state botanical garden of georgia

2012 master plan update

The State Botanical Garden of Georgia

THE UNIVERSITY OF GEORGIA COLLEGE OF ENVIRONMENT + DESIGN

C E+D

landscape architecture
historic preservation
env. planning + design
environmental ethics

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Shene Stroud	Rental Even Coordinator

The Garden is accomplishing it's mission on a daily basis in every season of the year. This success has been possible because of the very dedicated staff, volunteers, and many donors and supporters, and ongoing support from the University of Georgia.

charrette participants

Betsy Ellison
Flossie Dodge
Sylvia Gibson
Caroline Gilham
Ben Liverman
Marianne McConn
Lara Mathes
Carol Nourse
Hugh Nourse
Dave Phlegar
Shelly Prescott
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Mike Sikes
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Eileen Small
Robert Wyatt

faculty and students

Alfie Vick
Jon Calabria
Pratt Cassity
Dan Nadenicek
Lisa Biddle
Deepali Pavnaskar
Ashley Stinson

board of advisors

Many thanks to all of the Board of Advisors for their generous support and guidance

executive summary

The last master plan for the State Botanical Garden of Georgia (SBGG) was completed in 1990. In the intervening 22 years since that time, the SBGG has undergone tremendous growth and transformation. New buildings have been constructed, including: the Cecil B Day Chapel, the Garden Club of Georgia Headquarters and the new Horticulture Complex. New cultivated gardens have been established, including: the International Garden, Heritage Garden and Flower Garden. The natural areas have received increasing levels of attention and stewardship, including: designation as an Important Bird Area (IBA), significant privet eradication efforts, and donation of the Ivy wetland.

Along with these physical changes, the SBGG has developed outstanding educational and recreational programs that have contributed to the local and regional appeal of the Garden to both the general public and professionals. Additionally, new leadership at the Director position has reinvigorated the SBGG at a time when creativity and entrepreneurship is more critical than ever in the face of limited funding from the State of Georgia.

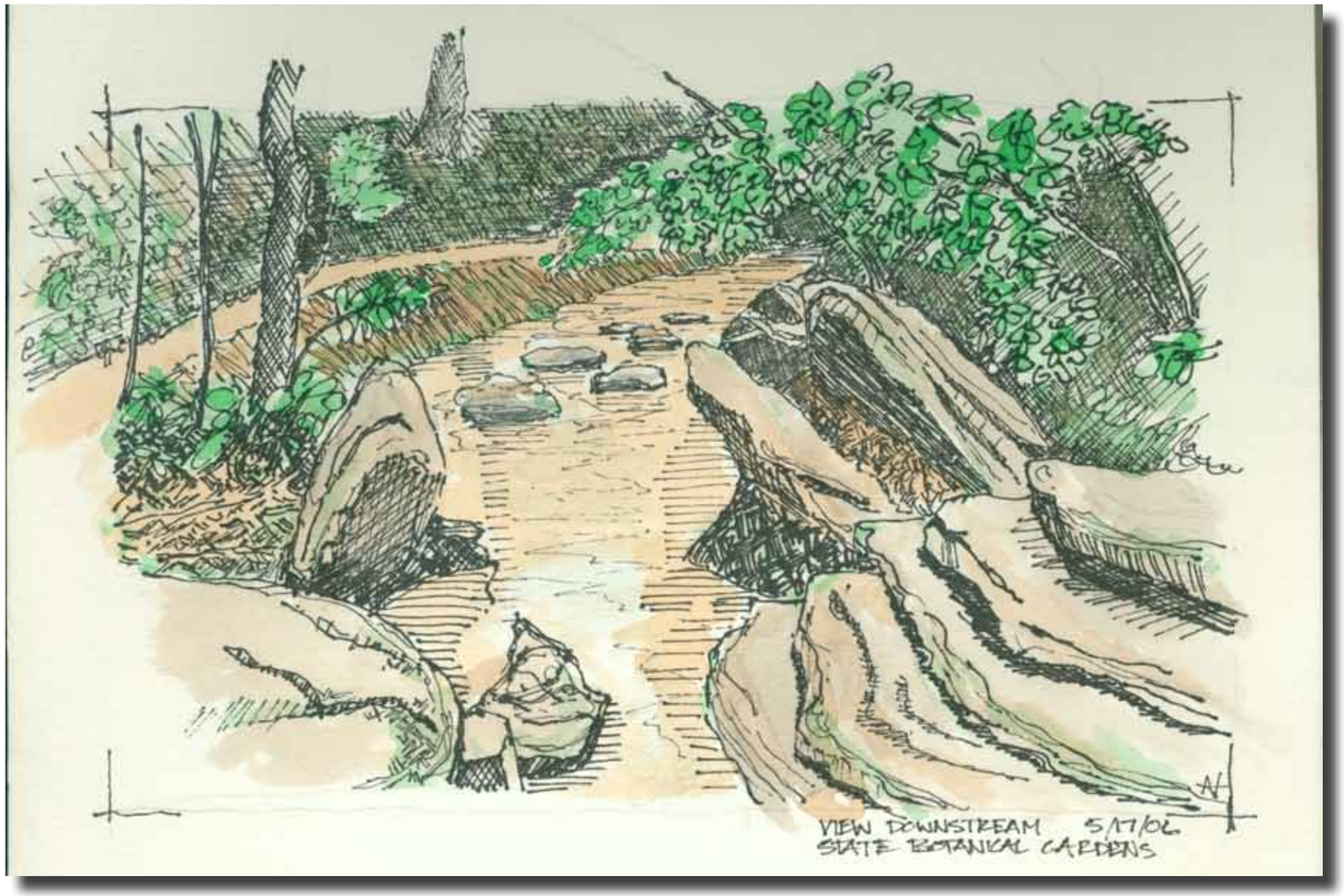
The time for an assessment of existing resources of the SBGG and a plan for the next decade of growth and stewardship is now. Our team at the College of Environment & Design has been honored and excited to produce this master plan. This document will establish a snapshot of the SBGG as it exists now, assess needs and opportunities for improving current amenities and visitor experience, and plan for the inclusion of anticipated new gardens and structures.

forward

This master plan update seeks to enhance to functionality and sustainability of the SBGG facilities and site and to plan for the introduction of new facilities and collections. The goals of the master plan were established through a comprehensive inventory and analysis of the existing conditions, combined with input from SBGG staff and charrette participants. The master plan project team conducted interviews with the SBGG staff and garden curators throughout the fall of 2011, and the plan was completed in October of 2012. Primary goals of the master plan are:

1. Plan in accordance with the SBGG mission
2. Enhance the sustainability of existing collections
3. Protect the SBGG natural areas
4. Plan for significant new buildings and gardens
5. Enhance the visitor experience and wayfinding
6. Accommodate larger numbers of visitors
7. Encourage more diverse modes of transportation to the SBGG

This report is organized into four sections, plus appendices. The Introduction & History section presents background context about the project and the master plan process. The Inventory & Analysis section presents the comprehensive environmental and cultural inventory that was completed by landscape architecture graduate students. The Master Plan section presents recommendations for the physical evolution of the SBGG over the next ten years. These recommendations are summarized in simple diagrams and given more specific direction through illustrative renderings and descriptions. Finally, the Management Plan section presents a framework for protecting and restoring the natural areas of the SBGG property.



ECOLOGY
GARDENS
BUILDINGS
ADMINISTRATION

1967
- Botanical Garden is proposed by the Campus Planning and Improvement Committee (CPIC)

1968
- Botanical Garden Faculty Committee is charged with developing a proposal

1969
- Dean Hubert and three students from SED conduct a landscape design analysis of the proposed site
- Formal approval of the site for the garden
- Advisory committee of non-University persons formed
- Presentation of topographical model and written analysis to Botanical Garden Committee; aided in selecting areas to develop and laying out trails and roads

1970
- Formal approval of a budget for The University of Georgia Botanical Garden

1971
- Three miles of trails were laid out, cleared, and opened for public use
- Board of Regents formally designate the land for perpetual use as a botanical garden
- Advisory committee forms Friends of the Garden

1972

1973
- Professor William Berry hired to prepare Master Plan

1974
- Dr. Francis E. Johnstone named director
- Master Plan complete
- Ground broken for the Callaway Building

1975

1976
- GCG plant collections and Elizabeth Bradley Turner Memorial Rose Garden dedicated
- Dedication of the Callaway Building
- Administration moved from the Provost's Office to the Office of the Vice President for Services
- Trails and road shifted to new entrance

1977

1978
- Environmental Planning and Design of Pittsburgh hired to review the Master Plan
- Propagation greenhouse completed
- Botanical Garden contributions: 13 species and cultivars of American holly, collection of rhododendron cultivars, collection of azaleas and a dahlia garden. Construction of a greenhouse in the maintenance area

1979
- Dr. J. H. Tinga named acting director
- Dr. Frank B. Golley named acting director

1980
- Preliminary plans and model for a combined visitor center and conservatory
- Dr. Michael A. Dirr named director

1981

1982
- Dr. Samuel B. Jones, Jr. takes over as director
- All-American display garden incorporated into annual/perennial garden; art in the garden program initiated; wildflower garden developed

1983
- Plans for International Garden formulated, prepared by Margaret Koepke of the School of Environmental Design
- Ground broken for Visitory Center/ Conservatory

1984
- Name changed to The State Botanical Garden of Georgia

1985
- Board of advisors created
- Dr. Michael A. Dirr named acting director

1986
- Visitor Center/ Conservatory dedicated; entry plaza and fountain constructed
- Dr. Roy A. Mecklenburg named director

1987

1988
- Major renovation to the shade garden
- Establishment of the Fred C. Galle Native Azalea Garden

1989
- Deer fence established around 80 acres of the garden

1990 — Dr. A. Jeff Lewis III named director

1991 — Master Plan update by EPD

1991 — Mathis Plaza, which connects the Shade Garden to the upper parking lot, is dedicated

1992 — Plans announced for a chapel/ reception complex

1994 — Garden Club of Georgia relocation announced; Cecil D. Day, Sr. Chapel completed

1997 — Plans for Heritage Garden announced

1998 — Official groundbreaking for the Garden Club of Georgia headquarters

1999 — Visitor Center/ Conservatory named in honor of Alice Hand Callaway

2001 — Heritage Garden construction completed

2007 — SBG designated Important Bird Area; *Field Guide to the Rare Plants of Georgia* published

2007 — Flower Garden construction begins

2009 — Horticulture Complex funding completed; construction begins. Visitor center renovation completed

2011 — Dr. Wilf Nicholls named director

1 — Mr. J. Swanton Ivy, Jr. donates 19.3 acres of wetland across the Oconee River in Oconee County to the SBG

1 — Final portion of the Shade Garden is complete

1 — Renovations to existing entrance include curvilinear flanking stone walls, a divided entrance, enhanced signage and extensive landscaping; official groundbreaking for the International Garden

1 — International Garden construction completed

1 — Garden Club of Georgia Headquarters completed

2 — Visitor Center front plaza, steps and fountain renovated; Heritage Garden construction begins

2 — Freedom Plaza completed

2 — Privet removal research in the riparian zone along the Middle Oconee River begins

2 — Renovation to the Visitor Center/Conservatory begins; Gift of porcelain collection and funds for exhibition gallery announced

2 — Gift for Children's Garden announced; Flower Garden construction completed

2 — New Horticulture Complex completed

2 — Professor Alfie Vick of CED begins Master Plan update

community design

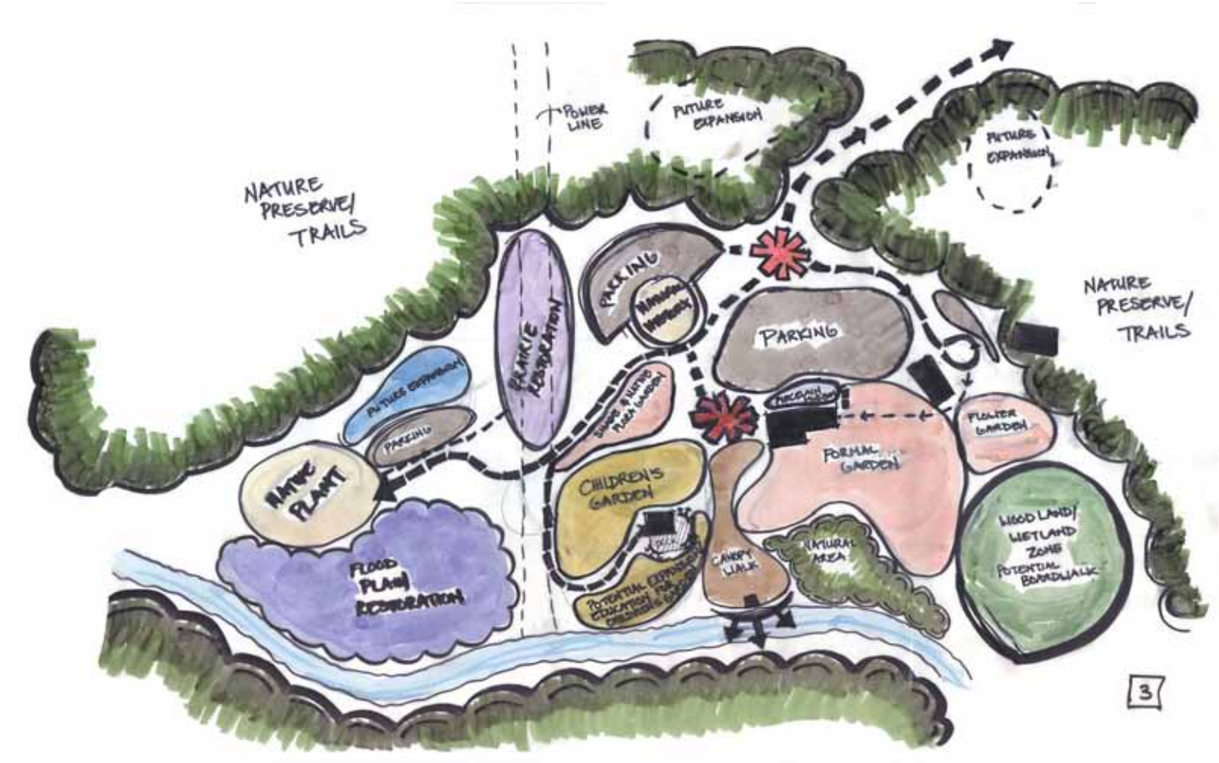


Figure 2. Master plan concept diagram from the Fall 2011 charrette.

In the early years of the State Botanical Garden of Georgia (SBGG) the UGA School of Environment and Design (SED) was closely involved in the study, placement, and design of the institution. Faculty and graduate students were commissioned to work on projects that ranged from preliminary studies and plans to promotional brochures and landscape design analysis – all under the direction of Dean Hubert B. Owens. Professor William Beery from SED was hired to prepare a master plan for the garden, and students aided Professor Beery on detailed conceptual plans for the Garden Club of Georgia district plant collections (currently the shade garden at the SBG).

The SBG is entering into its 44th year under the leadership of a new director, Dr. Wilf Nicholls, and is once again enjoying this kind of relationship with the College of Environment and Design (CED). Dean Daniel Nadenicek and Dr. Nicholls are working together to create opportunities for students and faculty to learn through the State Botanical Garden. Professor Alfie Vick is the faculty member directing the largest of these projects – a new master plan for the SBG. Two graduate students are aiding Professor Vick in this year-long endeavor to produce the final master plan document. Contributing faculty are Professor Jon Calabria and Pratt Cassity of the CED's Center for Community Design and Preservation.

In the Fall 2011 semester, two major projects were completed that will be used in the creation of the final master plan. First, graduate students in Professors Vick and Calabria's LAND 6030: Nature and Sustainability Studio used Geographic Information System (GIS) technology to create an inventory of the SBG grounds and composite suitability analyses that will be used to guide the future development, conservation, and restoration of the garden property.

A community design charrette followed the inventory and analysis and was conducted by Pratt Cassity. Participants included the students from the design studio, students from the MEPD and BLA programs, CED faculty, staff from the Office of the University Architects, staff at the Garden, members of the Board of Advisors, and Friends of the Garden members. The charrette created an opportunity for students to work closely with stakeholders that had a strong interest in the development and future of the SBGG. The combination of these groups of people brought to light many new opportunities for the garden that had not been considered by the class while working individually in a studio environment.

Figures 3 - 7. Charrette participants collaborate to generate a vision for the future of the State Botanical Garden of Georgia

While the tangible products of the studio and the charrette are obvious - a comprehensive environmental inventory, composite analyses, various visions for a conceptual master plan for the SBGG - the intangible benefits are those reaped by the students. Relationships with institutions such as the State Botanical Garden afford students opportunities that they can't get in a classroom - the opportunity to work on real projects and interact with stakeholders, to design with groups of people with different ideas and opinions, to propose ideas to people who aren't giving them a grade, and to have a voice that reaches beyond the walls of a studio.

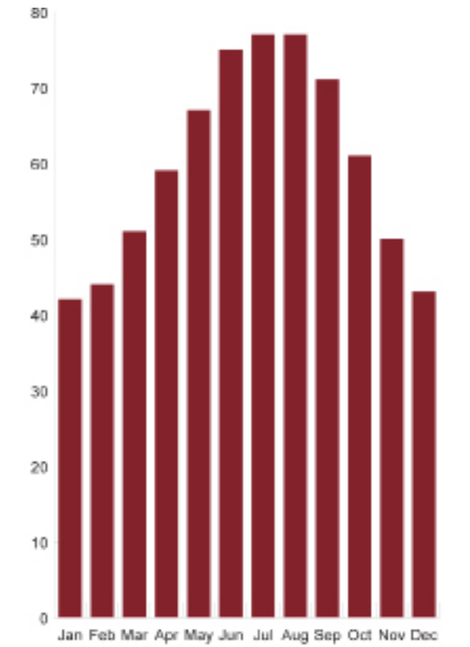
inventory & analysis

In the Fall semester of 2011, the graduate landscape architecture studio taught by CED assistant professor Jon Calabria and associate professor Alfie Vick conducted a site inventory of the State Botanical Garden of Georgia.

The inventory is focused on the environmental and built characteristics of the SBGG and is surrounding context. Data was collected from existing maps, on-site investigation, and aerial photographs / satellite imagery. The data was spatially analyzed using Geographic Information Systems (GIS), specifically using the software package ArcMap 10, and the maps that follow were produced. Digital versions of these maps, along with all the GIS shapefiles are archived at the CED and at the SBGG.

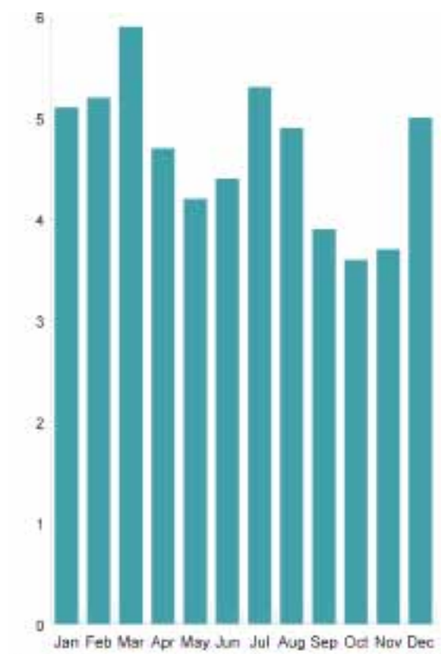
The inventory maps serve as a basis for sound planning and decision-making for the master plan. They reveal the underlying environmental characteristics and context of the SBGG landscape, including the soil, vegetation and hydrology of the site. They also present a snapshot in time record of the built environment of the SBGG as it existed in 2011; the buildings, roads, sidewalks and more that are found on site.

Most of the inventory maps are produced at one of two drawings scales, either a site scale (e.g., Soils Inventory) or a landscape context scale (e.g., Transportation Context Inventory), although there are a couple exceptions (e.g., Watershed Basins HUC 10 Inventory). The SBGG property boundary shown on these inventory maps is the one that was provided by the Office of University Architects at the time the inventory was done, the fall of 2011. On page 34-35 of this document, an updated property boundary is presented with justification for the changes.



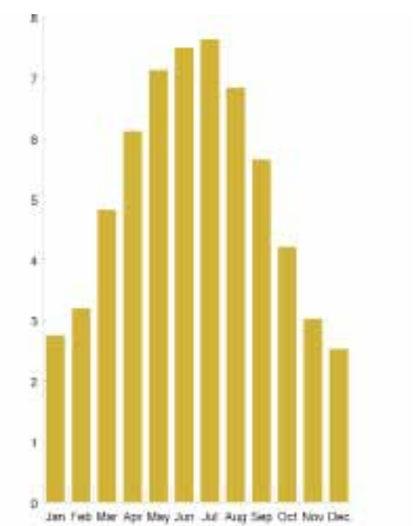
Monthly Average Temperatures in Degrees Fahrenheit 1895-1993

Georgia State Climate Office, Driftmier Engineering Center, University of Georgia



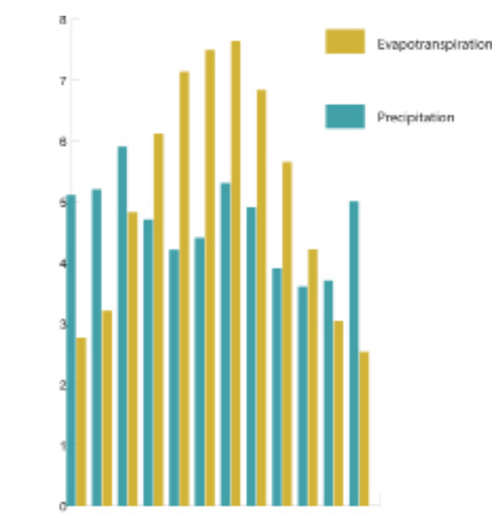
Monthly Average Precipitation in Inches (1895-1993)

Georgia State Climate Office, Driftmier Engineering Center, University of Georgia



Monthly Average Evapotranspiration in Inches

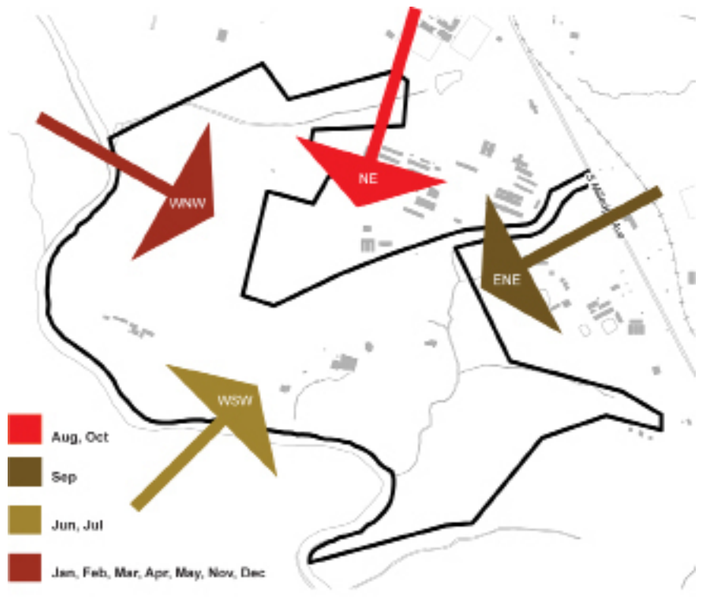
NOAA Technical Report NWS 34



Precipitation versus Evapotranspiration in Inches

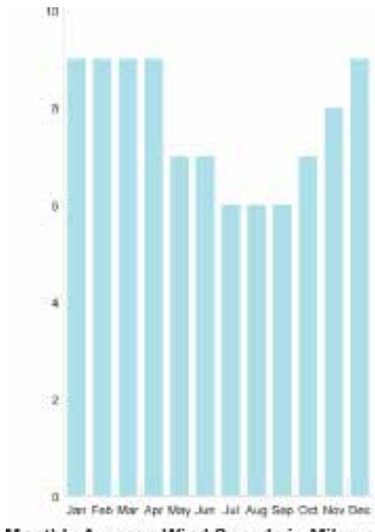
al Report NWS 34 and Georgia State Climate Office, Driftmier Engineering Center, University of

USDA Plant Hardiness Zone Map 2012



Wind Direction Chart

USA Climatology Research Lab and weatherunderground.com



Monthly Average Wind Speeds in Miles per Hour

USA Climatology Research Lab and weatherunderground.com

CLIMATE

Climate plays an important role in both the growth and health of plants and the comfort of visitors. Understanding climate on site is crucial to planning and maintaining the collections as well as accommodating users.

Climate on site is characterized by warm, humid summers and wet, cold winters. Average temperatures range from a high of about 90 degrees in the summer to a low of about 33 degrees in the winter. Each year sees around 51 days per year with a temperature of 90 degrees or higher and 50 days per year with a minimum temperature that falls below freezing. During winter months, trace amounts of snow are likely. The site has historically been classified into the USDA's Hardiness Zone 7b, however the latest revision puts the SBGG in Zone 8a with an annual minimum temperature range of 10 to 15 degrees Fahrenheit (garnered from temperature data taken in 1976 through 2005). Average temperatures projected over 60 years by University of Georgia's Climate Lab through the Geology department shows a trend of increasing temperatures. The last frost date (32 degrees) generally falls in the spring between March 30th and April 5th, and first frost date (32 degrees) typically falls between October 30th and November 5th.

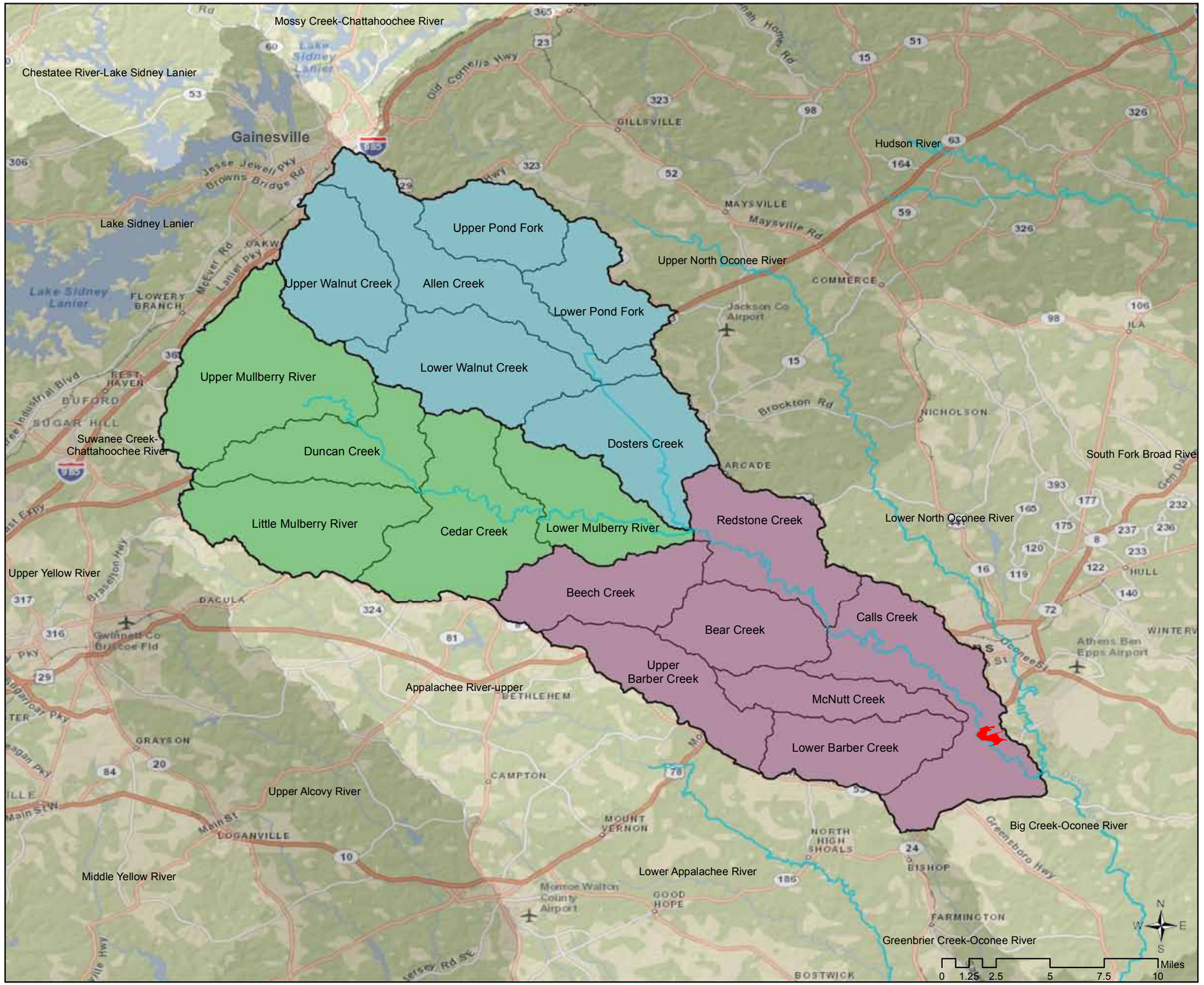
Large rain events are typical to the site, which can experience one-year events with an intensity rate of 5.19 inches per hour during a five-minute period and one hundred year events with an intensity rate of 9.18 inches per hour during a five-minute period. Around 50 inches of precipitation is expected in the region annually. Most months receive on average over 3.5 inches of precipitation while January, February and March receive over 4.5 inches of precipitation. However, drought conditions are extremely likely in the state of Georgia and projected to occur more frequently. On site wind speeds range from 6 to 9 miles per hour with winds predominately from the northwest. Vegetation, slope aspect, and proximity to the Oconee River contribute to microclimates on site. Over the next several decades, climate change is likely to affect the SBGG and will need to be monitored closely.

