Center for Field Studies

Master Plan

OCTOBER 2009

PREPARED BY
Division of Administration and Finance
Planning + Design + Construction
UNIVERSITY OF CINCINNATI

Center for Field Studies

OCTOBER 2009
Master Plan

PREPARED BY
Division of Administration and Finance
Planning + Design + Construction
Our Mission

To promote inquiry and discovery about the natural world through a unique integration of research and education.

6 Principal Objectives

- Ecosystem Research
- Address Challenges of Climate Change
- Field Oriented Education
- Interdisciplinary Research
- Environmental Stewardship and Management
- Communicate Scientific Information to the Public
Table of Contents

Foreword
Preface
Executive Summary

1.0 Introduction
   1.1 General Conditions Affecting the Plan

2.0 Background Information
   2.1 Field Station at the University of Cincinnati
      2.1.1 Mission and Vision
      2.1.2 Goals and Objectives
      2.1.3 Faculty, Students & Activities
      2.1.4 UCCFS Staff
      2.1.5 Academic Strategic Plan

3.0 Existing Conditions
   3.1 Campus Context
   3.2 Environmental Assessment
   3.3 Climatic Assessment
   3.4 Site Analysis

4.0 Planning Framework: Buildings and Site
   4.1 Design Ideas
   4.2 Program of Requirements
      4.2.1 Internal Program
      4.2.2 External Influences
   4.3 Sustainability and Integrated Design

5.0 Alternative Concepts
   5.1 Relationship Diagrams
   5.2 Concepts, Drawings & Descriptions

6.0 Recommended Development Plan
   6.1 Key Site Elements
   6.2 Site and Utility Plans

7.0 Implementation Strategies

8.0 Appendix
Foreword

I am very pleased and proud of the central role that McMicken College of Arts and Sciences faculty have played in the launch of the University of Cincinnati Center for Field Studies. This partnership between the University and Hamilton County Park District is in the best tradition of the University’s history of community engagement in pursuit of its research, education and service missions. In addition to expanding research and educational opportunities for faculty and students in each of the four founding academic departments, the Center will attract students and scholars from across the University, Greater Cincinnati, the region and the world. There is no doubt that the unique collection of activities pursued at the Center will garner considerable attention, and in fact, this is already happening. Faculty and student demand for research and educational projects at the Center is already high, and will only grow with time. I fully expect the Center for Field Studies to grow into one of the most valued resources of the University, and look forward to its future development.

Valerie Hardcastle, Dean
McMicken College of Arts and Sciences
Preface

The 2009 University of Cincinnati Center for Field Studies (UCCFS) Master Plan provides a conceptual and strategic framework intended to inspire, educate, organize and guide current and future development of the field station campus.

Its contents attempt to recognize and respond to the inherent balance between past, present and future; the natural and the man-made; and the research and educational experiences by promoting systems of flexibility that encourage long-term utilization and relevance of the Center.

As a “living” document, the Master Plan engages the biological, environmental, architectural and technological communities in the process of producing a network that is interactive, independent, yet inter-dependent and adaptable.

It is a plan that reinforces the UCCFS mission by presenting a language of conservation, exploration, partnership and recognition of the past, while constructing a foundation for the future.

Most importantly, the Master Plan recognizes the symbiotic potential that accompanies the responsible use and development of an environment where teaching and learning are synergistically connected.

When we see land as a community to which we belong, we may begin to use it with love and respect.

— Aldo Leopold
Sand County Almanac
Executive Summary

The University of Cincinnati’s McMicken College of Arts and Sciences has a pedagogical commitment to pursue multidisciplinary research and teaching opportunities in a natural environment outside the conventional classroom and laboratory setting. The University has entered into a long-term lease agreement with the Hamilton County Park District (HCPD) for a 17-acre property (the site), located within the Miami Whitewater Forest and identified as South Shaker Farm. This mutually beneficial agreement will facilitate learning and research opportunities on the property and extend into Miami Whitewater’s 16,000 acres as well as other HCPD-owned land. This Master Plan provides a framework for development of the site that supports the College’s Departments of Anthropology, Biology, Environmental Studies, Geography and Geology in a collaborative teaching, learning and research campus identified as the University of Cincinnati Center for Field Studies (UCCFS).

Located approximately 22 miles from UC’s Uptown Campus, UCCFS will serve as a center for environmental education and support research in areas such as climate change, environmental impacts, geochemical processes, hydrology and land management, biological diversity, ecology and habitat. The mission of the Center is to increase public awareness and understanding of science through research, training and public interactions while using science to address societal needs. Goals are many and varied and focus on teaching and research relative to the natural ecosystem in an interactive, collaborative and interdisciplinary manner that engages scientists, the public and other Universities beyond the boundaries of UC.

The site has unique existing contextual characteristics that need to be understood, acknowledged and potentially celebrated as the site is developed. Its geological history, Shaker settlement in the 19th century and agricultural use are important attributes. The farmhouse and agricultural buildings are of some historical and cultural significance and should be preserved to the extent reasonably possible. Existing ecosystems, trees and
archaeological remains also need to be preserved. An adjacent creek, a prairie and a wetland are also significant features. Existing infrastructure is typical of agricultural sites.

There are four predominant building types that are addressed in this Master Plan to support the Center’s mission and goals: existing buildings; new academic, teaching and research buildings; new residential buildings; and new agricultural structures such as greenhouses. Based upon campus context, environmental and climatic assessment and site analyses, the recommended general location of the new buildings is:

- **Academic, teaching and research**—westernmost portion of the site
- **Residential**—western edge of lawn north of existing farmhouse
- **Agricultural**—eastern side of Oxford Road

The new buildings are likely to be constructed over time and need to be architecturally compatible with the existing farmhouse and agricultural buildings, while reflecting the simple, utilitarian Shaker lifestyle. Site improvements need to be of a consistent style throughout and minimize impact on the environment.

Sustainability of the buildings and site is an important attribute consistent with the pedagogical mission in a natural environment.

Spatial programmatic requirements include:

- **Archaeological research facility** 2500 sf
- **Laboratory Pod** 8800 sf
- **Greenhouses** 4500 sf
- **Dormitory** 20-30 occupants

This Master Plan contains various concepts and studies that provide direction for placement of buildings based on: existing structures; existing natural features such as Howard Creek, its floodplain and the wetland; the park-like setting; agricultural fields; Oxford Road and view corridors, among others.
A project cost and schedule for the various Master Plan components are included within Implementation Strategies. Total projected costs for all of the currently identified components are in the range of $4.7 million to $6.2 million based on today's estimates without projected inflation. A significant portion of the difference in the range relates to the extent to which existing buildings are renovated. Total schedule duration is solely dependent upon available financial resources.
1.0 Introduction
Introduction

In 2004, the concept of developing a field station and research facility for the University of Cincinnati’s College of Arts & Sciences was introduced in the context of the accreditation process of the University. The motivation behind this initiative was to extend the pedagogical boundaries of the University by creating a multi-disciplinary environment that would link students and faculty to a more natural site where unprecedented research and learning opportunities could occur outside the conventional classroom and laboratory setting.

In Spring 2008, the University of Cincinnati entered into a long-term lease agreement with the Hamilton County Park District (HCPD) for the use of a 17-acre property located within the Miami Whitewater Forest, identified as South Shaker Farm.

Within the terms and conditions of this agreement, HCPD “invites qualified researchers in the natural sciences to pursue various research in its parks and nature preserves. The results of such studies are of benefit to the Park District’s natural areas and land management programs.”

By establishing the mutually beneficial relationship with HCPD, the Cincinnati Center for Field Studies’ research and learning horizon may extend into the additional 16,000 acres of park property, a resource rich in historic and natural diversity, and one that supports the engagement of the College of Arts & Sciences’ Departments of Anthropology, Biology, Environmental Science, Geography and Geology.

The following aerial and satellite images illustrate the location of the UCCFS campus in relation to the University of Cincinnati and the leased property within the local context of Crosby Township, near New Haven, Ohio.
UCCSF Site north of New Haven, Ohio.
2.0

Background Information
Background Information

The University of Cincinnati (UC), an urban university with more than 37,000 students, has created a strategic plan for the development of a field station. UC and the Hamilton County Parks District (HCPD) have joined forces to create a unique facility designed to serve the Greater Cincinnati region and beyond. UC’s field station is in the northern portion of Miami Whitewater Forest, located approximately 22 miles northwest of the University of Cincinnati’s Uptown Campus. This extensive property includes mixed mesophytic eastern deciduous forest, natural and reconstructed prairies, and wetland habitats along the Great Miami River.

The UCCFS will promote research programs designed to meet some of the major challenges of the University of Cincinnati’s research agenda, including investigations that focus on:

1) biological diversity, invasive species and ecosystem function
2) ecological aspects of biogeochemical cycles
3) ecological implications of climate change
4) land use dynamics, subsistence activities and habitat alteration across broad time scales
5) ecology and evolution of animal behavior
6) dynamics and management of the hydrologic system
2.1 Field Station at the University of Cincinnati

There are many strengths of the UCCFS that provide the foundation of future success. The first strength is the number of faculty members at the University who are interested in, or have been conducting research and teaching classes at UCCFS. Notably, a great number of UC scientists have already conducted research in this region and have inspired many students to do likewise. A second strength is the partnership with HCPD because of its recognized history of conservation-oriented land-use policies and environmental education. Partnerships like this demonstrate an effective way to promote education and conservation. The third strength is the geological underbedding of the area. UCCFS and the surrounding region have an abundant resource of highly fossiliferous strata that can provide a better understanding of past environments and biological evolution. Finally, because of its location on the outskirts of a major metropolitan areas and because it is situated in an identified area of air and water pollution, UCCFS is in an opportune location to record atmospheric, hydrologic, climatic and environmental changes in terrestrial and aquatic habitats over time.

Not only will research at the field station produce valuable data regarding climate change, environmental impacts, geochemical processes, hydrology, and land management, but it also will serve as a center of environmental education, positively influencing the professional lives of students that participate in UCCFS programs. Leaders in science, such as Harvard Professor E.O. Wilson, have called for the training of more environmental scientists, and this new field station will help fulfill that need. Students will gain confidence, self-esteem and life skills at UCCFS that will enable them to engage more effectively in the larger scientific community.
Students will be encouraged to continue their studies and pursue careers in the sciences, an area that will benefit from a greater diversity among its ranks. Toward this end, the UCCFS scientists will actively recruit budding scientists from underrepresented groups. UC is a major urban university with a substantial enrollment of African American (10.1%) and other minority students (4.3%). The University is committed to student diversity and offers numerous scholarship and fellowship opportunities for underrepresented minority and women undergraduates.

The Darwin T. Turner Scholars program, administered through the Office of Ethnic Programs and Services, supports a number of undergraduate students. The UCCFS scientists will participate in the Women in Science and Engineering (WISE) undergraduate mentoring program as sponsors of undergraduate students during the summer months. Any minority students participating in this research will be encouraged to attend annual meetings of professional societies and present research posters in venues like the Charles H. Turner Memorial poster session, sponsored by the National Science Foundation. Turner was the first African American to receive a graduate degree at the University of Cincinnati (M.S. 1892) and went on to become a prominent research biologist and educator at the turn of the last century.

Students in the Cincinnati Public Schools STEM (science-technology-engineering-mathematics) program at Hughes High School potentially will be able to participate in hands-on research at the UCCFS. This STEM program is designed to provide high school students with enhanced learning opportunities in the sciences. Through the University of Cincinnati’s participation in these programs, students from all socioeconomic backgrounds will have the chance to explore research possibilities in the unique facilities and surrounding landscape of the UCCFS, complementing the University’s urban campus with one immersed in nature.
2.1.1 Mission and Vision

The University of Cincinnati Center for Field Studies is committed to increasing public understanding of science through research, the training of the next generation of scientists, and public presentations on current topics in the environmental sciences. As a result, both the University of Cincinnati and the Hamilton County Park District (HCPD) will be better equipped to further their goals in education and outreach, benefiting the community as a whole. The wide range of research opportunities that the UCCFS can offer to students, teachers, and visiting researchers is hard to find at another location. Options for research range from environmental studies to investigations examining the Ohio Valley’s historic and prehistoric past. With room to grow and adapt to future needs, the UCCFS will create important research and learning opportunities. Through research, education and interactions with the public, the UCCFS hopes to become an example of how science can address societal needs.

UCCFS Executive Director David Lentz (left) with Hamilton County Park District Director Jack Sutton (right) at the UCCFS kick-off ceremony in September 2008.
2.1.2 Goals

UCCFS allows for a wide breadth of research possibilities because of the diverse natural and cultural environments, with easy access to rivers, mesophytic forests, wetlands, prairies, and geological features, all contained within a deep historic and prehistoric context. With a focus on developing research and teaching facilities, UCCFS seeks to:

- Provide research space for both students and teachers
- Provide educational opportunities in a field-oriented setting
- Facilitate interaction between academic disciplines
- Offer a hands-on approach for students by providing a number of courses and workshops that utilize this unique facility
- Conduct research on natural ecosystems in a changing environment
- Create interdisciplinary opportunities for students and researchers to broaden their knowledge beyond their immediate areas of study
- Collaborate with scientists from other colleges and universities throughout the region to enhance cooperation and understanding of regional and local environmental issues
- Find ways to address the challenges that arise from climate change
- Work with land and resource stewards to improve the understanding and management of our environment
- Communicate science to the public and provide scientific insight to help address societal problems

It is a profound mistake to think that everything has been discovered; as well to think the horizon be the boundary of the world.

— Antoine-Marin Lemierre
2.1.3 Faculty, Students and Activities

Faculty from a number of UC programs (i.e., Geology, Biology, Environmental Studies, Geography and Anthropology) are conducting research at the field station. In addition, our HCPD partners are interested in research efforts that focus on land and resource management issues, as well as curriculum development and teacher training for environmental education. Researchers from state, regional and national agencies, who would be interested in applied projects addressing environmental management questions relating to public policy, also will be welcome. UCCFS will offer research resources to those who can effectively use the facility as a research home. Collaborations with scientists from other colleges and universities will be encouraged.

