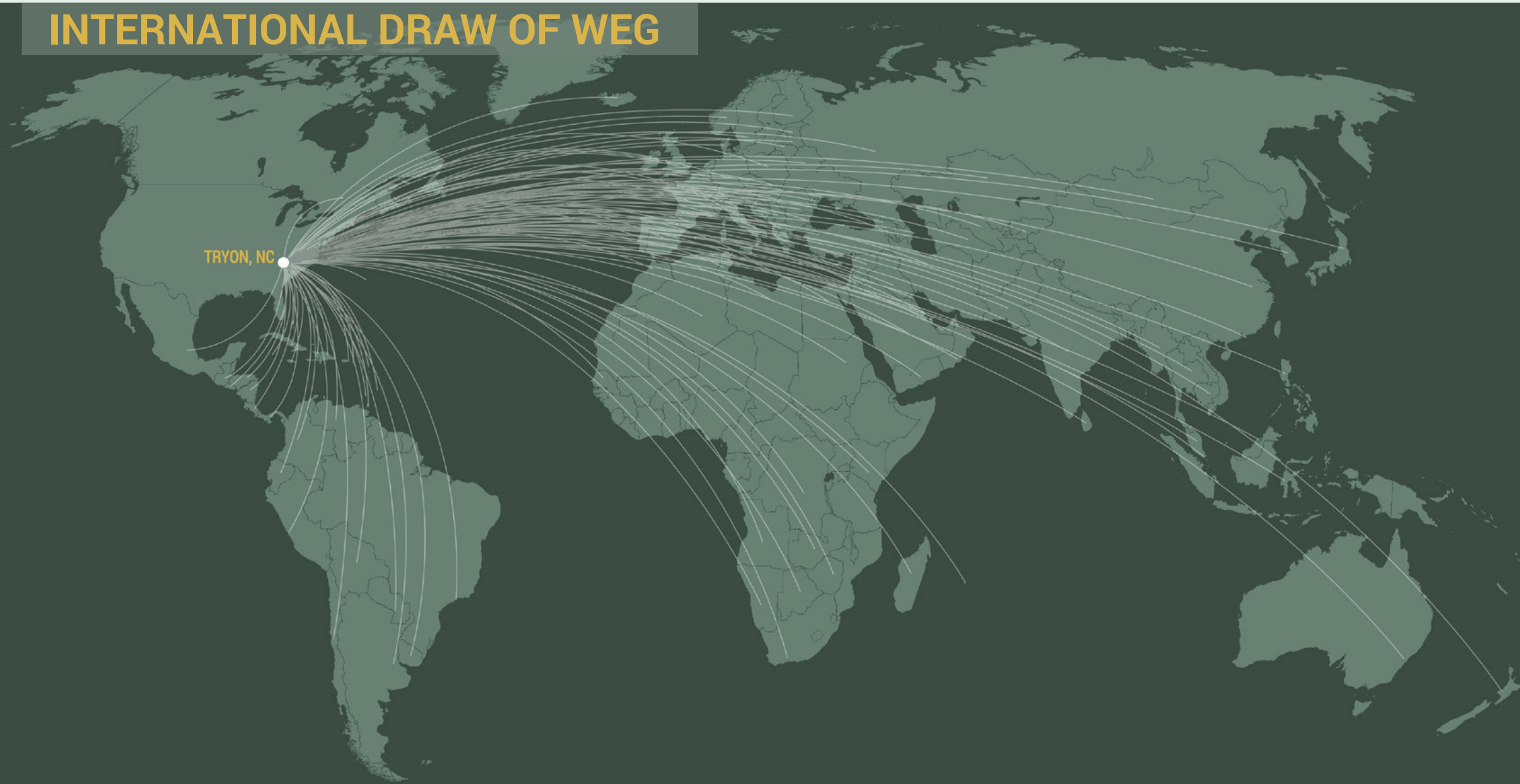
### TRYON INTERNATIONAL EQUESTRIAN CENTER (TIEC)

Established in 2014, Tryon International Equestrian Center (TIEC) is the newest and largest equine facility in the region. Currently open year-round, TIEC has plans to host events every week of the year, offer boarding for training, develop quarantine stables for horses entering the United States, and develop multiple five-star hotels for guests arriving for equine events as well as for meetings, conferences, and weddings<sup>5</sup>. TIEC owners and operators are working to integrate into the community by offering food through locally-owned restaurants, offering free entry for all equine events, and hosting Saturday Night Lights family festival-style events<sup>5</sup>.





## INTERNATIONAL DRAW OF WEG



### 132 COUNTRIES PARTICIPATING IN THE 2018 WORLD EQUESTRIAN GAMES

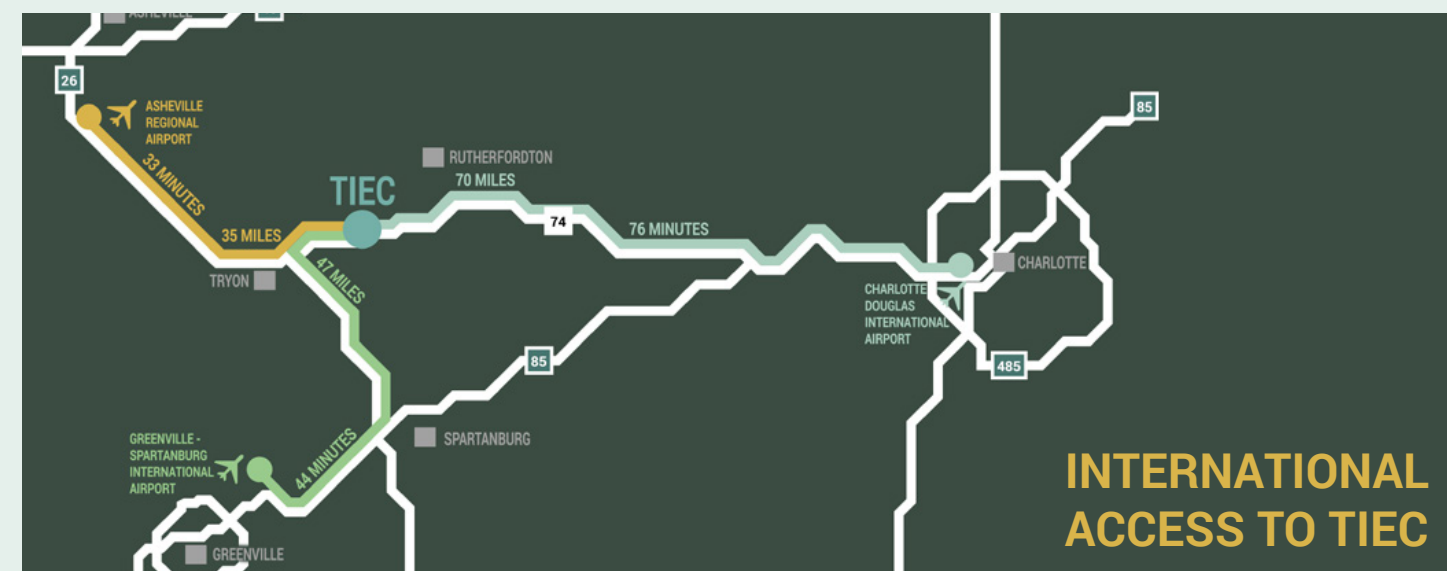
INCLUDING ATHLETES, TRAINERS, OWNERS, NF DELEGATES, & OFFICIALS

SOURCE: OFEI DATABASE, NATIONAL FEDERATION GROUPS

ALBANIA ALGERIA ANDORRA ANGOLA ANTIGUA & BARBUDA ARGENTINA ARMENIA AUSTRALIA AUSTRIA AZERBAIJAN BAHAMAS BARBADOS BELGIUM BERMUDA BOSNIA & HERZEGOVINA BELARUS BOLIVIA BOTSWANA BRAZIL BAHRAIN BRUNEI DARUSSALAN BULGARIA CAMBODIA CANADA CONGO CAYMAN ISLANDS CHILE CHINA COLUMBIA COSTA RICA CROATIA CUBA CYPRUS CZECH REPUBLIC DENMARK DOMINICAN REPUBLIC ECUADOR EGYPT EL SALVADOR SPAIN ESTONIA FINLAND FRANCE GREAT BRITAIN GEORGIA GERMANY GREECE GRENADA GUATEMALA HAITI HONG KONG HONDURAS HUNGARY INDONESIA INDIA IRAN IRELAND IRAQ ICELAND ISRAEL VIRGIN ISLANDS ITALY JAMACIA JORDAN JAPAN KAZAKHSTAN KENYA KRYGYSZSTAN SOUTH KOREA SAUDI ARABIA KUWAIT LATVIA LIBYA LEBANON LIECHTENSTEIN LITHUANIA LUXEMBOURG MADAGASCAR MOROCCO MALAYSIA MOLDOVA MEXICO MONGOLIA MACEDONIA MALTA MONACO MAURITIUS MYANMAR NAMIBIA NICARAGUA NETHERLANDS NORWAY NEW ZEALAND OMAN PAKISTAN PANAMA PARAGUAY PERU PHILIPPINES PALESTINE POLAND PORTUGAL PUERTO RICO QATAR ROMANIA SOUTH AFRICA RUSSIA SENEGAL SINGAPORE SOLVENIA SAN MARINO SERBIA SRI LANKA SUDAN SWITZERLAND SLOVAKIA SWEDEN SWAZILAND SYRIAN ARAB REPUBLIC THAILAND TURKMENISTAN TRINIDAD TUNISIA TURKEY UNITED ARAB EMIRATES UKRAINE URUGUAY UZBEKISTAN VENEZUELA YEMEN ZAMBIA ZIMBABWE



The FEI (Fédération Equestre Internationale) [World Equestrian Games](#) (WEG) are held every four years and will be taking place at TIEC in 2018. In 2010 the games generated 201 million dollars in revenue for the state of Kentucky<sup>14</sup> and promised to create job opportunities in an area of high poverty and unemployment. In 2018, 132 different nations are expected to be represented at the WEG<sup>15</sup> and will put the region on the international map.





# PRELIMINARY CASE STUDIES

REVIEW OF SELECT RESEARCH  
& EDUCATION CENTERS



## IDENTIFYING CASE STUDY TYPES

The Core Interdisciplinary Faculty team examined a select list of equine education and research centers operating in the US. In addition, university-affiliated centers were explored to learn from development, managerial, and design best practices. This list was created in consultation with Equine Faculty members at NC State University. The list of benchmark centers were grouped into three categories:

- 1) Equine centers from land grant universities used by these institutions to pursue their research, extension, and education missions.
- 2) Equine research and development centers owned and operated by industry to conduct R&D and also to serve as public relations showcases for their companies' products.
- 3) Non-equine research and learning centers operated by universities in partnership with community and industry partners to take advantage of unique opportunities afforded by those satellite locations.