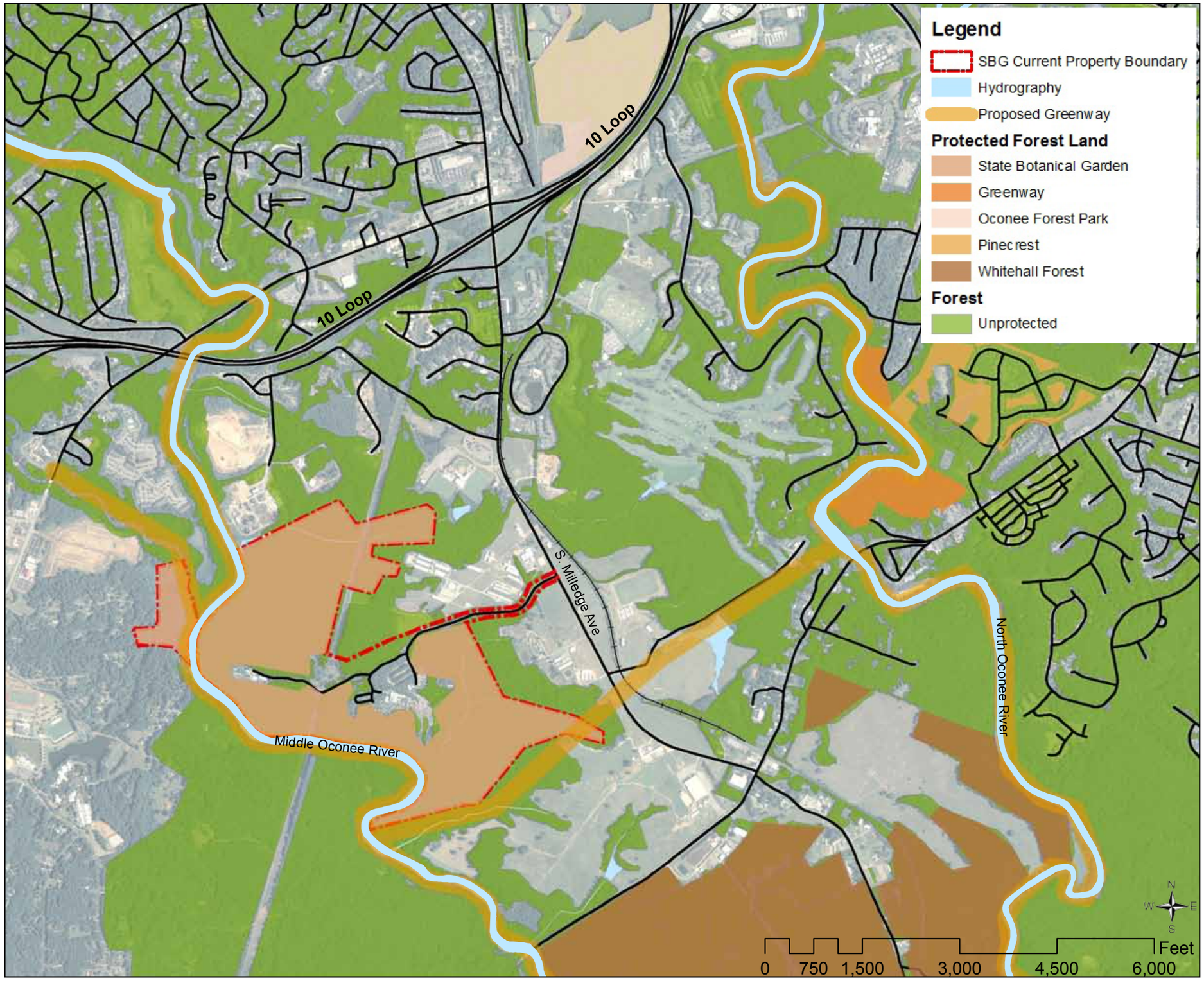
WATERSHED BASINS
HUC10

The Middle Oconee River runs through the State Botanical Garden of Georgia (SBGG), forming the western boundary of the property. It is the main feature of the Oconee River Basin, with headwaters approximately 60 miles north of Athens in Hall County.

South of SBGG, the Middle Oconee joins the North Oconee to form the Oconee River proper, which then flows south past two impoundments before its confluence with the Ocmulgee to form the Altamaha River. The basin drains a total of 5,330 square miles and stretches over 220 miles through the state of Georgia, where it flows into the Atlantic Ocean.

The river system is home to a large variety of aquatic life, including some federally and state-protected species. The Altamaha Shiner and the Robust Redhorse are two examples of state protected species.





GREEN INFRASTRUCTURE

The 313-acre State Botanical Garden of Georgia (SBGG) is located in Clarke County, approximately four miles from downtown Athens and the University of Georgia. Approximately 87% of the site is natural forested landcover, in various stages of maturity. The natural landcover is a functional and important green infrastructure. The EPA defines green infrastructure as, "Green infrastructure uses vegetation, soils, and natural processes to manage water and create healthier urban environments. At the scale of a city or county, green infrastructure refers to the patchwork of natural areas that provides habitat, flood protection, cleaner air, and cleaner water."(EPA, 2012) http://water.epa.gov/infrastructure/greeninfrastructure/gi_what.cfm

These important ecosystem services benefit the community in environmental, economic and social functions.
One example in particular is the role that SBGG plays for wildlife. In 2007, the National Audubon Society designated the garden as an Important Bird Area (IBA). The program "recognizes that coupled with global warming, habitat loss and fragmentation are the most serious threats facing populations of birds across America and around the world. By working to identify and implement conservation strategies at Important Bird Areas, we hope to minimize the effects that habitat loss and degradation have on birds and other biodiversity" (http://web4.audubon.org/bird/iba/). There are many species of land birds, such as warblers, vireos, and thrushes, which use the garden for breeding, winter habitat, and as spring and fall migration corridors. Many of these species are of high conservation priority in Georgia.

While the land cover condition of SBGG itself is critical to providing habitat, its landscape ecology context contributes significantly to its ecological value. The SBGG functions as a protected (not likely to be developed) habitat patch within a network of regional habitat. Other significant protected patches include the Whitehall Forest, the Oconee Forest Park, Pinecrest conservation easement (Athens Land Trust), and an Athens-Clarke County Greenway parcel. Protected habitat corridors consist primarily of the required buffers along the surrounding rivers and streams, as well as the land acquired for the planned greenway. There is currently a large amount of unprotected habitat around SBGG, much of it belonging to UGA. Efforts to preserve this habitat will benefit SBGG.

TRANSPORTATION CONTEXT

The South Milledge Corridor and SBGG are currently underserved by transportation options. At this time the only safe and feasible way to access SBGG is by personal automobile. This is an unsustainable situation and must be remedied in order to increase visitorship and community value while minimizing the need for additional parking.

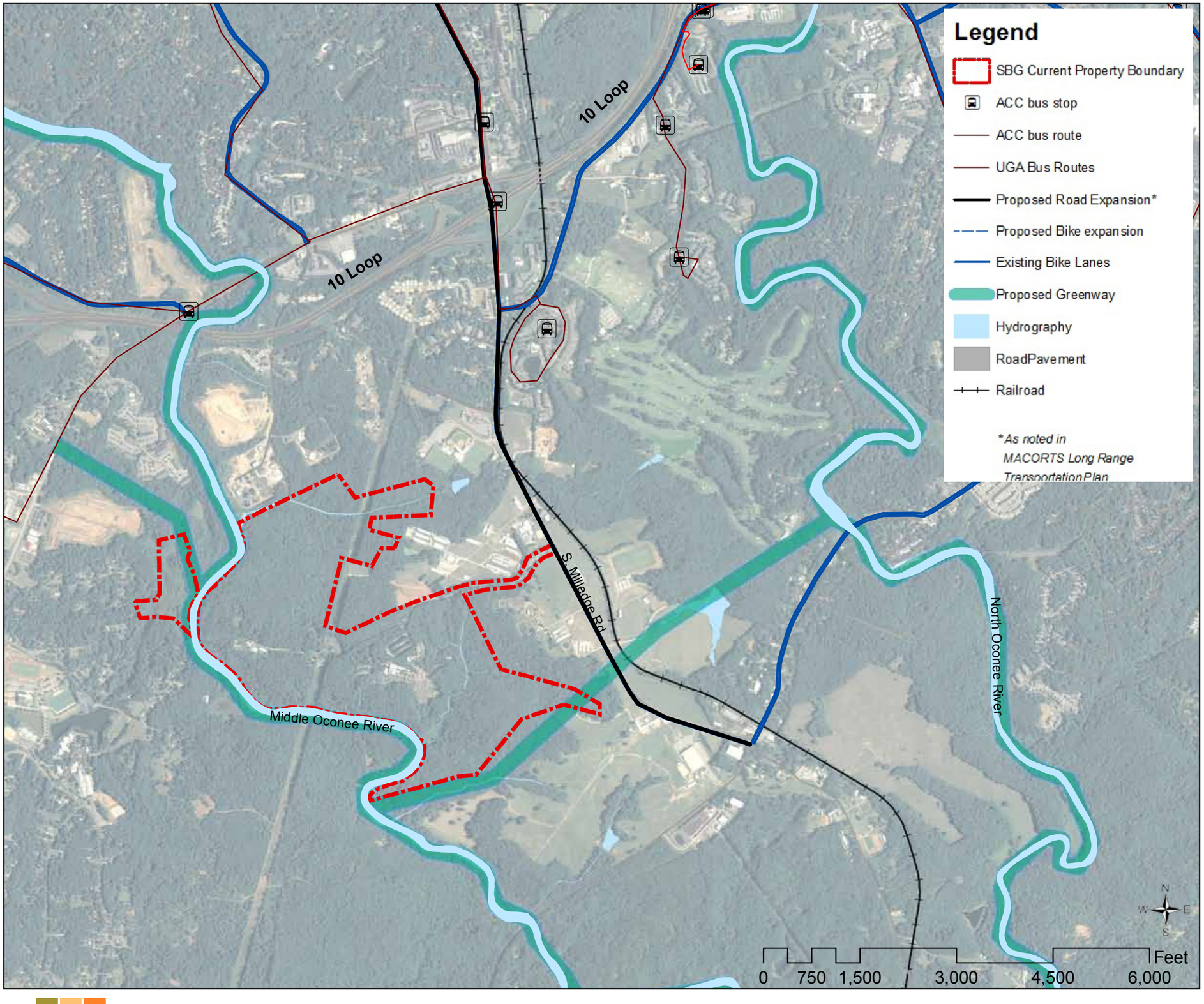
Currently, A-CC bus routes, UGA bus routes, and on-street bike lanes stop at the UGA Golf Course approximately one mile north of the SBGG main entrance. Sidewalks do not exist south of the 10 Loop. In other words, bus, bicycle and pedestrian access to SBGG is currently unavailable.
Some planned/proposed improvements will help to rectify this situation:

- The MACORTS Long Range Transportation Plan proposes widening South Milledge to include turn lanes and on-street bike lanes. Estimated completion: 2030.

- The Oconee Rivers Greenway is planned to extend south along the Middle Oconee River, providing access to the west side of SBGG. An east-west connector is planned along the south side of SBGG, connecting the Middle Oconee River route with the North Oconee River route. Estimated completion: unknown.

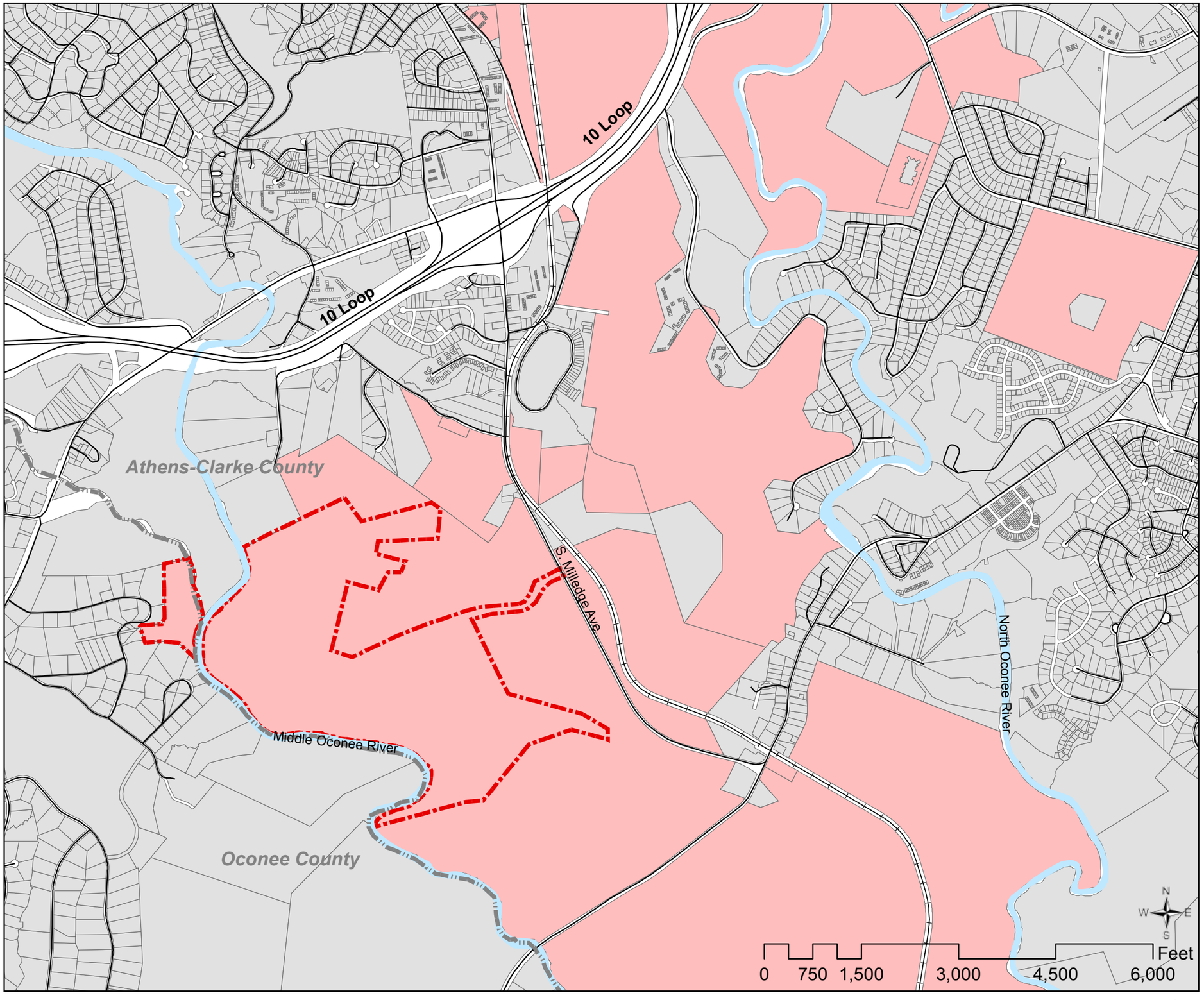
- UGA Campus Transit has expressed a willingness to serve South Milledge. Leverage exists from multiple users, including: SBGG, new intramural and other athletic facilities, UGArden, Horticulture Department facilities. Estimated completion: 5 years.

- Another opportunity is the unused rail corridor that parallels South Milledge. This rail connects to campus and downtown, and proposals exist to convert it to light rail. Estimated completion: unkown.



PARCEL OWNERSHIP

The SBGG is surrounded by UGA property on the south, east and most of the north boundaries. The remainder of the northern property boundary is adjacent to the Athens-Clarke County Middle Oconee Water Reclamation Facility. The Middle Oconee River comprises the western boundary of SBGG, with private property in Oconee County on the other side of the river. The Ivy Wetland is a part of SBGG, and lies on the west side of the Middle Oconee in Oconee County. It is currently not accessible to the public.



Legend

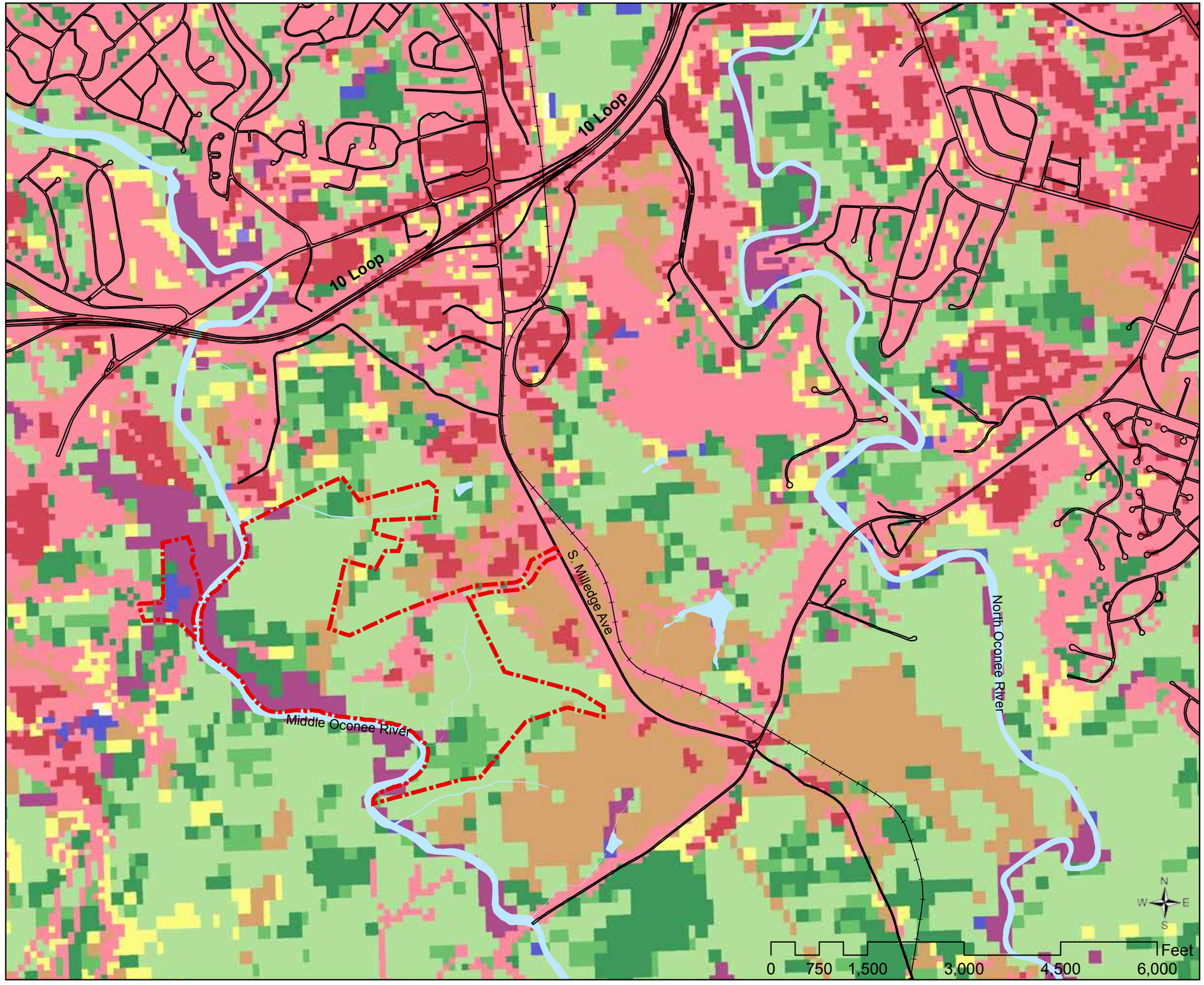
- SBG Property Boundary
- Roads
- Railroads

Parcel Ownership

- Privately or Publically Owned, not B.O.R.
- University of Georgia, Board of Regents

LAND COVER

The State Botanical Garden of Georgia is located at the urban fringe of Athens. Urban development is the dominant landcover inside the 10 Loop and it is an increasing presence outside the Loop as well, sprawling along vehicular routes throughout the County. The SBGG, and other UGA property along the South Milledge corridor has served as a de facto urban growth boundary, primarily functioning as agricultural research land and now bordered by other "greenbelt" land uses such as low density residential land and natural land cover. Much of the surrounding land is susceptible to more intense land use in the future which would bring new challenges to managing the SBGG.

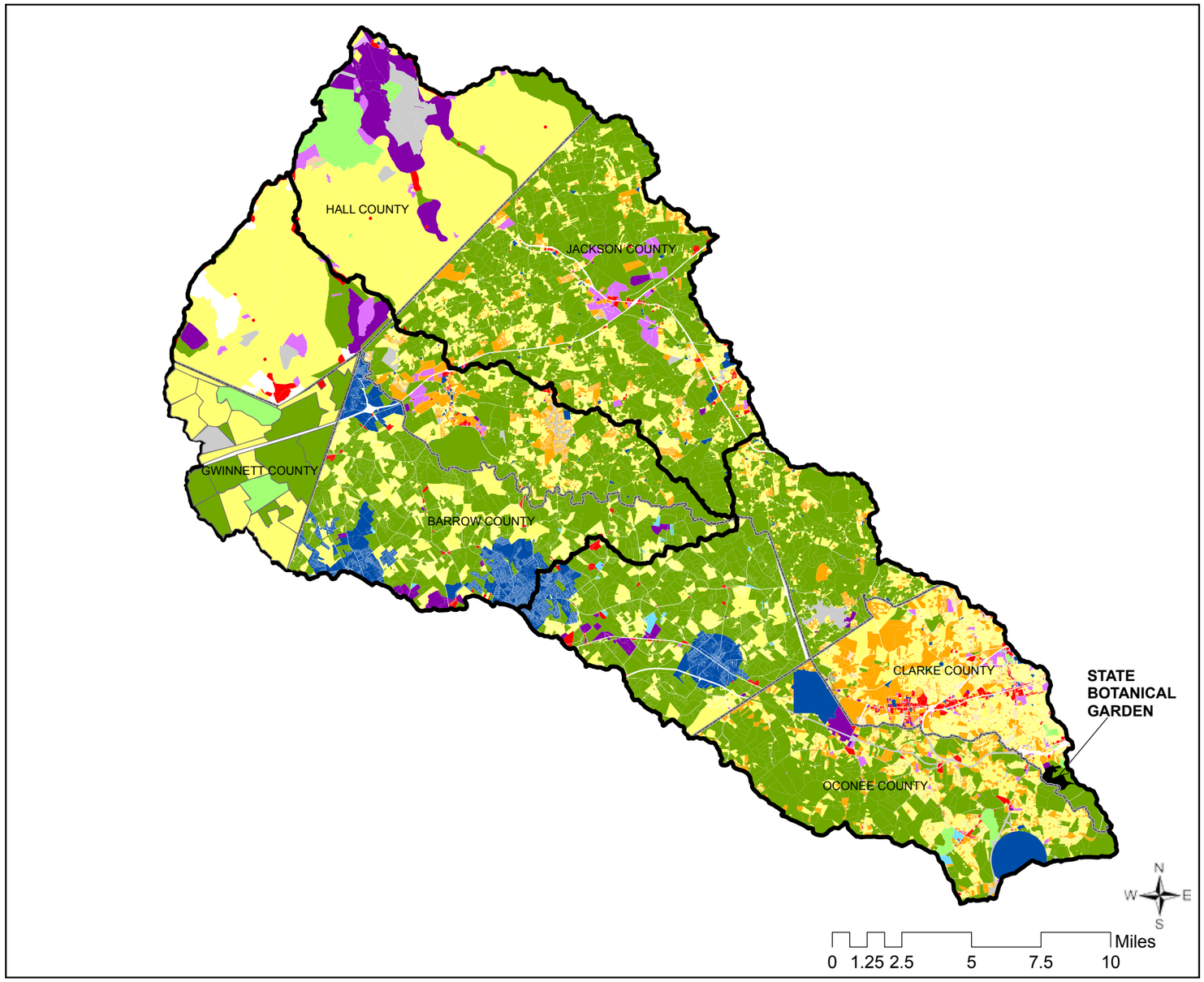


Legend

- SBG Current Property Boundary
- RoadPavement
- Railroad
- Hydrology

Land Cover 2008

- Beach/Dune/Mud
- Open Water
- Low Intensity Urban
- High Intensity Urban
- Clearcut/Sparse
- Quarries/Strip Mines/Rock Outcrop
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Row Crop/Pasture
- Forested Wetland
- Non-Forested Salt/Brackish Wetland
- Non-Forested Freshwater Wetland



LAND USE WITHIN WATERSHED

The Middle Oconee watershed extends from Whitehall Forest (just south of the SBGG) up into Hall County including a portion of Gainesville, GA. The watershed comprises portions of six counties: Clarke, Oconee, Barrow, Jackson, Gwinnett and Hall. Most of the land use within the watershed is agricultural, although it is punctuated by the cities of: Athens, Watkinsville, Bogart, Winder, Statham Braselton and Gainesville. These urbanized areas contain a large proportion of impervious surfaces, which alter and degrade surface water resources if left unmitigated. Hall County in particular shows a dominance of low-density land-use throughout the county, although the distinction between this land use and the adjacent agricultural use is probably exaggerated simply due to classification preferences of the different county governments. An excellent description of the Upper Oconee River Basin can be found at: http://www.gaepd.org/Files_PDF/plans/oconee/chapt-2.pdf

Legend

- HUC10 Watersheds
- Counties

Land Use Description

- Agriculture
- City
- Commercial
- Government
- Industrial
- Park/Recreation/Conservation
- Public/Institutional
- Residential
- Transportation/Communication/Utility
- Unclassififed
- Undeveloped/Unused

HISTORIC RESOURCES

The Regents of the University System of Georgia purchased the property where the current the State Botanical Garden of Georgia (SBGG) is housed in July of 1936 from the Georgia Rural Rehabilitation Corporation (GRRC). Initially, the land was used by the Agronomy department at the University of Georgia (UGA) for research and development and was later used by the Forestry and Horticulture departments for research and practice areas. In 1968, The UGA Horticulture department introduced the idea of a 'living library' - giving birth of the SBGG. The property was set out within the larger parcel as a place for plant research and as a location for land conservation practices at UGA. The property has many cultural and historic remnants of past land uses throughout the landscape.

Historic land use maps were generated from aerial photography taken by the United States Department of Agriculture's (USDA) Agricultural Stabilization and Conservation Service (ASCS) using GIS software. The photographs are all in black and white making it difficult to determine specific land uses limiting categorization to general categories including agricultural, forested, developed, utilities, rivers, and other.

Extensive research exists on how and when the State Botanical Garden formed and was began but there is little information available concerning the use of the land predating 1968 and almost no information exists for the landscape pre-1936. What are the stories of the people who lived here? What is the history of the educational and research based operations of the university on the land before the formation of the State Botanical Garden? These questions could be answered and the garden could engage its visitors on the cultural heritage and research use of the site. Georgia's unique human history on the land can be used in order to educate visitors on the historic context by which the garden exists through historic interpretation and access to these various locations to create a more dynamic experience for visitors to the SBGG.