The strengths of the field station as previously described will contribute to successful educational programs. Perhaps the most significant educational resource is the merging of the educational visions of both HCPD and UCCFS. The University has a long history of providing hands-on educational opportunities for its students, especially in the sciences. UC recently presented an educational vision for the 21\textsuperscript{st} century, placing students at the center of an integrated approach to knowledge as befits a major urban research university. This UC|21 plan states that scholarship will emphasize inquiry, research, experimentation, investigation and production. These are exactly the attributes a field station provides for a memorable and effective educational experience.

The Hamilton County Parks District is a leader among park systems in the nation, and its success as an institution offering excellent science education programs to its visitors is unrivaled. The HCPD recently revised its Strategic Plan to describe a new mission, core values and vision. The mission is "to preserve and protect natural resources and to provide outdoor recreation and education for present and future generations." Their current resources and programs accomplish this mission in a notable...
manner, but immediate access to field research projects will significantly enhance the experience for participants at the HCPD. The excitement of participating with researchers as they work in the field deepens an understanding of the scientific method; and of the richness, diversity and complexity of the natural world. The combination of HCPD programs with the research that UC and other scholars will be conducting at the field station will point toward a national model for a successful civic-academic partnership.

The diversity of habitats available at Miami Whitewater Forest provide a wide range of teaching opportunities. There are major rivers, streams, aquifer systems, a lake, ponds, springs, mature forests, developing woodlands, unique geologic formations, old fields, old and new building areas, and landscaped areas. It is desirable, but not always possible for an urban university to provide access to such an extensive natural area within a short distance of its campus. General scientific principles can be illustrated in a variety of ways. In-depth topics can be explored, such as the impact of invasive species on the environment, patchy habitats as wildlife resources, and agricultural and resource management techniques that are sustainable within the local natural setting.

The first university class to be held on site, Environmental Field Technique, was taught in the summer of 2008 at UCCFS and led by faculty in Biological Sciences. Expanded and enhanced course offerings continue to be successfully introduced, as was the Archaeological Field School that opened in the summer of 2008. Excavations of an ancient Hopewell village at Shawnee Lookout Park, another HCPD property, are already providing new insights into the climatic and cultural history of the Ohio Valley. This project will be the focus of numerous planned research papers and a topic of several graduate theses.
Several departments are considering the aforementioned courses as models for additional UCCFS course offerings. Topics for future classes include paleoecology, paleoclimatology, field botany, remote sensing for environmental resource mapping, hydrology, contaminant tracking, field archaeology and aquatic biology. The Geology faculty also has suggested a three-week intensive Ordovician fossil field camp.

With this much potential and interest, the UCCFS could become an integral part of undergraduate and graduate education at UC.

2.1.4 UCCFS Staff

The suggested administrative structure for existing and projected staff positions for the UCCFS are listed below.

- **Executive Director**

  A full-time Executive Director, Dr. David Lentz, was hired in September of 2006. The Director is responsible for spearheading the planning process, implementing the strategic plan, identifying and driving the research agenda, operating the field station and working with the College development office to maximize the fundraising potential for the field station. The Director also represents the Center to the local, regional, national and international scientific community and the general public.

- **Administrative Assistant**

  This position is anticipated to be part-time, on site, and to administer paperwork for all field station activities, including accounting, administrative assistant duties, correspondence, and scheduling requests for approval by the Director.
• **Resident Manager**

The resident manager will reside on site to manage oversight and security of the buildings and the research areas. Specific duties include: maintaining the facility, providing or supervising custodial activities and making emergency repairs.

• **Program Coordinator**

As the number of educational and research programs grow, a part-time program coordinator will be added to the staff. This position will be combined with a junior faculty appointment. The coordinator will assume responsibilities for coordinating programs with the HCPD, agency collaborators and others. Duties would include conceptualization and design of programs, but not necessarily their day-to-day operations over time.

• **Collection and Data Manager**

The field station collection and data management program can begin before any future facilities are built. The need for a full-time manager is likely to occur fairly rapidly and it is our desire to fill this position within the next year.

*Those who dwell, as scientists or laymen, among the beauties and mysteries of the earth, are never alone or weary of life.*

---Rachel Carson
2.1.5 Academic Strategic Plan

The most important feature of this university field station is the excellence of the research conducted. Peer-reviewed and intellectually rigorous research efforts provide a solid foundation for all other programs. A community of scholars will be created that welcomes researchers, students, teachers and other professionals to participate in classes, workshops and research activities. Open debate concerning current scientific issues gives everyone the chance to deepen their knowledge and awareness, and to engage in thinking about complex topics. This will create a fertile environment for students to learn and develop research projects of their own. Also, the research environment will generate a core of knowledgeable scientists that bring enthusiasm and a depth of local, as well as global, information to their lectures. In short, the main focus is on research, but a strong research program will support and enhance a vibrant educational program.

The limitations in classroom and laboratory space and the associated technological support systems of the existing facilities on the UCCFS campus impact the current curriculum potential. Despite this challenge for research and academic programming, the abundant natural resources of the field station property, and those contained within the Hamilton County Park District, have opened doors of teaching and learning opportunity to include classes in environmental and archaeological field techniques, aquatic ecology, and soils and edaphic conditions. In addition, courses in paleoecology, paleoclimatology, environmental resource mapping, hydrology, environmental science, Ordovician fossil field research, ornithology, herpetology, entomology and local flora taxonomy have also been planned.

To meet the current and projected research and educational interests and requirements of all existing and proposed programs at the field station, construction of a new laboratory and classroom building is critical to the maximization of its potential. A detailed assessment of the functional and spatial requirements of the proposed new buildings is listed in Section 4.2 Program of Requirements.
3.0
Existing Conditions
3.1. Campus Context

The UCCFS site has a unique natural and built environment that has shaped its development and will continue to influence the future evolution of the site.

Geological History

The UCCFS site is located in the final reaches of the last major glacial action within the Ohio River Valley and Great Miami River Valley regions, and on what was once a vast prehistoric ocean. These combinations of alluvial deposits, fertile soil deposits and calcium-rich limestone helped make this a rich farming area for generations. Major aquifers lie beneath the site and stretch to the north, providing drinking water for local residents. Please see Section 8.0, Appendix, for maps and more information regarding the geology of the site.

Early History

Indigenous populations first settled in this area around 800 BC. The earliest inhabitants were mound builders, but little is known about their culture. By the late 1700s when settlers of European descent first began entering the region, the Shawnee people already had an expansive settlement in this region.
**Recent History**

Shakers settled this area in 1824 and founded Whitewater Village, the fourth and last Shaker settlement in Ohio. The original settlement was only 20 acres and had 18 members. By its peak, the community held 1,400 acres and had 125 members. The UCCFS site was developed as a farmstead around 1830 when the existing farmhouse was built.

The Shakers were a sect of Protestants known for their simple, communal lifestyle dedicated to hard work and religious service. Though the Shakers peaked in 1840 with around 6,000 members and are nearly non-existent today; their legacy lives on in American culture. Their utilitarian architectural styles influenced the Modernists of the early 20th-century and their plain, but elegant furniture style continues to be popular. The farm house is a good example of Shaker-inspired architecture—unadorned and simple brick. While it was not originally built by the Shakers, it was used by their community in the late 19th century.

The Whitewater Village was abandoned in 1916, as the group ceased to exist. Farmers occupied the house throughout much of the 20th century, adding barns and a garage to the site. Most recently the property was donated to the Hamilton County Parks District and became part of the Miami Whitewater Forest.

**Agriculture**

The Shaker residents presumably removed much of the forest which would have covered this area in order to build their structures and furniture. The cleared area proved to be fertile agricultural land due to the alluvial deposits from the nearby Great Miami River and the glaciers from the last ice age.
The Shakers probably would have grown a variety of crops since they were a largely self-sufficient community. Two important commercial ventures of the Whitewater Village Shaker community were straw for manufacturing brooms and crops for seed production. More recently, local farmers have used the cultivated lands for corn and soybeans.

**Preservation**

The site contains architecture of some historical significance, natural ecosystems, trees and archaeological remains which should be preserved whenever possible for their importance to our cultural heritage and our desire for a more sustainable approach to constructing on the land.

**Historic Guidelines**

While the property has historic mid-19th-century connections to settlement of this region, and notably the Whitewater Shaker community, it is not an original Shaker property and not included on the Department of the Interior’s National Register of Historic Places. Any ordinances associated with current or future development of the site fall under the jurisdiction of Crosby Township, Hamilton County and the Hamilton County Parks District.
**Local Context**

The site is located at 11053 Oxford Road in the village of New Haven, Ohio. The mailing address is Harrison, Ohio (about 3.5 miles to the southwest). The site is within Crosby Township and within Hamilton County. It is approximately 22 miles from the University of Cincinnati’s Uptown campus.

The 17-acre property, which is leased from the Hamilton County Parks District, is located in the northern portion of the Miami Whitewater Forest. The terms and conditions of the University’s lease agreement are detailed in Section 8.0, Appendix.

The property is divided by Oxford Road into an eastern and a western section, with more than half of the 17 acres existing on the east side of Oxford Road. This portion is currently being used for agricultural production, but with no supporting structures.

The definitive physical separation of the site, by the road, influences proposed future use of the field station property, by assigning new classrooms, laboratory and dormitory structures into an integrated connecting plan with the existing residence, barns and outbuildings on the west side of Oxford Road, while the eastern portion of the property would be used for greenhouses, a head house and agricultural research functions.

Future plans will require visual and physical connections (driveways, axial alignment of buildings, plantings and infrastructure) between east and west properties, as well as a conspicuous and safe crossing zone.
3.2 Environmental Assessment

The environment of the field station campus is abundant with natural resources that support current and future UCCFS classroom, field study and research programs.

The field station and the immediately adjacent HCPD property includes aquifer, wetland, creek, woods, pastures, prairies, cultivated agricultural fields, landscaped areas, and rich archaeological and geologic content.

These bountiful resources add texture and diversity to the campus, but only represent a fraction of the extensive resources contained within HCPD’s 16,000 acres of park land; property which is recognized in the lease agreement as being available for educational and research use by the UCCFS students and faculty. (Refer to Section 2.0, Academic Plan, to see a listing of existing and future curriculum and Section 8.0, Appendix, for terms and conditions of the lease agreement).

Environmental Resources

- Water

The aquifer is viable and plentiful and recent water quantity and quality inspections suggest a sufficient volume to adequately service existing and future UCCFS needs.

A seasonal wetland is adjacent to the northwestern edge of the site and the water is detained in this basin by a man-made earthen dam. An overflow drain allows water to move through the dam and migrate south across the site depositing into Howard Creek which, like the wetland, contains its greatest volume in the late winter and spring.
seasons. The water flow in Howard Creek has sufficient depth and current that the sloping sides demonstrate noticeable erosion, exposing its stratified and fossilized profile. Furthermore, the creek’s water flow has occasionally climbed above its banks, introducing a flood plain on the southern portion of the site west of Oxford Road. It is recommended that future buildings be placed north of this area prone to flooding.

- Pastures and Prairies

The existing pastures and prairies offer additional biotic diversity by introducing habitat, successional evolution and wildflower populations to both the semi-managed and natural, undisturbed areas of the site. The primary prairie areas exist beyond the northern and western property boundary, and are vegetatively managed through annual burning by HCPD staff. The existing pasture areas reside within and beyond the property boundary west of Oxford and consist of minimally-maintained grassy areas with mixed deciduous tree species—mostly oak and osage orange in the area between Oxford Road and the barn, as well as volunteer species such as hackberry, locust, mulberry, cherry and hawthorn in the pasture area along the western edge.

The westernmost pasture area is the likely preferred location of the archaeology research facility and the complementary laboratory and dormitory buildings. It is also the area in which the natural watershed moves through the site. Future development of this area will necessitate thoughtful placement of the buildings and infrastructure to accommodate spatial requirements, and to minimize the environmental/ecological impact. (Refer to Section 3.3, Site Analysis for related remarks).
• Lawns and Trees

It is a Master Plan recommendation that the lawn and mature tree population that exists north of the main entrance be preferentially maintained and left principally undisturbed (from a development perspective).

Future construction in this area is intended to be selectively evaluated. The Master Plan acknowledges the potential need for a dormitory to house 20-30 residents. The current proposed location would be along the far west edge of this maintained lawn area, with a complementary pedestrian connection linking it to existing buildings and the proposed education/research facility. See Section 5.0, Alternative Concepts.

• Agricultural Fields

The area surrounding the property is conspicuously agricultural. The field station is no exception, with the land on the east side of Oxford Road in soybean, wheat and corn production.

There is an opportunity for the east side of the UCCFS campus to be utilized for environmental studies, field plantings and crop research. Similarly, the open, flat cultivated fields offer the best opportunity for placement of greenhouses and a head house—facilities that would compatibly service the botanical/agricultural research initiatives. In addition, greenhouse space may be used for entomological research on insect—plant interactions.

Infrastructure to support these programs is not currently present (i.e. well, electric, IT, sanitation).
Development of a visual and physical link between the eastern and western portions of campus will enhance the integration of the agricultural context of the east into the built environment of the west.

### 3.3 Climatic Assessment

Climatic conditions could be considered a subset of an environmental assessment, however, they have such potential to significantly influence site and building design from a sustainability perspective, that they merit separate commentary.

The site is located in the Northern Hemisphere at latitude 39.28548619247578 and longitude -84.7410249710083. The average number of sunny days is 81 days per year. The UV Index ranges from 0 (December) to 7 (July) and the USDA Plant Hardiness Zone is 6. Situated in the gently rolling lands west of the Appalachians and within the Ohio River Valley, the site has a typical Midwestern climate, though with high summer humidity due to its position in the river valley.