More details on cases will be presented in a future SEREP report.

## BENCHMARKS

### 1. EQUINE RESEARCH CENTERS INTEGRAL TO THE MISSION OF LAND GRANT UNIVERSITIES

These centers tend to be located close to a main campus and rely primarily on research funding for operation. For NC State University, some considerations for a center like this would be the willingness of NC State Office for Research, Innovation, and Economic Development to use shared facilities funds to operate a new facility a few hours west of Raleigh, as well as the perceived need of NC State faculty to write such a center into major multi-year grants.

#### SELECTED BENCHMARKS

##### COLORADO STATE UNIVERSITY EQUINE SCIENCE PROGRAM

LOCATION: Fort Collins, Colorado  
SIZE/ FACILITIES: 80 acres, 3 barns, 2 indoor arenas, an outdoor arena, indoor stalls, and outdoor paddocks, and centers dedicated to equine related activities.

The facilities are used for teaching, conferences, and research on equine-assisted activities and therapy.



1

##### OKLAHOMA STATE UNIVERSITY CLINE EQUINE CENTER

LOCATION: Stillwater, Oklahoma  
SIZE/ FACILITIES: 60 acres, teaching barn, indoor arena, classrooms, treatment area.

The facilities are used for teaching, research, and extension.



2



1



## TEXAS A & M UNIVERSITY HILDEBRAND EQUINE COMPLEX

LOCATION: College Station, Texas  
SIZE/ FACILITIES: 65 acres, including a 200' x 300' covered arena, boarding barn, and a laboratory. Off-site facilities include a large animal hospital, Horse Haven Equestrian Center, and the OD Butler Junior Animal Science Complex.

The facility offers education programs, research, horse sports, clinical services, and theriogenology.

2



## CALIFORNIA POLYTECHNIC INSTITUTE EQUINE CENTER AT VIA CARTE

LOCATION: San Luis Obispo, California  
SIZE/ FACILITIES: breeding lab, 1 foaling stall, sand arenas, 2018 Center will expand with a new covered arena, stallion barn, and foaling barn

The equine science program includes science, research, and management and training of horses from an industry perspective.

3



## MICHIGAN STATE UNIVERSITY HORSE TEACHING & RESEARCH CENTER

LOCATION: Lansing, Michigan  
SIZE/ FACILITIES: 100 acres, show/training barn, reproduction barn, 2 quarantine barns, breeding shed, indoor arena/ classroom complex, storage shed

The center houses a majority of the university's equine courses as well as adult and youth extension programs, arabian horse breeding programs, and equine research lab.

## NORTH CAROLINA STATE UNIVERSITY EQUINE VETERINARY SERVICE - COLLEGE OF VETERINARY MEDICINE

LOCATION: Raleigh, North Carolina  
The facility offers up to date diagnostic procedures and treatment of medical and surgical disorders. They also offer emergency care and hospitalization.

### EQUINE EDUCATIONAL UNIT

LOCATION: Raleigh, North Carolina  
SIZE/ FACILITIES: 60 acres, breeding shed, reproduction laboratory, foaling stalls, student apartments, and a classroom.

The facility offers instruction through university and extension programs.

1



2



## UNIVERSITY OF FLORIDA HORSE TEACHING UNIT

LOCATION: Gainesville, Florida  
SIZE/ FACILITIES: 65 acres, outdoor arena, reproduction barn/laboratory, mare and foal feeding barn, student housing, and a hay storage barn.

This facility's focus is the equine industry. Educational programs include breeding, training, marketing, farm management, and health care.



## 2. EQUINE RESEARCH & DEVELOPMENT CENTERS OWNED AND OPERATED BY INDUSTRY:

It is important to examine how much interest there might be from select equine companies, considering possible proximity to their headquarters, and ties to Tryon. Private research institutions seem to focus on applied research, and in research that is best kept away from the public view. Additionally, marketing and public relations are primary functions for these facilities owned by feed and pharma companies.



### PURINA HORSE RESEARCH FARM GREY SUMMIT FARM

LOCATION: Grey Summit, Missouri  
SIZE/ FACILITIES: Part of the 1200-acre Purina Animal Nutrition Center.

In this facility, Purina conducts research on equine nutrition - including growth and development, digestive physiology, exercise physiology, palatability and intake behavior, and life stages - and food manufacturing.



### KENTUCKY EQUINE RESEARCH JOE PAGAN

LOCATION: Versailles, Kentucky  
SIZE/ FACILITIES: 150 acre research farm.

This company focuses on applied equine nutrition research and consultation, with a mission to create a healthier and more athletic horse by improving nutritional care throughout the lifespan.



### PHARMACEUTICAL PFIZER: ZOETIS MERCK CENTER

LOCATION: Richland, Michigan  
SIZE/ FACILITIES: 24,000 sq.ft (.55 acres)

This company focuses on expanding vaccines and therapies for horses.

## 3. ENGAGED RESEARCH & LEARNING CENTERS OPERATED BY UNIVERSITIES WITH MULTIPLE USER GROUPS :

These centers are characterized by high involvement of local stakeholders and industry peers, which may help local communities connect better with local natural resource economies (e.g., field ecology training programs).

### SELECTED BENCHMARKS:

#### UNIVERSITY OF THE WITWATERSRAND WITS RURAL FACILITY

LOCATION: Acornhoek, South Africa  
SIZE/ FACILITIES: 865 acres, visitor accommodation, seminar and conference facilities, a restaurant, staff housing, offices, and laboratory space.

This facility was created to foster research, student training, and community engagement in a rural setting.



#### CLEMSON UNIVERSITY INTERNATIONAL CENTER FOR AUTOMOTIVE RESEARCH (CU-ICAR)

LOCATION: Greenville, South Carolina  
SIZE/ FACILITIES: 250 acres & 4 research facilities. In 2005, a master plan was developed and updated in 2016 for further expansion of the automotive research campus and its facilities.

This facility supports education for students pursuing graduate degrees in automotive engineering, research, and economic development on a global scale.





PRELIMINARY CASE STUDIES



DAVID H. MURDOCK  
RESEARCH INSTITUTE

LOCATION: Kannapolis, North Carolina  
SIZE/ FACILITIES: 350 acres, multiple laboratories.

This facility is multidisciplinary and uses an integrated approach to collaborate on research and development solutions at the intersection of human health, agriculture, and nutrition.



SHAVER’S CREEK  
ENVIRONMENTAL CENTER

LOCATION: Petersburg, Pennsylvania  
SIZE/ FACILITIES: 72 acres, an amphitheater, classrooms, welcome center, gift shop, herb and flower garden, picnic area, raptor center, and displays and exhibits.

This facility is a community resource and field laboratory for students who wish to get hands-on experience teaching about the natural world in the areas of environmental education, plant sciences, recreation, park, and tourism management.

The purpose of examining these case studies was to glean lessons and questions from select benchmarks for further exploration through expert, community, and key stakeholder input. Among other nuanced lessons, these benchmarks reveal that:

- Many universities have developed their equine centers close to their main campus, with the exception of situations in which the centers could be located in a region that affords access to opportunities specific to a region (e.g., Wits Rural’s location next to Kruger National Park), or access to an industry partner (e.g., Clemson’s ICAR’s proximity to BMW).
- Centers are funded from a variety of sources, including tuition from academic programs, facility management/service funds, use of research herds built into extramural grants, as well as internally managed programs and events for the public.
- The funding of new centers is usually associated with the political influence and/or philanthropic support of high-profile alumni and community members. Horse ownership and interest in equine sports and events help foster relationships with key supporters.

MOVING FORWARD

So far, our analysis has taken into account a wide variety of relevant case studies to help us understand how selected research and education centers function. Moving forward, it will be important to have a deeper understanding of the intended use of the facility. Further details of potential research and education activities will be identified through continued examination of existing centers and further community engagement. For now, potential research and education activities are listed below.

POTENTIAL RESEARCH & EDUCATION ACTIVITIES

PASTURE MANAGEMENT	EQUINE HEALTH SCIENCES	COMMUNITY ENGAGEMENT
HAY PRODUCTION RESEARCH / BREEDING	EQUINE VET-TECH TRAINING FACILITIES	THERAPEUTIC RIDING RESEARCH
PASTURE EROSION PREVENTION	HAY AND PASTURE SAMPLE TESTING LAB	EVENT HOSTING
ROTATIONAL GRAZING PATTERNS	EQUINE NUTRITION RESEARCH	COMMUNITY EDUCATIONAL PROGRAMMING
WASTE MANAGEMENT RE-SEARCH	EQUINE QUARANTINE RESEARCH AND TRAINING	EQUINE AND PEDESTRIAN TRAIL STEWARDSHIP
FOREST CANOPY AND PASTURE EDGE RELATIONSHIP	EQUINE REHABILITATION RESEARCH AND TRAINING	INTER-INSTITUTIONAL EQUINE TRAINING AND EDUCATION PROGRAMS
SUSTAINABLE BEST MANAGEMENT PRACTICES		