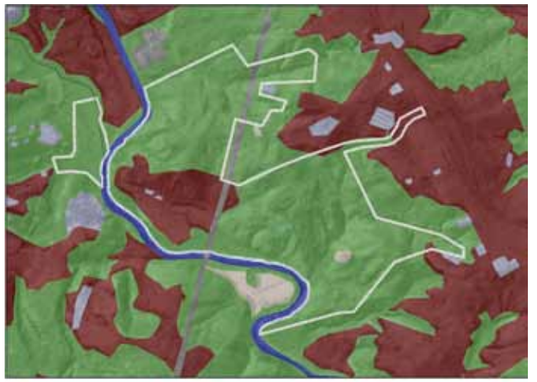
1938 Land Use - ASCS Aerials

1944 Land Use - ASCS Aerials

1951 Land Use - ASCS Aerials

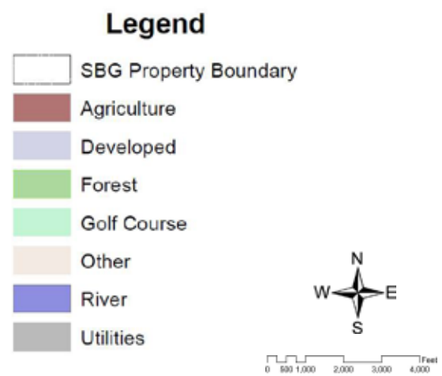
1955 Land Use - ASCS Aerials

1960 Land Use - ASCS Aerials

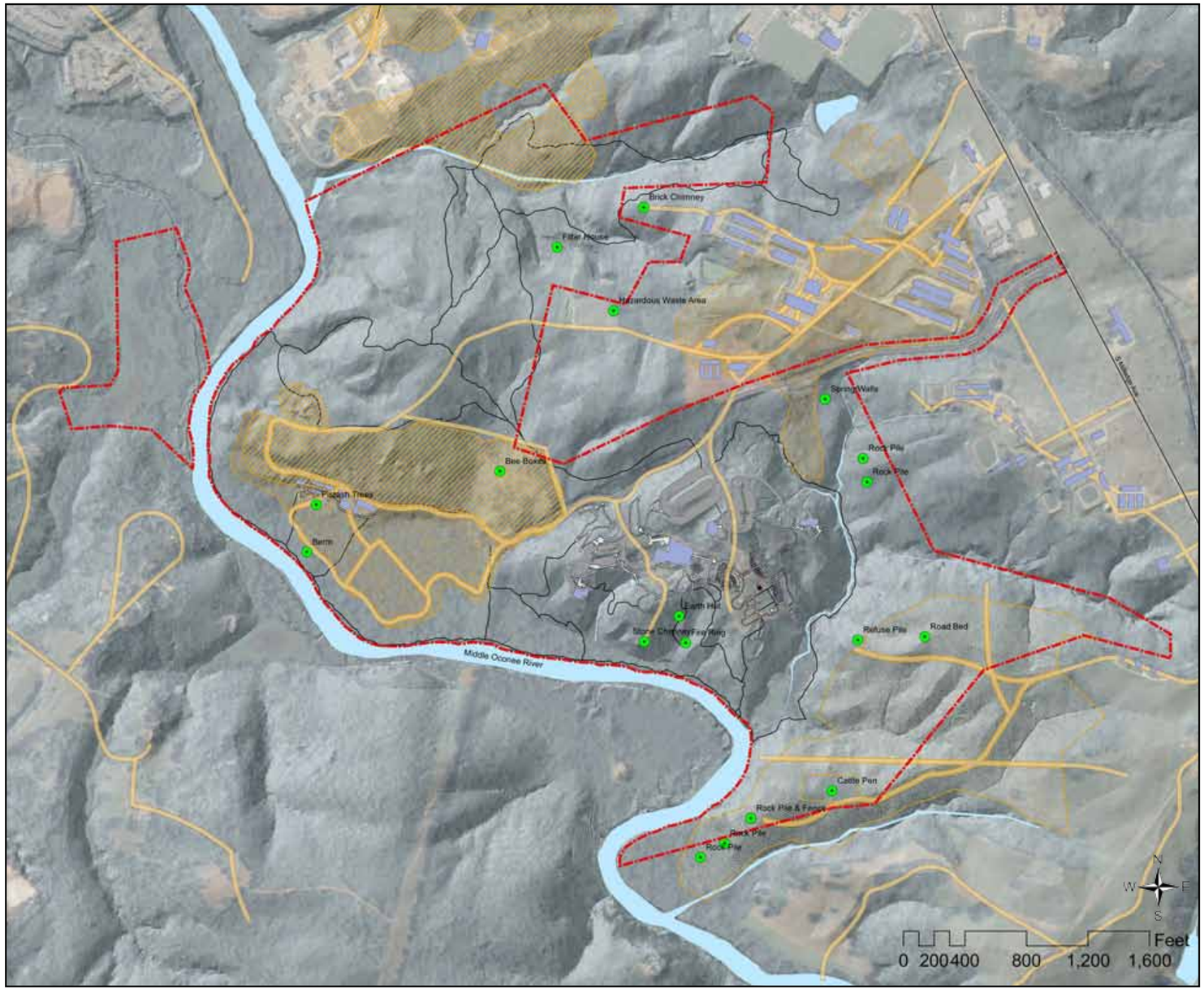


1967 Land Use - ASCS Aerials

1973 Land Use - ASCS Aerials



CULTURAL RESOURCES



The locations of points and areas of cultural significance that remain on the property in 2011 have been GPS located and digitized using Geographic Information System (GIS) software. Many of these points have been photo documented and most have no historical interpretation. Some approximate dating was determined by appearance of items in the aerial photographs. Descriptions and photos of the cultural resources identified on this map can be found in Appendix A.

These cultural resources can provide a story that is similar to many places throughout the state of Georgia and used as an educational tool held within the landscape. Protecting, restoring and preserving these resources would create a more dynamic experience for visitors. Individual and groups of visitors will have the opportunity to learn about the history of Georgia's evolving landscape and the ecological changes that occur through the cultural human intervention on the landscape over time. These cultural elements may not have great significance in a specific event or person but they can help visitors understand the historical context in which that landscape has evolved through Georgia's history.

Legend

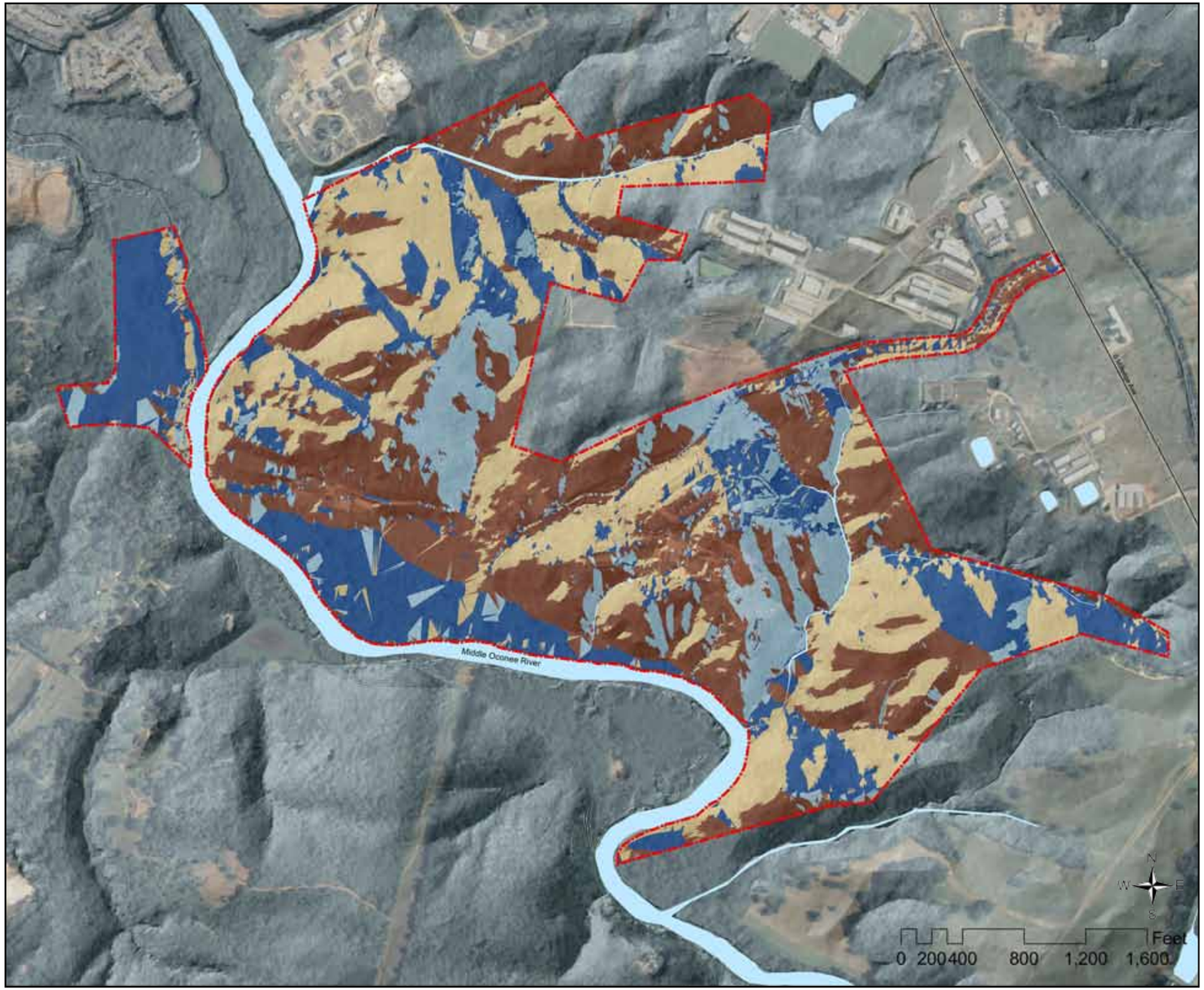
- SBG Property Boundary
- Cultural Resource Points
- Historic Roads (1938-1973)
- Current Roads
- Current UGA Buildings
- Current Trails

Extent of Previous Agricultural Land (1938-1973)

- Agricultural
- Flat Agricultural
- Terraced Agricultural

SOLAR ASPECT

Generally, the SBGG site slopes south and west toward the Middle Oconee River. Variations in aspect can be found throughout the site due to its diverse topography and the ridges and valleys created by the streams flowing through the property. The variety of slope aspect creates varied microclimates, which can help in allowing for a diverse display of plant species. North facing slopes may be associated with cooler and moister conditions and more diverse groundlayer vegetation. South facing slopes may be hotter and drier, although when considered in combination with other characteristics they may make ideal locations for siting buildings in order to maximize passive solar potential.



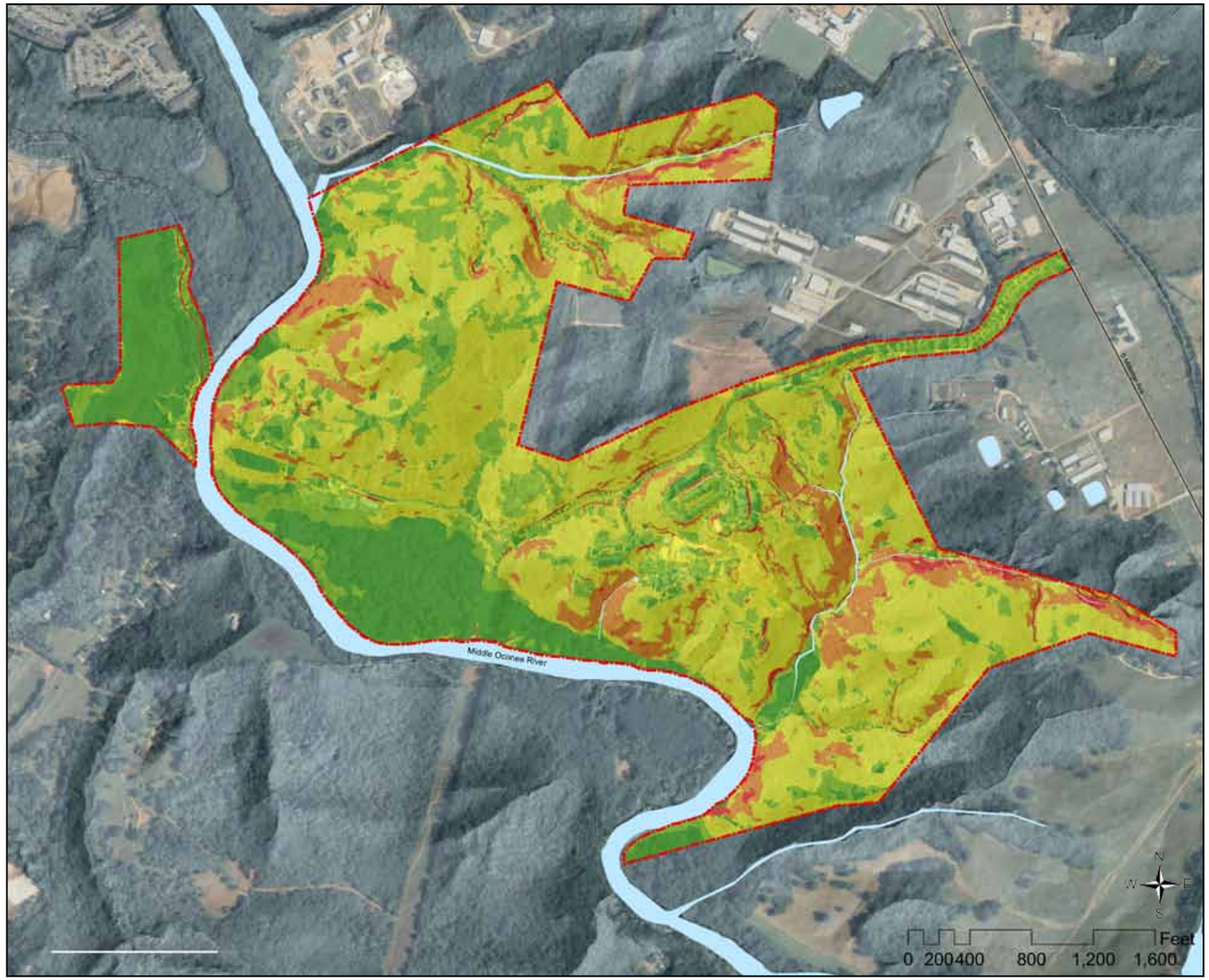
Legend

- SBG Property Boundary
- Hydrography

Solar Aspect

- Cool (North)
- Cool Morning Sun (East)
- Hot (South)
- Warm Afternoon Sun (West)

SLOPE



The State Botanical Garden in Clarke County, Georgia is located northeast of the Middle Oconee River. The site is made up of varied terrains that range from zero to greater than 25% slopes. More than 50% of the property falls into the 25% slope or greater range. The steepest slopes associated with the major streams on the property, North Creek and South Creek, as well the bluffs that are found along the Middle Oconee River. The flattest parts of the property are found adjacent to the Middle Oconee River in the floodplain as well as the developed areas of the site.

This site has elevations that range from 536 feet to 703 feet. Its highest point at 703 feet is located at the southeast end of the property. There are also two secondary high points of 682 feet located at the center and north end of the property. The lowest portions of the site are between 536 and 556 feet and are located on the southwest end of the site along the Middle Oconee River. This area is also associated with the Middle Oconee River's flood plain.

Legend

- SBG Property Boundary
- Hydrography

Slope Inventory

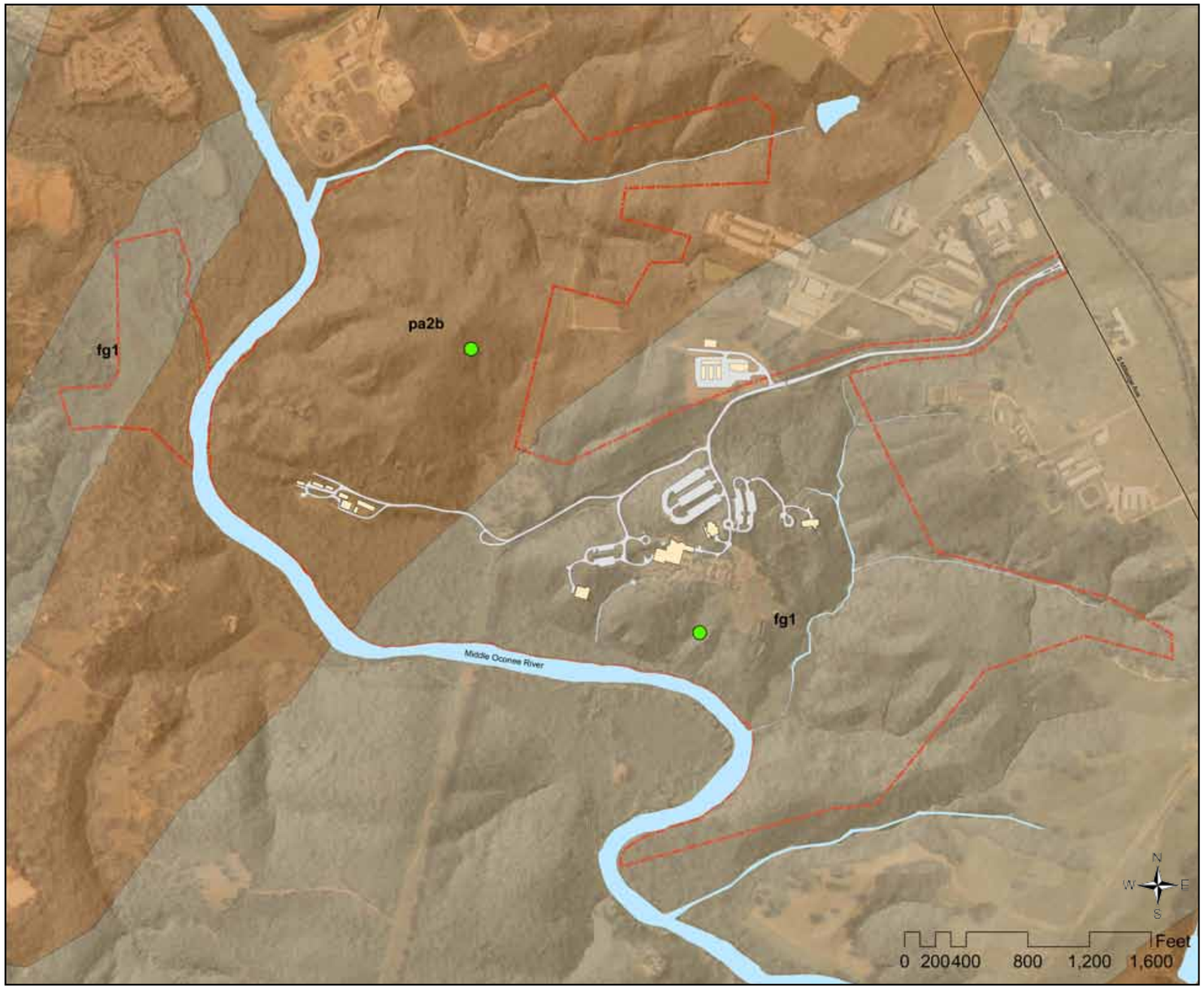
- 0 - 2%
- 2 - 6%
- 6 - 15%
- 15 - 25%
- 25+%

GEOLOGY

The State Botanical Garden of Georgia (SBGG) spans two different geologic groups as defined by the United States Geologic Survey. The northern half of the property sits on pa2b geology, or a sillimanite schist/gneiss/amphibolite. This geology mostly influences development of fairly well drained soil profiles made of sandy silts and clays. The deep soil profiles influence the formation of undulating rounded hilltops with steep side slopes. The southern half of the SBG is on fg1 geology, or a biotite gneiss/feldspathic biotite gneiss. Gneiss residual soils contain sandy silts or sandy clays and have a plastic subsoil in humid climates. Profiles run from five to ten feet deep. Gneiss regions typically have a high level of visual diversity.

Although the geology is important to the soil structure and analyzing the topographic features of the site, it should not greatly affect construction in any way as the soils are stable, and the bedrock strong.

Inventory data was made available through the Georgia GIS Clearinghouse. A detailed description of the geology of the SBGG can be found in the "Natural Environments of the State Botanical Garden of Georgia" (Wharton, 1998).



Legend

SBG Property Boundary

Hydrography

USGS Geologic Group Code

fg1: biotite gneiss/feldspathic biotite gneiss

pa2b: sillimanite shist/gneiss/amphibolite

amphibolite surface rocks

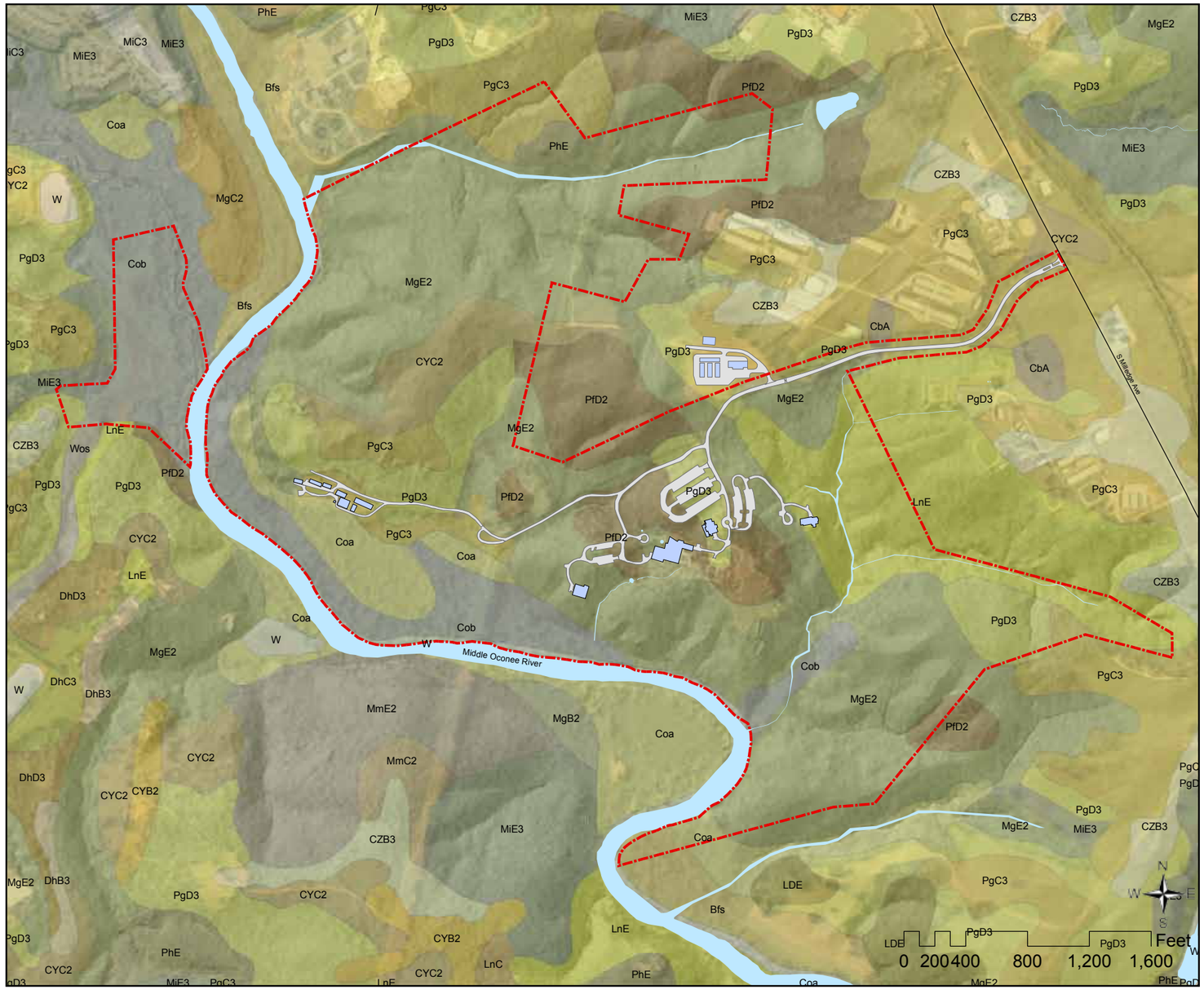
SOILS

Soils at the SBGG (excluding the Ivy Wetland) are predominantly Madison sandy loam (49.6%) and Pacolet sandy clay loam (22.4%); also, Louisburg loamy sand (9.1%), Chewacla soils and alluvial land (8.1%), Congaree soils and alluvial land (4.8%), and Cecil sandy loam (4.0%); with the presence of Pacolet gullied land (0/7%), Buncombe loamy sand (0.4%), Cecil soils overwash (0.1%); and the remainder surface water (0.8%).

The Ivy Wetland is nearly entirely Chewacla soils and alluvial land (92.0%); also present is Pacolet sandy clay loam (3.5%), Madison sandy clay loam (2.0%), Pacolet sandy loam (0.8%), Wehadkee and alluvial land (0.8%), Louisburg loamy sand (0.6%), and surface water (0.3%).

Wharton reports that analysis of the soils at the SBGG indicate higher levels of fertility than would typically be found in the Piedmont, despite the history of agriculture and erosion.

Excerpted soil reports are included in Appendix C.



Legend

- SBG Property Boundary
- Hydrography
- SBG Buildings
- Roads and Parking

Soil Unit Code

- Bfs
- CYB2
- CYC2
- CZB3
- CbA
- Coa
- Cob
- DhB3
- DhC3
- DhD3
- LDE
- LnC
- LnE
- MgB2
- MgC2
- MgE2
- MiC3
- MiE3
- MmC2
- MmE2
- PfD2
- PgC3
- PgD3
- PhE
- W
- Wos

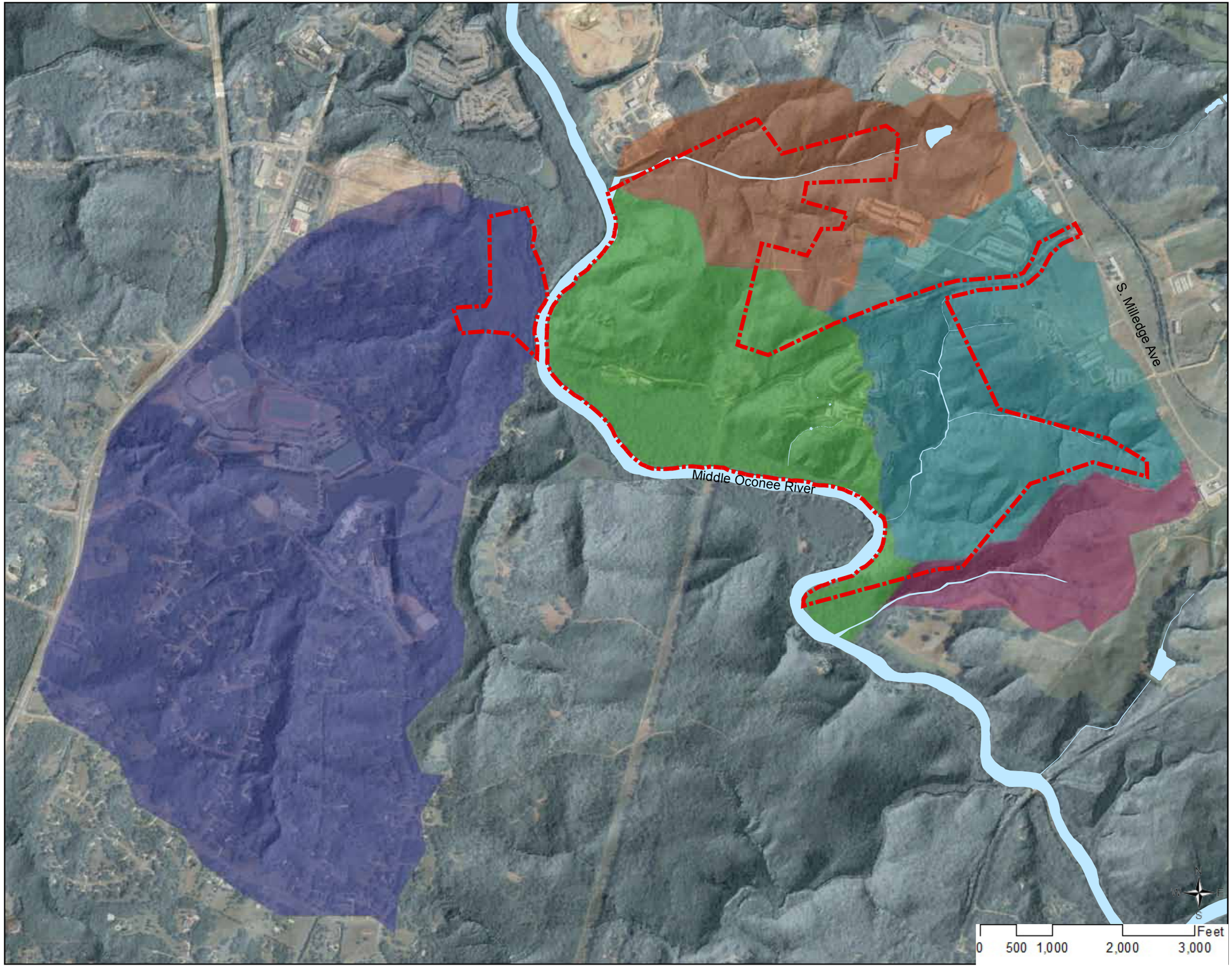
HYDROLOGY
SITE WATERSHED BASINS

There are four primary watersheds comprising the SBGG. South Creek, along the Orange Trail drains the eastern portion of the property, including the Main Entrance Drive, the Flower Garden and most of the off-site development along South Milledge Avenue. This watershed receives runoff from these off-site areas which has been a problem in the past (when the swine farm lagoons were still extant) and could be again in the future (many new UGA green houses are planned within this watershed along South Milledge).