Winds are minimal with summer prevailing winds from the southwest and cold winter winds from the northwest. Wind speeds average less than 12.3 miles per hour (the minimum speed generally recommended for wind turbine electrical generation). Even though wind speeds are relatively low, building orientation and site improvements should be designed to maximize the positive impacts of the wind, while minimizing its negative impacts. An orientation to the southwest would allow the opportunity for natural ventilation during the temperate seasons while minimizing the amount of building surface exposed to northwest winds during the cold months. Mounding and landscaping on the northwest of the building site would also be beneficial.
### Annual Climatic Data for UCCFS Site

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>July</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg. High</td>
<td>37 F</td>
<td>42 F</td>
<td>54 F</td>
<td>65 F</td>
<td>74 F</td>
<td>82 F</td>
<td>86 F</td>
<td>85 F</td>
<td>78 F</td>
<td>67 F</td>
<td>55 F</td>
<td>44 F</td>
</tr>
<tr>
<td>Avg. Low</td>
<td>18 F</td>
<td>21 F</td>
<td>31 F</td>
<td>40 F</td>
<td>48 F</td>
<td>58 F</td>
<td>64 F</td>
<td>61 F</td>
<td>55 F</td>
<td>44 F</td>
<td>34 F</td>
<td>25 F</td>
</tr>
<tr>
<td>Mean</td>
<td>28 F</td>
<td>32 F</td>
<td>44 F</td>
<td>54 F</td>
<td>62 F</td>
<td>71 F</td>
<td>75 F</td>
<td>74 F</td>
<td>67 F</td>
<td>55 F</td>
<td>45 F</td>
<td>34 F</td>
</tr>
<tr>
<td>Avg. Precipitation</td>
<td>3.0 in.</td>
<td>2.9 in.</td>
<td>4.4 in.</td>
<td>4.1 in.</td>
<td>4.8 in.</td>
<td>3.7 in.</td>
<td>4.5 in.</td>
<td>3.8 in.</td>
<td>3.3 in.</td>
<td>3.1 in.</td>
<td>3.8 in.</td>
<td>3.4 in.</td>
</tr>
<tr>
<td>Avg. Snowfall</td>
<td>5.7 in.</td>
<td>3.7 in.</td>
<td>4.7 in.</td>
<td>0.5 in.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.1 in.</td>
<td>5.8 in.</td>
<td></td>
</tr>
</tbody>
</table>
3.4 Site Analysis

An analysis of the site provides an in-depth assessment of existing conditions as a precursor to the successful development (academic, programmatic, economic, efficient and resourceful) of the UCCFS campus. This comprehensive assessment identifies existing conditions; suggests future infrastructural needs; and provides valuable information critical in long-range planning.

The site is located within the Miami Whitewater Forest, in an area of gently rolling topography, mixed mesophytic forest, reconstructed prairies, wetland habitats and agricultural fields. A small creek with a stratified rocky slope borders the southern edge of the property. The creek typically floods in spring and remains relatively low or dry in summer and autumn. A reconstructed prairie west/northwest of the leased area. The prairie is managed by HCPD through annual controlled burning. Within the prairie is an existing wetland adjacent to the property with a small man-made earthen dam, the outflow from which traverses the site from its north to the creek on its southern boundary.

There is evidence of erosion at the south and west side of the property. A scarp demarcates the flood zone and the topography descends from north to south, falling toward the creek.

An expansive lawn with mature trees introduces a park-like quality to the area north of the main residence. It is recommended that this area be judiciously managed and integrated into the pedestrian circulation plan (ie. If a dormitory is constructed on the western edge of this lawn area). Oxford Road divides the site, with all existing buildings on the west and flat, agricultural fields and a small, immature woodlot on the east.
The use of the 17-acre site has been predominantly agricultural and the existing structures reflect typical agricultural functions: a farm house, barns and outbuildings for storage of equipment, produce, livestock, grain/hay and supplies.

The existing buildings are expected to remain, with the possible exception of the western-most outbuilding, which might be considered for demolition in order to enhance the visual and physical east/west axial connection. The main residence is currently being upgraded. Alternative uses could be considered for the barn and outbuildings. Meeting and storage space would be appropriate functions for the barn, although significant code upgrades and expenditures would be required. Other existing outbuildings could accommodate selective storage functions.

While the farm’s main residence was not an original Shaker residence, a Shaker family did occupy this property. New buildings do not need to match existing buildings, but their architectural form should blend in with existing structures and reflect Shaker principles. Utilitarian, simple and agricultural design should apply, wherever possible, and integrate into the contemporary design theme of sustainability.

The archaeological remnants of early buildings and other artifacts on the site should be preserved so that future investigation and excavation can be conducted.

There are limited utilities at the site, typical of a rural, agricultural setting. The existing utilities include single phase electric (7200V), a water well, residential septic system with leach field, and phone service at the road. There is no gas service to the property; heating is via fuel oil. There is an existing sewer easement on the property, but there are currently no connections to Crosby Township or Hamilton County sanitary or storm water infrastructure. Preliminary discussion with Hamilton County
suggests that there is no longer a need for the easement, and that it can be removed from the public record. Please see map on following page for more information on existing utilities. A utilities matrix summarizing existing and proposed utilities is included in Section 8.0, Appendix.

Arrival to the site is relatively easy via local roads from Interstate 74. Vehicular access is from Oxford Road to an aggregate driveway which runs west through the site, between the farm house and the barn. Crosby Township required that the new driveway be paved, or tar and chip in order to mitigate the environmental impact of dust. A large vehicular turnaround with adjacent parking appears adequate to accommodate current use. Additional parking to accommodate students, faculty and visitors will accompany future development plans. ADA compliant and bus parking will be provided.

Long-term enhancement of the east/west axis through landscaping, lighting and expanded hardscape will improve the visual and physical connections on both sides of Oxford Road and improve pedestrian and vehicular circulation throughout the site.

Similarly, development along the north/south axis, particularly on the west side of Oxford Road, will require thoughtful consideration. With the majority of visitors to the site arriving from New Haven, the view corridor along Oxford Road, looking toward to the farm house and site entrance, should be preserved. A possible exception might be the strategic placement of deciduous trees whose canopy would eventually provide shade, while still allowing views into the campus. It is required that any proposed construction east of the main barn along Oxford Road comply with Crosby Township zoning (set-back requirements).
Currently, there are virtually no site furnishings on the field station campus. Design standards for site furniture and fixture selection (i.e. tables, benches, lighting, trash/recycling, etc.) will be established and conform to a unified theme influenced by the simplicity and functionality of the Shaker tradition.

Similarly, a signage design standard will be established that recognizes current needs and future growth. Materials, color, branding elements, form and placement will be determined by the University’s Senior Environmental Graphic Designer in collaboration with UCCFS and HCPD’s Executive Directors.

Fences, where needed for containment or to establish boundaries, will be designed and installed while considering the safety and convenience of site occupants.

In summary, and based on campus context, environmental and climatic assessments and site analyses, there are four predominant development areas:

1) Existing buildings and their proposed improvements and uses
2) Teaching and research buildings on the westernmost portion of the site
3) Residential housing at the west edge of the lawn/park-like area north of the farm house
4) Agricultural and compatible structures (ie. greenhouses) on the east side of Oxford Road.
4.0

Planning Framework: Buildings & Site
4.1. Design Ideas

It is important that new buildings have a similar architectural appearance, so that the entire development has a unified look. This could be done in any number of ways, such as commonality of materials, consistent proportions, color and thematic elements.

Numerous open space components also need to demonstrate a similar continuity. It is recommended that open space standards be developed for the entire site. Some existing University of Cincinnati standards may be applicable; others are contextually inappropriate. Open space considerations should include, but not necessarily be limited to:

- **Hardscape**: vehicular surfaces, pedestrian walkways, exterior gathering spaces (ie. decks and patios), concrete details and vertical surfaces
- **Site Furniture**: tables, benches, trash cans, recycling containers, bike racks, umbrellas, shading devices and water fountains
- **Landscaping**: native and drought-tolerant/disease-resistant species
- **Signage**: must meet Crosby Township, HCPD and UC standards
- **Lighting**: simple and “dark sky” compliant (establish a minimum F.C. standard of 0.25—0.5)
- **Other**: ADA requirements, railings and emergency help phones

An architect will be selected and commissioned to provide professional architectural and engineering design services consistent with the requirements of Ohio Revised Code 153. The intent of this section is not to replace the conventional design process, but to offer an organizational framework and overriding concepts from which design ideology is initiated.

The site, the history of the area, and the proposed use and function of the site all provide important design clues. Section 3.0, Existing Conditions, provided insight into the context in which the site
operates. The relative placement of new structures has been suggested and some commentary about existing buildings has been provided. The integration of old and new may be a challenge. It would be easy to identify the existing buildings as foreground structures and the new buildings as background; letting the architecture of each stand on its own. While there is design merit to such a foreground/background concept, the design professionals are encouraged to consider each new and existing building as a singular element on the horizon and that the completed composition appear as an aesthetically unified whole. This could be done through commonality of colors, materials, consistent use of proportions, design elements, the celebration of thematic and/or integration and unification of site elements.

The Shaker influence in the area suggest simple, straightforward and utilitarian design. Also, the budget will not support any more than a minimalist approach. A simple and inexpensive building usually suggests rectilinear shapes in plan and elevation, as well as a rectilinear volume. This creates a dichotomy with the organic nature of the site. However, a sensitive integration of the building with the site will mitigate any potential imbalance. Integrating the building with the site means engaging and embracing the natural resources:

- Bringing the outside in and the inside out
- Integrating the draining swale with building placement
- Elevating a viewing platform to overlook the prairie, creek and wetland
- Using natural lighting to enhance views
- Creating transparency with the natural environment

Building design and placement needs to be responsive to prevailing climatic factors as identified in Section 3.4, Climatic Assess-
Integration into the long term plan is important. Future flexibility and adaptability will be key. The first new building, the Court Archaeological Research Facility (CARF), will need to be self-supporting, but will need to be designed such that it can easily be integrated with future buildings. Utilities and infrastructure will need to be developed with individual building components, while engaging the long-term plan.

Adaptive use of the existing buildings will need further study as the Master Plan evolves. Storage and meeting space are the most obvious potential uses for the barns and outbuildings. However, re-use as meeting/congregational space could be expensive due to code requirements and modifications.

Most users and visitors will approach the site from the south. As a result, construction of new buildings east of the large barn will require compliance with township set back requirements, in order to preserve the view corridor along Oxford Road.

The bisection of the site by Oxford Road creates a challenge. Anything that can be done from a design perspective to enhance the east/west axis is strongly encouraged. Embellishing the entry drive, extending the entry drive to the east across Oxford Road and creating a crosswalk of unique pavement across Oxford will improve the unification of the site. A special crosswalk would also act as a traffic calming device to improve pedestrian safety.

There are some Master Plan limitations that could create unique design opportunities:

- Site
- Budget
Site constraints are obvious, but the positive attributes of the site far outweigh any limitations. Budget limitations are significant on the first building (CARF) and are likely to remain a significant factor in future development. Initial capital expenditures need to be minimized, but not at the expense of long-term operational costs. Both capital and operational expenses need to be reduced. Pre-fabricated buildings, systems or components need to be considered. Reuse of premanufactured assemblies could be an option (reference Section 8.0, Appendix for additional examples). Operational expenses for the building need to be assessed within the context of sustainability and life cycle costs. Site improvements should be designed with low maintenance in mind. Fundraising is an important contributing factor to the budget. A strong promotion and marketing program is encouraged, not only to raise capital dollars, but to sustain ongoing education and research. Active pursuit of incentives, grants, sponsored initiatives, corporate sponsorships, and government funding opportunities are strongly encouraged. Administrative constraints relate to the client, the Owner of the property, the Owner of the improvements, and the approval process. UC is a State of Ohio entity which requires compliance with Ohio Revised Code 153. The Master Plan improvements will be managed through the Office of the University Architect as a collaborative effort. UC's College of Arts & Sciences will be the end user. The Owner of the property, HCPD, has review and approval rights. Building authorities include Crosby Township and Hamilton County. It is strongly encouraged that the myriad of entities be viewed not as another hurdle to overcome, but as active participants with whom dialogue, interaction and collaboration will result in stronger design ideas and a more cohesive overall plan.

These design ideas are further explored in Section 5.0, Alternative Concepts and 6.0, Recommended Development Plan.
4.2. Program of Requirements

A program of requirements typically describes proposed spatial needs and the activities and functions associated with the space. The requirements are generally identified within the context of a building, but could also include site parameters and special or unique requirements. For the purposes of this Master Plan, the requirements are identified as “Internal Program.”

There may be external factors that influence the program that are neither building, nor site specific. This Master Plan identifies those factors as “External Influences.”

4.2.1 Internal Program

Explanation of Space Requirements

Archaeological Research Facility
The Court Archaeological Research Facility will consist of three rooms: a research area, a general area and an archive. The research area (400 ft²) will have water service, cabinetry, an island and lab benches and possibly a fume hood. The general area will have an open floor plan with a conference table, work stations and office space (600 ft²). The archive (1000 ft²), designed for the storage of archaeological artifacts, will have artificial light (only), concrete floors and will be climate controlled. The room will be equipped with heavy-duty shelves designed for the housing and curation of artifacts.

Laboratory Pod
Two classrooms that will accommodate 20-30 students each are requested for the Laboratory Pod. These will be proposed “smart” classrooms with all of the currently available projection and com-
puter technologies. Two separate classrooms are needed. They should be designed to provide simultaneous utilization with a removable wall between them, enabling the expanded space to serve as a larger lecture/meeting space. All rooms in the Laboratory Pod must be climate controlled.

A conference room with library shelves is requested. This may also serve as a lunchroom. A kitchenette with microwave, refrigerator, stove, sink and dishwasher should be adjacent to the conference room.

A teaching laboratory, designed to accommodate 30 students, will be equipped with lab benches, cabinetry and at least one large fume hood. Water and possibly gas hook-ups will be required. (“Smart” classroom technology is highly desired in the teaching lab.)