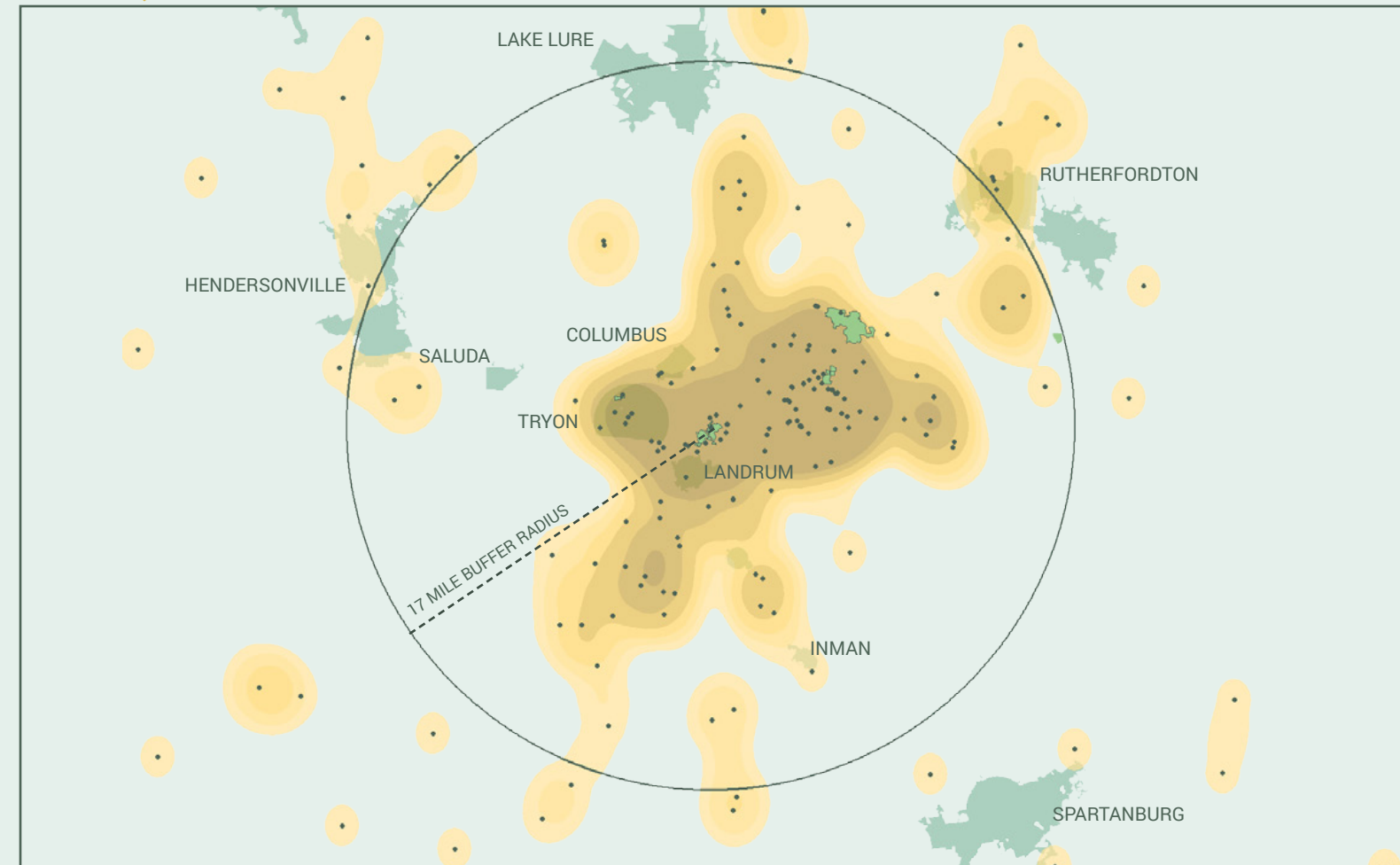
## GEO-SPATIAL ANALYSIS PRELIMINARY SITE SELECTION PROCESS

The vision for the future Equestrian Research and Education Center is ambitious and evolving. Five sites were identified by community members for the initial feasibility study and a program that includes equine health science was requested. The center is intended to support the equestrian community's needs and create a working relationship between academic and industry professionals. However, the appropriate academic research and industry development are not yet known. The SEREP has been tasked with identifying all of those opportunities and developing a strategy for building a center around them. Therefore it is critical that prior examples in other regions and local strengths are both leveraged to create a successful model. First, environmental conditions and the equine industry as they currently exist must be understood.



## ESTABLISHING THE AREA OF INTEREST

### TOTAL EQUINE ECONOMY



The equestrian community is predominantly located in the low population rural areas surrounding and to the east of Tryon (NC), Columbus (NC), and Landrum (SC). It also bridges the divide between North and South Carolina with little regard for the state line. This follows the region's history as it appears the equestrian community has grown out from the area that includes local equestrian cornerstones - Harmon Field and F.E.N.C.E. Additionally, it is important that any potential EREC site would be close and connected to this community. Therefore the study area for further analysis will be based on a 17 mile buffer that encompasses this area.

## EQUESTRIAN COMMUNITY MAPPED

### EQUINE RELATED SERVICES

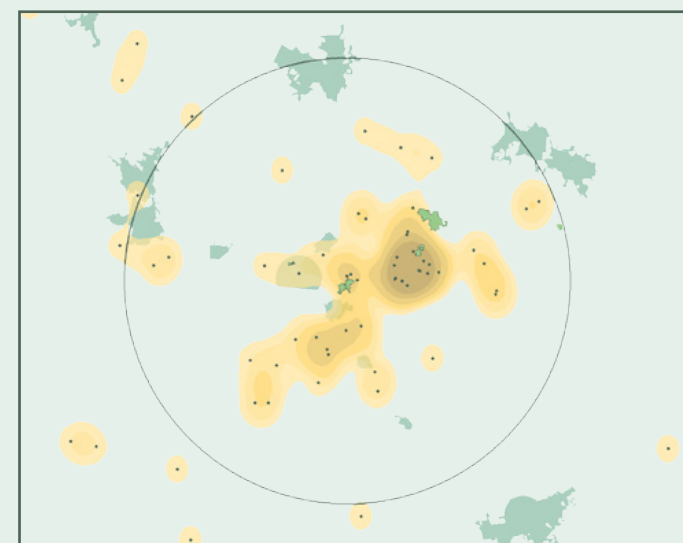
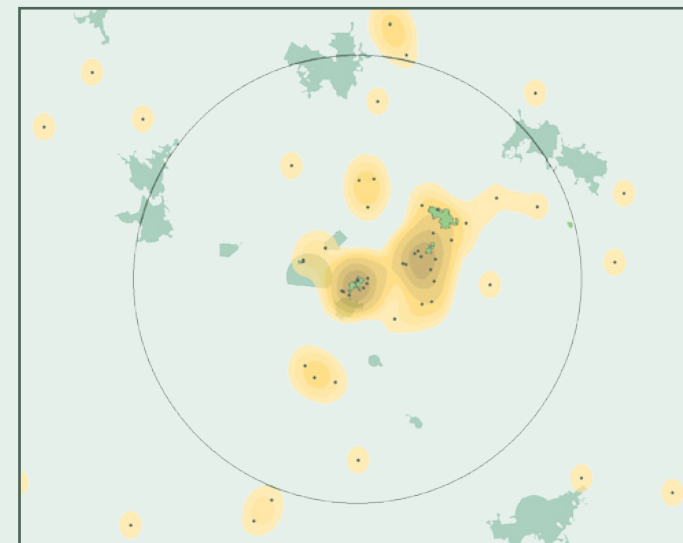
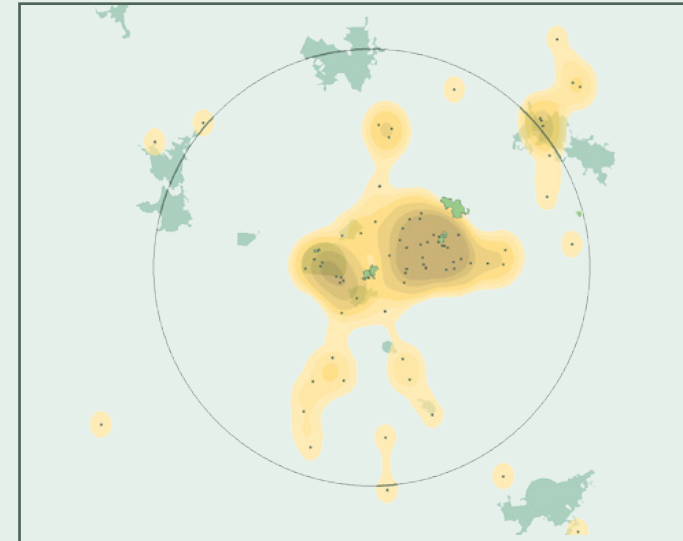
- Traditional Equine Health Services
- Therapeutic Health Services
- Therapeutic Riding
- Farm Supply
- Hay Supply
- Retail Services
- Farriers
- Miscellaneous Equine Services
- Construction/ Management

### FACILITIES

- Built Structures for Equine Programs
- Boarding Facilities
- Riding Trails
- Competition & Horse Shows
- Overnight Stays
- Cross Country Courses
- Covered Arenas
- Horse Paddocks