North Creek drains the northern portion of the property, and its major impacts include overflow from the retention pond serving the UGA softball field and the groundwater contamination located just outside the SBGG boundary (this contamination has been remediated and is monitored by the state EPD).

The third water shed within the main SBGG property lacks a perennial stream but drains to the Middle Oconee though several intermittent and ephemeral channels. Portions of the curated gardens, the Visitor Center and the CNPS all are within this watershed.

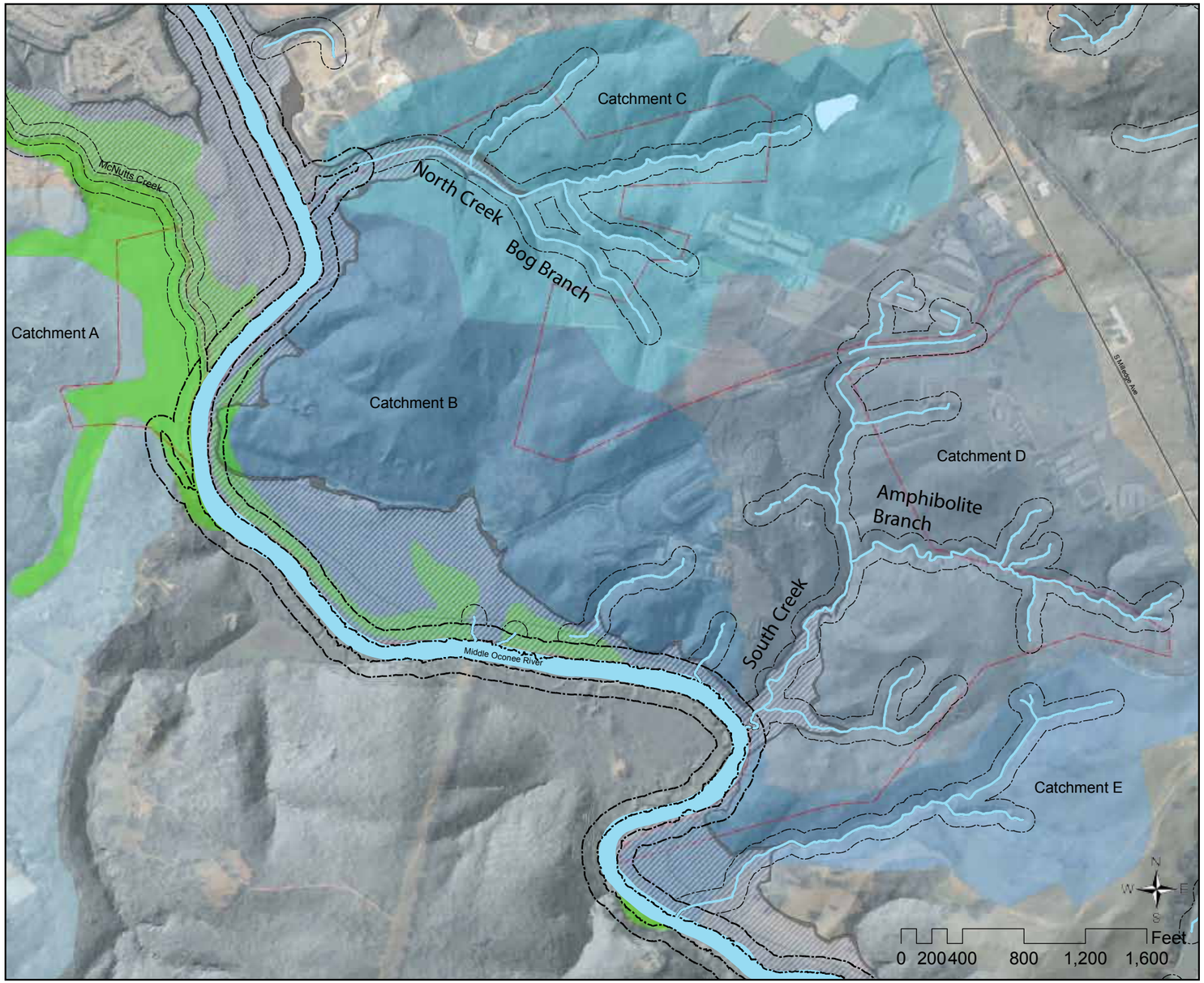
Across the river, the Ivy Wetland is at the bottom of a larger watershed draining residential and commercial land-use in Oconee County.



HYRDOLOGY
FLOODPLAINS AND BUFFERS

The surface water resources on the site are subject to local, state and federal regulatory protections. It must be noted that the inventory presented here is informational only, and does not represent the actual delineation of any regulatory protections, which must be verified by field-run survey and/or interpretation of the governing jurisdiction.

The State of Georgia requires a 25-foot undisturbed buffer on each side of perennial streams (measured from the top of bank) and other surface water bodies. Athens-Clarke County requires an additional 50-foot (total of 75-feet) buffer on each side. The Middle Oconee River is protected by a 100-foot buffer. Also shown on this map are the 100-year and 500-year floodplains, as determined by the Federal Emergency Management Agency (FEMA). The 100-year floodplain is subject to local and federal development restrictions. The National Wetlands Inventory indicates the presence of forested wetland on both sides of the Middle Oconee River. If verified, these wetlands would be subject to legal protections as well.



Legend

- SBG Property Boundary
- Streams
- Stream Buffer - 100ft
- Stream Buffer - 75ft
- Freshwater Forested/Shrub Wetland

Flood Plain

- 500 Year Flood Event
- 100 Year Flood Event

Site Catchment

- A
- B
- C
- D
- E

VEGETATION
PLANT COMMUNITIES

Vegetation on site is characterized predominately by hardwood and mixed hardwood forests, consisting of species of pine, oak, and hickory. An evaluation of the successional stages on the property revealed how previous land management practices have impacted the landscape. Pine forests are mainly confined to the western portions of the property, located by the old plant propagation greenhouses. Two unique plant communities were also discovered on the site. These included three wetlands and a heath bluff, which bear great potential for educating visitors to plant communities, which are not endemic to the Georgia Piedmont.

To classify existing vegetation, a Landsat Landcover layer was referenced along with aerial imagery from March 2003, in GIS. Using the landcover layer as a guide and the aerial as the base, existing vegetation was digitized into twelve distinct plant communities.

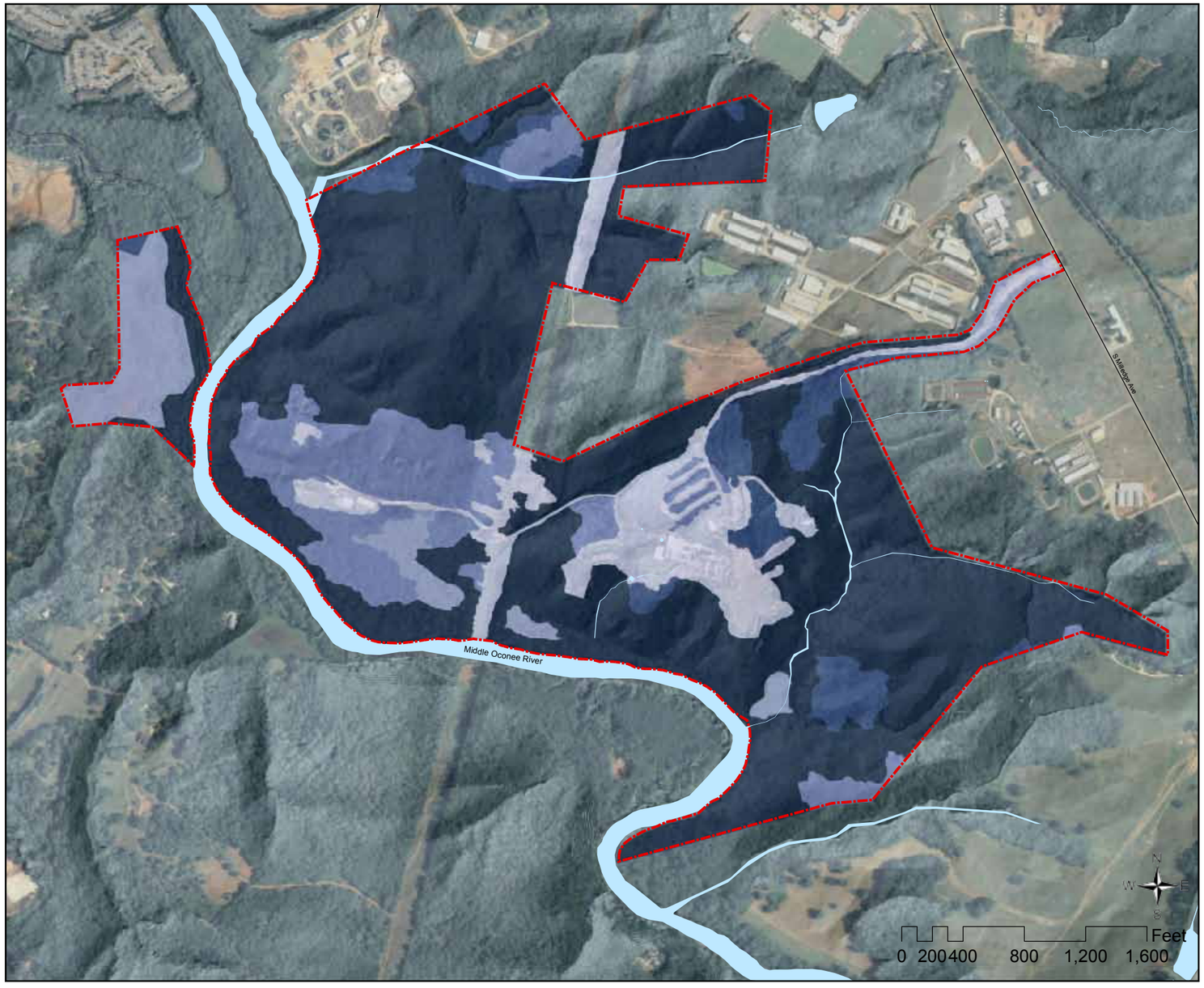
Descriptions of the plant communities found on site are located in Appendix B of this document.

Legend

- SBG Property Boundary
- Hydrography

Plant Communities

- Bottomland Hardwood
- Garden Areas
- Garden Areas Forested
- Hardwood Forest
- Heath Bluff
- Loblolly and Shortleaf Pine
- Mixed Pine Hardwood
- Open Loblolly and Shortleaf Pine
- Pasture Hay
- Utility Swath
- Wetland



VEGETATION
SUCCESSIONAL AGE

Several large stands on the property are in a mature hardwood successional stage, primarily along the Middle Oconee River and on the northern and southeastern boundaries of the property. Areas that were once used for agriculture are now in the mixed pine or pine successional stages and are found in patches on the southern and northern borders of the property. A large patch of pine forest dates back 20-40 years where the largest agricultural field once lay and was converted back to forest sometime during the 1970s.

The successional stages map shows the relative age of each plant community. The plant communities' map was overlaid with historic aerial images (similar to the historic/cultural inventory) dating between 1938 and 2009. Using these two sources, it was determined how forests were managed and when they were allowed to enter into a natural successional stage. The successional stages correlated very well with the historic inventory maps and by plant community. Ages were broken into five ranges (0 to 5, 5-20, 20-40, 40-70, 70+), with 70+ years being the maximum age class since the aerial imagery only went back 70 years.

Legend

- SBG Property Boundary
- Hydrography

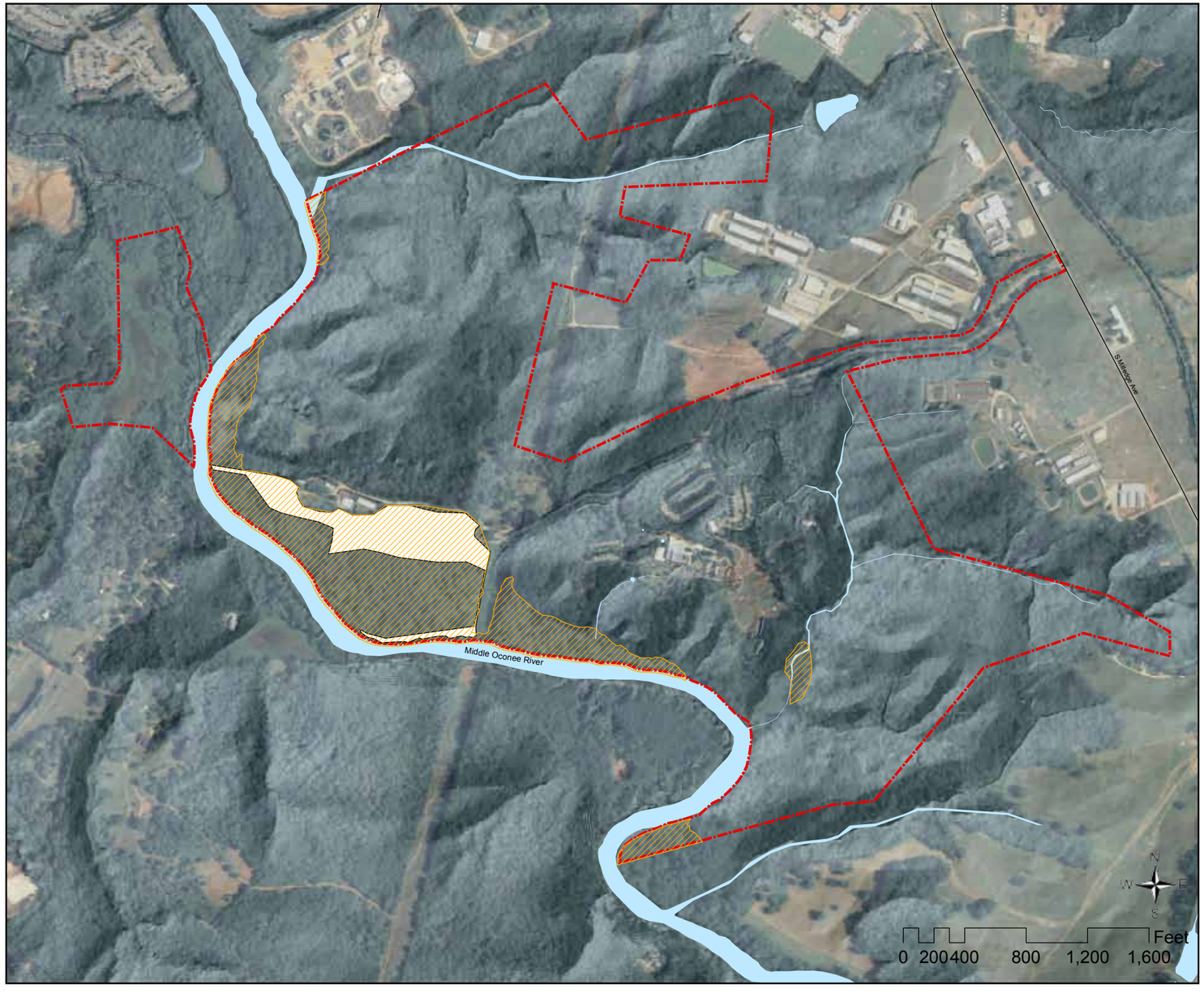
Successional Age

- 0 to 5 years
- 5 to 20 years
- 20 to 40 years
- 40 to 70 years
- 70+ years

VEGETATION
INVASIVE SPECIES

Most natural areas in the Piedmont are affected in some way by invasive exotic plant species, and the SBGG is no exception. Most problematic is the widesperead infestation of Chinese privet (Ligustrum sinense) throughout the floodplain of the Middle Oconee River. Privet seeds are deposited in the floodplain by periodic flooding as well as by birds. In some areas the privet growth is so dense that it effectively eliminates native groundlayer, shrub and understory diversity.

Privet control research has been ongoing at the SBGG since 1995. Three 5-acre research plots monitor the impact of different management techniques. Recently, in the fall of 2011/spring of 2012, a Gyrotrac machine was employed to cut and grind several acres of privet-infested floodplain.



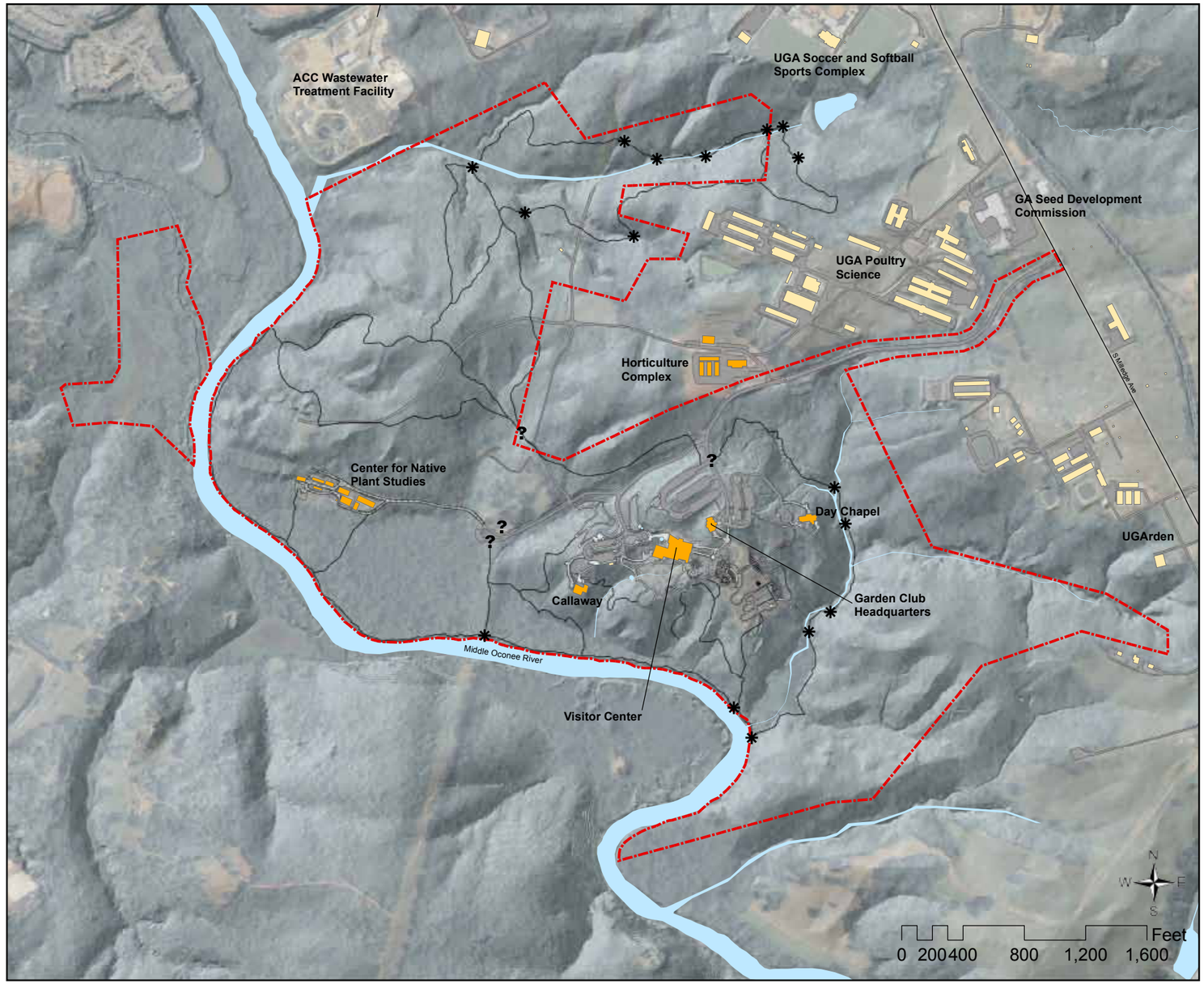
Legend

- SBG Property Boundary
- Hydrography
- Chinese Privet Distribution
- Area of Privet Removal by Gyrotrac, December 2011

EXISTING BUILT STRUCTURES

Several existing buildings are located on the SBGG property. These include the: Visitor Center, Callaway Building, Garden Club of Georgia Headquarters, new Horticulture Complex, Center for Native Plant Studies, Day Chapel, and a restroom building.

Other built structures include map kiosks, rain shelters, and footbridges that are located throughout the site.



Legend

- SBG Property Boundary
- UGA Buildings
- SBG Buildings
- Roads and Parking areas
- Service Drive areas
- Gravel areas
- Sidewalks
- Trails
- Bridge Locations
- Kiosk Locations

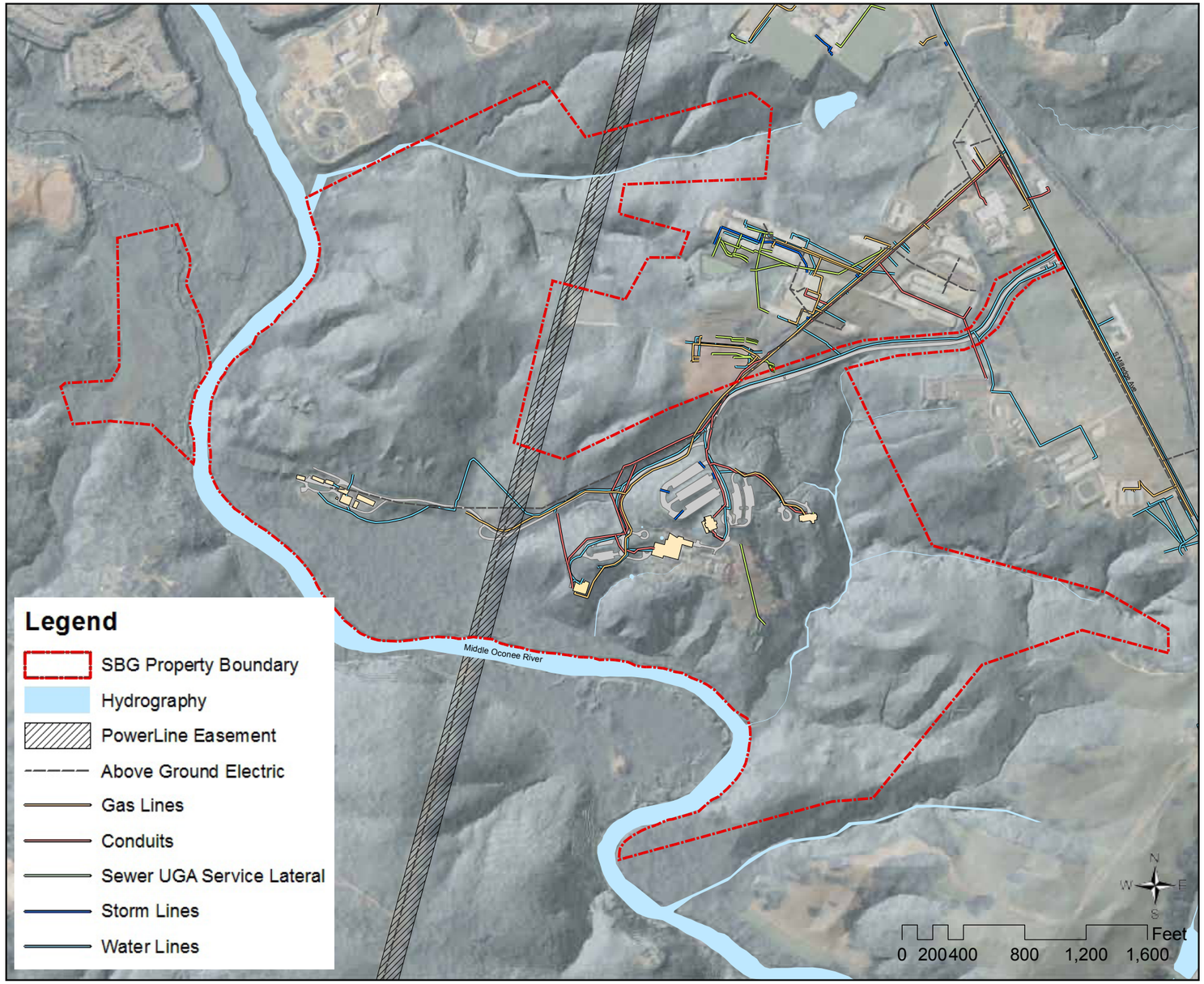
INFRASTRUCTURE

The utilities infrastructure at the SBGG include water lines, gas lines, sewer lines, storm lines, above ground electrical lines and electrical conduit lines. The core of the SBGG, in regards to infrastructure, is the Visitors Center; all necessary utilities are available at the core as well as radiating out to other buildings, including the Day Chapel. Water, gas, and electrical are available near the CNPS, as well as septic for restrooms, but sewer and communication would need to be added if that area were to be further developed.

Gas, power and other buried conduit enters the SBGG property from the north near the new Horticulture Complex. Once it reaches the paved drive, it forks, providing gas to the core of the SBG and continues toward, but does not reach, the old greenhouse. Gas lines also run to the Day Chapel on the east side of the property.

The main water line into the SBGG begins at Milledge Avenue, continues along the Main Entrance Drive before branching in multiple directions from the Main Parking Lot.