Four research offices and labs (525 ft² each) equipped with benches, cabinetry and fume hoods would be available for faculty researchers. Water and possibly gas will be required in each lab. These could be arranged as lab bays similar to the University of Toledo model (see Section 8.0, Appendix).

Four staff offices are requested (120 ft² each) as well as a Directors office (150 ft²). These should have high-speed internet connections and adequate natural lighting. It is recommended that the staff offices be in an open room arrangement with a support area/kitchenette and a small storage room.

A small room that is modestly climate controlled, without direct natural lighting, will be needed as a dry storage area for specimen such as fossils, dried plants or preserved animal collections. This will be of modest size (500 ft²). Storage of other, less sensitive items can occur in one of the sheds or the barn.
An analytical room will be designed to accommodate computer stations and microscopes. This room should include desk high benches and high-speed internet connections. Several “snorkels” or small, moveable vent outlets that will draft fumes to the exterior should be considered.

Also of importance is the need for non-climate-controlled storage for cores, rocks and field equipment. This need can be met by upgrading one of the sheds currently located at UCCFS.

**Greenhouse**

A greenhouse is proposed for the UCCFS campus that will provide complementary academic/research opportunities for various disciplines. The placement of the greenhouse would be most compatibly sited on the east side of Oxford Road due to the prevailing contextual, climatic and topographic requirements associated with use and construction.

The construction of 4000 SF of greenhouse space, along with a 500 SF headhouse will require placement that conforms to existing and proposed east-west axial and circulation relationships with the western portion of campus. A new driveway, parking and infrastructure will be required. The proposed driveway will be in alignment with the primary entrance to the Field Station. Supporting infrastructure will include power, data, water (a new well is proposed) and potentially geothermal. Landscaping, lighting, connecting sidewalks and drive surfaces will also be included.

The existing agricultural nature of this site and its deep soil profile supports research efforts where surface cultivation is required. The proposed position of the greenhouse and accompanying service components included on the site plan in Section 6.0, Recommended Development Plan. A construction and schedule estimate is included in Section 7.0, Implementation Strategies.
**Dormitory and Future Needs**

Future plans may include the construction of a dormitory capable of accommodating 20-30 occupants (students and visiting scientists).

The placement of this structure is proposed along the northwest edge of the property line adjacent to the Hamilton County Park District's prairie and wetland (see Site Plan in Section 6.0).

While the program identified 20-30 guests, the cost and schedule estimate is based on 20 occupants and 6500 GSF of building (see Section 7.0, Implementation Strategies). Once needs and funding are established, the dormitory should be designed to contextually integrate into the predisposing architectural theme of the new buildings on the site and, of course, be ADA compliant. Because of the dormitory's proposed location in proximity to the managed prairie, wetland and the park-like lawn area behind the 19th-century brick farmhouse, the design should demonstrate a sympathetic transparency where views to the natural surroundings from the interior to the exterior are encouraged.

Additionally, with new infrastructure and new use (a dwelling for 20+ occupants) being introduced, new zoning and code compliances may be required (particularly as the site conforms to sanitation management).

The building will offer complementary outdoor programmable space, with lighting, landscaping and hardscape included to ensure its “connectivity” to the existing and proposed buildings and parking areas.
Table 4.2.1 General Program
Field Station Laboratory, Archaeological Research Center and Greenhouse Buildings

<table>
<thead>
<tr>
<th>Laboratory Pod</th>
<th>Area (in sq. ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classrooms (2 @ 700 ft² each)</td>
<td>1400</td>
</tr>
<tr>
<td>Library/conference room</td>
<td>500</td>
</tr>
<tr>
<td>Kitchenette</td>
<td>120</td>
</tr>
<tr>
<td>Teaching lab</td>
<td>1000</td>
</tr>
<tr>
<td>Research ofc. &amp; labs (4 @ 15 x 35 = 525 ft²)</td>
<td>2100</td>
</tr>
<tr>
<td>Staff offices (4 @ 120 ft² plus storage room, open area)</td>
<td>500</td>
</tr>
<tr>
<td>Dir. office</td>
<td>150</td>
</tr>
<tr>
<td>Dry specimen storage (e.g., herbarium, insect cases)</td>
<td>500</td>
</tr>
<tr>
<td>Analytical equipment room</td>
<td>500</td>
</tr>
<tr>
<td>Service (Halls, baths, HVAC etc. = 30%)</td>
<td>2,030</td>
</tr>
<tr>
<td><strong>Sub-Total</strong></td>
<td><strong>8,800</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Greenhouse</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 bays at 1,000 ft² each</td>
<td>4,000</td>
</tr>
<tr>
<td>Head house</td>
<td>500</td>
</tr>
<tr>
<td><strong>Sub-Total</strong></td>
<td><strong>4,500</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Archaeological Research Facility</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research area</td>
<td>400</td>
</tr>
<tr>
<td>Conference, study and office space (open floor plan)</td>
<td>600</td>
</tr>
<tr>
<td>Archival space (no windows, concrete floor, climate con-</td>
<td>1,000</td>
</tr>
<tr>
<td>Service (Bathroom, HVAC etc.)</td>
<td>500</td>
</tr>
<tr>
<td><strong>Sub-Total</strong></td>
<td><strong>2,500</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15,800</strong></td>
</tr>
</tbody>
</table>
4.2.2 External Influences

A significant factor influencing the program is the context of the site within Miami Whitewater Forest. The entire Forest becomes potential laboratory research space (subject to prior approval by HCPD). Easy and convenient access to adjacent research opportunities are critical; the most obvious being Howard Creek, the prairies and the wetlands.

The site’s location in western Hamilton County is significant in that most users and visitors will need to drive to the field station. Parking for vehicles as well as for buses bringing large groups, will need to be accommodated. The site is near an extensive bike path within the Miami Whitewater Forest so bike storage should be included.

4.3 Sustainability and Integrated Design

Sustainability promotes the preservation of the environment for future generations. Preservation requires an in-depth understanding of the world in which man and nature co-exist in a highly complex ecosystem. The mission of the field station fosters an understanding of the natural environment by promoting “inquiry and discovery about the natural world through a unique integration of research and education”. Areas of research support the mission and focus upon: 1) biological diversity, species composition in an ecosystem function; 2) ecological aspects of biogeochemical cycles; 3) ecological implications of climate change; 4) land use dynamics and habitat alteration across broad time scales; 5) ecology and evolution of animal behavior; and 6) hydrologic forecasting.
Furthermore, the University of Cincinnati has demonstrated its commitment to sustainability by drafting and endorsing Administrative Memorandum 135, The Comprehensive Policy on Environmental Sustainability, and by signing the American College & University Presidents’ Climate Commitment. The signing of the Presidents’ Climate Commitment has inspired at least 80 sustainable campus initiatives to date. Similarly, the site which is owned by Hamilton County Park District (HCPD) offers tremendous natural research potential. HCPD’s mission supports sustainability; and all new structures will be designed in light of this principle. Improvements to the site and the building will include sustainable principles.

The United States Green Building Council has developed criteria which can be utilized as a measure of success during design. The criteria is identified as Leadership in Energy and Environmental Design (LEED). LEED establishes a point system of measurement and the points translate to ratings — platinum, gold, silver, and certified. The higher LEED ratings usually have cost premiums associated with them; and the higher the rating, the greater the premium. For instance, the initial cost of alternative energy systems is greater than conventional systems. Because UCCFS is planned as a center of environmental research and education, our goal is to attain the highest LEED rating possible. A LEED rating requires that a building be registered. Extensive documentation will be required during the design and construction process. There are costs associated with registration and documentation and typically higher LEED ratings have commensurately higher cost premiums. It is questionable whether or not a LEED rating will be pursued for initial phases of work.

The pursuit of creative funding sources for sustainable initiatives is strongly encouraged. Those sources and/or relationships might
include partnerships, contributions, utility incentives, grants, federal and state initiatives, research opportunities, and public and private ventures. Whether or not a LEED rating is pursued, buildings and site improvements shall be designed sustainably.

The decision about whether or not to pursue a LEED rating needs to be made at the beginning of the design process. Once design has started, it is difficult to integrate complex sustainability strategies and prepare documentation retroactively. See Section 8.0, Appendix for more information about LEED criteria and the University of Cincinnati’s commitment to sustainable design.

An integrative design process shall be utilized during design. It provides an opportunity for all facility stakeholders to participate at design inception as well as create a process by which site and building systems and components can be holistically integrated in a sustainable way.

A list of potential sustainable opportunities has been developed and included in the Appendix. The list is generally organized in a format consistent with LEED criteria. A sense of priority has been developed based primarily upon costs — the greater the costs, the lower the priority. The list will be further developed and refined during the design process with the goal of maximizing sustainable attributes within the available funds.
5.0

Alternative Concepts
5.1 Relationship Diagrams

The following diagrams illustrate the relative relationships created by the various programmatic requirements with respect to the site, as well as within the two proposed educational facilities: CARF and the Laboratory Pod. The diagrams were generated following site analysis and the development of the program of requirements. The diagrams are not intended to reflect buildings or architecture, but represent in a very general way, relative sizes of space, spatial hierarchy, functions and interrelationships between spaces.
5.2 Concepts, Drawings & Descriptions

The following diagrams and conceptual drawings illustrate some of the ideas generated after studying the history, topography, climate, condition and opportunities of the site. The existing Shaker and agricultural buildings are integral to the site. However, visual and circulation connections (as depicted in the site master plan) may infer selective demolition of an existing subordinate outbuilding to improve overall site utilization. The existing trees, woods, creek, prairie and other natural areas should also be preserved whenever possible. The site’s unique position in a watershed and over an aquifer comprise some of the other challenges and opportunities in positioning a new building. Lastly, to respect the history and natural beauty of the site, as well as to educate students on the values of environmental sustainability, any design concepts should take into account issues related to preservation, carbon footprint, “green” technologies and integrated design strategies.

A School of Architecture and Interior Design studio, led by Karl Wallick, conducted a study of the site and proposed some architectural concepts for an archaeological research center. The final concept of this studio appears on page 72. Its rectilinear, U-shaped form, with porches facing the courtyard corresponds to the symmetry and order of the Shaker buildings and lifestyle, while the courtyard promotes interaction among disciplines and provides a venue for students, faculty, staff and visitors to engage. However, the U-shaped form does not respond well to site considerations such as climate, topography and property line.
Later iterations of the scheme have attempted to consider sustainability, watershed routes, space programming and usability of the courtyard. Featured conceptual designs introduced in this section integrate the proposed dormitory into the site and the building’s site placement is changed to afford better views, sun exposure and natural ventilation.

Creative design exploration, beyond conventional construction, is encouraged for CARF and the Laboratory Pod. Alternative construction systems and methods should be considered. Prefabricated buildings or building components might be an option to minimize costs. Sustainable attributes should be an important consideration. Examples could include: pole buildings, metal buildings, structural integrated panels (SIPs), concrete tilt-up construction, pre-engineered concrete systems, laminated bamboo framing, plastic and/or fiberglass framing from recycled materials, and the use or reuse or locally-available materials. Some local materials which could serve both as structure and as iconic elements might include: large containers, vessels, tanks, elements of land and sea transportation and structures/artifacts from the manufacturing or agricultural industries. These may introduce unique design opportunities worthy of consideration.
UCCFS Proposed Floorplan
Based on Program Dimensions

This concept corresponds to the UCCFS CARF and Laboratory Pod programs. See Section 4.2 for more information.
Photo with rendering of placement of greenhouse on land to east of main barn, showing unobstructed view to farmhouse from main vehicular approach.

Model with existing buildings (white) and placement of greenhouse (purple, at center) to east of main barn.
Outdoor Courtyard Concepts
A series of outdoor courtyard concepts (formal and informal) that link buildings, provide pedestrian connections and promote outdoor utilization.
Archaeology Research Facility with articulated connection to Laboratory Pod and Courtyard.

Conceptual plans for variation on “U” shaped configuration with greater respect to interior-exterior relationship, topographical influences, climate and property boundary.
The relationship of new construction to existing buildings and watershed in terms of scale, articulation and proximity.

Variation including accentuated watershed rain garden and courtyard programming/landscape.

Circulation patterns and interconnectivity of newly proposed and existing.
CARF sketch acknowledging site and sustainable attributes such as simplicity and functionality of design and the respect for natural topographic influences.
6.0

Recommended Development Plan
6.0 Recommended Development Plan

The site analysis provides an explicit direction for the placement of the buildings, as well as existing and proposed field station functions. The key elements of the site that dictate location are:

- **Existing Structures** -
  The ensemble of existing farmhouse, barn and outbuildings reflect the agricultural heritage of the site and generally should be maintained to the extent reasonably possible. However, the western-most outbuilding could be considered for demolition to reinforce the east/west visual axis established by the existing drive, as well as improving proposed pedestrian and vehicular circulation by its removal.

- **Howard Creek and its Floodplain** -
  The creek provides both visual and research opportunities. Therefore, it would be beneficial to locate teaching and research functions near the creek to take advantage of views and proximity. Creek erosion and the floodplain preclude locating any building too close to the stream.

- **Prairie and Wetland** -
  Both the prairie and the wetland afford opportunity for views and research similar to the creek. Locating a structure near the prairie and wetland would be beneficial so long as adequate separation is maintained for access and controlled burning of the prairie. In addition, the wetland’s drainage route should be maintained.

- **Parklike Setting** -
  It is strongly recommended that the lawn and trees north of the farmhouse be maintained and protected. Those trees that are structural liabilities will be pruned and/or cabled, those that are diseased/declining will be considered for removal. This area could provide an ideal front lawn for a future dormitory at the northwest portion of the site and away from soil compaction and root disturbance of the mature trees.
• **Agricultural Fields**
  The site is bisected by Oxford Road. The portion of the site east of the road is relatively flat and is currently being farmed. It is recommended that this area be maintained for agricultural/botanical research including future greenhouse and head-house construction.

• **View Corridor**
  A small field east of the barn provides a view corridor to the existing buildings and the entrance into the site. It is recommended that this field be maintained as open space without structures so that the view corridor can be maintained.