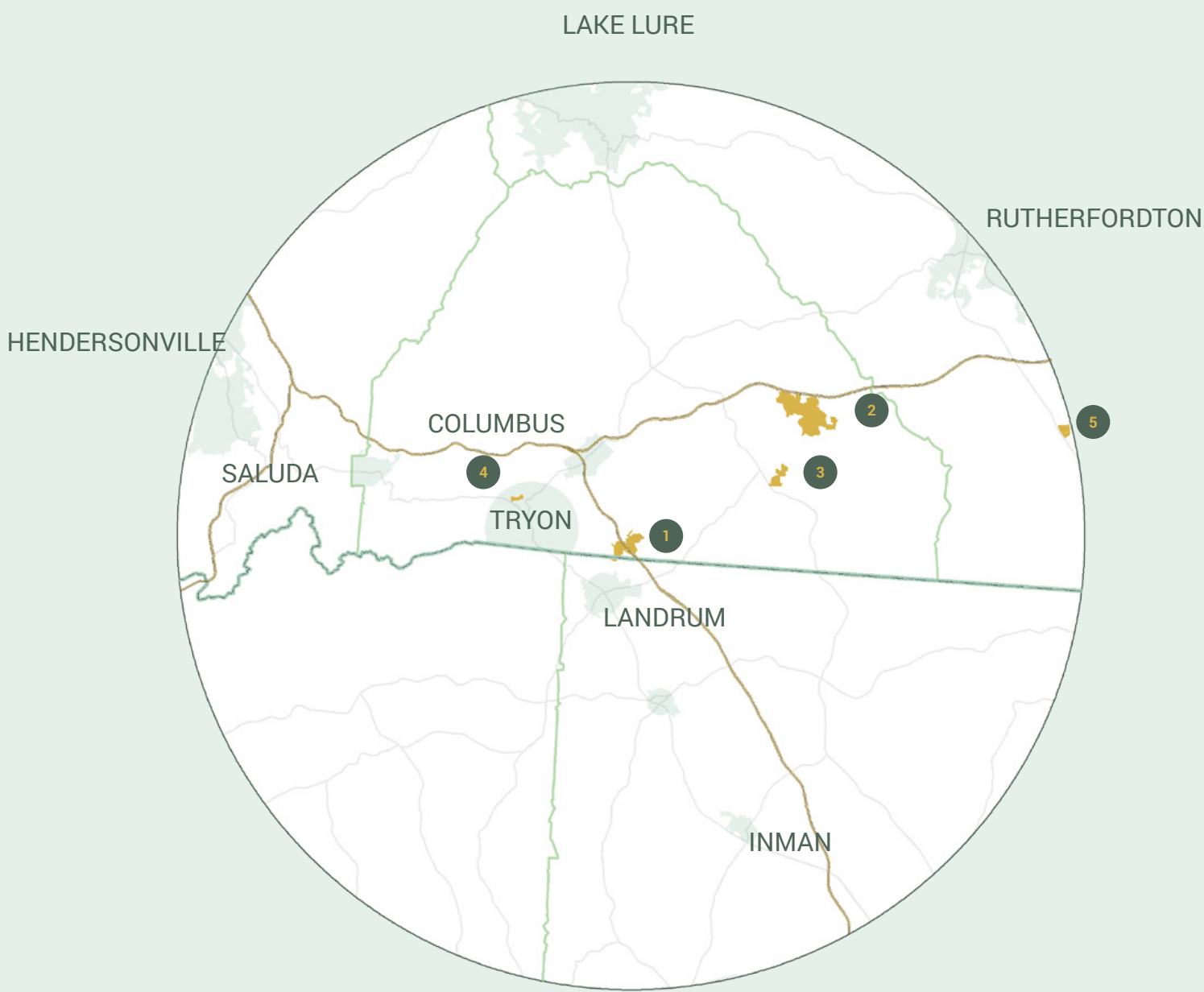
### HORSE PEOPLE/ TRAINERS

- Instructional Training
- Breeders
- Consultants





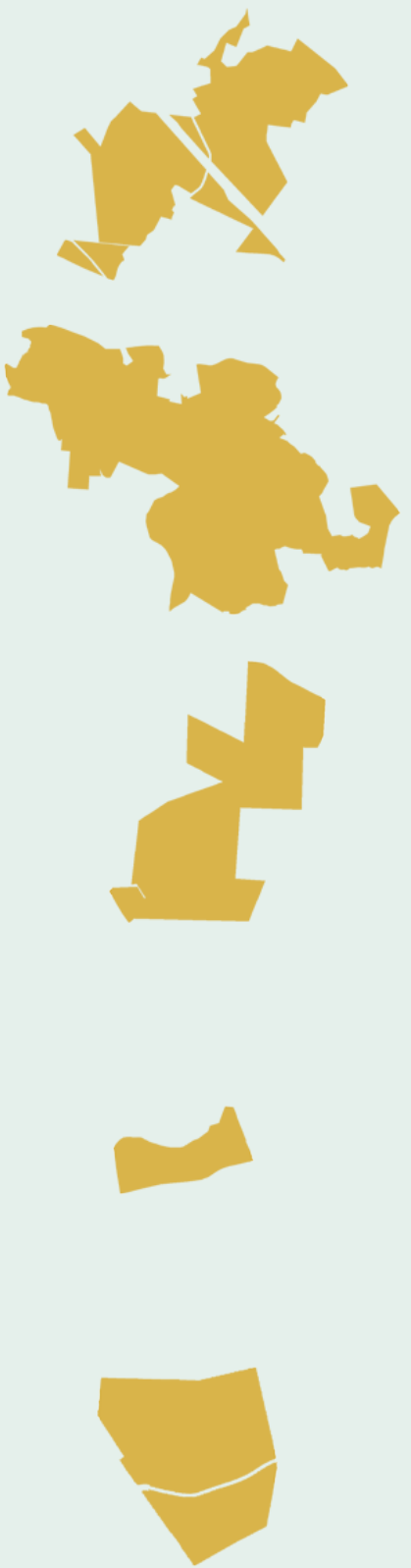
# STUDY AREA CONTEXT



This graphic shows the spatial extend of our study area as well as the locations of sites to be analyzed and their relation to regional population centers.

# SITE CONTEXT

- 1** **FOOTHILLS EQUESTRIAN & NATURE CENTER (F.E.N.C.E)**
- 2** **TRYON INTERNATIONAL EQUESTRIAN CENTER (TIEC)**
- 3** **GREEN CREEK**
- 4** **HARMON FIELDS**
- 5** **HENSON RD / U.S. 221 SITE (RUTHERFORD)**

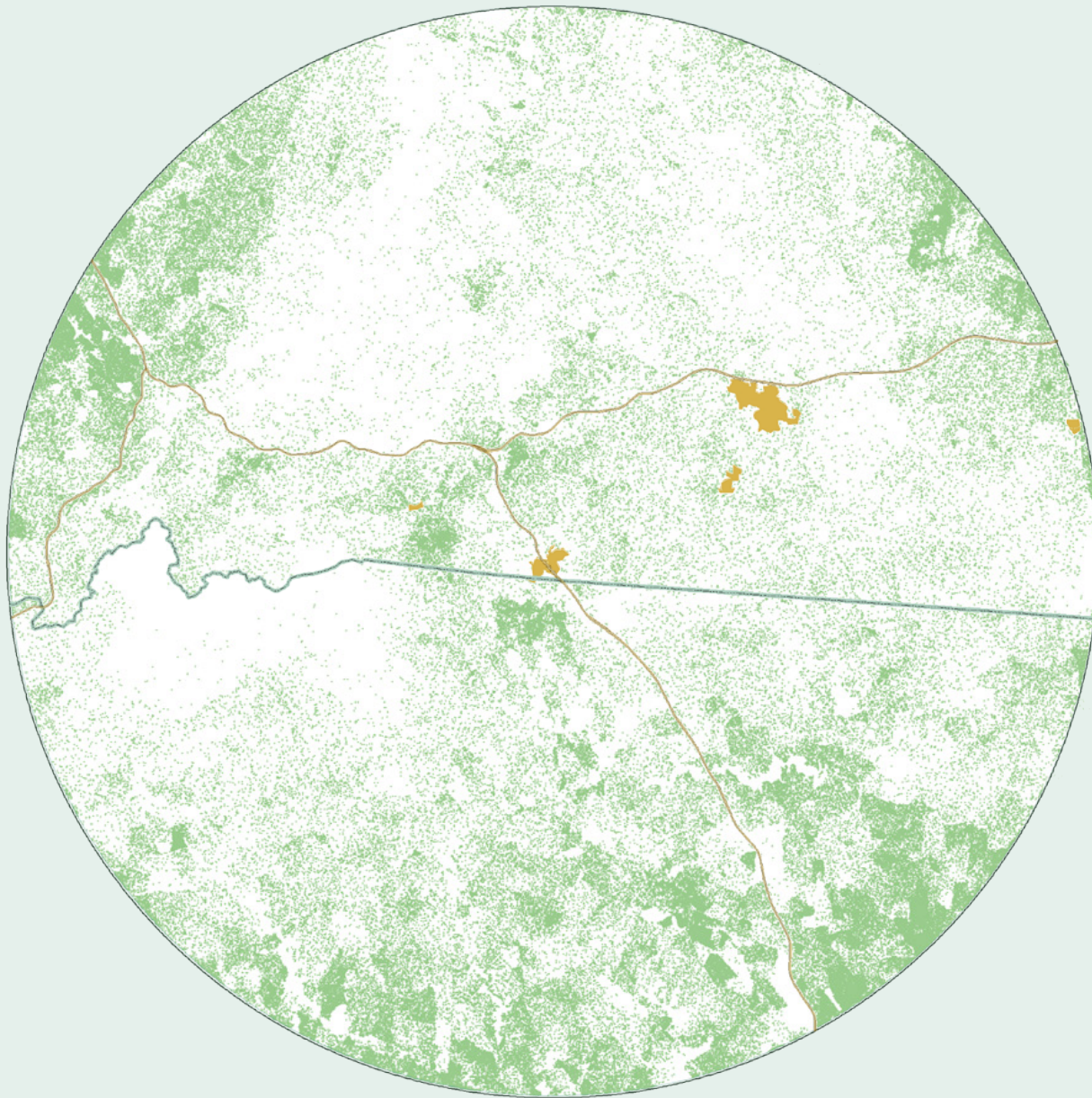


\* Sites not shown to scale for graphic representation.



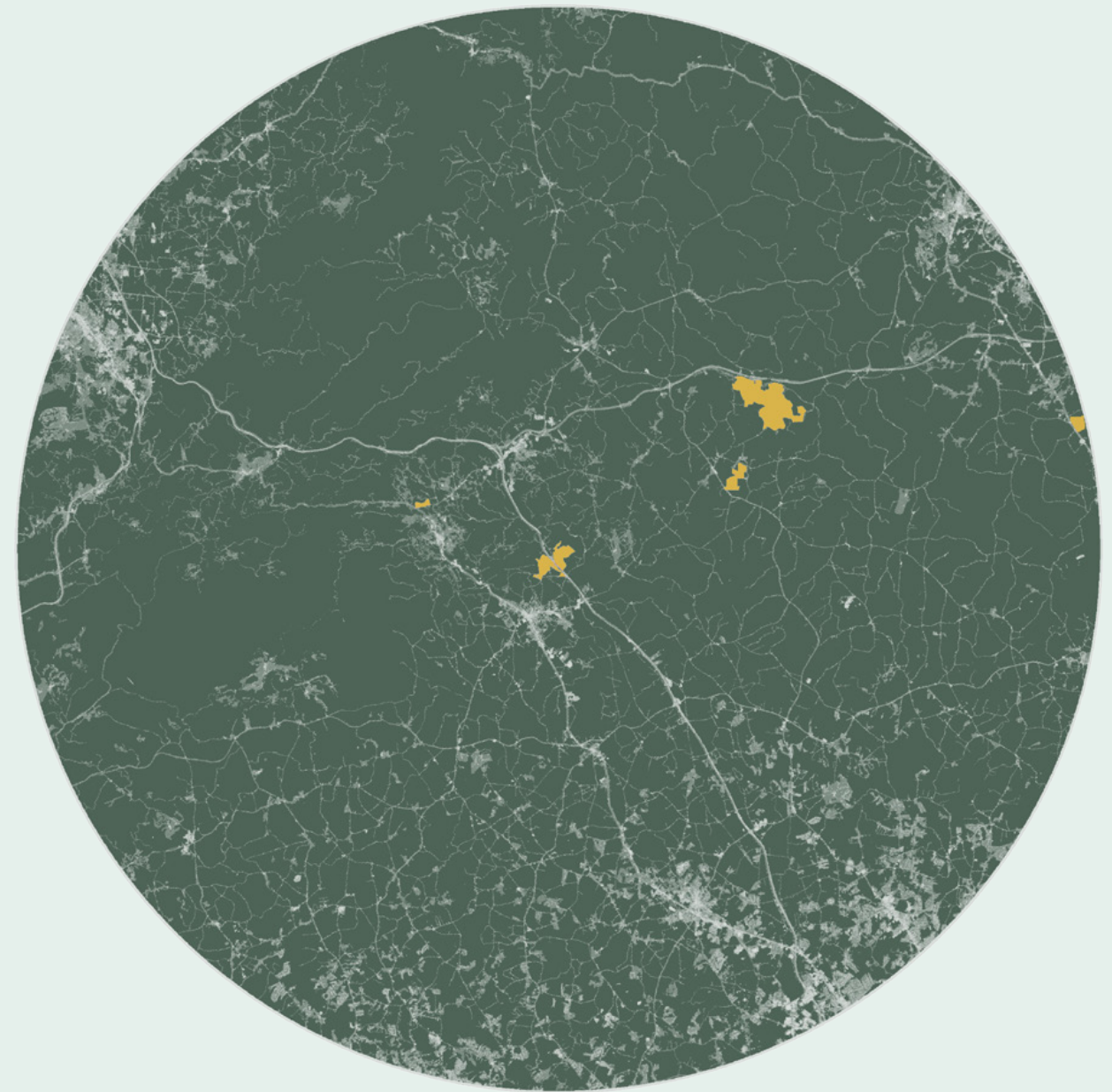
## POPULATION DATA

1 DOT (green) = 1 PERSON



Our site selection considerations focus on the areas where the population of the region is located. The largest proportion of the population is concentrated around the larger cities of Hendersonville, Rutherfordton, Forest City, and Spartanburg. However, more centrally in our area of interest the population is concentrated along the State Highway 176 as it passes through Tryon and Landrum, as well as around the crossroads of Interstates 26 and 74 where Columbus is located. Clearly, the road infrastructure has been important to the population growth of this region.