A large electrical transmission line runs north and south across the entire property, essentially cutting the property into two halves. The line falls in between the core of the SBGG and the Center for Native Plant Studies



GARDEN BOUNDARIES

There are eight distinct cultivated gardens that currently exist at SBGG. They are:

- Lower Shade Garden (1988)
- Upper Shade Garden (1991)
- Dunson Native Flora Garden (1981)
- International Garden (1995)
- Herb and Physic Garden (1984)
- Heritage Garden (2001)
- Flower Garden (2008)
- Horticulture Complex Demonstration Gardens (2010)

The boundaries of the existing gardens shown on this map were drawn based on descriptions and on-site meetings with each of the garden curators. Some of the boundaries are distinct, such as a sidewalk or a row of plants. Other times they are a bit more vague, such as 'approximately 25 feet from the edge of the sidewalk.

master plan

EXISTING AND PROPOSED DIAGRAMS

The master plan presented here is intended to address the goals that were identified at the beginning of the project:

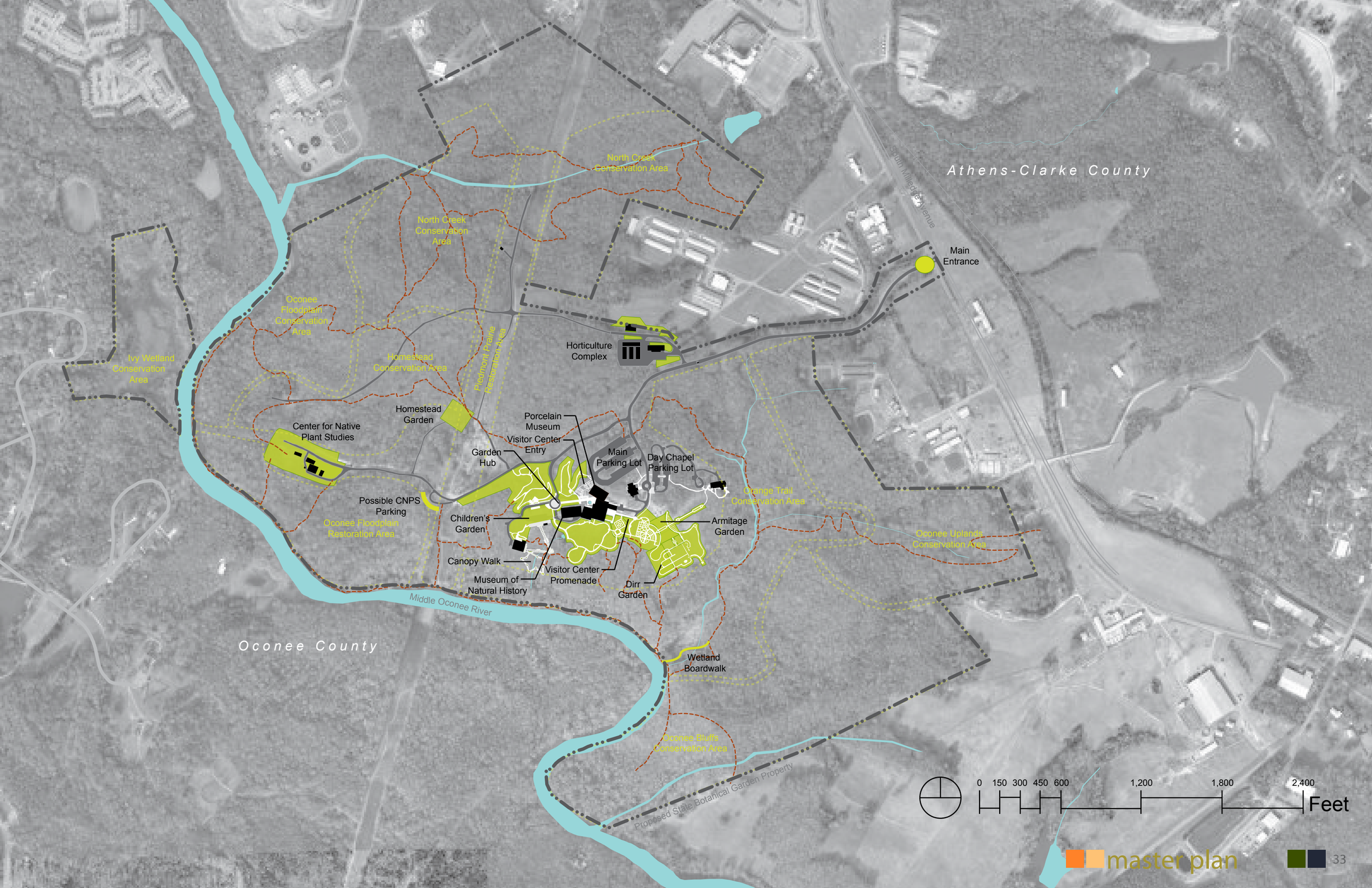
1. Plan in accordance with the SBGG mission
2. Enhance the sustainability of existing collections
3. Protect the SBGG natural areas
4. Plan for significant new buildings and gardens
5. Enhance the visitor experience and wayfinding
6. Accommodate larger numbers of visitors
7. Encourage more diverse modes of transportation to the SBGG

The image on the facing page serves as a simple key map to the recommendations which are presented in more detail on the following pages.

The first series of five Existing and Proposed diagrams describe the physical improvements and additions to the SBGG. Specifically, they are organized into the following categories: property boundary, buildings, vehicular circulation, pedestrian circulation, and gardens (The other critical resource at the SBGG is the natural areas that comprise the majority of the property area and they are addressed in the next section of the document, the Management Plan). Each diagram is accompanied by written text that explains the rationale and the expected outcome of the recommended changes.

After the Existing and Proposed diagrams, several of the proposed improvements are explained in more detail and illustrated with a conceptual Site Design. It is important to note that the images and plans presented here are conceptual in nature, and the implementation of any of these improvements would require more detailed surveys and construction drawings.

Opposite: Master Plan Key Map


Athens-Clarke County
South Milledge Avenue
Main Entrance
North Creek Conservation Area
North Creek Conservation Area
Oconee Floodplain Conservation Area
Ivy Wetland Conservation Area
Homestead Conservation Area
Piedmont Prairie Restoration Area
Horticulture Complex
Homestead Garden
Center for Native Plant Studies
Porcelain Museum
Visitor Center Entry
Garden Hub
Main Parking Lot
Day Chapel Parking Lot
Orange Trail Conservation Area
Possible CNPS Parking
Oconee Floodplain Restoration Area
Children's Garden
Armitage Garden
Oconee Uplands Conservation Area
Canopy Walk
Visitor Center Promenade
Museum of Natural History
Dirr Garden
Middle Oconee River
Oconee County
Wetland Boardwalk
Oconee Bluffs Conservation Area
Proposed State Botanical Garden Property
0 150 300 450 600 1,200 1,800 2,400
Feet

PROPERTY BOUNDARY

The property boundary of the State Botanical Garden of Georgia is documented by the Office of University Architects and kept on file in the campus GIS database. The only legally described boundaries are the western boundary (Middle Oconee River) and a portion of the northern boundary bordering the A-CC Middle Oconee Water Reclamation Facility, as well as the Ivy wetland which is located on the west side of the Middle Oconee and bordered by private residential property.

The remainder of the SBGG property boundary is contiguous with additional UGA property. The recorded property line has shifted throughout the Garden's history in response to changes in programming or facilities (e.g., swapping land with A-CC to allow expansion of the Water Reclamation Facility; the construction of the new Horticulture Complex). The mapping has general been kept up to date, although there is little to no written record of these changes.

This Master Plan process affords an opportunity to examine the current property line and scrutinize its compatibility with SBGG mission and goals. As part of the master plan process, stakeholders identified several problems with the current Botanical Garden property boundary:

- Since the 1990 master plan, several land swaps between the State Botanical Garden and neighboring property owners have occurred, but not reflected in the boundary line.

- Existing marked trails extend beyond the limits of the existing property boundary

- Does not include extent of the mature forest patch that is critical to the integrity of SBGG natural areas

- Does not include the extent of the drainage basins of North Creek and South Creek which exposes them to impacts from off-site actions

The proposed property boundary line reflects these land swaps as well as other changes outlined below.

Goal: Accurately reflect current ACC Tax Assessor Data
In January 2007, the Board of Regents granted the Athens-Clarke County Government a portion of portion of property adjacent to the ACC Wastewater treatment facility. This sale of land is recorded in the ACC Tax Assessors data and should be reflected on the current property boundary line for the Botanical Garden.

Goal: Include all State Botanical Garden buildings and trails into their property boundary
The new horticultural complex, completed in 2010, was built on the northern edge of the main entrance drive, outside the current State Botanical Garden property line. While this construction was mutually agreed upon by surrounding departments, the current property boundary does not reflect this new construction. The proposed boundary includes the five buildings and parking lot of the State Botanical Garden Horticulture Complex into the new boundary.

Several portions of the State Botanical Garden trail network extend outside the current property lines. This mostly includes the white trail on the northern side of the property as well as portions of the white trail within the powerline easement. The proposed boundary line incorporates these portions of State Botanical Garden trails into their property boundary for management and maintenance purposes.

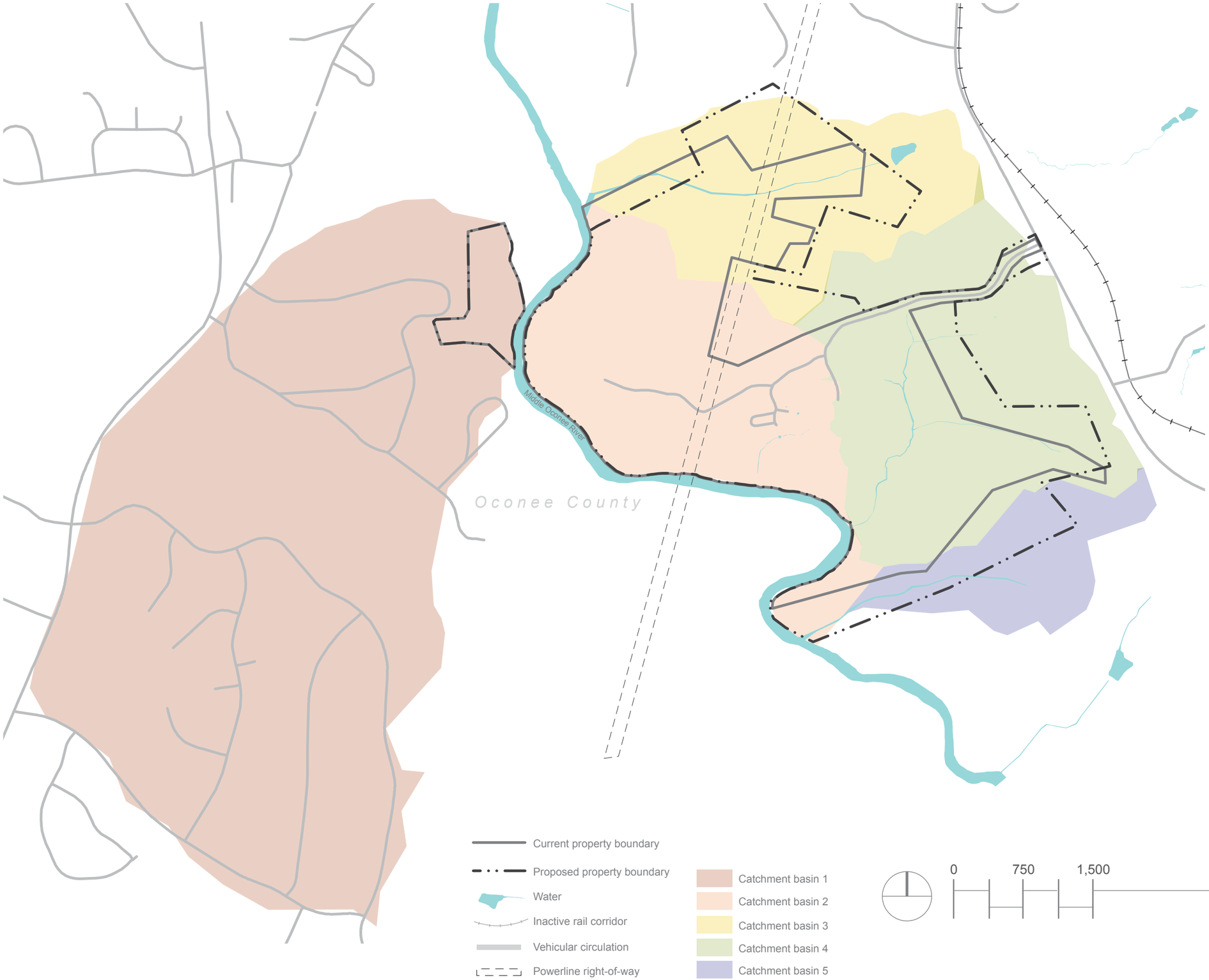
Goal: Protect intact forest stands in conservation management areas
The master plan update includes a plan to that create special designation of forested areas for long-term conservation and stewardship. Many of the forested stands in and around Botanical Garden property are over 70 years old and in good forest health. The master plan update proposes the naming of these forested natural areas into specific conservation and restoration areas. By delineating these conservation and restoration areas on a map and giving these natural areas a distinct name, the hope is that a sense of stewardship of these unique forest lands becomes instilled. Furthermore, the conservation and restoration areas could potentially be purchased by donors to form an endowment for their long-term management and care as natural areas. The State Botanical Garden proposes extending their boundary to include as much of these intact forest stands as possible to ensure their long-term stewardship and conservation through the conservation designation program.

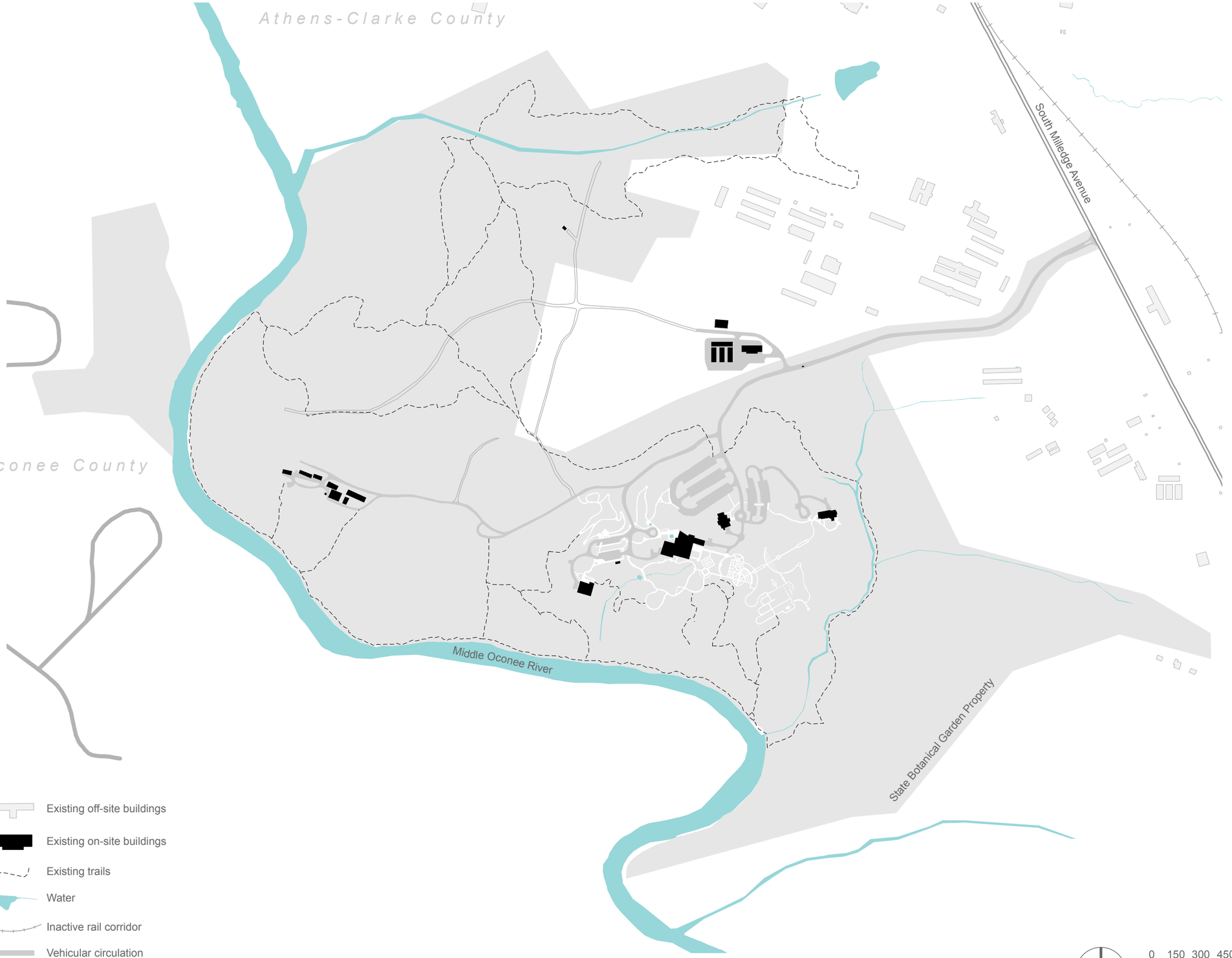
Goal: Include land within the power line easement to restore a native prairie demonstration area
The State Botanical Garden is actively seeking funds to create a native prairie restoration area underneath the Georgia Power powerline easement. This prairie restoration will be a demonstration site for native prairie restoration in the Piedmont and bring new habitat to the State Botanical Garden. The current property line includes portions of the powerline easement on the northern and southern portions of the property; however, there is a section in the middle of the property that is not currently within the Botanical Garden's property. The proposed boundary extends the Botanical Garden property to include all portions of the powerline easement in order to connect these two fragmented areas.

Goal: Do not include the existing hazardous waste site on Botanical Garden property.
There is a hazardous waste site located near the powerline easement that is currently on Board of Regent's land outside the Botanical Garden boundary. Since the hazardous waste was not produced by the Botanical Garden, the garden does not wish to acquire this portion of land.

Acreage Estimates

Current State Botanical Garden property: 301 acres
Proposed State Botanical Garden property: 406 acres
Acreage Increase (estimate): 105 acres


Athens-Clarke County
Middle Oconee River
Oconee County
Current property boundary
Proposed property boundary
Water
Inactive rail corridor
Vehicular circulation
Powerline right-of-way
Catchment basin 1
Catchment basin 2
Catchment basin 3
Catchment basin 4
Catchment basin 5
0
750
1,500
3,000
4,500
6,000
Feet



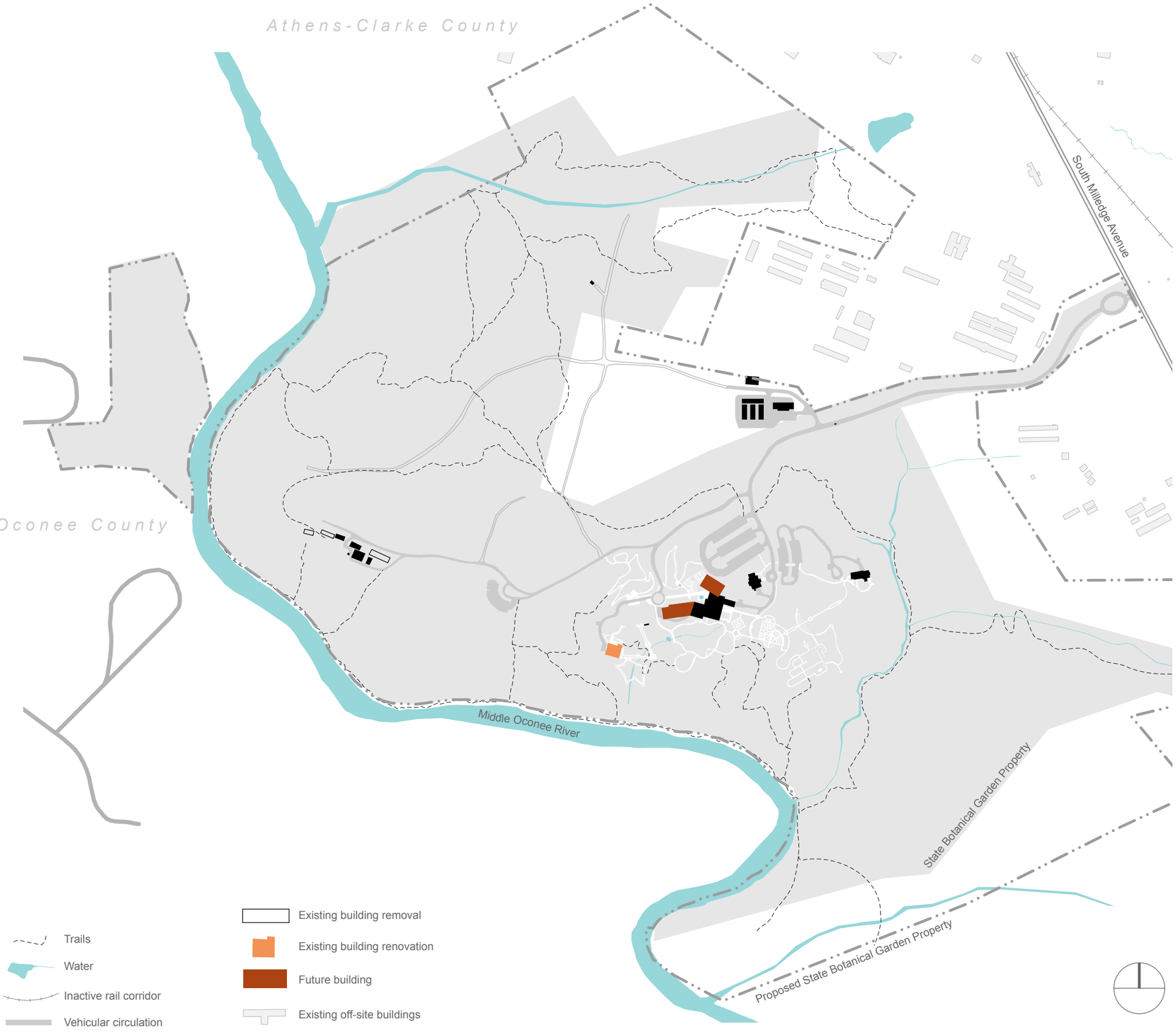
EXISTING BUILDINGS

The existing buildings at SBGG are grouped into three clusters.

The horticultural Complex is the first cluster, located north of the main entrance drive. These building were completed in 2010, and they incorporate many green technologies such as natural daylighting and rainwater harvesting.

The next cluster can be identified as the primary visitor complex. This includes the Visitor Center, the Callaway Building, a small public restroom, the Garden Club of Georgia Headquarters and the Day Chapel. This cluster serves as the central core of the curated Gardens at SBGG. These building vary in age and architectural style; they are well-used and adaptable for the many needs of SBGG.

The third cluster is the Center for Native Plant Studies, which occupies the old horticultural complex on the west side of the property. These structures are aged, many of them in a condition that warrants removal or significant renovation.



PROPOSED BUILDINGS

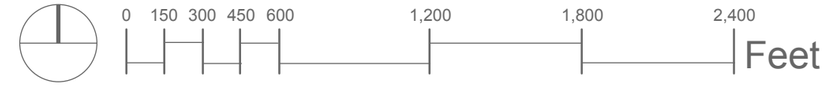
Two new buildings are proposed as a part of this master plan, shown in brown in this diagram.

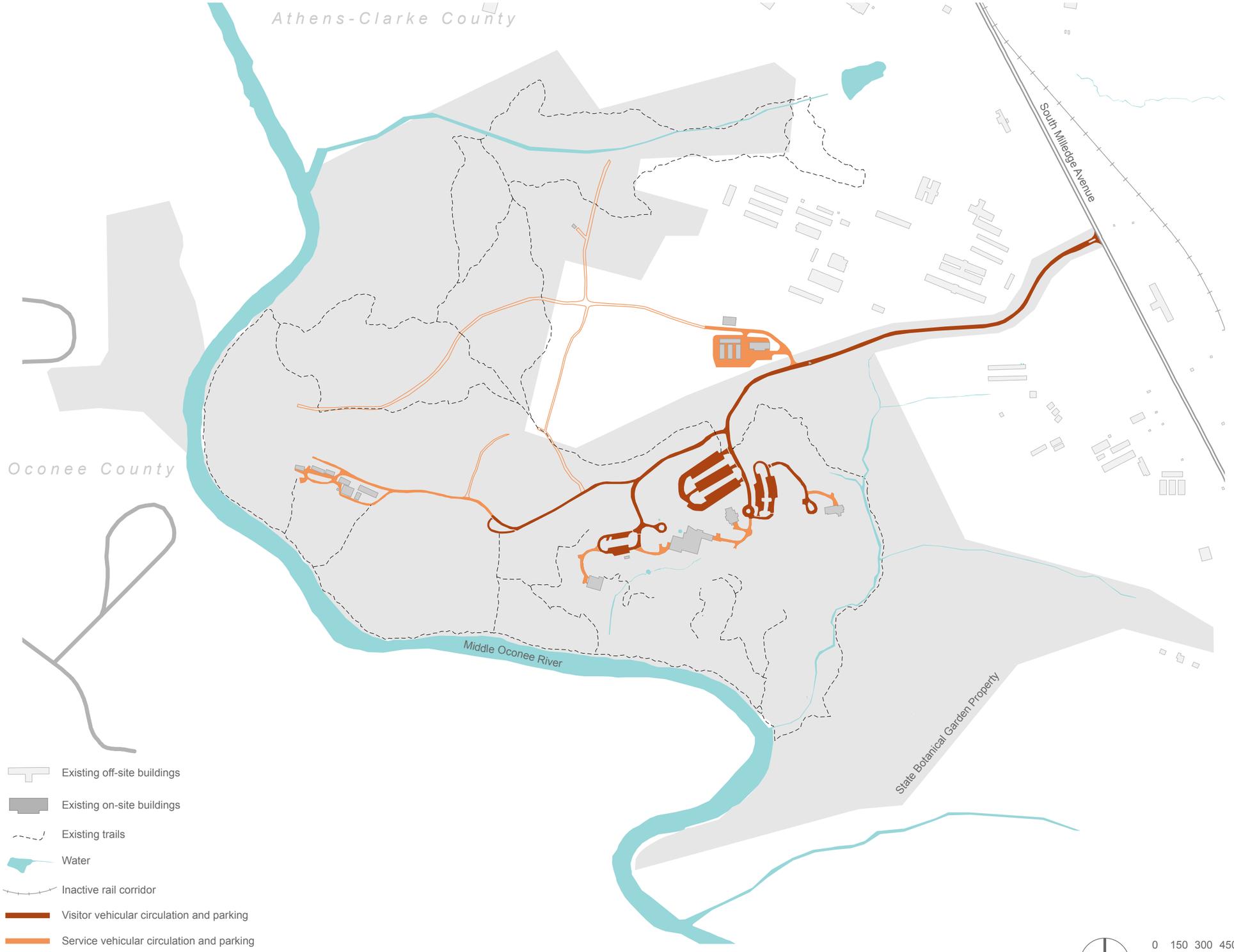
A generous donor has willed the SBGG a large collection of botanically-themed porcelain along with a new museum building to house the collection. Architectural programming for this building has not yet occurred, and the footprint in this diagram is schematic only. The proposed location establishes an architectural presence at the elevation of the main parking lot, affords an opportunity to create elevator access from parking to the garden level, and allows for direct access to and from the Visitor Center.

The second new building is the Georgia Museum of Natural History. A long-needed permanent home for these nationally significant natural history collections is a perfect fit for the SBGG. The fourteen collections include: anthropology, arthropods, botany, geology, herpetology, ichthyology, invertebrate, mammalogy, mycology, ornithology, and zooarchaeology. Existing cooperative programs between the SBGG and Museum of Natural History, such as the annual Insectival, are some of the most popular and well-attended events at the Garden. A capital campaign underway by the Museum of Natural History will begin the fundraising efforts necessary to create a permanent home for this amazing resource at the SBGG.

One major renovation is proposed, shown in a salmon color in this diagram. The Callaway Building currently contains administrative offices and conference space. The adjacent parking lot is slated for removal with that entire portion of the site planned to accommodate the new Children's Garden (see page 44 for more information). With the Children's Garden in place as the central hub of children's activities and outdoor education, the Callaway Building will be perfectly situated for a renovation as a new Center for Environmental Education. Administrative offices will be relocated into the Visitor Center, a logical location that will allow for more accessibility to visitors when necessary.

Several buildings in the Center for Native Plant Studies are planned for removal due to safety concerns. These structures are shown as hollow footprints in this diagram. The remaining buildings will be renovated as necessary to meet the needs of CNPS.