While the teaching and research functions of the development represent a common theme, the construction of buildings and their accompanying improvements to the site are relatively independent. Therefore, the individual components can be constructed independently over time, as funding and user priorities dictate, and should integrate with future development opportunities. CARF is a good example, in that funds are available and work is proceeding.

The following site and utility plans introduce a recommendation for placement of buildings, educational and research initiatives, and their accompanying infrastructure.

This overview of space assignment takes into consideration the prevailing climatic and topographical influences, existing building locations, natural resources, pedestrian and vehicular circulation patterns and programmatic intent.

The plans suggest direction for site development. However, as a three-dimensional system, comprised of existing and proposed improvements, responsible site development may require an inherent flexibility in order to create a living, learning and teaching environment that collaboratively and cohesively conforms to the Cincinnati Center for Field Studies intended mission, program, and product.
7.0 Implementation Strategies
7.0 Implementation Strategies

The teaching and research functions of the University of Cincinnati Center for Field Studies represent a common mission. The introduction of new programs, construction of new buildings, and renovations to existing buildings will occur independently as funding sources are identified.

Over time, changing programmatic needs will require that this master plan be updated and refined to remain current with evolving demands of the scientific community and the university.

Therefore, the infrastructural, educational and interpersonal relationships that emerge, and ultimately converge from this collaboration of five distinct scientific disciplines, should demonstrate a viable and symbiotic potential.

This Master Plan introduces a summary of elements (buildings and infrastructure) that, despite their sequential independence, should include infrastructure and open space improvements that address future system and circulation cohesiveness.

The following projected costs and schedules are extremely preliminary and have been developed without the benefit of detailed programming and architectural/engineering drawings. Numerous assumptions have been made and are likely to change due to factors such as availability and timing of funding, commencement of construction relative to inflation and market conditions, changes in scope, and external influences over which we have no control. Schedules are based on compliance with funding parameters as outlined in Section 8.0, Appendix.
<table>
<thead>
<tr>
<th>Description</th>
<th>Construction Cost Range (1)</th>
<th>Project Cost Range (2)</th>
<th>Schedule Range in Months (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Court Archaeological Research Facility (CARF)</strong></td>
<td>$345,000</td>
<td>$500,000</td>
<td>21-33</td>
</tr>
<tr>
<td>This research facility consists of approximately 2400 S.F. of teaching, research, office and archival space. Existing utilities will be utilized to the extent possible. Open space improvements will be included.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Laboratory Pod</strong></td>
<td>$1,500,000-$1,650,000</td>
<td>$2,100,000-$2,900,000</td>
<td>24-30</td>
</tr>
<tr>
<td>This teaching, research and office space program consists of approximately 8800 S.F. of new construction with utilities and open space improvements. It will be connected to CARF such that, upon completion, CARF and the Laboratory Pod will be one, integrated facility.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Greenhouses and Headhouse</strong></td>
<td>$320,000-$360,000</td>
<td>$420,000-$470,000</td>
<td>6-24</td>
</tr>
<tr>
<td>Two commercial polycarbonate greenhouses of 2000 S.F. each and one headhouse of 500 S.F. will provide plant research opportunities. Heating, ventilation, irrigation, shading and benches are included with utilities, parking and open space improvements.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Housing</strong></td>
<td>Construction Cost Range (1)</td>
<td>Project Cost Range (2)</td>
<td>Schedule Range in Months (3)</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------------------</td>
<td>------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Short/mid-term housing is proposed for 20 students. Exterior amenity space such as decks and a patio, as well as utilities, are included.</td>
<td>$1,050,000-1,200,000</td>
<td>$1,430,000-1,560,000</td>
<td>23-25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Improvements to Existing Buildings</strong></th>
<th>Construction Cost Range (1)</th>
<th>Project Cost Range (2)</th>
<th>Schedule Range in Months (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A wide range of scope and related expenses could be anticipated relative to existing buildings. A low end of the range could be as simple as locks, painting and lighting for use as storage. Utilization as meeting space would require major expenses for comfort, code upgrades, utilities and weather-tightness.</td>
<td>$50,000-820,000</td>
<td>$70,000-1,150,000</td>
<td>6-24</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Miscellaneous Allowance</strong></th>
<th>Construction Cost Range (1)</th>
<th>Project Cost Range (2)</th>
<th>Schedule Range in Months (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishing a budget line for unknown and unanticipated expenditures is strongly encouraged. While contingencies are in included in the above line items, there are likely to be expenses beyond the scope anticipated for each line item.</td>
<td>$100,000</td>
<td>$150,000</td>
<td>unknown</td>
</tr>
</tbody>
</table>

(1) Construction cost projections are based on very limited information without the benefit of detailed design. The projections are based on normal and reasonable market conditions with inflation assuming that design would start today. New construction includes infrastructure and open space.

(2) Includes construction cost, architectural/engineering fees, limited furnishings, management fees, permits and contingencies.

(3) Based upon having funding in-place per University funding policy.
8.0 Appendix

Table of Contents

- UCCFS Location in Miami Whitewater Forest
- Lease Agreement between Hamilton County Park District and University of Cincinnati
- Crosby Township Zoning Compliance
- Aerial Image
- Boundary Survey
- Photographic Building and Site Inventory
- CARF Program Statement
- Utility Matrix
- Cincinnati Water Works Service Area
- Sustainable Options
- Design and Site Standards
- University of Cincinnati Funding Policy
LEASE AGREEMENT
SOUTH FAMILY SHAKER COMPLEX
MIAMI WHITewater FOREST
UNIVERSITY OF CINCINNATI

I. THIS INSTRUMENT OF LEASE, WITNESSETH:

That the Hamilton County Park District, 10245 Winton Rd., Cincinnati, Ohio 45231, herein known as "HCPD" or "LESSOR" in consideration of covenants and stipulations hereinafter agreed to be performed and observed by the University of Cincinnati, PO Box 210063, Cincinnati, OH 45221-0063, hereinafter known as "the University" or "LESSEE" does hereby demise, let and lease unto the University the following described premises known as the "South Family Shaker Complex" and which is located on two parcels totaling 17.6 acres more or less. The parcels are located at 11053 Oxford Road in Crosby Township, Hamilton County, Ohio. The legal descriptions of the parcels are attached as Exhibit A to this Lease.

Whereas: The HCPD is the owner and operator of a park known as Miami Whitewater Forest, located in Crosby, Whitewater and Harrison Townships in Hamilton County, Ohio, and

Whereas: The University is a coeducational public research university in Cincinnati, Ohio, and

Whereas: The University intends to use the South Family Shaker Complex for activities and programs integral to the Cincinnati Center for Field Studies (CCFS), and

Whereas: The mission of the CCFS is to promote inquiry and discovery about the natural world through a unique integration of research and education, and

Whereas: The lease of the South Family Shaker Complex to the University will facilitate cooperation between the CCFS and the Park District and aid in the pursuit of their respective missions, and

Whereas: The University and HCPD have mutually agreed to enter into a lease agreement with the covenants hereinafter described,

NOW, THEREFORE, in consideration of their mutual promises, the parties agree as follows:

1. Term
   The term of this Lease shall be thirty five (35) years, beginning April 15, 2008 and ending April 14, 2043. Provided the University shall have faithfully fulfilled each of its obligations under the Lease, it will have an option to extend the Lease for an additional thirty-five (35) years on reasonable terms to be agreed upon by the parties.
2. Rent
Yielding and paying therefore, during the term aforesaid, $1.00 per year and subject to covenants, fees and conditions hereinafter set forth. Rent will be paid for the entire term in advance of the date of commencement.

II. COVENANTS OF LEASE

FURTHER, The University hereby covenants with HCPD.

1. Purpose of Occupancy
The premises shall be used for educational and scientific purposes only. The six principal objectives of the Cincinnati Center for Field Studies are to conduct research on natural ecosystems in a changing landscape, facilitate interaction between a variety of disciplines related to the environment, provide field-oriented educational activities in the form of formal academic classes, conduct informal workshops and training programs, inform the management of natural lands for CCFS, HCPD and the region, communicate science to the public and engage non-scientists in scientific study, and serve as a regional center for scientific exchange and knowledgeable discussion of environmental issues.

2. Conditions
A. The University has inspected the South Family Complex and accepts the Premises "as is" and agrees that neither HCPD nor any of HCPD's agents or employees have made any other representations or warranties, either written or oral, express or implied, with respect to the Premises.

B. The University shall submit to HCPD a master plan of operation, maintenance, site alterations, and intended use of the South Family Complex for review and approval by HCPD within a reasonable amount of time, not to exceed 18 months of the commencement of the lease term, for review and approval by HCPD. Future revisions and/or updates to the Master Plan shall be submitted to HCPD for review and approval by HCPD. Approval by HCPD shall not be unreasonably delayed or withheld.

3. Lawful Use
The University is responsible for and will use reasonable efforts to protect the property and facilities against vandalism and encroachments, as well as from fire and soil erosion. The University will not use the premises, nor permit the premises to be used, for any unlawful purpose and will conform to and obey all present and future lawful ordinances, bylaws, rules and regulations of the United States of America, State of Ohio, County of Hamilton and political subdivisions and agencies thereof and the Hamilton County Park District, respecting the premises and occupation and use therefore.
4. Operation of the South Family Complex

A. There shall be no discrimination by the University based on race, creed, nationality, sex, or physical or mental disability. The University will comply with requirements of the Americans with Disabilities Act (ADA).

B. The University shall be responsible for the securing and the security of all buildings. Adequate records of all operations shall be maintained by the University.

C. HCPD shall be responsible, at its expense and discretion, for the security and protection of the South Family Shaker Complex in accordance with its general practices and its Code of By-Laws. The University shall cooperate with HCPD in dealing with incidents of vandalism, dumping and trespassing on the property in accordance with applicable law.

D. The University will at its sole cost and expense maintain the leased property including the fields, grounds, structures, buildings and improvements located on the leased property. Such maintenance responsibilities shall include cleaning, mowing, painting, snow removal, etc., and the University shall further make all necessary repairs to and/or replace as needed roofs, windows, plumbing, heating, electrical, and other mechanical systems, foundations, and structural elements.

E. Contracts for all utilities serving the property will be placed in the name of the University and the University will be solely responsible for the cost, improvement and/or extension of such service.

F. The University may make such improvements to the leased property including improvements to the buildings and out-buildings and the construction of additional buildings and structures, as it may determine in its sole discretion subject to the express prior written consent of HCPD which consent shall not be unreasonably delayed or withheld. The University shall be solely responsible for the cost of making any such improvements. The University shall respect the historic and agricultural nature of the buildings and site, including design of future buildings that is consistent and compatible with typical Shaker architecture.

G. HCPD Motor Vehicle Permits will not be required for automobiles parking at the South Family Shaker Complex.

5. Construction and Reconstruction of Buildings

A. The University agrees to pay the costs of new construction, reconstructing, remodeling, renovating, restoring and furnishing all structures in accordance to plans set forth and mutually agreed to by the HCPD and the University.
B. The University shall not change the contour or condition of the property without prior written approval of the HCPD nor shall the university permit or allow anyone else to do so. This includes, but is not limited to, mining and drilling operations, cutting of timber, sand or gravel removal, or waste disposal in the area.

C. The University agrees to develop the buildings and site in a sustainable manner, consistent with the University's process for applying sustainability to its development projects.

D. Any placement of additional buildings, structures, pavements, gravel, construction, changes, or alterations to the property including installation of utilities, drainage, improvements or grading shall have prior written approval of the HCPD.

E. All landscaping and construction must be in accordance with the plans approved by the HCPD.

F. HCPD acknowledges that the University will be seeking Crosby Township Zoning Certificates and Hamilton County Building Department Permits from time to time as it makes improvements to the property. HCPD agrees that it will cooperate with the University in its efforts to secure such approvals provided they are in accordance with the approved master plan as referenced in Paragraph 2 of Section II above.

G. Prior to any proposed construction or improvements including placement of buildings or structures, landscaping or alteration to the property, The University shall:
   (i) Submit a written request to HCPD for approval of said construction or improvements.
   (ii) Submit a plan, drawn to scale on an aerial photo or similar format as directed by HCPD showing the proposed location, description and general scope of work involved in said improvement, including any clearing of trees, grading, drainage, construction, utilities and landscaping for review and approval by HCPD.
   (iii) Stake in the field the proposed location of said construction or improvements for review and approval by HCPD.
   (iv) Provide HCPD a proposed schedule for completion of said improvements.
   (v) Provide HCPD other information as requested pertaining to the proposed improvements as necessary for HCPD to make a complete evaluation of the proposed improvement.

6. Additional Rights of Access
   The University will be permitted access to other portions of Miami Whitewater Forest, and other Park District properties, for the purposes of educational programs and/or scientific research and experiments, subject to advance written consent of HCPD which consent shall not be unreasonably delayed or withheld, and subject to HCPD's applicable standard rules for contractual research. See Exhibit B.
7. Insurance

A. The University agrees to be responsible for any and all claims, actions, damages, liability and expense in connection with loss of life, personal injury and/or damage to property arising from or out of the occupancy or use by the University of the leased premises, caused wholly or in part by any act or omission of the University, its agents, or employees while acting in the course and scope of their agency or employment.

B. The University will maintain a comprehensive program of self-insurance and/or commercially purchased insurance in the amounts reasonably sufficient to cover the risks inherent in the operation of a large state university including the activities the University proposes to conduct on the leased property. The University will provide HCPCD with a summary of its self-insurance program and a Certificate of Insurance for excess coverage annually at the request of HCPCD, and agrees to name HCPCD as an additional insured on such commercial insurance if it maintains to cover its obligation under 7A, above. The University represents that it currently maintains insurance coverage, through self-insurance and commercially purchased insurance, in the amount of at least $5 Million per occurrence. HCPCD will review and may adjust required insurance limits every five years on advice of HCPCD’s Risk Manager and in accordance with trends in the insurance industry.