## URBANIZED/ IMPERMEABLE LAND



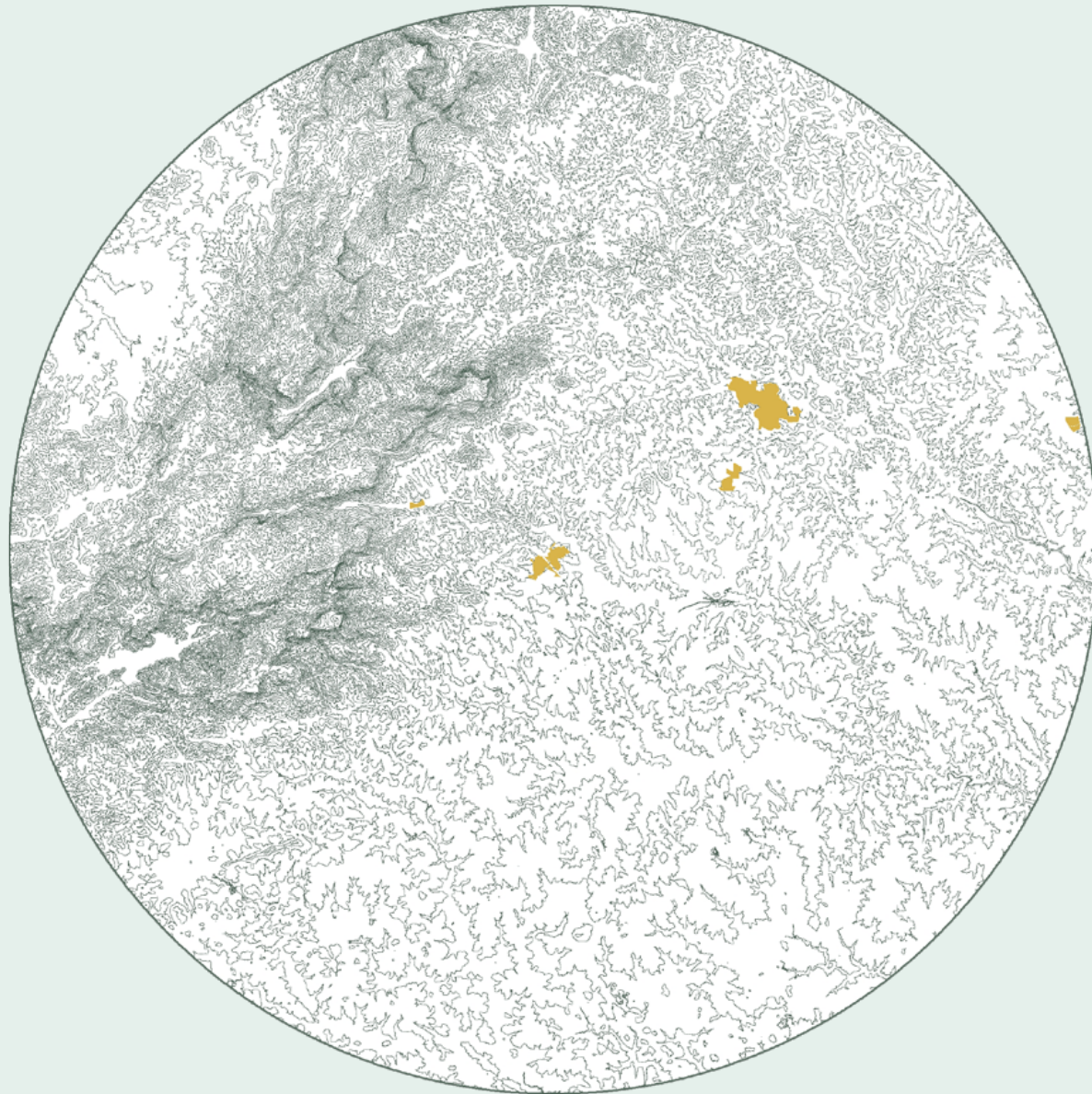
The location of the impermeable or urbanized land can show patterns of development and provide insights into the health of watersheds and other ecosystem functions. As would be expected, the impermeable and urbanized land mostly coincides with population density and is located within cities and towns. The primary exceptions are commercial and industrial operations located in the countryside, such as nurseries, golf courses, and factories.





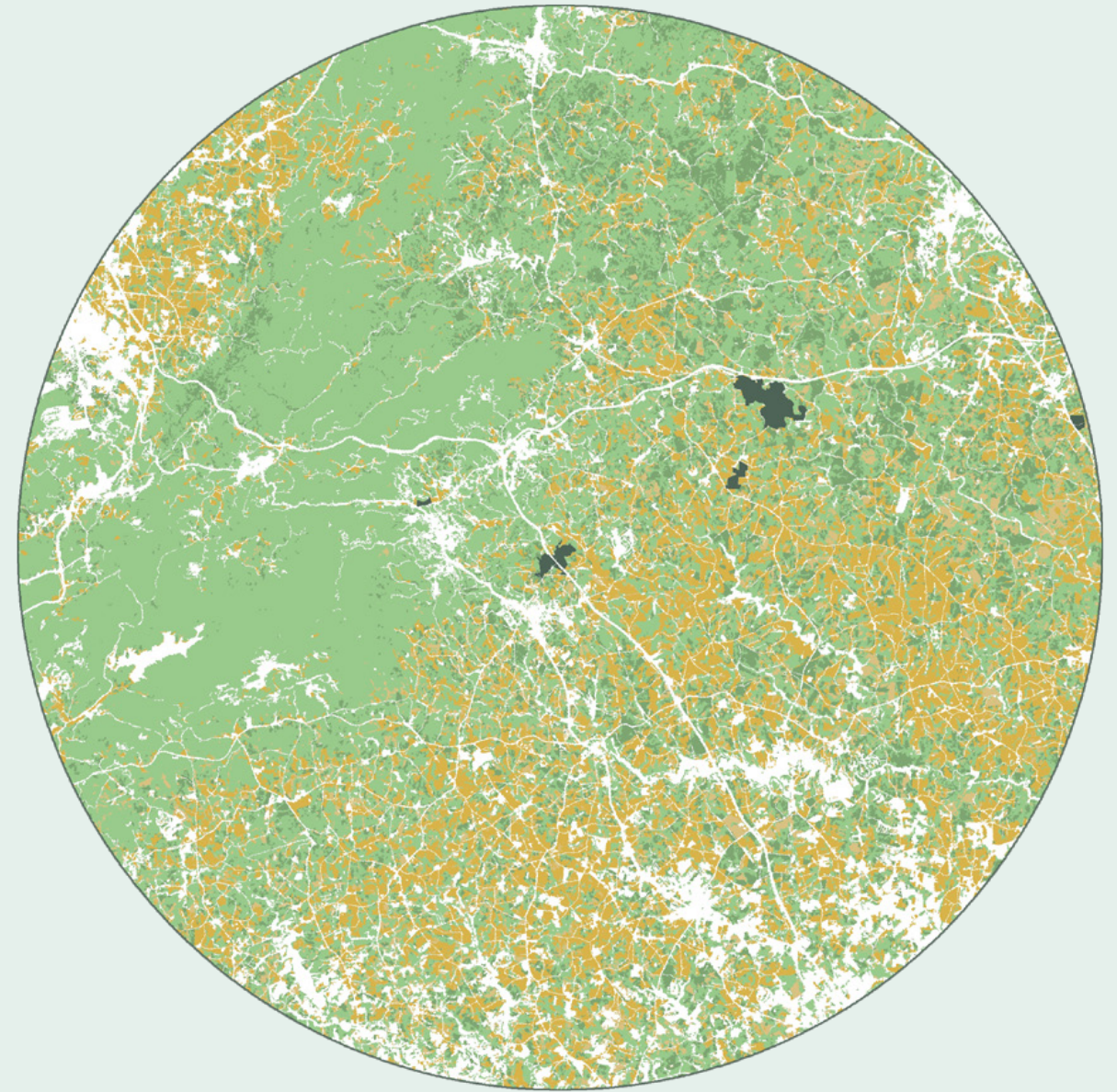
## ELEVATION CONTOURS

### 100ft.CONTOUR LINES



A contour map has been utilized to visualize the varied topography of the regional landscape. Slowly rising foothills in the Southeast give rise to an abrupt and steep range of mountains in the West that level off similar to a plateau in the area of Hendersonville. Most equine activities are best suited for the gently rising foothills but must account for occasional steep areas, streams and rivers flowing from the high land.

## LAND COVER DATA



The existing conditions of land by cover type will aid in site selection by showing how the land is divided and grouped, as well as how other environmental characteristics overlap or coincide with certain land uses. Polk and Rutherford counties are dominated by two land use types, forest and pasture, that are typically excluded from developed areas. Although scattered throughout, the forestland is concentrated in the high elevation and mountainous areas, while pastureland is located predominantly in slowly rising foothills to the east and the western plateau of the Hendersonville area. Interestingly, the cities at the center of the study area, Tryon, Landrum, and Columbus, are located right along a border dividing heavily forested and pasture lands.

 Crops / Hay / Pasture

 Deciduous Forest

 Evergreen Forest



## SITE SELECTION CRITERIA

This list of geo-spatial criteria is a framework for evaluating which sites are most ideal for the expected Equestrian Research & Education Center. Although this list is preliminary in the site selection process, it will help narrow the focus of our analysis.