EXISTING VEHICULAR CIRCULATION

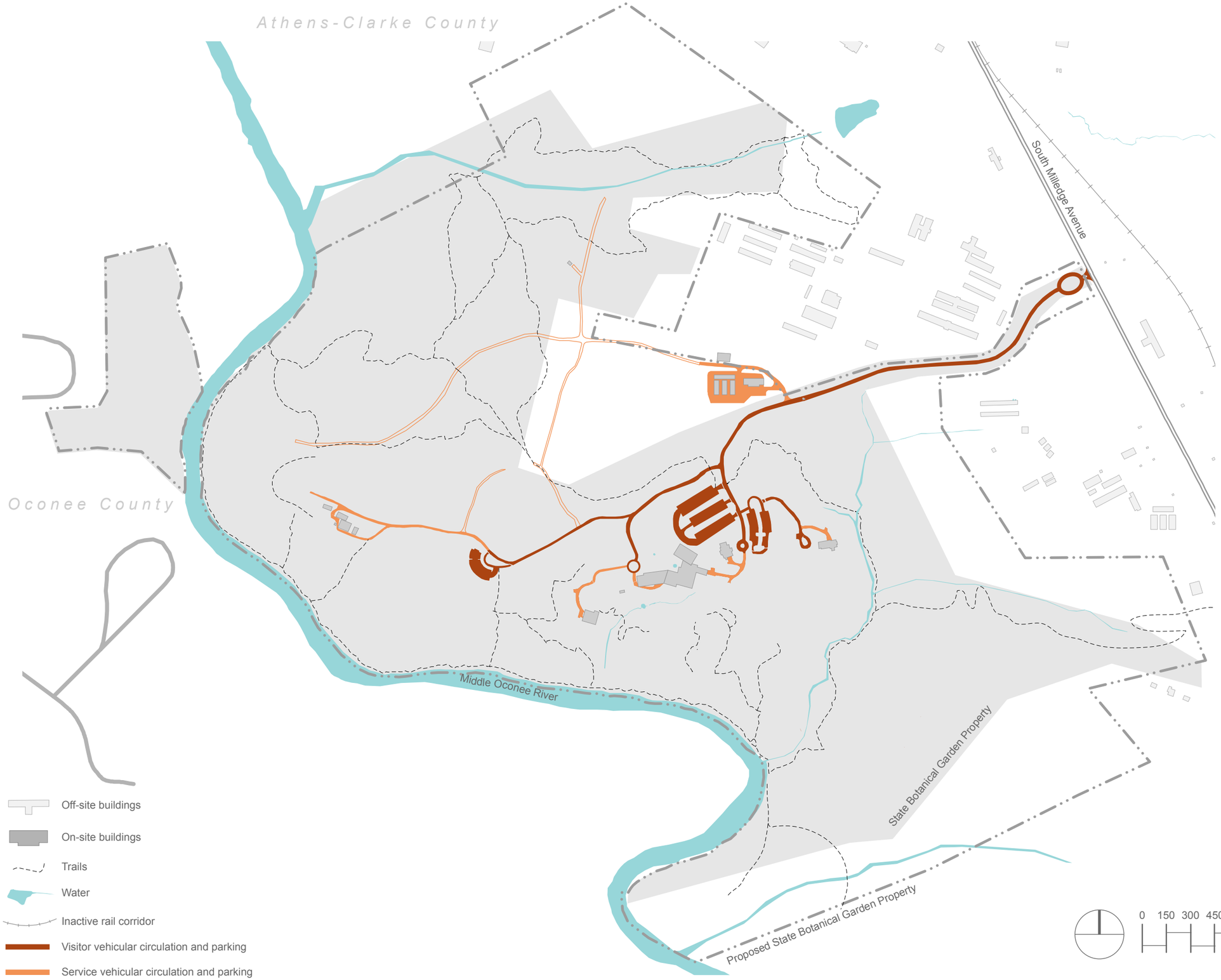
Vehicular access to SBGG is located along South Milledge Avenue. Visitor parking is located in four separate parking lots: The main lot, the Garden Club/Day Chapel lot, the Callaway lot and the river access lot. Public drives provide access to all of these lots, as well as to drop-off areas in front of the Garden Club Headquarters, the Visitor Center and the Day Chapel. Service drives provide service and fire access to all of the existing buildings.

The Main Entrance Drive continues east into the Garden and curves south to the Main parking lot, Garden Club drop-off, Garden Club/Day Chapel lot, and the Day Chapel drop-off. Another driveway forks to the right and provides access to the Visitor Center drop-off and Callaway parking lot. A third drive forks off to the right again to provide access to the white trail/river access parking.

Existing vehicular circulation is somewhat confusing for visitors, and wayfinding from the main parking lot to the Visitor Center is an issue (see pedestrian circulation for more information).

Multiple small parking lots create unnecessary traffic as visitors are prone to “shop around” for the closest space to their destination.

Existing vehicular circulation is inadequate for large vehicles such as buses. Most large vehicles cannot turn into the Main Entrance off Milledge because of the inadequate turning radius and the location of the stone entrance walls. The two primary drop-off areas do not accommodate busses either.



PROPOSED VEHICULAR CIRCULATION

The proposed vehicular circulation makes many small improvements that will result in a more efficient and logical arrival experience for visitors.

- The Main Entrance is reconfigured to accommodate buses and create a more visible and appealing presence on South Milledge (see page 46 for more information).

- The Callaway parking lot is removed to make room for the Children's Garden.

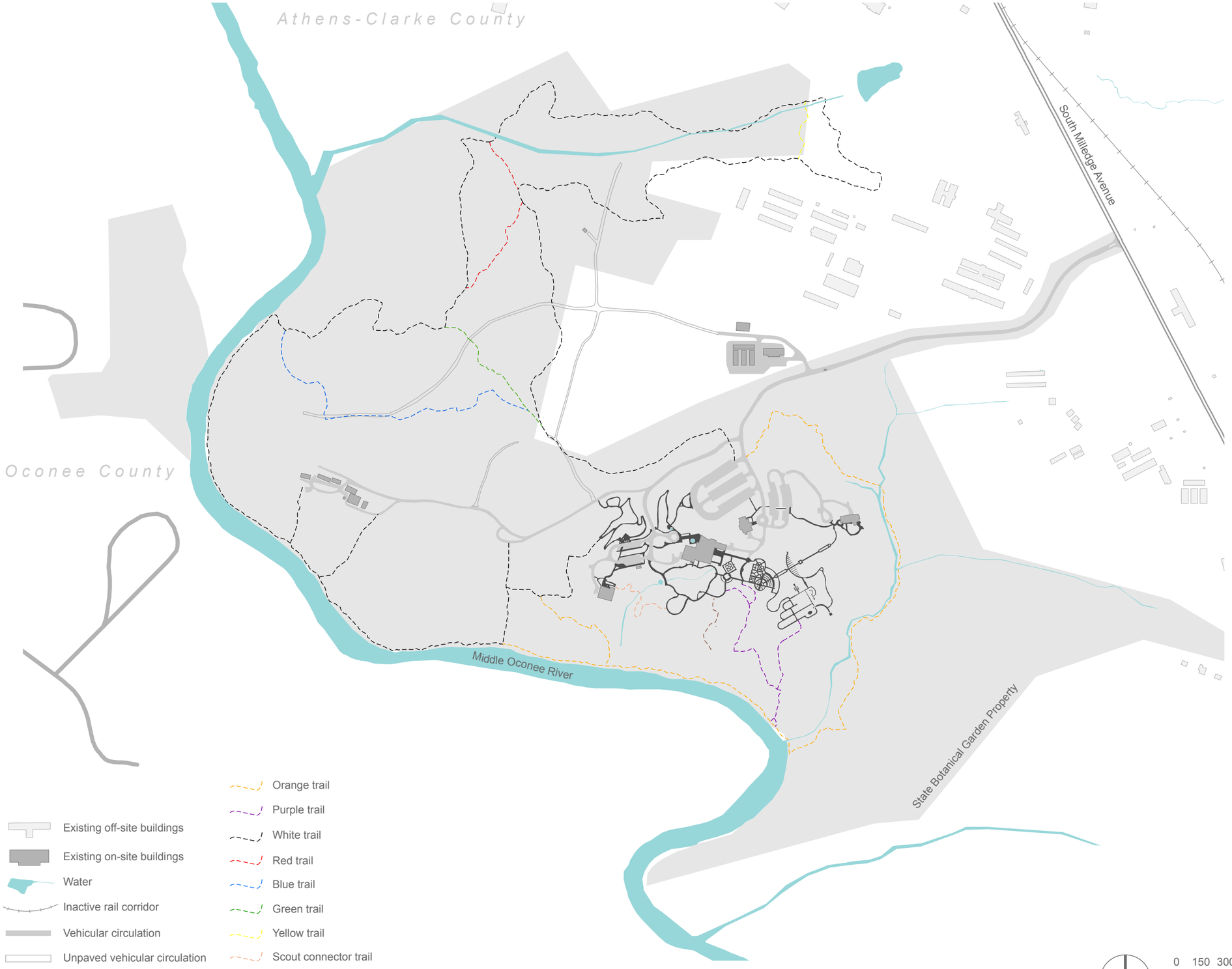
- The Main Parking Lot is expanded/reconfigured to accommodate more parking spaces and utilize the space more efficiently (see page 54 for more information).

- The Garden Club/Day Chapel Lot is expanded/reconfigured to accommodate more parking spaces and utilize the space more efficiently. It is connected directly to the Main parking lot, and disconnected from the Garden Club drop-off. This creates separation between parking traffic and drop-off traffic (see page 54 for more information).

- The Visitor Center drop-off is relocated and enlarged to accommodate busses (see page 46 for more information).

- Expansion of the CNPS parking lot is possible if vistor traffic to CNPS, and access to future A-CC blueway and greenway facilities warrant it (see page 54 for more information).

- Service access is maintained to all buildings.



EXISTING PEDESTRIAN CIRCULATION

Pedestrian circulation at SBGG consists of paved walkways through the gardens and a network of unpaved trails through the natural areas (and the Native Flora Garden). All of the pedestrian circulation is internal, meaning there is no designated pedestrian access from the Main Entrance or any other location. ADA accessible routes connect each building to the required number of ADA compliant parking spaces. Notably, the ADA compliant parking spaces for the Visitor Center are located in the Callaway parking lot, which is slated for removal when the Children's Garden is constructed.

The sidewalks found adjacent to vehicular drives are typically a standard poured concrete surface. The garden walkways vary among many different materials, including: poured concrete, asphalt, brick pavers, concrete with brick paver edging, loose crushed brick aggregate. While the use of different surface materials is warranted for visual and tactile interest, the inclusion of asphalt as a pedestrian surface is problematic. All of the service drives are asphalt or crushed gravel and the use of asphalt as a pedestrian surface confuses visitors and complicates wayfinding. We have observed several visitors wandering down a service drive and ending up in front of a dumpster en route to one of the gardens, at which point they are forced to backtrack or blaze a path through natural or planted vegetation. Access from the main parking lot to the Visitor Center is currently provided by the Upper Shade Garden walkway, which includes several sets of steps. Relocating ADA parking to the main lot will require a new ADA accessible route.

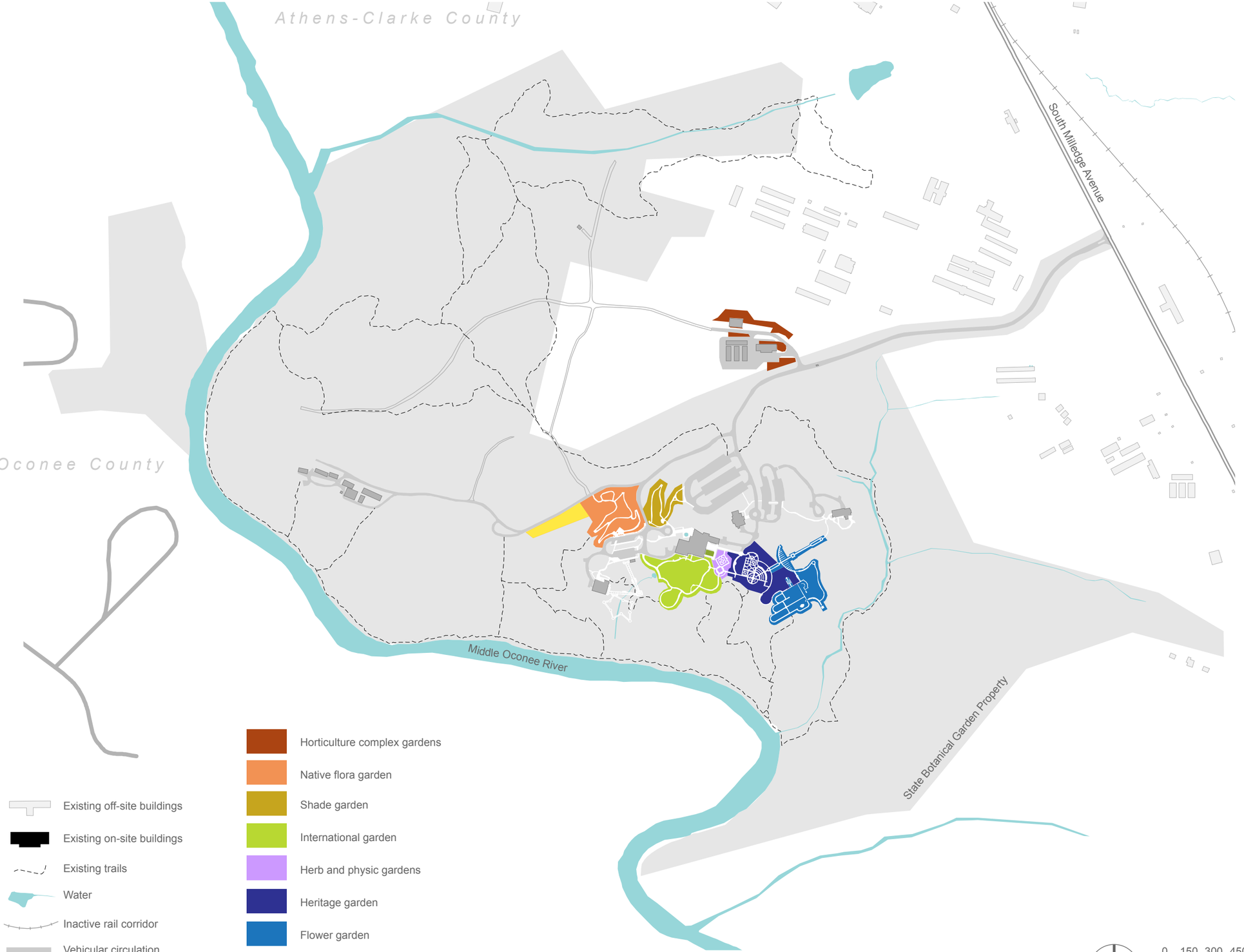
Trails through the natural areas are worn dirt or other naturally occurring surface (sand and rock are also present). The trails are well-used and generally in good shape. Some areas show signs of erosion, flooding, or off-trail use that should be corrected. The White Trail extends beyond the existing SBGG property boundary.

PROPOSED PEDESTRIAN CIRCULATION

The proposed pedestrian circulation is designed to create clear wayfinding and develop a more experiential and logical arrival sequence for visitors. The pedestrian circulation plan responds directly to the proposed changes to the vehicular circulation described on the previous pages. The most relevant improvement to vehicular circulation is that all visitors to SBGG that arrive by automobile should go directly to the Main Parking Lot and park their car. The only exceptions to this are for those vehicles that will be dropping passengers off at one of the three drop-off areas, or those vehicles that will be continuing on to the CNPS Parking Area.

From the Main Parking Lot, the following changes to pedestrian circulation will be experienced:

- New sidewalks in the Main Parking Lot and the Garden Club/Day Chapel Lot clearly lead pedestrian from their vehicles to a new Overlook and Visitor Center Entrance (see page 54 for more details).
- A new Visitor Center Entrance provides both stairs and ADA compliant ramps that bring visitors directly to the Visitor Center Plaza (see page 48 for more details).
- The Visitor Center Plaza is expanded to respond to the proposed change to the Visitor Center drop-off. The existing "Field Trip" sculpture is relocated and helps to create an extended Plaza (see page 44 for more details).
- After entering the Visitor Center, visitors will access the curated gardens by exiting the rear of the Visitor Center. A proposed Garden Promenade replaces the existing old service drive to create a coherent and experiential connection to the International, Herb, Physic, Heritage and Flower Gardens (see page 50 for more details).
- A sidewalk is added to connect the Garden Club drop-off area to the curated gardens. This is a intended as a secondary entrance to the gardens to be used primarily for access to special events and other circumstances when passing through the Visitor Center is not desired (see page 50 for more details).
- The Visitor Center front plaza is extended out to meet the relocated drop-off area. This extension creates a strong axis into the Children's Garden (see page 44 for more details).
- The garden path that enters the west side of the International Garden will be reoriented to be visually distinct from the adjacent service drive and to connect with the Children's Garden (see page 44 for more details).
- A canopy walk is added that connect the Children's Garden with back porch of the Callaway Building.
- A new trail is added (in part restored from a previously used trail) along Amphibolite Creek that eventually will connect to UGArden on the east side of SBGG. The connection to UGArden should not be completed until it is warranted by programming needs. Amphibolite Creek is described in detail in the Wharton Report (1998).
- A new trail segment is added to the Blue Trail in order to create a loop that provides access to the CNPS. Additional trail segments and pedestrian circulation will be developed internally at the CNPS site as it evolves.xxx for more details).
- The unofficial, yet heavily used, Heath Bluff spur will be marked and maintained.

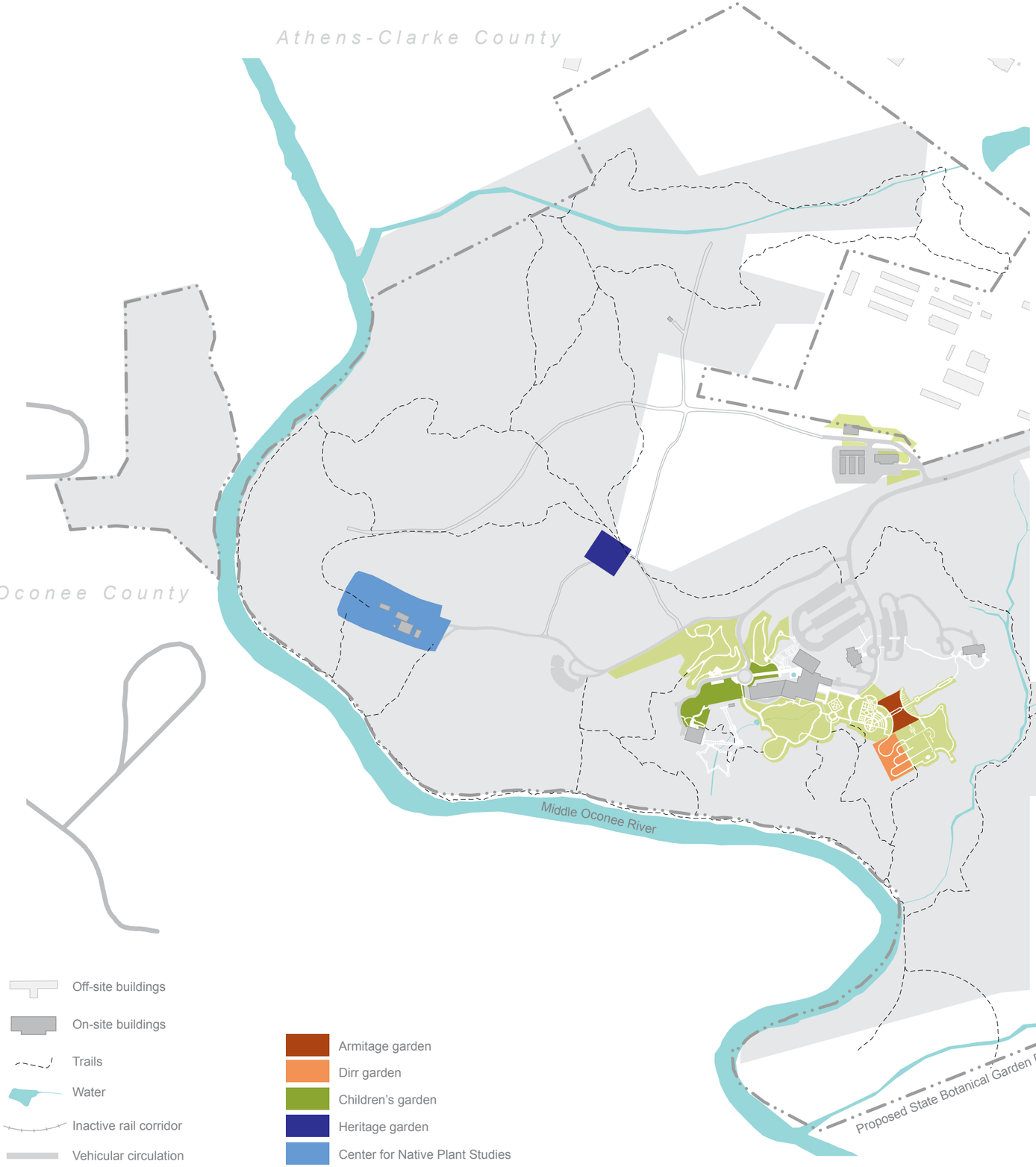


EXISTING GARDENS

There are eight distinct cultivated gardens that currently exist at SBGG. They are:

- Lower Shade Garden (1988)
- Upper Shade Garden (1991)
- Dunson Native Flora Garden (1981)
- International Garden (1995)
- Herb Garden & Physic Garden(1984)
- Heritage Garden (2001)
- Flower Garden (2008)
- Horticulture Complex Demonstration Gardens (2010)

The boundaries of the existing gardens shown on this map were drawn based on descriptions and on-site meetings with each of the garden curators. Some of the boundaries are distinct, such as a sidewalk or a row of plants. Other times they are a bit more vague, such as 'approximately 25 feet from the edge of the sidewalk.



PROPOSED GARDENS

Two of the proposed new gardens are already in development (planning/funding) as this master plan is being prepared:

- The Children's Garden. Envisioned as a nationally recognized outdoor space for nature play and environmental education, this garden is expected to have a schematic design completed in early 2013. Fundraising will determine the construction date.
- The Center for Native Plant Studies (CNPS). Schematic planning for the adaptive reuse of the old horticultural complex has been underway since the fall of 2011. The CNPS is envisioned as a research and outreach center promoting the propagation and use of native plants for landscaping and restoration purposes.

The State Botanical Garden of Georgia has grown significantly over the last two decades. While this master plan proposes five new gardens in total, it is imperative that careful allocation of resources will maintain and improve existing gardens as well. Interviews conducted during this master planning process revealed several critical issues that need to be addressed related to the existing gardens:

- The deer problem. The deer fence was installed in 1989. Today there are deer inside the fence, either existing as an "exclusive "population of extremely lucky deer or somehow coming and going in a manner that is still unknown. This issue must be addressed to maintain the existing collections (see page 65 for more information).
- The irrigation problem. Irrigation exists in a piecemeal fashion throughout the SBGG. Some systems are semi-functional, other are completely non-functional. Most watering is done by hand. A complete irrigation plan for the SBGG should be completed to aid in the maintenance of existing collections and to improve the resource efficiency of the SBGG. The plan should emphasize the collection and reuse of rainwater as a primary source of irrigation.

The remaining three proposed new gardens should be implemented when sufficient resources exist to maintain the existing gardens, Children's Garden and CNPS.

- The Dirr Collection and the Armitage Collection. Envisioned as an expansion into land disturbed during construction of the Flower Garden, these collections will honor two of the most renowned plantsmen in North America. We are fortunate to have benefitted from the knowledge and passion of these longtime UGA horticulture faculty members. The Dirr Collection will display many of the selections of woody species attributed to Michael Dirr. The Armitage Collection will display many of the selections of perennial species attributed to Alan Armitage.
- The Homestead Garden. Located west of the powerlines, the Homestead Garden will showcase the plants, ornaments and practices of traditional homesteads and subsistence farms. The site is in a portion of SBGG that still maintains features of the era of widespread agriculture in this area, including agricultural terraces, successional pine forest, and relics of human habitation (old chimney). Farming and local agriculture is becoming recognized as an important part of our sustained future, and SBGG has the opportunity to connect this movement to its roots, a time in which every family depended on the land for survival.

master plan

SITE DESIGN

GARDEN HUB

The core of the visitor experience at SBGG is centered in front of the Visitor Center, an area we refer to as the Garden Hub. In planning for the future of this space, the following considerations were paramount:

- The Garden Hub is a point of arrival and orientation for visitors who parked in the Main Parking Lot or were dropped off at the Visitor Center Drop-off.

- The Garden Hub is anchored by the two most heavily used buildings on the site – the Visitor Center and the Callaway Building.

- The Garden Hub is also anchored by the most significant projects that the SBGG will build in the near future – the Children's Garden, the Porcelain Museum and the Georgia Museum of Natural History.

- The Garden Hub provides direct access to the Shade Garden, International Garden and Children's Garden as well as access through the Visitor Center to several other cultivated Gardens.

The schematic design of the Garden Hub creates a coherent space that welcoming, diverse, and beautiful. Specific improvements are*:

- An expanded Visitor Center Plaza receives visitors from the new stairs and ramp from the Main Parking Lot. It also connects to the ground floor of the future Porcelain Museum.

- The Visitor Center drop-off is shifted west and enlarged to accommodate larger vehicles such as busses and fire trucks. The "Field Trip" sculpture is relocated to the grassy area adjacent to the walkway extending from the Visitor Center Plaza.

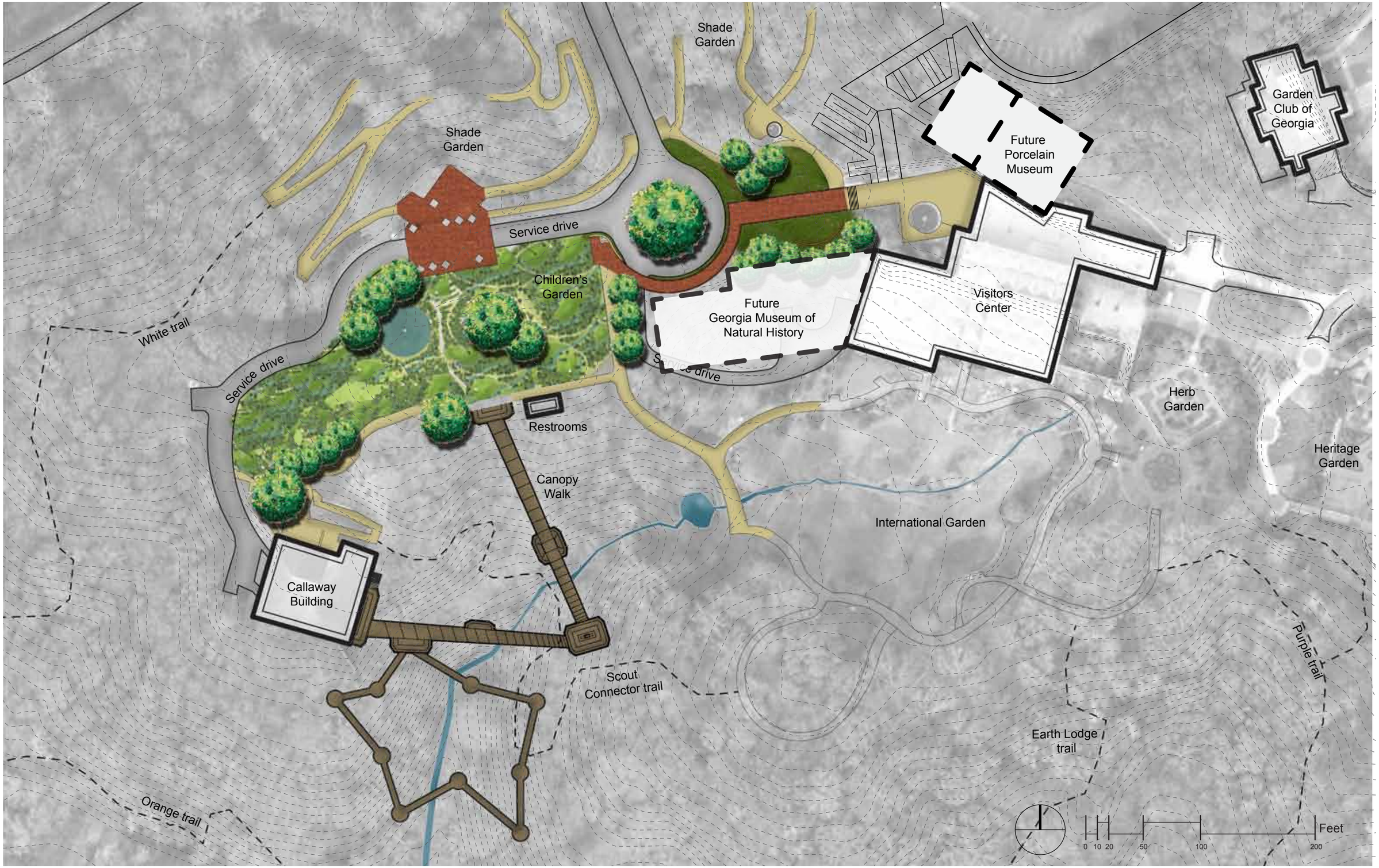
- The walkway from the International Garden is realigned to connect to the Children's Garden entrance. It is recommended that the paving material is NOT asphalt in order to improve wayfinding and minimize confusion with the service drive.