C. When contracting for construction, reconstruction, restoration and remodeling on the Premises, The University will require their agents and/or contractors to maintain comprehensive general liability insurance, bodily injury, property damage, automobile liability and worker’s compensation insurance naming the HCPCD as an additional insured. The University will consult with HCPCD’s Risk Manager with regard to minimum coverage to be required.

D. The HCPCD and the University mutually agree to the following asset protection terms. The University, at its expense and discretion, will be responsible for and insuring: i. personal property damage (contents) on the leased premises ii. approved betterments to HCPCD building(s) or structure(s). ii. additional building(s) and structure(s) placed on the leased premises. iii. HCPCD, at its expense and sole discretion, will maintain property insurance on HCPCD buildings and structures. HCPCD may modify coverage limits or cancel the property insurance at any time during the term of the lease agreement. The University agrees to obtain builders risk insurance for approved improvement projects to the leased property and for the construction of approved buildings and structures, naming HCPCD as a loss payee.

E. If any HCPCD building(s) or structure(s) are damaged by fire, explosion, Acts of God or other casualty ("Casualty"), HCPCD shall not be obligated to repair or replace the building(s) and/or structure(s). In the event of a Casualty, HCPCD shall retain sole discretion to determine whether any building(s) or structure(s) shall be
8. **Subleases**
The subleasing of this property will not be permitted without approval of the HCPD.

9. **Taxes**
The South Family Complex property is enrolled by the Park District in the State of Ohio’s Current Agricultural Use Value (CAUV) differential tax assessment program. Taxes shall be paid annually by the Park District. Should the University desire to apply for tax exemption for the lease area, the Park District will cooperate in securing this designation.

III. **COVENANTS OF HCPD**

FURTHER, HCPD hereby covenants with the University as follows:

1. **Quiet Enjoyment**
The University shall peaceably and quietly hold, occupy and enjoy said premises during said term without any let, hindrance or molestation by the HCPD or any person or persons lawfully claiming under the HCPD.

2. **Ownership**
HCPD warrants that it is the true and lawful owner of the buildings and premises and has good right and power to demise the same in the manner aforesaid. However, this lease is made without warranty of any kind, express or implied, as to the fitness of the buildings and premises demised for any particular use.

IV. **MUTUAL COVENANT OF HCPD AND THE UNIVERSITY**

FURTHER, both the HCPD and The University Mutually Covenant:

1. **Inspection**
General property inspections including inspections of the interior of all buildings shall be conducted at least once per year at a time convenient to both HCPD and The University.

HCPD has the right to view and inspect the property at any time, to assure that the site is used as intended, and that all conditions are in compliance with the agreement. Such inspections shall be conducted in the presence of an officer or representative of the University after reasonable notice has been given.
2. **Violations**
Any violations of the agreement by either party shall be set forth in a written notification to the offending party, and corrections of such violation(s) which must be performed in a reasonable period of time. If the corrections are not performed within a reasonable period of time, or if the offending party otherwise fails to keep and perform any of the covenants, provisions, terms of conditions of this lease, on the part of HCPD or the University to be kept and performed, either party may terminate the lease by mailing written notice to the other party.

3. **Early Termination**
Both HCPD and The University mutually agree to reserve the right to terminate the lease for cause one hundred and eighty (180) days after HCPD or the University has received from the other written notice of the intention of the party sending such written notice to terminate the lease.

4. **End of Agreement**
At the expiration of the term of this agreement, or upon termination of the agreement in accordance with Section IV, paragraphs 2 and 3, the property shall be vacated and the premises left in good condition, reasonable wear and tear excepted. Any facilities not removed prior to the expiration of the term of the lease or upon termination of the agreement in accordance with Section IV, paragraph 2, shall become the property of the HCPD without right or claim for compensation or for damage therefore. The University shall remove all non-fixtures which the University has placed on the leased premises. HCPD, at its sole discretion, shall determine how to dispose of any facilities or property remaining on the premises.

5. **Miscellaneous**
A. This Agreement shall be binding on the successors and assigns of both the University and the HCPD.

B. If any court should decree some portion of this Agreement to be invalid, such decree shall in no way affect the validity of its remaining provisions, and it is agreed by the University and the HCPD that the remaining provisions shall continue to be binding between them.

IN WITNESS WHEREOF, the HCPD and the University have set their hands hereof this 15th day of April, 2008.

Signed and Acknowledged
In the Presence of:

WITNESSES: ___________________________  

______________________________

HAMLET COUNTY PARK DISTRICT

______________________________
Nancy R. Hamant, President
Exhibit A

Legal Description
South Family Shaker Complex
Miami Whitewater Forest
Hamilton County Park District

Situated in Section 11, Township 2, Range 1 and in Section 10, Township 2, Range 1, Crosby Township, Hamilton County, Ohio and being more particularly described as follows:

Beginning at the northeast corner of section 11 thence South 0° 03', 09 West a distance of 938.612' to the real place of beginning of this description; Thence South 88° 22' 22" East a distance of 478.348 feet; Thence South 1° 27' 23" West a distance of 1,089.952 to the south line of the Appleton property; Thence with the south line of the Appleton property North 87° 36' 06" East a distance of 441.305 feet crossing to the west side of Oxford Road; Thence South 6° 23' 26" West a distance of 290.363 feet; Thence North 85° 45' 49" West a distance of 187.489 feet; Thence North 72° 12' 56" West a distance of 128.489 feet; Thence North 38° 45' 56" West a distance of 195.404 feet; Thence North 21° 35' 43" West a distance of 238.344 feet; Thence North 45° 45' 32" East a distance of 439.010 feet; Thence South 87° 20' 56" East a distance of 249.562 feet to the vicinity of the centerline of Oxford Road; Thence North 1° 04' 51" East a generally along the line of Oxford Road a distance of 611.855 feet to the real place of beginning of this description.

Containing 17.677 Acres more or less of land and being subject to all legal highways, easements and restrictions of record.

Being the same premises conveyed to the Lessee by three separate conveyances herein by deeds recorded in the:
Dead Book 5127 page 1082 (First National Bank of SWO (Hilier) acquired on 10/6/1989)
Dead Book 5319 page 918 (Appleton, Edna acquired on 6/6/1990) and
Registered Land Certificate 143924 (Knollman, Donald E and Doris L. acquired on 9/15/1989)
of the Official Records of Hamilton County, Ohio.
EXHIBIT B

NATURAL AREAS RESEARCH GUIDELINES

The Hamilton County Park District invites qualified researchers in the natural sciences to pursue various research projects in its parks and nature preserves. The philosophy of the Park District is that preserved natural areas should be used as outdoor laboratories for scientific study of flora and fauna. However, because conservation of natural resources is the highest priority of the Hamilton County Park District and since the Park District acts as a resource steward for citizens of Hamilton County, the following guidelines have been established:

1. Proposals for all research projects must be submitted in writing to the Land Manager prior to the beginning of the actual work. The proposal should be submitted with a signed copy of these guidelines and must include the researcher's institution, supervisor's name, purpose, methods, funding source, location and expected time frame. All proposals will be reviewed by the Park District's Research Committee. They will submit their recommendations for approval or disapproval to the Director, if specimen collection is requested.

2. Preferred areas of research include species inventories, population studies and habitat evaluation work. Results of such studies are of benefit to the Park District's natural areas and land management programs. Other types of studies may also be approved.

3. An executive summary or copy of the research results in digital form must be received by the Land Manager within six months after the project's completion. If the project requires more than six months to complete, bi-annual reports are required. Any publication of results must also be reported to the Park District. Failure to file reports on time will result in denial of future research privileges. Please note that all final reports must be submitted on computer disk as well as a hard copy. Text should be in Microsoft Word, Rich Text form, or WordPerfect. Spreadsheet data should be in Excel format and graphics should be in jpg or tif format. Mapping data should be in ArcView Shape files or AutoCAD 14.

4. Projects unlikely to receive approval include those requiring habitat damage or removal of specimens from the Parks. Park By-Laws must be followed during the study. Photographic documentation should take the place of voucher specimens whenever possible.

Written permission of the Park District is required to remove herbaceous plants from the parks. Any plants removed from the Parks must be stored in a recognized and accessible herbarium location. Herbarium specimens of species currently endangered or threatened within Ohio can not be collected.

Written permission of the Director is required to mark and trap wildlife. Marking and trapping must be done humanely and by methods commonly accepted by the scientific community. Snap-trapping of animals is not permitted.
5. Researchers must abide by all State laws, including permit regulations, and have current permits where so required. Copies of permits must be submitted to the Land Manager prior to beginning of work.

6. Proposals will be evaluated based upon their consistency with Park District goals and management. Denial of a proposal does not mean it is not scientifically valid, nor that the researcher is not qualified; only that the research cannot be allowed because it is not appropriate in a Park District situation. We encourage the researcher to apply to do other projects, provided that the denial was not based upon an infraction of #3 above.

7. The Park District reserves the right to withdraw research permission if, once it has begun, the research is found to be detrimental to the wildlife or Park District.

8. A signed letter from the Land Manager giving approval to conduct research must be carried by the researcher as proof for Park Rangers to determine if the person has necessary approval.

If collecting of plant specimens or live trapping is part of the proposal, a signed letter of approval from the Park Director must also be carried. The researcher must sign a copy of these rules as an indication that he/she understands them and will comply with them.
RESOLUTION AUTHORIZING EXECUTION OF LEASE AGREEMENT WITH THE UNIVERSITY OF CINCINNATI FOR USE OF THE 17.6-ACRE SOUTH FAMILY SHAKER SITE AT MIAMI WHITEWATER FOREST

WHEREAS, the Board of Park Commissioners of the Hamilton County Park District on December 20, 2007 authorized negotiation of a lease agreement with the University of Cincinnati for the use of the approximately 17.6-acre South Family Shaker site on Oxford Road in Miami Whitewater Forest in Hamilton County, Ohio with the intent of developing a biological field and research station.

WHEREAS, the Board of Park Commissioners of the Hamilton County Park District on April 15, 2008 authorized execution of a 35-year lease agreement with the University of Cincinnati for the use of the approximately 17.6-acre South Family Shaker site.

NOW, THEREFORE, BE IT RESOLVED, by the Board of Park Commissioners of the Hamilton County Park District, as follows:

1. That the Board of Park Commissioners of the Hamilton County Park District hereby authorizes the Park District to enter into a lease agreement with the University of Cincinnati for the approximately 17.6-acre South Family Shaker site for developing a biological field and research station.

Adopted this 15th day of April 2008.

BOARD OF PARK COMMISSIONERS
HAMILTON COUNTY PARK DISTRICT

NANCY R. HAMAN, President

JAMES E. BUSHMAN, Vice President

ROBERT A. GOERING, SR. Vice President

ATTEST:

This 15th day of April 2008

JACK SUTTON, Director
ZONING RESOLUTION
FOR THE
UNINCORPORATED TERRITORY
OF
CROSBY TOWNSHIP,
HAMILTON COUNTY, OH

ADOPTED
BY
THE TRUSTEES
OF
CROSBY TOWNSHIP
ON
NOVEMBER 23, 1974

WITH
SUBSEQUENT REVISIONS
THROUGH
APRIL 4, 2007
ARTICLE 23

"P" PARK, GREEN SPACE DISTRICT REGULATIONS

Sec. 23.0 The regulations set forth in this Article, or referred to in this Article, are the district regulations in the "P" Park, Green Space District.

Sec. 23.1 USE REGULATIONS: A building or premises shall be used only for the following purposes:

23.1.1 Public forests, wildlife refuges, and green space.

23.1.2 Public parks, playgrounds, riding stables, campground, and structures that support the above uses, (e.g., toilet facilities, nature centers, shelters, and visitor centers), except that any proposed project that would adversely affect the surrounding township area next to the park or green space shall require a special zoning certificate as per Section 23.2.

Sec. 23.2 Special Zoning Certificate for "P" District: Prior to the construction of any project that would have an adverse effect on the surrounding property values, traffic, or township services as determined by the Township Zoning Inspector, the applicant or applicants shall apply for a Special Zoning Certificate from the Board of Zoning Appeals. Upon receipt of such a request, the secretary of the Board shall secure a written statement from the Crosby Township Zoning Commission setting the necessary standards and conditions for the proper operation of the proposed use in the township. Upon receipt of the foregoing, the Board will schedule a public hearing upon the request. The Board may grant or deny the certificate. If the Board grants the certificate, it may specify guarantees and assurances with which the applicant(s) must comply. In determining what action is in the public interest, the Board shall consider all relevant factors, including but not limited to the following:

1) The adverse effect of increased traffic to the Township;
2) The effect on property values surrounding the proposed use;
3) The effect on Township services, i.e. fire, emergency, etc.;
4) The importance of the use to the Township;
5) Consistency with the Township land use plan.
Aerial image showing site boundaries
Photographic Building and Site Inventory
Photographic Building and Site Inventory
Looking west from agricultural field at east property line

South boundary of agricultural field on east side of Oxford Road

East side of Oxford Road looking north

Rear of Main building looking east to Oxford Road and agricultural fields

Photographic Building and Site Inventory
PROGRAM STATEMENT

COLLEGE OF ARTS & SCIENCES
Cincinnati Center for Field Studies
Court Archaeological Research Facility

UC Project No: 08067F
Prepared by: Department of Planning + Design + Construction

Date: December 18, 2008
Revised: December 22, 2008

APPROVALS:

Dean/Client Department

Provost

University Architect

An affirmative action/equal opportunity institution
**TABLE OF CONTENTS:**

<table>
<thead>
<tr>
<th>Section</th>
<th>Page #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Description</td>
<td>1</td>
</tr>
<tr>
<td>Background and Master Plan</td>
<td></td>
</tr>
<tr>
<td>Project Site</td>
<td></td>
</tr>
<tr>
<td>Scope of Work</td>
<td></td>
</tr>
<tr>
<td>Space Listing</td>
<td></td>
</tr>
<tr>
<td><strong>Project Justification</strong></td>
<td>5</td>
</tr>
<tr>
<td>Project History</td>
<td></td>
</tr>
<tr>
<td>Project Rationale and Concept</td>
<td></td>
</tr>
<tr>
<td><strong>Project Criteria</strong></td>
<td>5</td>
</tr>
<tr>
<td>General Standards</td>
<td></td>
</tr>
<tr>
<td>Systems Criteria</td>
<td></td>
</tr>
<tr>
<td><strong>Project Budget</strong></td>
<td>6</td>
</tr>
<tr>
<td>Project Funding</td>
<td></td>
</tr>
<tr>
<td>Project Cost</td>
<td></td>
</tr>
<tr>
<td><strong>Project Schedule</strong></td>
<td>7</td>
</tr>
<tr>
<td><strong>Project Contacts</strong></td>
<td>7</td>
</tr>
</tbody>
</table>

**Attachments:**

A. Master Plan
B. Schematic Floor Plan for Court Archaeological Research Facility
C. CARF Description
D. Project Budget
PROJECT DESCRIPTION

Background and Master Plan:

An archaeological field station identified as the proposed Court Archaeological Research Facility (CARF) is the basis of this Program Statement. This proposed 2,400 square foot building is the first of multiple structures and improvements to a parcel at 11053 Oxford Road, Harrison, Ohio. The site is a leased parcel with a 35 year lease of approximately 17 acres. The site is identified as South Shaker Farm and is a part of Miami Whitewater Park owned by the Hamilton County Park District (HCPD). The site is in Crosley Township north of the community of New Haven.