### TRANSPORTATION

- Site within 30'-50' of an existing road
- No more than 1 linear mile away from highway/interstate

### SOILS

- Prime Farmland and Well-Drained Soils are preferred to provide ideal pasture conditions

### WATERSHEDS /FLOODPLAINS

- Constructed area must be 200 ft away from surface waters
- Constructed area must be 200 ft away from floodplain
- Site not within substantially large floodplains

### SLOPE / ELEVATION

- Less than 20% slope
- Avoid steep slopes to protect against erosion, provide safe pasture, and promote ease of access

### CANOPY / TREE COVER

- Less than 50% of property should have Tree Coverage
- Protect against deforestation and damage to natural beauty

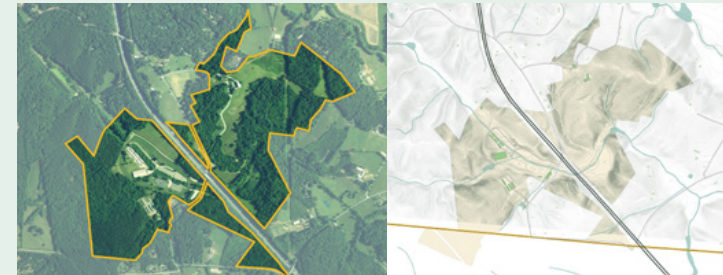
### LAND USE /ZONING

- Minimum 100 Acres
- 200 ft away from Residential Properties/Units

## SITE CHARACTERISTICS

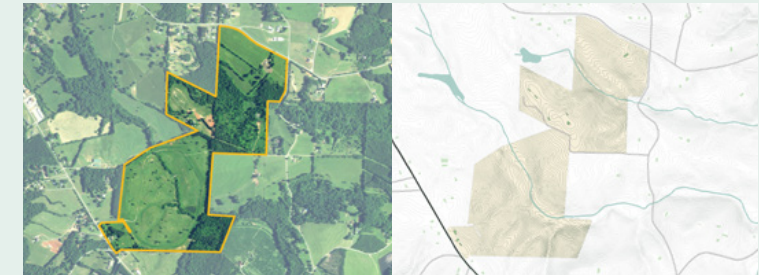
### SITE ANALYSIS

#### FOOTHILLS EQUESTRIAN & NATURE CENTER (F.E.N.C.E)



SIZE: 356 ACRES  
OWNED BY: FOOTHILLS EQUESTRIAN & NATURE CENTER  
CITY, STATE (COUNTY): TRYON, NC (POLK COUNTY)

#### GREEN CREEK



SIZE: 183 ACRES  
OWNED BY: TRYON EQUESTRIAN FOUNDATION,  
GREEN RIVER FARM, LLC  
CITY, STATE (COUNTY): TRYON, NC (POLK COUNTY)

#### HENSON RD / U.S. 221 SITE (RUTHERFORD)



SIZE: 103 ACRES  
OWNED BY: RUTHERFORD COUNTY  
CITY, STATE (COUNTY): FOREST CITY, NC  
(RUTHERFORD COUNTY)

#### TRYON INTERNATIONAL EQUESTRIAN CENTER (TIEC)



SIZE: 1,138 ACRES  
OWNED BY: TRYON EQUESTRIAN PROPERTIES, LLC  
CITY, STATE (COUNTY): MILL SPRING, NC (POLK COUNTY)

#### HARMON FIELDS



SIZE: 47 ACRES  
OWNED BY: TOWN OF TRYON  
CITY, STATE (COUNTY): TRYON, NC (POLK COUNTY)

\* Sites not shown to scale for graphic representation.



# SOILS/ PRIME FARMLAND



An equestrian research and education center will need to provide pasture and possibly other types of farmland. Hence, any site selected should have soil suitable for these purposes.

**RANKING CLASSIFICATION:**  
1= Most Suitable → 5= Least Suitable

## 2 FOOTHILLS EQUESTRIAN & NATURE CENTER (F.E.N.C.E)



Much of the site has suitable soil for crops/pasture and is of statewide and local importance

## 4 HENSON RD / U.S. 221 SITE (RUTHERFORD)



Much of the site contains farmland of statewide importance. This means it is not ideal but still functional agricultural land.

## 5 HARMON FIELDS



Has the lowest percentage of soil suitable for crops/pasture and much of it would require draining and protection from flooding.

# SOILS/ PRIME FARMLAND

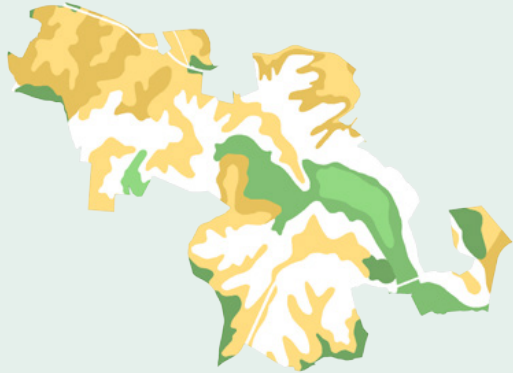
## SITE ANALYSIS

## 1 GREEN CREEK



Contains the highest percentage of soil suitable for crops/pasture. However, much of that land is dedicated to a racetrack for the Blockhouse Steeplechase and must be investigated further.

## 3 TRYON INTERNATIONAL EQUESTRIAN CENTER (TIEC)

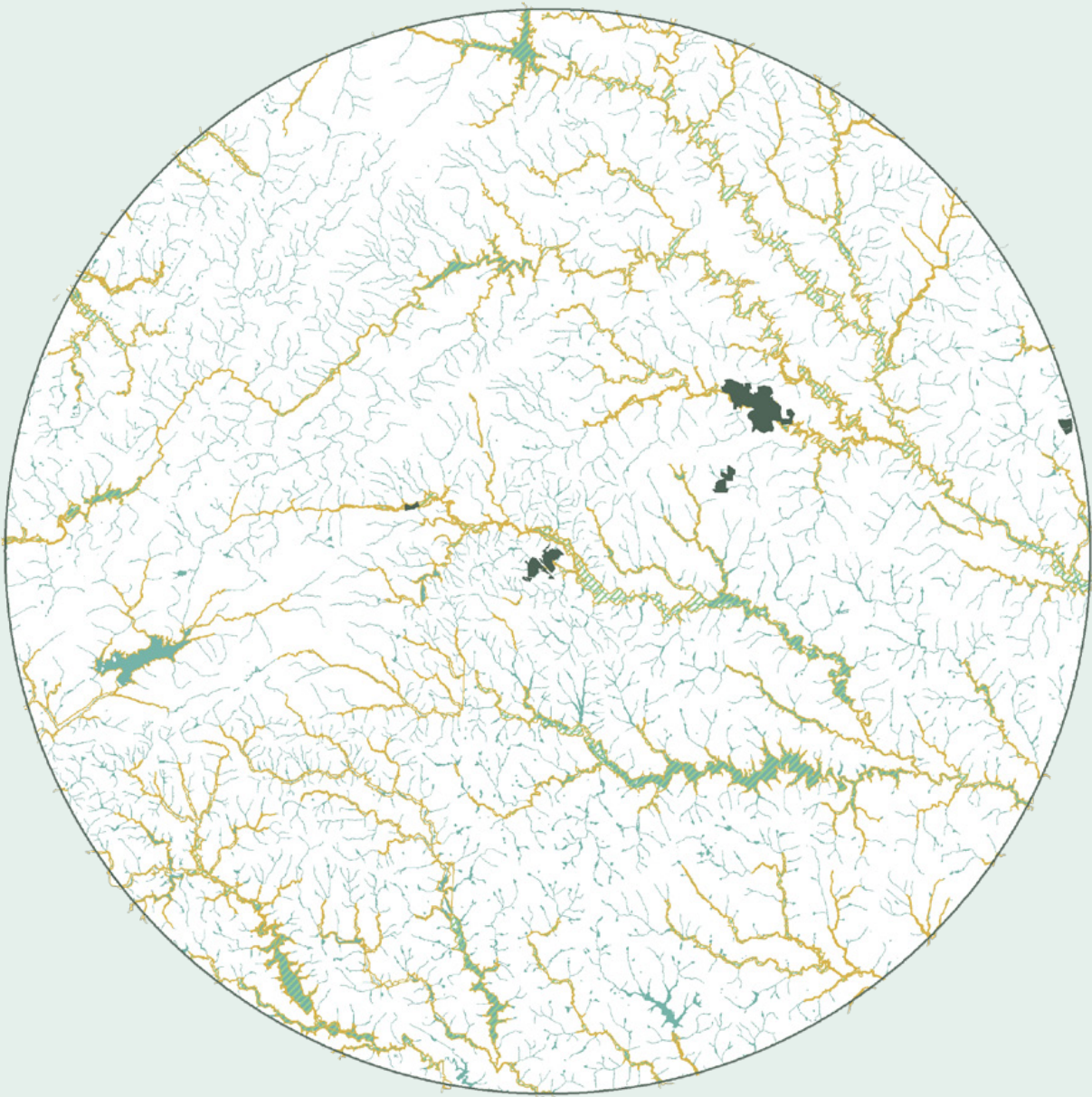


Contains a considerable amount of soil unsuitable for crops/pasture and has lost much of the remaining suitable land to recent development

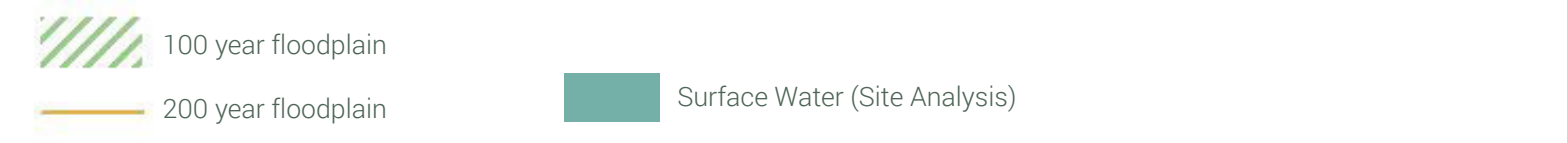
\* Sites not shown to scale for graphic representation.



# WATER RESOURCES / FLOODPLAINS



Streams, rivers, and floodplains can cause substantial property damage during storms and are easily damaged by pollution. A site must therefore have space outside of the floodplain to locate structures, as well as an adequate buffer area to separate surface waters from any potential pollution the center may create, such as animal waste and eroded sediment. Since this region contains the headwaters of many streams and rivers that are important resources to local wildlife and many downstream towns and cities, protecting water quality is a priority. The site selection process will take into account which sites incur the lowest risk.