- The Visitor Center Service Drive is left in place but clearly limited access by the installation of bollards or a gate.

- The Callaway Building service Drive is left in place but clearly limited access by the installation of bollards or a gate.

- A Canopy Walk is installed in the wooded ravine east of the Callaway Building, creating a link between the Callaway Building back porch and the Children's Garden.

*Note that it is imperative to protect, and if necessary to relocate, the memorial trees located throughout this area. This entire area will be designed in greater detail by a Design Consultant selected by SBGG/OUA. The design should be complete in early 2013.


Shade Garden
Shade Garden
Garden Club of Georgia
Future Porcelain Museum
Service drive
Children's Garden
Visitors Center
Future Georgia Museum of Natural History
White trail
Service drive
Service drive
Herb Garden
Restrooms
Heritage Garden
Canopy Walk
International Garden
Callaway Building
Purple trail
Scout Connector trail
Earth Lodge trail
Orange trail
Feet
0 10 20 50 100 200

MAIN ENTRANCE

The existing Main Entrance is located on South Milledge Avenue. It was constructed in 1993, and it is an attractive yet somewhat obscure presence on the street. There is also a severe functional issue related to the turning radius and the location of the stone walls – busses and other large vehicles cannot negotiate the entrance without having to stop and back up into traffic on South Milledge. This creates a dangerous situation and is an impediment to future bus service to SBGG. The proposed redesign of the Main Entrance includes the following:

- Enlarged turning radii to accommodate large trucks and busses.

- Retain the central stone entrance sign, flagpole and wrought iron gates from the existing main entrance.

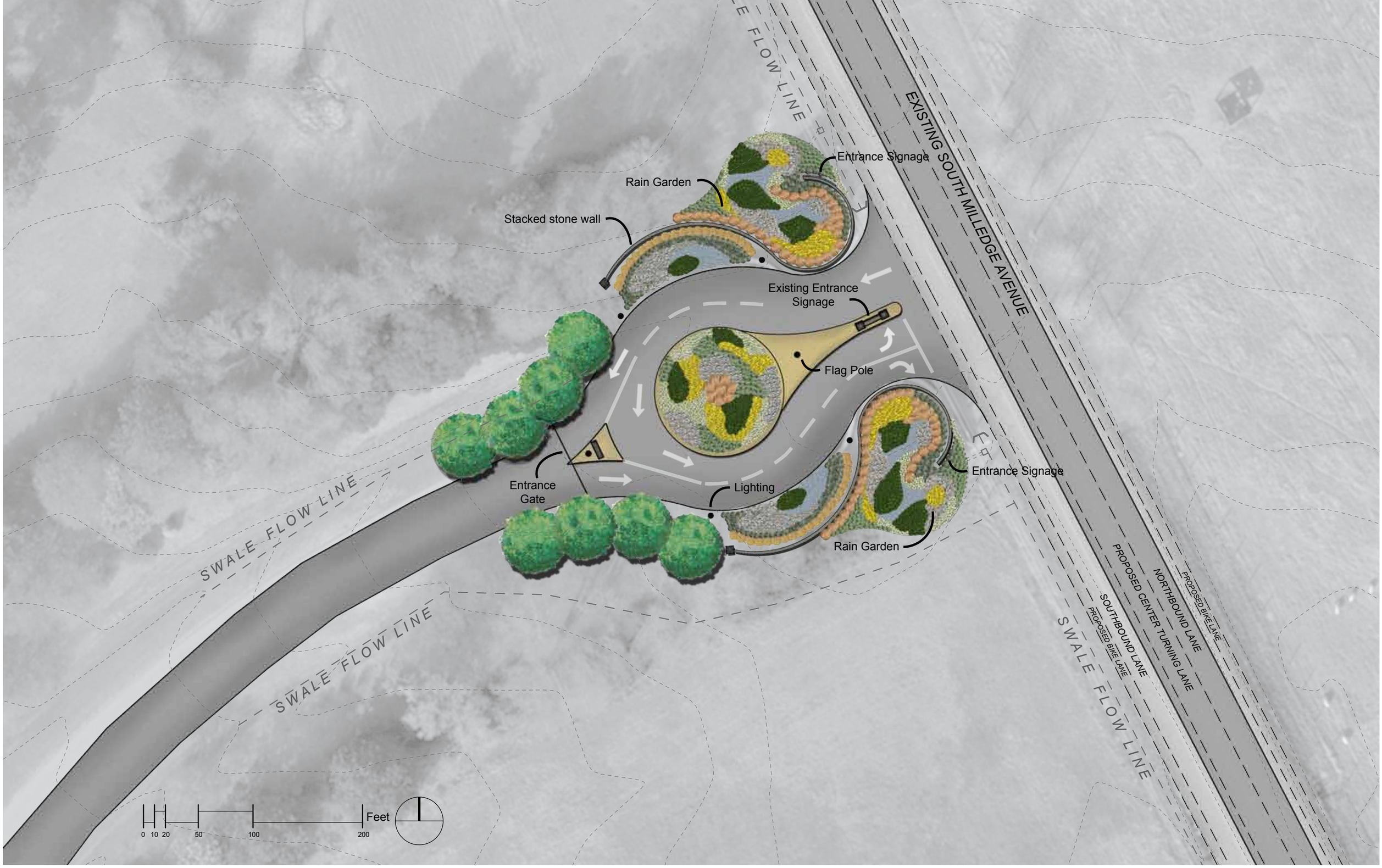
- Incorporate an optional turnaround in front of the gates. This serves as a possible bus stop as bus service is introduced to South Milledge; eventually the bus stop should be located at the Main Parking Lot or Visitor Center Drop-off. It also serves as a means for vehicles to return safely to South Milledge if the SBGG is closed and the gates are shut.

- Relocate and rebuild the flanking stone walls as shown and incorporate "State Botanical Garden of Georgia" name and possibly logo into the wall to create a more visible identifier for people traveling by automobile.

- Enlarge and enhance the plantings to create more of a "Wow Factor". Seasonal plantings, framed by perennials, grasses and woody species should be integrated into the planting in a way that does not obscure the entrance. Along these lines, the two existing Southern magnolias framing the existing entrance should be removed – they visually obscure the entrance and limit the options for additional landscaping.

- Incorporate raingardens into the landscape, as shown. These will treat stormwater runoff from the road and drive, as well as provide an aesthetically pleasing statement of the SBGG's environmental stewardship.

- Incorporate dark-sky compliant lighting into the Main Entrance.


Entrance Signage
Rain Garden
Stacked stone wall
Existing Entrance Signage
Flag Pole
Entrance Gate
Lighting
Entrance Signage
Rain Garden
SWALE FLOW LINE
SWALE FLOW LINE
SWALE FLOW LINE
SWALE FLOW LINE
EXISTING SOUTH MILLEDGE AVENUE
PROPOSED CENTER TURNING LANE
SOUTHBOUND LANE
PROPOSED BIKE LANE
NORTHBOUND LANE
PROPOSED BIKE LANE
0 10 20 50 100 200 Feet

VISITOR CENTER ENTRY

Creating a beautiful, experiential and accessible route from the Main Parking Lot to the Visitor Center is the most critical element of this Master Plan. Currently, wayfinding is difficult from the Main Parking Lot and visitors are often observed lost/confused or wandering down the back service drive to find the curated gardens. Additionally, the creation of the Children's Garden will displace ADA compliant parking from the Callaway Parking Lot and require that an ADA compliant accessible route be constructed between relocated ADA parking and the Visitor Center. The primary elements of this schematic design include:

- A new overlook/gathering spot at the southwest edge of the Main Parking Lot. Functionally, this is a meeting spot, an assembly area for large groups, and an orientation area with clear views down to the Garden Hub and Visitor Center Plaza. Signage, sculpture, architecture and plantings should reinforce that this is the destination for all visitors after they exit their vehicles. This level is equal to the third floor elevation of the future Porcelain Museum.

- A grand stairway and ADA compliant ramp lead first to a large landing/overlook, and then down to the Visitor Center Plaza. The elevation of the landing/overlook is equal to the second floor elevation of the future Porcelain Museum, and also provides views to the Garden Hub, Children's Garden and Visitor Center Plaza. Existing trees shall be preserved to the greatest extent possible, and new plantings are integrated throughout the ramps.

- The hardscape and landscape design should be treated as a curated garden, this is the first exposure that visitors will have of the SBGG landscape on foot, and attention to detail is critical. Many visitors will be families on their way to the Children's Garden and the experience here should be a relevant precursor for that garden as well as the other curated gardens.

- The Visitor Center Entrance is designed to integrate with the future Porcelain Museum by providing direct access at all three floors of the proposed structure. Note that the Porcelain Museum is not yet designed, these renderings serve only as a general representation of the scale and mass of the building. Once constructed, it is envisioned to include an elevator which could transport visitors from the parking lot level to the plaza level if they so choose.


Main Visitor
Parking Lot
Bus drop-off
Shade Garden
Overlook
+ 664
+ 659.5
+ 654.5
Overlook
+ 652
+ 647
+ 641
"Field Trip"
Sculpture Lawn
+ 636.83
+ 635.83
Future Porcelain
Museum
Visitor's Center
Garden Club
of Georgia

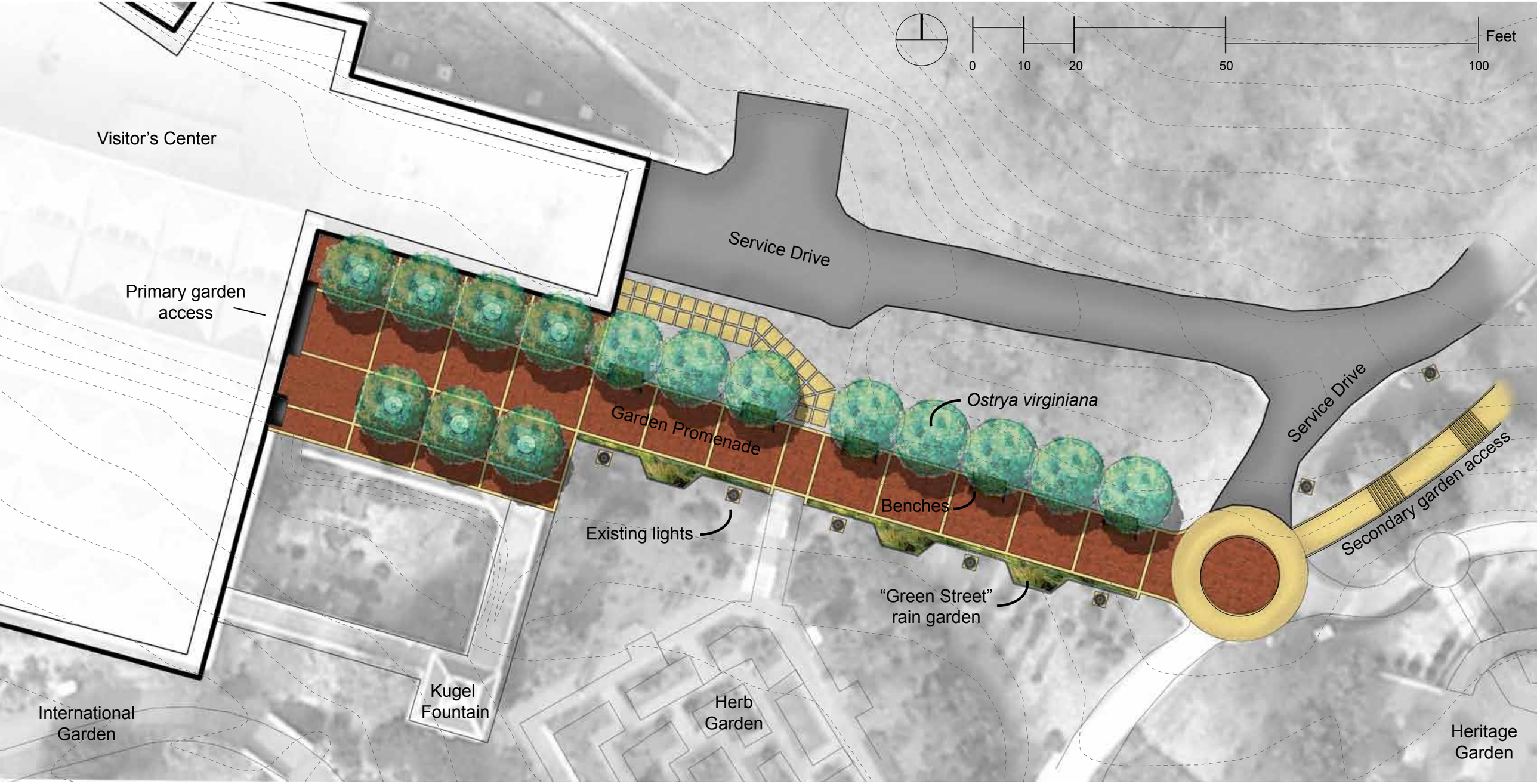
VISITOR CENTER PROMENADE AND ACCESS FROM DAY CHAPEL LOT

Exiting the Visitor Center from the east side of the conservatory takes visitors out to an exisiting courtyard and access to the International Garden, Herb and Physic Garden, Heritage Garden and Flower Garden. The walkway that leads to these gardens is a former asphalt service drive, no longer used as such since a newer one was constructed a few years ago. Now, it is time to give this prominent and heavily-used path the attention it deserves. The Garden Promenade will include:

- A renovated courtyard featuring medium-sized shade trees in planters and a contiguous allee of trees along the promenade. Brick paving with concrete edging creates a human scale and rich detail on the ground plane.
- Raingardens are situated along the Garden Promenade to capture and treat stormwater runoff, inspired by the Green Streets first implemented in Portland and Seattle.
- Benches are located under the allee and bistro seating situated throughout the courtyard, creating a useable space for lingering, working, socializing or relaxing. It also will help to blur the boundary between inside and outside by unifying the presence of vegetation and brick on either side of the glass curtainwall.
- Existing pedestrian lighting is retained and integrated into this promenade.
- New architectural louvered sunshades are installed over the swinging door and the large sliding door on the back of the Visitor Center, drawing attention to those access points and reinforcing the desired circulation pattern.
- Enhanced signage and/or entrance features will clearly identify the entrances to the Herb Garden, the Heritage Garden and the Flower Garden which are all directly connected to the Garden Promenade. Signage should indicate where the International and Physic Gardens are located and how to access them.
- A concrete paver walkway provides access to staff only door on the Visitor Center, but also passes through an area that could receive a plant collection, perhaps the collection that is currently located in front of the Callaway Building?

The curated gardens are the destination of many visitors to SBGG, and for almost all occasions the visitor should access them by passing through the Visitor Center and then from the Garden Promenade. However, there are occasions when direct access from the Day Chapel Parking Lot to the Flower Garden is warranted, attending an outdoor concert at the Flower Garden amphitheater for example. Currently, visitors use the existing service drive which is hazardous and unappealing. A new secondary garden access is proposed, parallel to the service drive, and will include:

- A concrete walkway and steps follow a gently curving path, roughly parallel to the service drive.
- Existing pedestrian lighting and existing plantings create a buffer between the walkway and the service drive.
- A bollard or gate and signage clearly direct pedestrians from the Day Chapel Lot to the walkway, NOT the service drive.


0
10
20
50
100
Feet
Visitor's Center
Service Drive
Primary garden access
Garden Promenade
Ostrya virginiana
Service Drive
Secondary garden access
Benches
Existing lights
"Green Street" rain garden
International Garden
Kugel Fountain
Herb Garden
Heritage Garden

WETLAND BOARDWALK

The trails through the SBGG natural areas are a treasured resource among Garden users, and arguably, the Orange Trail is the most popular of all of them. Following South Creek for most of its route, the Orange Trail is a cross-section of piedmont plant communities and stages of succession. As the trail enters the floodplain of the Middle Oconee River, one encounters the old Beaver Pond Wetland and then the sandy levee of the River.

There are several concerns with the condition of this area:

- The beaver dam was replaced with a stacked concrete sack dam with overflow structure a few years ago. This dam is failing, water flow has eroded around the dam and the water level of the wetland has dropped 1-2' below the overflow structure.

- The dropping water level has altered the characteristics of the vegetation in the wetland, shifting to more grasses than emergent aquatic vegetation.

- Portions of the Orange Trail along the east side of the wetland are perpetually muddy and somewhat hazardous.

- Views of the wetland are beautiful yet very limited.

A wetland enhancement and boardwalk is proposed, with the following benefits:

- A wetland enhancement will replace the failing dam with a more durable solution, such as an earthen dam. Zones of different depth are established in the wetland, creating more diverse habitat and also creating refuge areas during dry times of the year.

- A boardwalk will traverse the wetland, affording views of the entire wetland and allowing the muddiest portion of the Orange Trail to be closed and restored to natural vegetation cover.

- Observation decks along the boardwalk create opportunities for lingering, or collecting water samples or other educational activities.

- A new Purple Trail Spur will access to a Raised Viewing Platform situated just above the 100-year floodplain elevation. This platform will provide a protected location with expansive views of the wetland, perfect for birdwatching.


Purple trail
100-year flood
Contributing stream
Orange trail
Zone I, II
Zone III
Zone IV
Zone I, II
Zone IV
100-year flood
Raised viewing platform
Purple trail spur
Orange trail
Zone I, II
Zone IV
Zone III
Zone I, II
Zone I, II
Zone I, II
Zone IV
Boardwalk
Wetland boundary
MIDDLE OCONEE RIVER
Flashboard riser with drawdown pipe
20' Earthen Dam
Contributing stream
0 10 20 50 100 200
Feet

PARKING LOT RECONFIGURATIONS

Due to location and existing transportation infrastructure, nearly all visitors to the SBGG currently arrive by personal automobile. Some groups arrive by bus, and occasionally a visitor may arrive by bicycle or foot. It is anticipated that alternate forms of transportation will become more available and appealing in the future. However, adequate parking facilities are, and will remain, critical to ongoing success of the SBGG.

The chart on this page summarizes the existing and proposed parking capacity at SBGG. The construction of the Children's Garden will result in the removal of the Callaway Building Parking Lot, including the ADA compliant spaces serving the Visitor Center. Renovation of the Main Parking Lot and the Day Chapel Parking Lot can absorb those displaced spaces to maintain the overall parking capacity.

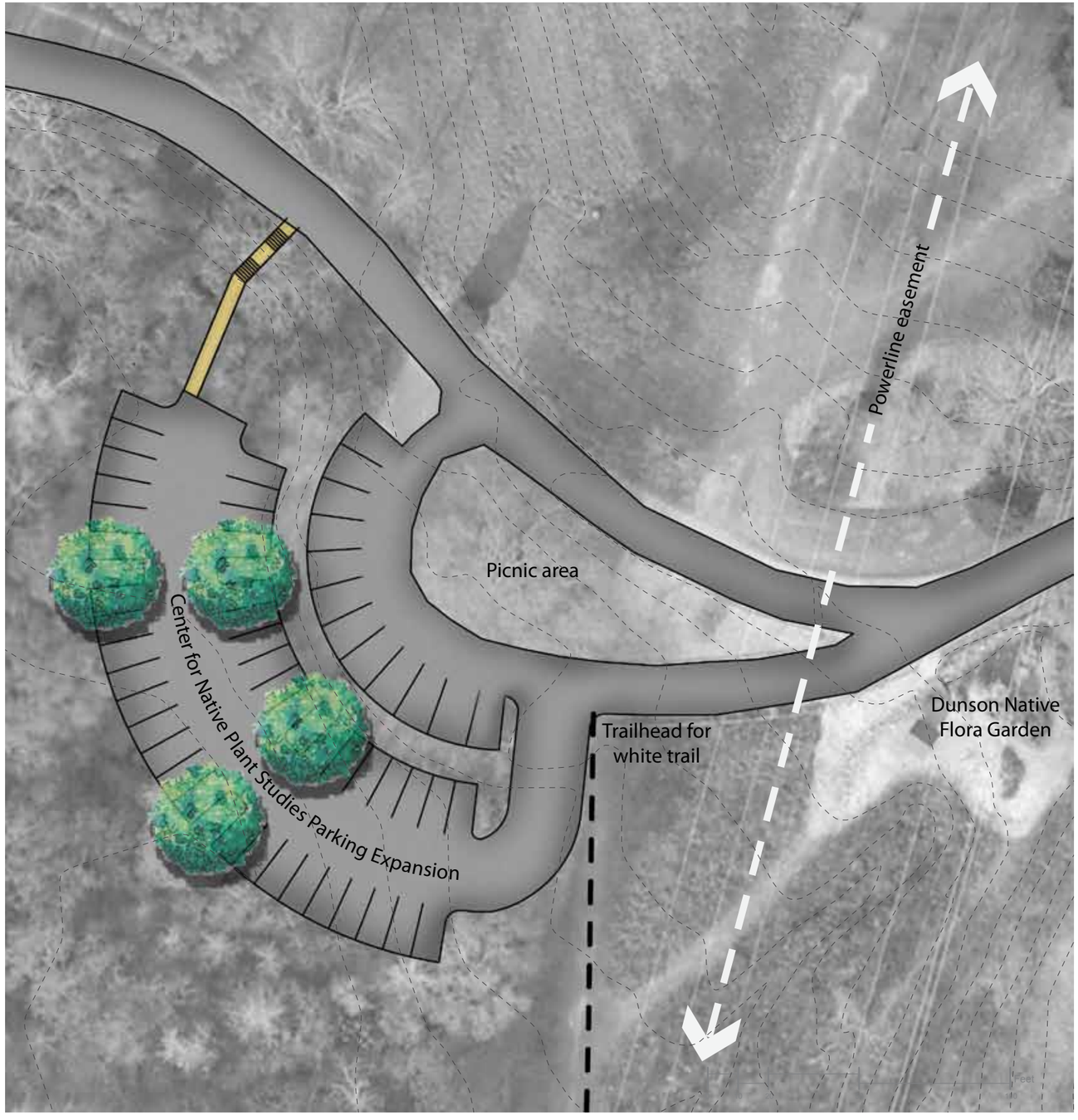
It is the intent of this Master Plan to emphasize that all visitor parking should be directed to the Main Parking Lot. The only exceptions to this rule are:

- The CNPS/River Access Lot will remain open to visitors who wish to visit the CNPS, directly access the western natural areas via the White Trail, or to portage personal boats to the Middle Oconee River.
- The Day Chapel ADA parking will remain open at the end of the Day Chapel Service Drive.

Additional parking can be added to the CNPS/River Access Lot, as shown in Figure xxx. Other than that, there are not any other locations that are desirable for additional surface parking. Efforts should be made now to increase alternative transportation options so that increased visitors does not equal increased automobiles. By no means should any additional natural areas be sacrificed to accommodate new surface parking. Parking capacity at the Main Parking Lot can be increased beyond the amount proposed in this Master Plan by constructing a parking deck. The northern 2/3 of the Garden Club/Day Chapel Lot is an ideal location for an unobtrusive parking deck (see figure xxx).

The major components of this proposed reconfiguration area as follows:

- The capacity of the Main Parking Lot is increased by making slight modifications to the layout and restriping. Designated bus parking is eliminated, although it can still be accommodated on-site or staged off-site on adjacent UGA property.
- ADA compliant parking is relocated to the Main Parking Lot from the Callaway Lot.
- Sidewalks are added throughout the Main Parking Lot. The primary purposes are public safety and wayfinding. All sidewalks direct visitors to the Visitor Center Entrance.
- New parking lot islands introduce shade trees to the parking lot. These should be designed as raingardens to capture and treat runoff from the parking lot.
- Raingardens can also be strategically located in the existing parking lot islands.
- A new driveway connects the Main Parking Lot and the Day Chapel Lot. This will improve wayfinding and connectivity of the two lots, as well as facilitate a few more parking spaces in the Day Chapel Lot.
- The Garden Club turnaround is disconnected from the Day Chapel Lot. Again, this will help to clarify the function of these different facilities and improve wayfinding. The message is that the turnarounds are for drop-off and pick-up only, and all visitors parking in the lots should proceed to the Visitor Center (unless they have a different specific destination).
- A secondary pedestrian garden access connects to the Day Chapel Lot, intended for use as access to special events held in the Flower Garden.



Center for Native Plant Studies Parking Lot Reconfiguration

Main Parking Lot and Day Chapel Parking Lot Reconfiguration

THE MIMSIE LANIER CENTER FOR NATIVE PLANT STUDIES

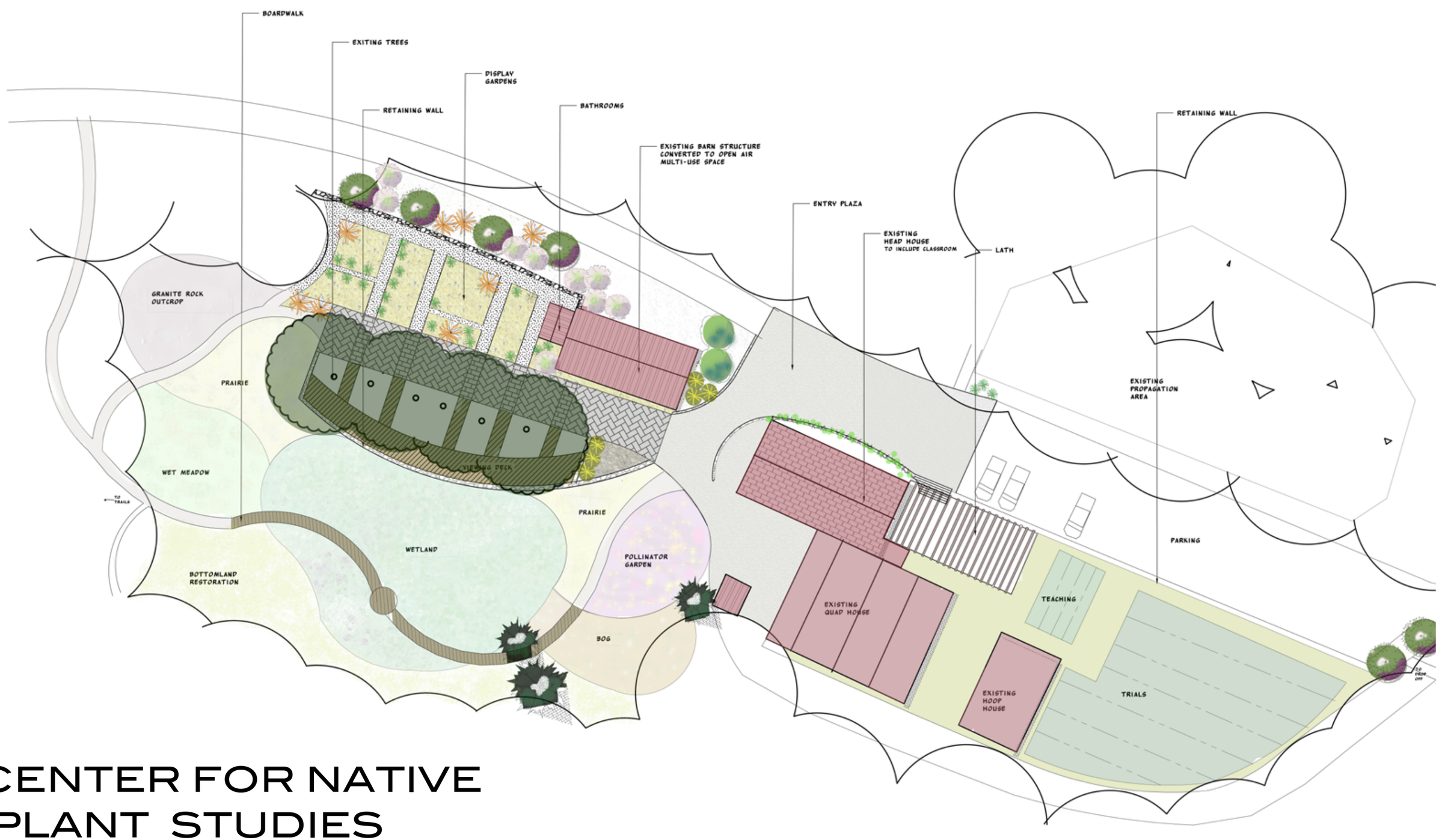
Begun in 2011, the Mimsie Lanier Center for Native Plant Studies establishes a prominent new epicenter for native plant research, education and outreach at the SBGG. The following description is excerpted from the SBGG website:

> The Mimsie Lanier Center for Native Plant Studies is the Garden's headquarters for native plant restoration, conservation, education, production and safeguarding. The Mimsie Lanier Center is undergoing upgrades to greenhouses and the Headhouse, but the workshop-style teaching space is available to UGA courses and plant professionals for holding horticulture, restoration and seed biology classes. Future additions to the Mimsie Lanier Center will include an indoor teaching classroom with a full seed lab and an open-air classroom for restoration workshops and environmental education programs. The natural areas offer a chance to teach and demonstrate land management and restoration techniques. The planting spaces and native plant collections can be used to teach many scientific disciplines including botany, pollination ecology, environmental design and horticulture.
>
> Within the Mimsie Lanier Center's 2.5 fenced-in acres, graduate students, interns, volunteers, and one full-time staff member propagates Georgia native plants for habitat restoration, endangered species recovery and the introduction of plants into the gardening community. We promote the incorporation of Georgia natives into Garden displays and right-of-way restoration projects in order to better reset the land for diversity and share great plants.
>
> Mimsie Lanier, for whom the Center is named, is an active board member who has worked alongside the Plant Conservation Program since 1995. She promotes the Conservation efforts of the Garden by raising funds for projects and sharing her vision for plant conservation and native plant programs in Georgia. She is Conservation's mentor, friend and matriarch, so it is only fitting that her name be placed on the Center for Native Plant Studies.