The existing Shaker farmhouse, barn and outbuildings are proposed to remain. The farmhouse is currently being upgraded as part of another project. New buildings do not need to match existing buildings but they do need to architecturally reflect Shaker values – simple, utilitarian, and sustainable.

The property includes a mixed mesophytic eastern deciduous forest, reconstructed prairies, wetland habitats, and agricultural land.

There is an existing wetland adjacent to the site with a small man-made earthen dam, the outflow of which traverses the site. A small, usually dry creek with seasonal localized flooding runs along the south edge of the site. Mature trees and lawn, offer a park-like setting north of the farmhouse and it is recommended that this be maintained as a park. Oxford Road bifurcates the site with the farm house and buildings on the west side of Oxford Road. Flat agricultural fields are on the east side of Oxford Road along with a small, immature wood lot.

There are limited utilities at the site, typical of rural agricultural sites. The utilities include single phase power (7,200V), a water well, residential septic tank and leach field and phone service at the road. There is no gas service; heating is via fuel oil. There is an existing sewer easement on the property but there is no sewer.

The McMicken College of Arts and Sciences at the University of Cincinnati desires to utilize the site for field research by: archaeology, geology, geography, environmental studies, and biology. Collectively, the field research station will be identified as Cincinnati Center for Field Studies (CCFS). Per the lease with Hamilton County Park District the University will be permitted access to other portions of Miami Whitewater Forest, and other Park District properties, for the purpose of educational programs and/or scientific research and experiments, subject to advanced written consent of HCPD. Research will focus on:
1) biological diversity, species composition and ecosystem function; 2) ecological aspects of biogeochemical cycles; 3) ecological implications of climate change; 4) land use dynamics and habitat alteration across broad time scales; 5) ecology and evolution of infectious diseases; and 6) hydrologic forecasting.

Master planning for the entire site is underway and programming discussions are ongoing. It appears that a total of approximately 16,000 square feet of new structures will be required including approximately 4,000 square feet of greenhouses and a head house. The archaeological component is part of the proposed 16,000 square feet development. Examples of master planning tasks include site evaluation and land use studies, identification of goals and objectives, inter-relationships between departments, relevance to the University and College missions and detailed discussions of user needs.

Sustainability, including integrated design and integrated systems, is an important consideration. Funding sustainability initiatives may be a challenge. It is recommended that creative relationships and concepts be pursued such as partnerships, contributions, utility incentives, Federal and State initiatives, research opportunities, and public and private ventures.

Project Site:

The site for this project is an approximately 17 acre parcel referred to as South Shaker Farm leased from the Hamilton County Park District and part of Miami Whitewater Park, Harrison, Ohio. It appears, for the purposes of this Program Statement, and based upon site and land use studies completed to date, that the best location for CARF is the western most area of the site.

Scope of Work:

A new building of approximately 2,400 square feet is requested for an archaeological field station. The proposed facility will be identified as Court Archaeological Research Facility (CARF). It will consist of two major rooms of 1,000 square feet each and support space such as mechanical/electrical and restrooms. Reference the “Space Listing/Space Summary” section of this Program Statement for more detail. One of the major rooms will be an open research laboratory of about 500 sf and a classroom/conference and office facility of about 500 sf with a fume hood and laboratory bench space. The user has indicated that no acids or hazardous chemicals will be put into the drain lines. Any dangerous chemicals will be collected and periodically removed by a HAZMAT service. The other major room will be a temperature controlled archival room. Exterior gathering space such as a porch and a screened porch is desirable. Reference the attachment and a proposed layout of the building for more detailed information, both about the building and how it will be utilized.
Existing site utilities will be utilized to the extent that they can. The water well will likely provide the water source. It is being tested for quality and quantity. The existing septic tank is being cleaned; however, the County will probably not allow any additional sources to utilize it. Composting toilets should be considered. Heating of the space and hot water are sustainable opportunities that need further investigation.

Electrical service will need to be provided from the existing overhead line on the east side of Oxford Road. Telephone service can be accessed from an underground line on the west side of Oxford Road. High speed data access is still being evaluated.

The building shall be designed in a sustainable way utilizing an integrated design process. Leadership in Energy and Environmental Design (LEED) criteria shall be utilized as a measurement of success during design. A LEED rating is desired. This building should be considered the first phase of a phased project that will exist both independently and, in a later phase, part of a larger building for which a minimum silver rating is desired.

The specific location for the building has not yet been identified pending ongoing master development and site and land use studies.

Furnishings typical of research laboratory, office and archival space are desired. A smart classroom has been requested. However, based upon available funding, they have not been budgeted (ref. Project Budget section).

Space Listing/Space Summary (based upon Scope of Work description identified above):

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Research laboratory</td>
<td>500</td>
</tr>
<tr>
<td>Classroom/conference and office</td>
<td>500</td>
</tr>
<tr>
<td>space (open floor plan)</td>
<td></td>
</tr>
<tr>
<td>Archival space (no windows, sealed</td>
<td>1,000</td>
</tr>
<tr>
<td>concrete floor, climate controlled</td>
<td></td>
</tr>
<tr>
<td>Restroom, mechanical and electrical, etc.</td>
<td>400</td>
</tr>
<tr>
<td><strong>Total Area/Square Footage</strong></td>
<td><strong>2,400 S.F.</strong></td>
</tr>
</tbody>
</table>
PROJECT JUSTIFICATION

Project History:

The University of Cincinnati (UC) McMicken College of Arts and Sciences has made a commitment to provide field research opportunities and educational projects. This research will be conducted at a field station and will include biological, environmental, archaeological, geological, and geographical research.

The field station will consist of leased property from Hamilton county park District (HCPD) with existing buildings and new facilities for research. The lease between UC and HCPD was executed in the spring of 2008. The field station, identified as the Cincinnati Center for Field Studies, is committed to increasing public understanding of science through research, training of scientists, and unique public presentations.

Gift funding has been procured to construct a facility for archaeology which is the focus of this Program Statement.

The funding requires that the Court Archaeological Research Facility (CARF) be constructed within three years from receipt of the gift. (Note: this gift was secured in the summer of 2008).

Project Rationale and Concept:

This project provides for one component of the field station, a facility for archaeological research. The facility will be designed such that it meets the mission, vision, and goals and objectives for CCFS.

The premise for the concept of the facility starts with a recognition that it will be one of many components on the site. Upon completion of the CCFS, the site, existing buildings, and new facilities need to aesthetically appear as a holistic entity sensitive to environmental influences. CARF needs to have a combined lab, classroom and office space suitable for both research and teaching and a climate controlled room for archival needs. Support functions will be required.

PROJECT CRITERIA

General Standards:

All work shall be performed in accordance with current standards of the industry and in accordance with the most stringent UC, federal, state and local laws, rules, regulations, codes, requirements and recommendations and in accordance with the University Master
Plan. Project approvals will be required from, but not necessarily limited to, the University, HCPD, Croley Township, the local fire department, and Hamilton County.

Attention is drawn specifically to Part 1926, Code of Federal Regulations (CFR), dated July 1, 1990, which prescribes the Occupational Safety and Health Administration's (OSHA) Safety and Health Standards for Construction, and to 29 CFR 1910, which are the OSHA General Industry Standards. Federal OSHA regulations have been adopted and codified by the State of Ohio under House Bill 308, which created the Public Employer's Risk Reduction Program (PERRP) for public facilities.

The design professional/contractor and/or construction manager shall furnish to the University acceptable affidavits of lien and other documentation, including any "releases" required by the university, before payment will be authorized.

Systems Criteria:

Refer to the most current editions of the following UC Design Guidance:

UC Sustainable Design Policy
UC Design Guidance: Learning Environments
UC Design Guidance: Office Environments
UC Design Guidelines and Standards Manual
UC Design Guidelines and Standards Manual
UCIT Communications Standards

PROJECT BUDGET

A detailed breakdown of costs is indicated on Attachment D - Project Budget. In summary, the construction cost is $344,500. Soft costs, including design and management fees, 20% contingency and miscellaneous costs are $155,500 for a total project cost of $500,000.

The funding source for this project is through a gift of $500,000, which has been procured.

The costs for the project cannot exceed the available funds. In an effort to align costs, and funds, movable furnishings and equipment have been reduced to zero (ref. Attachment D).

Extensive sustainability initiatives are desired by the user. Some of those initiatives can be incorporated within the design and the attached budget. Other sustainable initiatives such as alternative energies are costly, beyond the scope of this project, and not included in the attached budget. If some of the more costly initiatives are desired, the College of Arts and Sciences has the option of providing additional funding prior to preliminary design (see section entitled "Project Schedule").
Project financing will conform to the following University policy:

- The cash for design fees must be in place before the Architect/Engineer selection is started.

- Fundraising must be completed within 18 months of the approval of this Program Statement.

- Fifty percent of the cash for total estimated project cost must be in place prior to executing construction contracts for this project and the remaining 50% of project cost must be gift-pledged. (A bequest does not qualify as a pledge.)

- When the project is completed any shortage of pledges will be funded by the client department until all pledges are collected. The interest cost for the debt gift bridging is the responsibility of the client department. The complete repayment must be within five (5) years of beneficial occupancy of the project.

**PROJECT SCHEDULE**

<table>
<thead>
<tr>
<th>Task</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning &amp; Programming</td>
<td>1 month</td>
</tr>
<tr>
<td>Consultant Selection</td>
<td>2 months</td>
</tr>
<tr>
<td>Preliminary Design</td>
<td>2 months</td>
</tr>
<tr>
<td>Construction Documents</td>
<td>4 months</td>
</tr>
<tr>
<td>Reviews</td>
<td>1 month</td>
</tr>
<tr>
<td>Bidding &amp; Award</td>
<td>3 months</td>
</tr>
<tr>
<td>Project Construction*</td>
<td>5-6 months</td>
</tr>
<tr>
<td>Project Close-out</td>
<td>1-2 months</td>
</tr>
<tr>
<td>Contingency</td>
<td>2 months</td>
</tr>
<tr>
<td><strong>Total Project Duration</strong></td>
<td><strong>21-23 months</strong></td>
</tr>
</tbody>
</table>

*Subject to reasonable weather

**CONTACTS**

**Financial:**
Alice Jones  
Senior Financial Analyst  
University of Cincinnati  
PO Box 210156  
Cincinnati, Ohio 45221-0156  
Telephone - (513) 556-8137  
Fax - (513) 556-8370

**Technical:**
Greg Robinson  
Planning + Design + Construction  
University of Cincinnati  
PO Box 210186  
Cincinnati, Ohio 45221-0186  
Telephone - (513) 556-2107  
Fax - (513) 556-221
Attachment B
Cincinnati Center for Field Studies (CCFS)
Potential Floor Plan for Court Archaeological Research Facility (CARF)

The attached schematic floor plan for the Court Archaeological Research Facility component of the Cincinnati Center for Field Studies was provided by the user group and is very conceptual in nature. It will undergo further development and refinement once design professionals are hired. Existing site conditions, site environmental factors, constraints by governing entities, integration with future buildings, and master plan development are examples of factors that will influence the ultimate design.
Attachment C
Cincinnati Center for Field Studies
Description of
Court Archaeological Research Facility
December 18, 2008

For the purposes of this attachment, a date of December 18, 2008 has been added.

December 18, 2008

COURT ARCHAEOLOGICAL RESEARCH FACILITY

The proposed Court Archaeological Research Facility (CARF) will include hands-on Ohio Valley Archaeology research and teaching space and an artifact repository, which will curate materials recovered by the University of Cincinnati archaeologists from the Hamilton County Parks. When completed, this facility will include temperature control (air conditioning and heating), wheelchair-accessible restrooms, shelving for heavy material storage, office space, office furniture (desk, table, chairs), a computer for the office, internet access, black chem.-top benches along the walls and a center/island bench, necessary grounded electrical outlets, bench chairs to accommodate approximately 30 students, a double-basin sink with heavy sediment trap, exhaust ventilation, overhead cabinetry, blackboard, and a smart-classroom (computer, projector, and screen).