# WATER RESOURCES / FLOODPLAINS

## SITE ANALYSIS

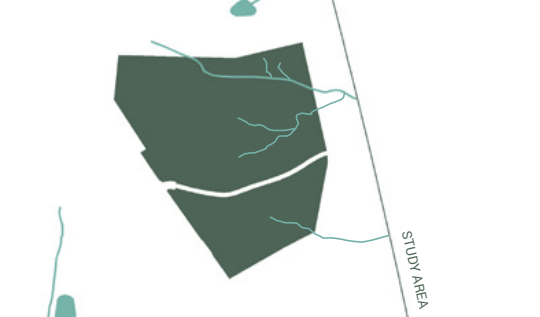
**RANKING CLASSIFICATION:**  
1= Most Suitable → 5= Least Suitable

### 3 FOOTHILLS EQUESTRIAN & NATURE CENTER (F.E.N.C.E)



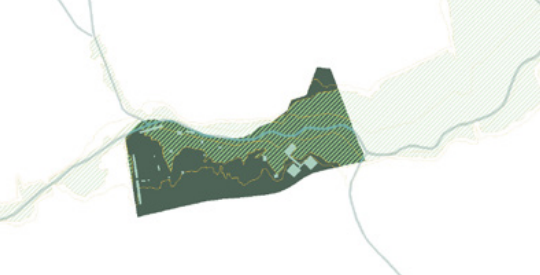
Contains a medium sized tributary of the Pacolet River (currently under a conservation easement) with a limited floodplain and no wetlands.

### 2 HENSON RD / U.S. 221 SITE (RUTHERFORD)



Contains the second least water resources, consisting of multiple headwater streams entering the site with no area of floodplain or wetland.

### 5 HARMON FIELDS



Directly adjacent to the North Pacolet River with the majority of the site being in a floodplain. Additionally, contains wetland designated areas. This area is at increased risk of both damaging water resources and being damaged by them.

### 1 GREEN CREEK



Contains the least water resources, consisting of only medium headwater streams with no area of floodplain or wetland.

### 4 TRYON INTERNATIONAL EQUESTRIAN CENTER (TIEC)

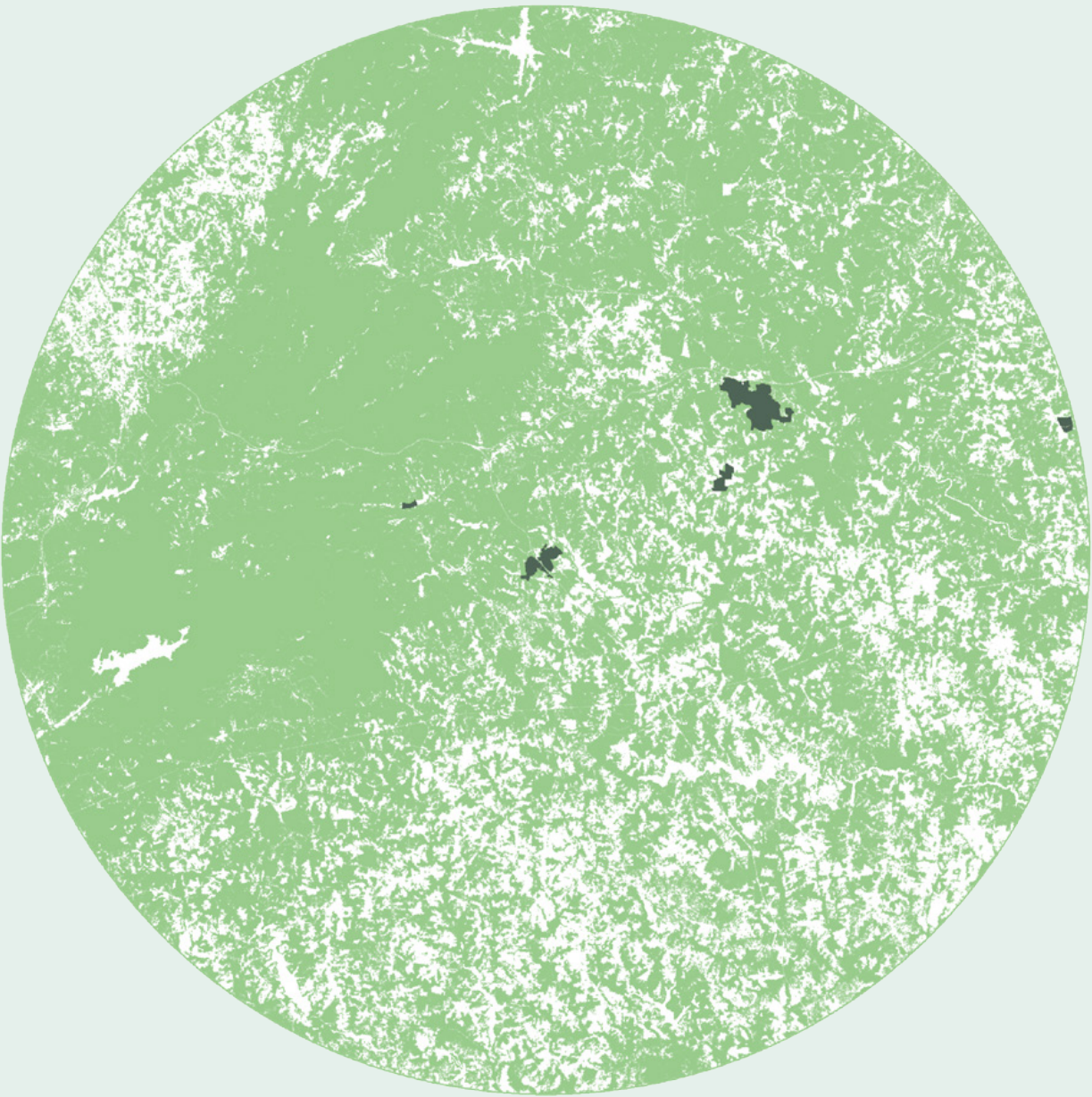


Contains a large and important tributary of the Green River with a substantial floodplain and wetland areas. Due to current development threatening the watershed, additional damage should be avoided.

\* Sites not shown to scale for graphic representation.



# CANOPY / TREE COVERAGE



In our site selection considerations, we aimed to select sites with less than 50 percent tree coverage. The natural beauty of this region is a result of its forests and environmental character. It is important that any potential EREC development does not contribute to substantial deforestation and works to preserve this character.

 Tree Coverage

# CANOPY / TREE COVERAGE

## SITE ANALYSIS

**RANKING CLASSIFICATION:**  
1= Most Suitable → 5= Least Suitable

### 5 FOOTHILLS EQUESTRIAN & NATURE CENTER (F.E.N.C.E)



Contains the largest percentage of canopy cover but the area without canopy is in many areas undeveloped.

### 3 HENSON RD / U.S. 221 SITE (RUTHERFORD)



Contains the second highest percentage of canopy cover but the area without canopy is entirely undeveloped.

### 1 HARMON FIELDS



Contains the lowest percentage of canopy cover and most of the canopy exists in undevelopable land around the river.

### 2 GREEN CREEK



Canopy coverage is limited but the most open area is already dedicated to a racetrack for the Blockhouse Steeplechase and must be investigated further.

### 4 TRYON INTERNATIONAL EQUESTRIAN CENTER (TIEC)

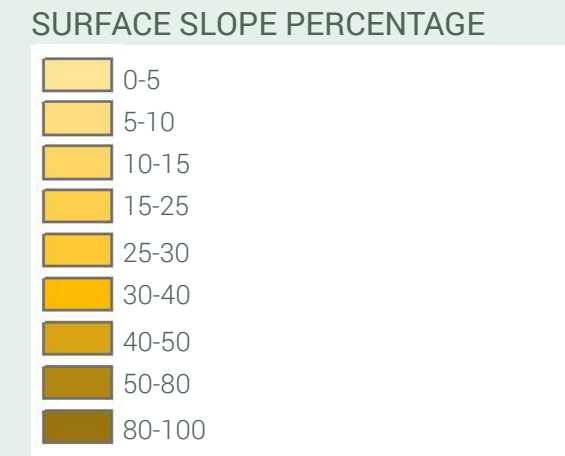
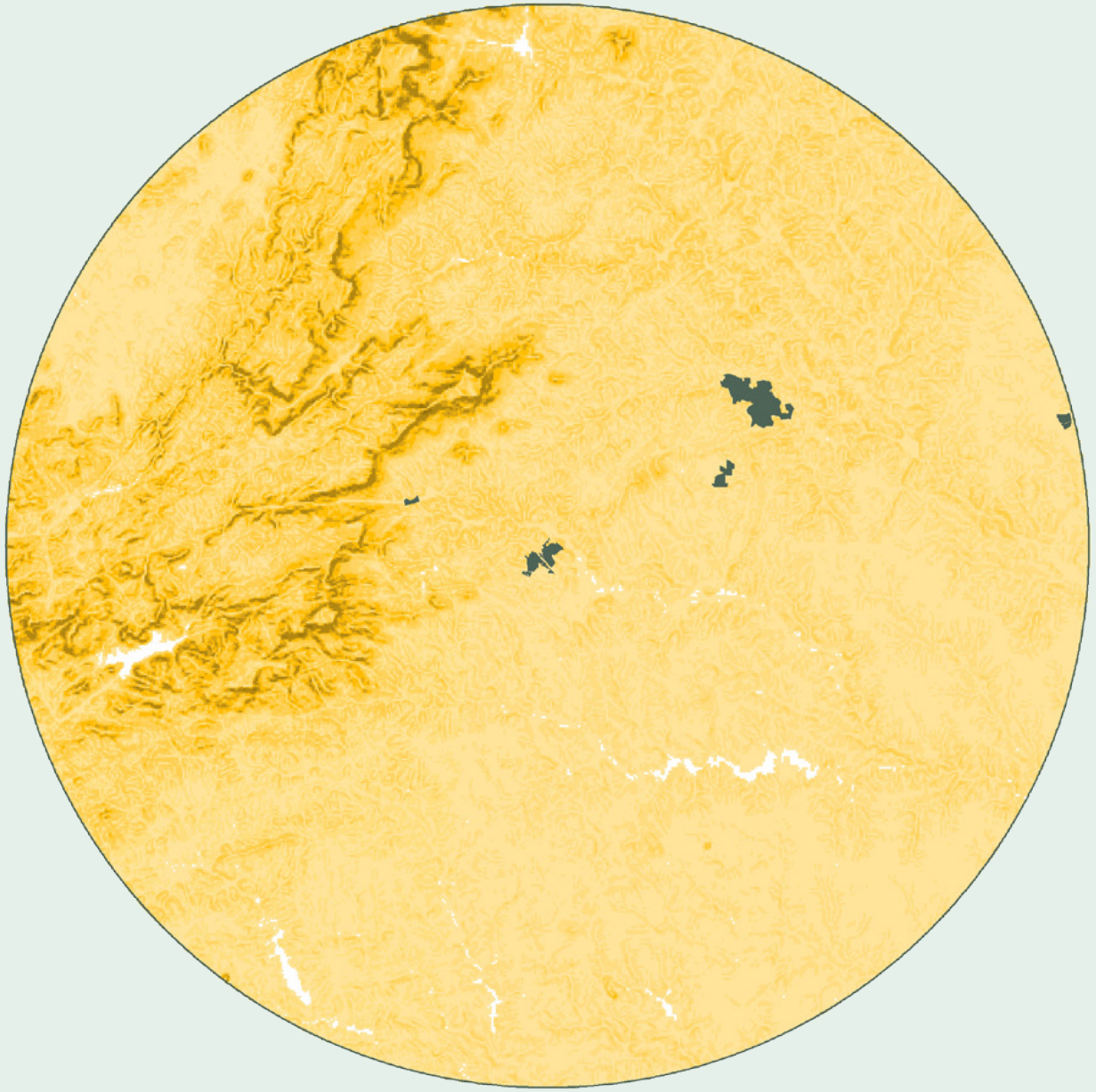


Contains the third most canopy cover despite extensive deforestation over the past 2 years. However, most of the area without canopy is under development and unavailable.

\* Sites not shown to scale for graphic representation.



# SLOPE PERCENTAGE



In addition to understanding the elevation of various areas in the study area, our site selection considerations must take into account the slope of the land. In mountainous regions slope can limit the uses and development of land because of the potential for erosion and landslides. For the purposes of an equestrian research and education center a majority of the site should have minimal slopes to allow for safe horse movement and limit erosion resulting from both horse traffic on pasture and construction.

# SLOPE PERCENTAGE

## SITE ANALYSIS

**RANKING CLASSIFICATION:**  
1= Most Suitable → 5= Least Suitable

### 4 FOOTHILLS EQUESTRIAN & NATURE CENTER (F.E.N.C.E)



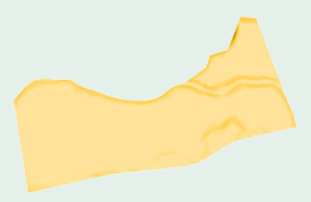
Has the second greatest percentage of steep slopes but does contain a large total acreage of undeveloped area that is not steeply sloping and out of a floodplain.

### 3 HENSON RD / U.S. 221 SITE (RUTHERFORD)



Increases in slope across the site as you get further away from Highway 221. However, the majority of the site has a consistently minor slope.

### 1 HARMON FIELDS



This site has the second lowest percentage of steep slopes but most of that land is in the floodplain.

### 2 GREEN CREEK



Has the lowest percentage of steep slopes. However much of that land is dedicated to a racetrack for the Blockhouse Steeplechase and must be investigated further.

### 5 TRYON INTERNATIONAL EQUESTRIAN CENTER (TIEC)

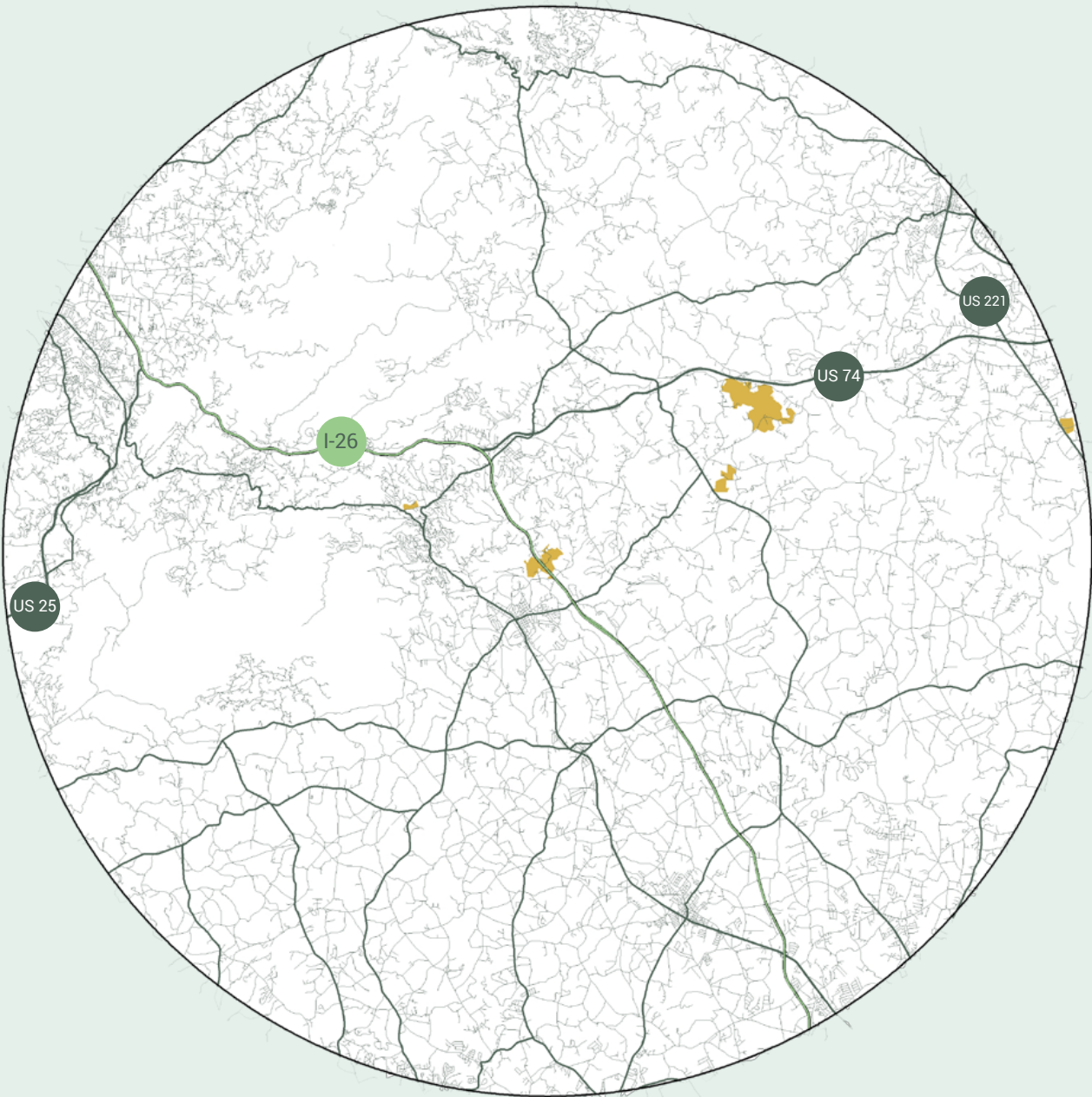


This site contains the greatest percentage of steep slopes. Additionally, most of the areas that don't have steep slopes are either already developed or are in the floodplain.

\* Sites not shown to scale for graphic representation.



# TRANSPORTATION DATA



Due to limited access, this region has developed along transportation corridors throughout its entire history. Therefore, understanding the network of roads and highways of the region, as well as each potential site's proximity to them, are important for the site selection considerations. Accessibility will be an important factor to future employees and visitors of the Equestrian Research and Education Center. Therefore, the preferred site should have the greatest accessibility possible. The connectivity to major routes will enable access to a wider population that might arrive from the greater distances and will be considered



# TRANSPORTATION ACCESS

## SITE ANALYSIS

**RANKING CLASSIFICATION:**  
1= Most Suitable → 5= Least Suitable

### 1 FOOTHILLS EQUESTRIAN & NATURE CENTER (F.E.N.C.E)



The largest roadway in our study area (Interstate-26), which runs from Charleston, SC to Kingsport, TN, cuts through this site. This corridor extremely important for future development in the area.

### 3 HENSON RD / U.S. 221 SITE (RUTHERFORD)



The site is adjacent to Highway 221, a four lane highway and is closer than Green Creek to the nearest freeway (US-74).

### 4 HARMON FIELDS



This site is the nearest to a population center (Tryon, NC and Columbus, NC) but is only accessible by two lane roads and isn't particularly close to nearby interstates or multi-lane highways.

### 5 GREEN CREEK



The site is only accessible by 2 lane roads although one is heavily trafficked locally (Highway 9). There are no nearby interstates or multi-lane highways.

### 2 TRYON INTERNATIONAL EQUESTRIAN CENTER (TIEC)



This site is adjacent to the second largest roadway in our study area (US-74) that runs from Charlotte, NC to Columbus, NC. Access is however limited on the Southwest side due to the river and limited secondary roads.

\* Sites not shown to scale for graphic representation.



## PRELIMINARY GEO-SPATIAL ANALYSIS

## IDENTIFYING AN ADDITIONAL SITE

All but one of the prospective sites considered for a potential Equestrian Research and Education Center, which were identified by local stakeholders, are affiliated with an existing member of the larger equine community. By selecting one of these sites, the area would be expanding on the value it already provides. The center could benefit from the affordable land and connections an existing entity would provide while building momentum for a successful launch. However, It is important to ask whether the total benefit to the community would be greater if the center was built independently from the existing equine infrastructure. Would creating a research and education center that stands alone build more substantial value for the equestrian community? Would sharing a site with an existing entity dilute the value they have already established? This relationship will be explored throughout the next stage in the study. Meanwhile, the SEREP team will work to identify additional unaffiliated sites for further analysis.

## CONCLUSION OF SITE ANALYSIS

Understanding that selecting a site will continue to remain an on-going process, our preliminary site analysis has revealed that the Green Creek site followed by F.E.N.C.E. and the Henson Rd./ U.S. Hwy 221 site have the most ideal environmental conditions out of the five sites that were investigated earlier in the report. However, there are other non-environmental factors that must be accounted for in the next stage of this study, including potential partnerships, funding, program fit, potential for expansion beyond site boundaries, and community/stakeholder input. The information provided in this report is therefore preliminary and represents the initial phase of the site selection process. Once the research and education activities are identified, it will be possible to evaluate how each site will be able to support those activities and the required spaces they demand. At that point it will be possible to select the most appropriate site and move forward with the design process.

PROGRESS REPORT  
SUMMARY

## SUMMARIZING OUR PLACE IN THE PROCESS

- Our analysis and engagement thus far has provided a preliminary understanding of regional identity context, and the key stakeholders.
- Preliminary case studies have provided an understanding of existing facilities with related programs in the United States and abroad.
- Candidate sites have been identified and their spatial/environmental characteristics have been analyzed, compared, and documented.

## NEXT STAGES AND GOALS

- Continued engagement with stakeholders and community leaders.
  - Document perspectives of local farmers and equine related business people.
  - Identify potential EREC research and education activities.
- Finalize site selection (including sites yet to be identified).
  - Re-evaluate sites based on improved/more targeted quantitative data/information.
  - Re-evaluate sites based on qualitative properties/information from engagement activities.
  - Select the most appropriate site for development of planning and design.
- Refine Case Study Analysis to target highly correlated programming and their physical properties
  - Design+Planning Criteria
  - Economic & Community
  - Research & Education





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*Photo Credit:* Cover Page, Page(s) 1, 4-5. 10. 12-14, 16-18, 26-27, 31, 48 - Tyler Kuss

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