In describing the layout, the facility will consist of two major rooms of 1000 ft² each and four smaller rooms. One of these rooms will be an open research/classroom/office facility. At one end will be a fume hood with laboratory countertops on both sides and a bench top island in the center of the area. Note that no acids or dangerous chemicals will be flushed down the drain of the fume hood. Whatever chemical waste is generated will be kept in a container in a chemical cabinet beneath the fume hood and periodically removed by a HAZMAT service. The sink with a heavy sediment trap will be located at the end of the research bench along one of the walls. At the other end of the research area will be the classroom area and faculty/graduate student desks (3) along the wall. The second large room will be archival space filled with rows of metal racks for the storage of artifacts. This archival area should be temperature controlled along with the rest of the facility. Of the small rooms, two will be ADA-approved rest rooms (40 ft² each), a third will house the HVAC and other equipment (150 ft²), a fourth will be a utility closet (50 ft²) and a third will be a mud room/entrance (200 ft²).
These resources will be used to provide interdisciplinary educational opportunities for aspiring undergraduate and graduate archaeology/anthropology students, as well as provide experiences for K-12 teachers and their students in the disciplines of archaeology, biology, environmental studies, geography, geology, and historic preservation. It will provide students with hands-on opportunities that focus on current research problems in the areas of the human and natural history of the Ohio Valley. The facility will also be used to teach students how to solve problems and test hypotheses by engaging them in collaborative research activities. This facility will also be used to teach the public about the archaeological, environmental, and historical significance of the area. It will provide students and the public alike with an opportunity to enhance their literacy and performance skills in the natural sciences. Mentored student research projects at the field station will explore problems of human adaptation to changing climatic and environmental conditions, and environmental sustainability. They will also provide important new data about the biogeographic shifts, clinal variation, and speciation of animals, plants, and communities through time. These data will be encoded into a Geographic Information Systems (GIS) program, which will allow students to examine archaeological, biological, and geological patterns and formulate predictive models that can be directly applied to Ohio Valley environmental management and historic preservation.
### Attachment D, Planning Cost Estimate

**Project 08867F, Court Archaeological Research Facility**

#### FUNDING SOURCES:

1. **State Funding:**
   - 30% of Line 14a = $30,000

2. **Other Funding:**
   - College and Department funds
     - $50,000
   - Gift funds
     - $0
   - Repair, Maintenance, & Improvement (RMI) funds
     - $0

3. **Total Funds Available**
   - $80,000

#### ESTIMATED COSTS:

1. **Construction Costs:**
   - **Site Development**
     - 0.0% of Line 14a = $0
   - **New Construction**
     - Laboratory: $0
     - Office and Support Space: $0
     - New Construction Interest: $0
   - **Renovation/Rehabilitation**
     - 0.0% of Line 14a = $0
   - **Construction Subtotal**
     - $0
   - **Construction Subtotal (selected)**
     - $0

2. **Earthwork and Abatement**
   - $0

3. **Structural and Site Work:**
   - $0

4. **Utilities - Construction/Installation/Telecommunications:**
   - 0.0% of Line 14a = $0

5. **Subtotal, Fixed Level of Construction Cost (FLCC):**
   - $0

6. **Construction Contingency:**
   - 0.0% of Line 5 = $0

7. **Moveable Furnishings and Equipment (FFE):**
   - Intercoms
   - Audio/Visual Equipment
   - Computer Hardware/Software
   - Other Moveable Equipment
   - Inflatable FFE
   - Subtotal, FFE
   - $0

8. **FFE Contingency:**
   - 0.0% of Line 7f = $0

9. **Design Fees (A-E/Architect/Engineer, In-House):**
   - Basic Engineering: $0
   - Design of Future Construction: $0
   - Feasibility/Programming/Scoping Studies: $0
   - Site Survey/Geotechnical Analysis: $0
   - Interior Design (Furnishings/Faucets): $0
   - Audio Visual Systems: $0
   - Other Consultants: $0
   - Zenithization in A-E contract
     - Design Fees Subtotal: $0

10. **Environmental Monitoring:**
    - $0

11. **Airports Allowance:**
    - $0

12. **Design and Construction Management:**
    - 23% of Line 16 (from $104) = $0
    - 0.0% of Line 3 plus 7f = $0
    - 0.0% of Line 3 plus 7f = $0
    - 0.0% of Line 3 plus 7f = $0

13. **Building/Advertising/Farm/Miscellaneous:**
    - $0

14. **Subtotal, Soft Costs:**
    - $0

15. **Interest Expense:**
    - $0

16. **Total Project Cost (Lines 5+14+15):**
    - $0

**NOTES:**

113
*Proposed quantity of use and discharge will dictate county and/or federal compliance regarding sewage management.

<table>
<thead>
<tr>
<th>Utility</th>
<th>Existing</th>
<th>Proposed Short Term (1)</th>
<th>Proposed Long Term (2)</th>
<th>Long Term Cost</th>
<th>Sustainable Options</th>
<th>Sustainable Cost</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water &amp; Sewer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domestic Water</td>
<td>Residential Water Well</td>
<td>Use existing well; quality and capacity being tested</td>
<td>Minimal (line only)</td>
<td>New well required for greenhouse and agricultural use</td>
<td>$7k to $10k</td>
<td>Reuse of existing</td>
<td>N/A</td>
</tr>
<tr>
<td>Sanitary Sewer</td>
<td>Residential Septic Tank with Leach Field</td>
<td>Composting toilets for new construction; clean septic tank for existing farmhouse</td>
<td>$16 to $244; two unisex toilets</td>
<td>Additional composting toilets as required</td>
<td>$16 to $244; one additional</td>
<td>Composting toilets are sustainable</td>
<td>Similar to conventional system</td>
</tr>
<tr>
<td>Storm Sewer</td>
<td>Not required – Existing natural drainage w/ sand and gravel throughout site beneath topsoil</td>
<td>No change</td>
<td>None</td>
<td>No change</td>
<td>None</td>
<td>Cistern for rainwater harvesting?</td>
<td>Bioswale</td>
</tr>
</tbody>
</table>

| Power                    |          |                         |                        |                |                     |                  |          |
| Electric                 | Butler Rural; Pole mtd. Single phase, 7,200v; existing farmhouse being upgraded to 200 amp | 200 amp service marginal for CARP; Add another 200 amps | $15 to $20k | TBD; quantity of fume hoods has significant impact | TBD | No apparent need for three phase; Rotophase motors could be considered if three phase is required. |
|                         |          |                         |                        |                |                     |                  |          |
| Fuel                     | Fuel oil heating (residential) | Propane – more efficient than fuel oil inc. w/ building | Propane – more efficient than fuel oil inc. w/ building | | | | No natural gas service available |
|                         |          |                         |                        |                |                     |                  |          |
| Low Voltage              |          |                         |                        |                |                     |                  |          |
| Phone                    | Cincinnati Bell underground service | Existing Service | Existing Service | | | | | N/A |
| Data                     | Time Warner High Speed “Road Runner” nearby but not onsite | Get onsite | $30k | Get onsite | See short term | | | N/A | Time Warner performing an engineering study, negotiate cost or find alternative |
| Cable TV                 | Time Warner nearby but not onsite | Get onsite | Included with data | Get onsite | Included with data | | | N/A | Same as data |

(1) Buildout of Court Archaeological Research Facility
(2) Master Plan Buildout
(3) Cost for photovoltaics are based on kilowatts. A 32 kw system serves approx. 2,500 to 3,000 sf and costs $250k; 80 kw, 6,700 to 9,500 sf, costs $593; and 107 kw, 9,000 to 12,500 sf, costs $750k.
Greater Cincinnati Water Works Service Area Map

Ohio River Service Area
- Amberley Village
- Amberley Township
- Avondale
- Blue Ash* 
- Bond Hill
- California
- Cherry Grove
- Cheviot*
- Clifton
- Corryville
- Covington
- Covington West
- Cumberland
- Deer Park
- Delhi & Delhi Township
- Downtown
- East End
- Elmwood Place
- Evanston
- Evendale
- Fairfax
- Forest Park*
- Golf Manor
- Green Township*
- Greenwich
- Hyde Park
- Kennedy Heights
- Kenwood
- Lincoln Heights
- Mack*
- Madeira
- Madeira West
- Mariemont
- Miami Heights*
- Monticello
- Mount Auburn
- Mount Lookout
- Mt. Adams* 
- Mt. Ashby*
- Mt. Auburn
- Mt. Lookout
- Mt. Washington
- North College Hill
- Northside
- Oakley
- Oakley
- Oakley
- Pleasant Ridge
- PREA
- Ralston
- Roselawn
- St. Bernard
- Taylor Park
- Sharonville*
- Silverton
- Springfield
- Sycamore Township*
- Symmes Township
- Walnut Hills
- West End
- Western Hills*
- Westwood*
- Winton Place
- Woodlawn

Legend
- WSSA Service Area (Provides 85% of GCAW water)
- Bolton Plant Service Area (Provides 12% of GCAW water)
- Wholesale areas served by Miller Plant using only GCAW water
- Wholesale areas served by Miller and Bolton Plants. These wholesale customers may mix GCAW water with water from their own sources.
- Area not served by GCAW.

*GCAW safe water to municipalities, counties and a local water association who distributes water and sells for the water.

Great Miami Aquifer Service Area
- Blue Jay
- Coterian Township
- College Hill*
- Crosby Township
- Dart
- Pineville*
- Forest Park*
- Miami Township
- Montford Heights*
- New Burlington
- North College Hill
- Northgate
- Pleasant Run
- Springfiled Township
- Vernon Gardens
- White Oak*
- White Water Township

*These communities may get water from both the Miller and Bolton Plants.
Sustainable Options

Note: Refer to Section 4.3, Sustainability for criteria determining priorities for sustainable projects and process.
Our life is an apprenticeship to the truth that around every circle another can be drawn; that there is no end in nature, but every end is a beginning; that there is always another dawn risen on mid-noon, and under every deep a lower deep opens.

-Ralph Waldo Emerson
SUSTAINABLE SITES

**Easy**

- Preservation of topography and natural features such as adjacent prairie, wetland outflow through site, and wood lot (reduced site disturbance)
- Low maintenance landscape materials
- Use of native species
- Bioswales
- Utilization of site for research on sustainability
- Utilization of natural features of site for drainage such as high sand and gravel content beneath topsoil
- Minimize night sky pollution
- Bicycle storage, changing room and showers

**Moderate**

- Preservation and reuse of existing structures
- Establish integrated transportation policy such as a bus schedule that is coordinated with classes and a ride share program to/from campus
- Permeable surfaces/pavement
- Reduce heat island effect
- Composting plans
WATER EFFICIENCY

**Easy**
- Use of creek water for rough cleaning of artifacts
- Low water use fixtures, shower heads, etc. in dorms
- Water efficient landscaping

**Moderate**
- Composting toilets (no water)
- Rainwater harvesting
- Efficient use of on-site aquifer
- Gray water

**Difficult**
- Capture and store floodwaters in spring
ENERGY AND ATMOSPHERE

Easy

- Building orientation
- Heat sink
- Passive solar
- Articulation of exterior skin to maximize solar exposure in winter, minimize in summer
- Light shelf
- Natural ventilation – operable windows low, operable clerestory windows high
- Energy efficient lighting
- Energy monitoring
- Energy star appliances
- Night time set back
- Daylight harvesting
- Manual shade control for windows

Moderate

- High efficiency exterior wall
- Green roof
- Fume hood use to minimize energy consumption
- Opportunity to open large expanses of exterior wall for natural ventilation
• Absorption unit with geothermal to reduce electrical consumption Reduce or eliminate reheat
• Automatic shade control for windows – interior or exterior
• Alternative energy source Geothermal
• Alternative energy source Solar water heating

**Difficult**

• Trombe wall (south facing wall acting as a heat sink)
• Seasonal “swamp cooler” application
• Solar chimney (potentially combine with geothermal heat exchange)
• Passive downdraft cooling tower (evaporative)
• Solar updraft tower – could be effective at greenhouses
• Alternative energy source Photo voltaic (not recommended – very costly)
• Alternative energy source Wind (conventional wind turbines not recommended – consider technology for low wind)
• Alternative energy sources Biomass
MATERIALS AND RESOURCES

**Easy**
- Materials with recycled content
- Use of materials produced within 500 miles
- No carpet
- Sealed (and potentially stained) concrete floors
- Certified wood
- Avoid potentially harmful chemicals

**Moderate**
- Existing building reuse
- Use of existing wood harvested on site in the past
- Rapidly renewable materials such as straw paneling or bamboo
INDOOR ENVIRONMENTAL QUALITY (IEQ)

**Easy**
- No carpet
- Sufficient air circulation
- No smoking policy
- Maximize views from interior to exterior
- Carbon monoxide monitoring
- Natural lighting
- Building air out

**Moderate**
- No or low VOC’s
- Humidification in winter
- Construction IEQ plan
INNOVATION AND DESIGN PROCESS

Easy
- Sustainable cleaning practices
- Integrated design
- Recycling program
- Develop an education program to tell the story
- Establish an incentive program to keep non-renewable energy use low
- Regenerative design

Moderate
- Research related to energy/biomass
- Plant nursery: growth of trees and shrubs for use on campus
- Dormitories on site to mitigate driving
- Commissioning

Difficult
- Food production on-site for campus dining facility use (locally grown organic)
University of Cincinnati Center for Field Studies
Design and Site Standards

The standardization of site fixtures, furnishings and materials is recommended in order to reinforce visual continuity and integration of buildings and functions.

Guidelines for design, maintenance and site amenities will need to be established, including the following:

- Design guidelines (sustainability)
- Site lighting
- Site paving: vehicular and pedestrian
- Site furnishings: tables, benches and bike racks
- Landscape: plants (indigenous) and maintenance
- Building identification and signage
University Funding Policy

UCCFS projects will not proceed until adequate funding for each project is confirmed.

The University of Cincinnati policy mandates that project financing conform to the following requirements:

- The cash for design fees must be in place before the Architect/Engineer selection process is started
- Fundraising must be completed within 18 months of the approval of a Program Statement
- Fifty percent (50%) of the cash for total estimated project cost must be in place prior to executing construction contracts for a project and the remaining fifty percent of project costs must be gift-pledged (a bequest does not qualify as a pledge).
- When the project is completed, any shortage of pledges will be funded by the Client Department until all pledges are collected. The interest cost for the debt gift bridging is the responsibility of the Client Department. The complete repayment must be within five (5) years of beneficial occupancy of the project.
You can never step in to the same river twice; for new waters are always flowing.

-Heraditus of Ephesus