The plan shown here is conceptual in nature, as the scope and timeline for this Center are still being developed.

Figure __. A hard-working volunteer removes privet durng he 2012 Bluestems and Bluejeans: Native Plant Sale & Family Day at the Mimsie Lanier Center for Native Plant Studies.

Figure __. Visitors perusing the large selection of native plants for sale during the during the 2012 Bluestems and Bluejeans: Native Plant Sale & Family Day.



CENTER FOR NATIVE PLANT STUDIES

Design by Lindsay Reynolds MLA 13' in collaboration with Ashley Stinson and Center for Native Plant Studies Staff

Fall 2011

Plan View

SCALE 1"=20'

0 50 100 150 200 FT

management plan

Creating a Landscape Management Plan

The State Botanical Garden of Georgia contains x acres of land, only x of which is cultivated as formal gardens. The remaining forested and riparian landscape has been loosely managed for over fifty years without an agreed-upon trajectory or documented management plan. This master plan proposes that the natural landscape should be guided by a landscape management plan to restore it to optimal health. The recommendations here call for the division of the landscape into conservation areas or restoration areas, which will be described in detail later.

Landscape management is an adaptive process that guides the regeneration and healing of natural landscapes. Often, landscapes that have been affected by humans get caught in positive feedback loops due to human disruption – these can include the introduction and pervasive spread of exotic invasive species, accelerated erosion, disruption of the natural predator chain for controlling nuisance species, etc. A well-written landscape management plan can address these issues and guide the natural healing of a landscape by monitoring and adjusting the goals of the plan. Landscape management is not a linear progression, it is a cycle that continually evaluates the landscape, introduces small-scale experimentation, and makes corrections and adjustments according to the end goals. The feedback loop of landscape management can be seen in Figure X.

A landscape management plan, once initiated, will have vast benefits for the staff of the State Botanical Garden; however, this can only occur when

- An organizational structure is in place to guide landscape changes over

time and monitor the results

- There is enough knowledge to know what is being managed
- There is a prescription for health; and
- There is a working document and/or management records.
-

The creation of a landscape management committee, or restructuring of job duties, will ensure that there is a dedicated group of people to oversee the implementation of the management plant. These people will be in charge of the monitoring and recording of data, as well as consulting with other staff members or experts for proposed revisions to the management plan. Once the revisions are approved the group will oversee their implementation and continue monitoring the landscape.

The State Botanical Garden of Georgia employs experts in a variety of fields, from horticulture, to natural resource conservation, to ecology, etc. An open discussion about the management of the natural landscapes of the SBGG will encourage the sharing of expertise, and will result in a collective knowledge. The staff are already loosely managing these natural areas, but by gathering this collective knowledge and creating a working document, a historical record will be created that can be accessed in the future. It also allows the expertise of the staff to be passed on when positions turn over. An agreed upon trajectory will also facilitate the pursuit of grant funding associated with the management goals.

A management plan requires that there is a prescription for health – in other words, there needs to be a proposed list of guiding principles and recommendations that will help achieve a specific ecological trajectory. Again, harnessing the combined expertise of the staff at the SBGG and coming to consensus about an ecological goal will satisfy this requirement. This prescription for health will continue to guide the management decisions as they go through the feedback process.

Finally, all of these requirements need to be combined into a working document. A management plan will not achieve its goals if written records are not kept. This document needs to survive retirements, restructuring, leadership changes, etc. and the only way to ensure that ecological goals are met is to continually record the monitoring, revisions, approvals, and implementation of management decisions.

Users of the State Botanical Garden can be either engaged or disengaged in the landscape management plan; however, part of the mission of the SBG is aimed at public education, and because of this, it is recommended that the staff should decide how to engage the public in the management of the natural landscape. The most passive form of engagement and education could consist of placing interpretive signage along the trails that pass through specific conservation or restoration areas, calling out specific features or projects that the staff is working on. A more active approach could engage the users at the SBG through volunteer monitoring groups, invasive species removal days, restoration plantings, or a place where visitors can upload photographs, helping to maintain a visual history of the garden.

Athens-Clarke County

Oconee County

North Creek Conservation Area

North Creek Conservation Area

Oconee Floodplain Conservation Area

Ivy Wetland Conservation Area

Homestead Conservation Area

Piedmont Prairie Restoration Area

Oconee Floodplain Restoration Area

Orange Trail Conservation Area

Oconee Uplands Conservation Area

Oconee Bluffs Conservation Area

South Milledge Avenue

Middle Oconee River

State Botanical Garden Property

Proposed State Botanical Garden Property

0 150 300 450 600 1,200 1,800 2,400 Feet

MANAGEMENT ZONES

The natural areas of the State Botanical Garden of Georgia comprise a diverse set of plant communities, which are determined by a variety of natural and cultural factors including: soil type, slope and aspect, previous land use, and moisture regime. The management zones presented here were delineated using these factors and other landscape features, resulting in nine different zones each with a unique identity. These delineations are schematic in nature, and should be ground-truthed and modified accordingly as the management plan is developed. There are seven conservation areas and two restoration areas.

CONSERVATION ZONES

The landscapes categorized as conservation areas are relatively intact successional forest areas or other native plant communities. There are fewer existing threats to ecosystem health in the conservation areas than the restoration areas. While not in perfect health, the areas do not require as aggressive of a management role, and minimal interventions can often restore health and vitality to these landscapes over time. Each of the proposed conservation areas may require a different set of principles specific to its environmental characteristics and conditions, which will guide the management process. This master plan recommends

RESTORATION ZONES

The natural features that have been categorized as restoration areas are landscapes within the garden boundaries that have been severely degraded or impacted by human interventions. These areas require an active management role; however, it is entirely possible for ecological reclamation to be achieved. Written records and working documents are extremely important for the management of the restoration areas. Once again, this process should begin with a thorough SWOT analysis, where experts can gage the health of the restoration area and determine guiding principles based on its strengths, weaknesses, opportunities,

NORTH CREEK CONSERVATION AREA

The North Creek Conservation Area comprises some of the most dramatic and remote natural landscapes in the SBGG. The mature forest over rolling topography is characteristic of the native Piedmont Oak-Hickory forest that once dominated this region. Although this plant community is dominant, it is not the only one present here.

Steep ravines and creeks create a multitude of microclimates, and scenic small waterfalls. Frequent occurrences of chalk maple in the understory are related to soils types and nutrients here. American beech is dominant in some of the mesic forests. A bog is located on one of the tributaries to North Creek, which we have named Bog Branch. Rivercane, sedges, rushes and salamanders are all found here (Wharton, 1998).

OCONEE FLOODPLAIN CONSERVATION AREA

The Oconee Floodplain Conservation Area offers an experience of the forested floodplain of the Middle Oconee River. Unlike many other floodplain areas, Chinese privet is a relatively minor presence here. That being said, privet and other invasive exotics are a constant threat in this landscape that experiences frequent to occasional flooding. While containing areas of floodplain, this conservation area also includes the adjacent upland areas as well as one of two unique heath bluff community found at SBGG. This landscape provides an excellent opportunity to experience a relatively abrupt transition from floodplain to uplands, contrasting with other areas that have more extensive lowlands.

OCONEE FLOODPLAIN RESTORATION AREA

The Oconee Floodplain Restoration Area is one of the youngest successional forests at the SBGG. It was an agricultural pasture or cleared land up until the mid-1970's. It is not surprising that this young floodplain forest is also the epicenter for Chinese privet (Ligustrum sinense) invasion at the SBGG. Beginning in 2005, privet removal research has been active in this area comparing the effectiveness of various methods of eradication. In the winter of 2011-12, a large portion of this area was cleared using Gyrotrack equipment to cut and grind the privet (and bamboo) that had infested the area. Ongoing management must continue to work towards the eradication of invasive exotic species, while simultaneously planning for and implementing restoration plantings. A comprehensive restoration plan for the Oconee Floodplain Restoration Area should be developed to include restoration, management, and monitoring goals, objectives, and actions.

HOMESTEAD CONSERVATION AREA

The Homestead Conservation Area comprises an area that is in the early stages of secondary succession. The landscape is dominated by pine and mixed-pine forest, which has reforested the area after farming was ceased approximately 40 years ago. In addition to the vegetation, many indicators of the landscape's agricultural past are still present: agricultural terraces that were installed for soil conservation, an old chimney which is a remnant of a former homestead, and more. The 2012 master plan proposes the creation of a Homestead Garden in this area, to inform visitors about the region's agricultural history and educate about the traditional gardening practices.

The Homestead Conservation Area is also an important landscape to interpret old field succession. This landscape is in the pine stage, while others in SBGG are at later stages of succession.

PIEDMONT PRAIRIE RESTORATION AREA

The Piedmont Prairie Restoration Area is essentially the Georgia Power transmission line easement. In the past, curated collections such as the Flower Garden were located here. In recent years, the collections have been relocated and the easement has been relatively underutilized north of the paved driveway. In contrast, the portion of transmission line easement south of the driveway has been restored/managed as early succession grasses, shrubs and wildflowers. The results have been significant in terms of insect and bird habitat created, and provides evidence that similar results can be achieved elsewhere.

While extensive prairies were not historically present in the southeast as they were in the midwest, smaller meadows and savannas were documented (and, rarely, still exist) and offer a potential natural reference model for restoration efforts subject to the limitations of a powerline easement. A comprehensive restoration plan for the Piedmont Prairie Restoration Area should be developed to include restoration, management, and monitoring goals, objectives, and actions.

IVY WETLAND CONSERVATION AREA

The Ivy Wetland Conservation Area, located across the Middle Oconee River at the confluence with McNutt Creek, was donated to the SBGG in 1990. The wetland was reportedly created by beavers, and remains a beautiful and important wetland habitat. The forest on the edge of the wetland is a blue heron rookery. The site is not currently accessible to the public, however its ecological value and research value is significant. Public access may be possible in the future, perhaps in conjunction with the proposed Middle Oconee Greenway.

OCONEE UPLANDS CONSERVATION AREA

Ampibolite Creek is a small, picturesque tributary of South Creek that extends from its confluence near the Orange Trail east towards Milledge Avenue and the UGArden. The creek was first named by Charles Wharton in 1998 due to the dark, almost black amphibolite rock that is found in the creekbed. The mineral content of this rock may influence the botanical composition plant communities that are found in the area. Along the creek stream edge and colluvial flat communities are present, transitioning to mesic slopes and ridges as one moves uphill and away from the creek. The deciduous forest near the headwaters of Amphibolite Creek is some of the oldest and most mature forest on the SBGG property.

An abandoned spur trail leads up Amphibolite Creek for a short distance before dissipating. We propose reestablishing this trail and extending it further along Amphibolite Creek, being sure to prioritize the stream health by respecting the appropriate stream buffers, in order to provide access to this beautiful area of the SBGG.

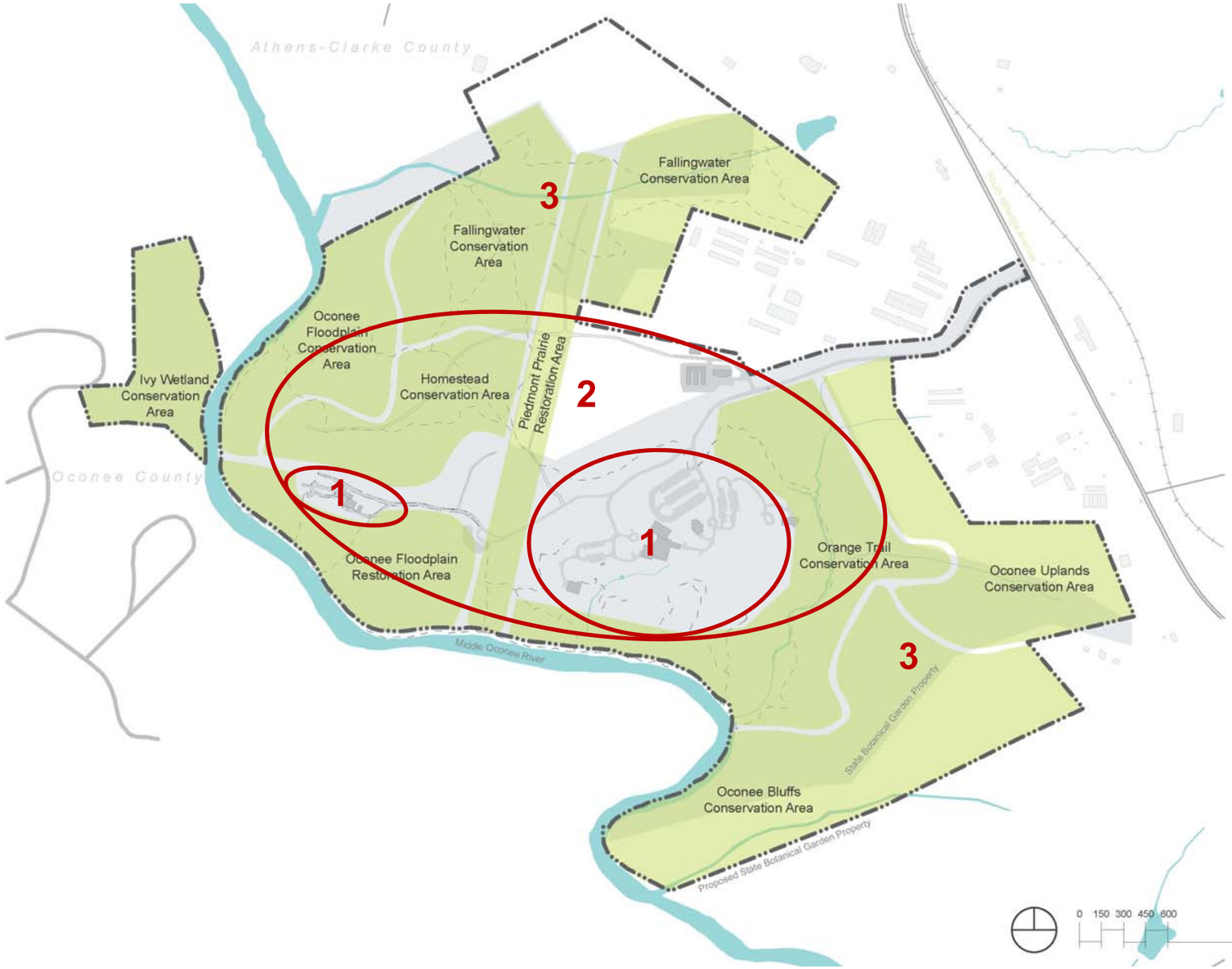
ORANGE TRAIL CONSERVATION AREA

The South Creek Conservation Area includes the Orange Trail as it follows South Creek from the trailhead to the Middle Oconee River. This is the most heavily used and perhaps most loved natural area at the SBGG, popular among families who love the direct access to the beautiful creek, naturalists who enjoy the transect through different stages of succession and from upland to floodplain and wetlands, runners who enjoy the challenging topography and beautiful surroundings, and UGA faculty and students who use the area for botanical and aquatic sampling and surveys. Easy access from the Main Parking Lot as well as from the Flower Garden contribute to the popularity of the Orange Trail.

Unique management issues that need to be addressed here include mitigating the heavy use, as well as managing and mitigating the off-site impacts of runoff that flows through South Creek. In the past, high levels of nutrients were detected due to the swine lagoons that were located on Milledge Avenue. Those lagoons are gone, however plans to construct dozens of horticulture greenhouses in the near future present a possible new impact that will need to be addressed. Every effort should be made to influence the horticulture greenhouses to mitigate their runoff "at the source" by collecting and reusing or infiltrating runoff outside the SBGG property. Also, this area includes the South Creek Wetland, formerly a beaver wetland but now maintained by a concrete sack dam. The dam is failing and water is eroding around the side of it causing lowered water levels in the wetland. A complete analysis and

OCONEE BLUFFS CONSERVATION AREA

The namesake of this conservation area is located south of the Orange Trail along the Middle Oconee River. One of two occurrences of a heath bluff community is located here. Wharton describes these areas as "steep riverside bluffs along the Oconee River, with considerable exposed bedrock and boulders. The evergreen heath, mountain laurel, is diagnostic." The spur trail that leads through this area is not formally marked but it is already moderately used. Visitors enjoy accessing the large boulders along the banks of the Middle Oconee as well as exploring the loop trail through the adjacent forest. We propose formalizing this existing trail, as appropriate, to provide access to this unique area. The other heath bluff is no longer accessible to the public due to trail relocations that were necessary in that area, so this is the only readily accessible heath bluff community.



DEER EXCLUSION AND MANAGEMENT

Deer at the SBGG are a major problem and are currently a limitation to the expansion and sustainability of the curated botanical collections. This issue must be addressed to maintain the existing collections, and a solution is a prerequisite to adding any additional collections.

Existing Deer Fence
The large red oval on this plan represents the approximate location of the perimeter deer fence, which was installed in 1989. There are several gates that allow visitors and staff to pass through the fence. Today there are deer inside the fence, either existing as an "exclusive" population of extremely lucky deer or somehow coming and going in a manner that is still unknown.

The smallest red oval on this plan represents the approximate location of the CNPS deer fence which was installed in the summer of 2012. This 12' tall fence is intended to completely exclude deer from its interior in order to protect the CNPS growing facilities and future collections.

Proposed Deer Fence
The medium-sized red oval on this plan represents a proposed deer fence that would enclose the curated collections around the Visitor Center, including the Shade, Native Flora, Flower, Herb, International, and Childrens Gardens.

Discussion
These three deer fences would effectively establish three zones of deer exclusion/management.
ZONE 1- Deer Exclusion Areas
The deer exclusion areas include the most sensitive and vulnerable botanical resources at the SBGG, including the curated gardens in the vicinity of the Visitor Center, as well as the outdoor propagation areas of Center for Native Plant Studies. The management of these areas should be "No deer, no exceptions." In they occasion that deer do penetrate the fence, they should be removed as expediently and humanely as possible.

The CNPS recently had the high-security deer fence installed. The other proposed high-security deer fence should be carefully evaluated for cost, location, aesthetics and visitor accessibility. The security of the collections should be achieved in the least visually and physically invasive manner possible.

appendices

Brick Chimney
Appears on 1938 aerial image and seems to be attached to a near-by grouping of buildings by road. Existing roadbed can be seen.

Earth Hut
Does not appear on aerial images but a garden employee re-marked that it was built by the garden staff dating it post 1968.

Hazardous Waste Area
Appears on 1960 aerial. Site was completely fenced in and sealed off. According to garden staff, the filter house near by is connect-

Cattle Pen
Appears in 1973 aerial image. A roadbed is visible. Structure looks like it has been modified over time.

Fire Ring
Unknown date. Does not show up on any aerial images.

Refuse Pile
First appears in the aerials in 1955. The road to it appears in 1944. A license plate was found with the date 1955.

appendix A Cultural Resource Inventory

Rock Piles
Various rock piles around the property. All are approximately equal in shape and size. Could have been from clearing the land

Spring and Walls
Could be pre-1938. Concrete spring with two walls and a damn. Could have been used to water livestock or irrigate farmland. Area

Stone Chimney
A road appears in the 1938 aerial image to the location of the chimney. Garden staff re-used some of the stones in the interna-

Some other features that were not photographed but are marked on the inventory:

Bee Boxes
These do not appear to be on any of the aerial images. They appear to be in good shape, which suggests a more recent installation.

Berm
This feature could have been created to prevent flooding as early as 1938.

Filter House
Unknown date, does not appear in aerials images. Seems to be associated with the hazardous waste area because it lays down slope in an ephemeral streambed.

Pistachio Trees
A small grove of pistachio trees might have been among some of the first horticultural experimental tree. Unknown date.

Plant Community Descriptions appendix B

PLANT COMMUNITY DESCRIPTIONS

Invasive Species
This vegetative overlay contains areas of the site where the understory is composed almost exclusively of Chinese privet, Ligustrum sinense. The locations of this unique understory layer are along the river banks and bottomland hardwood portions of the site where moist soil conditions have aided in the proliferation of this invasive exotic. The existence of this invasive exotic understory layer has disrupted the natural forest successional process along the river. Due to the invasive nature of this plant, the State Botanical Garden (SBG) has undergone a Chinese Privet Removal Project along portions of this area.

Heath Bluff
This vegetative overlay shows the extent of a heath bluff found on the northern exposure of a rock outcrop on the east bank of the Middle Oconee River, just south of the Orange Trail. Heath bluffs are atypical in the Georgia Piedmont and are more typical of northern affinities and mountainous regions, making this a unique plant community on site. The shrub layer is dominated by heath species of mountain laurel and Carolina rhododendron.

Bottomland Hardwood
This vegetative community is found along the floodplain of the Middle Oconee River and near stream tributaries on the site. Due to the flat, moist soil conditions, this area can be classified as wet-mesic and is a diverse and species rich area of the site. Common species include American beech, tulip poplar, and white oak. Subcanopy and shrub layers consist of ironwood, mulberry, painted buckeye, and native azalea.

Garden Areas
These vegetative areas contain developed areas of the site (roads, buildings, sidewalks) as well as garden spaces that have little to no forest canopy cover. The vegetation, if existent, is highly managed and not a naturally occurring plant community.
Forested Garden Areas
The vegetated areas contain garden spaces with mature canopy cover. Forested areas consist of both naturally-occurring and managed vegetation.

Hardwood
Consisting of mesic to moderately mesic forests, the community includes non-wetland floodplain forests of yellow-poplar, sweetgum, ravines of oaks, beech, and many upland oak-hickory stands—the most prevalent community on the site.

Mixed Pine and Hardwood
A vegetative community of mesic to moderately dry forests of mixed deciduous and evergreen species: sweetgum, yellow-poplar, various oak species, and loblolly or shortleaf pine.

Open Grassland
A vegetative community comprised of recent clearcuts, sparse vegetation, and other early successional areas.

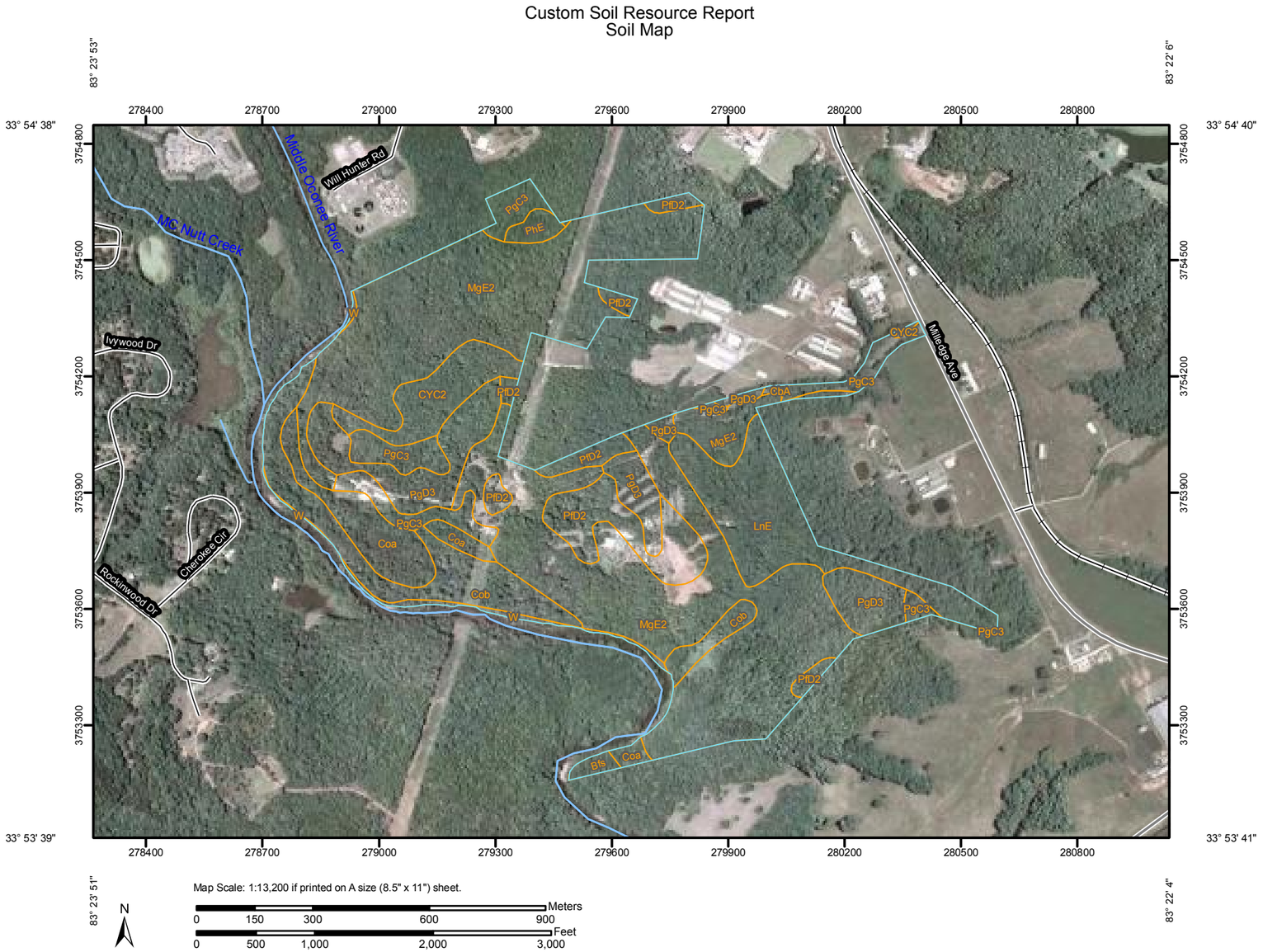
Open Loblolly and Mixed Pines
A vegetative community including older, fairly open stands that may be almost savanna-like in appearance.

Loblolly and Shortleaf Pine
A vegetative community consisting of dominant pine stands regenerating from old field conditions or other recent disturbances.

Utility Swath
The community consists of an open swath of vegetation maintained for Georgia Power transmission lines. Current vegetation under easement contains a vegetated mix of perennial grasses, planted gardens, and early successional shrub areas. A native Georgia perennial and grass prairie is planned for the area.

Wetland
The site contains three wetland locations. The old beaver dam, located on the southeastern portion of the site, is highly visible along the Orange Trail. This wetland was altered by human and animal activity in the past 10 years and currently contains a mix of wetland plant species and open canopy. The other wetland areas consist of a small area located adjacent to the southern end of the utility swath and a larger wetland located on the southwestern end of the site across from the Middle Oconee River.

appendix C Soil Reports



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

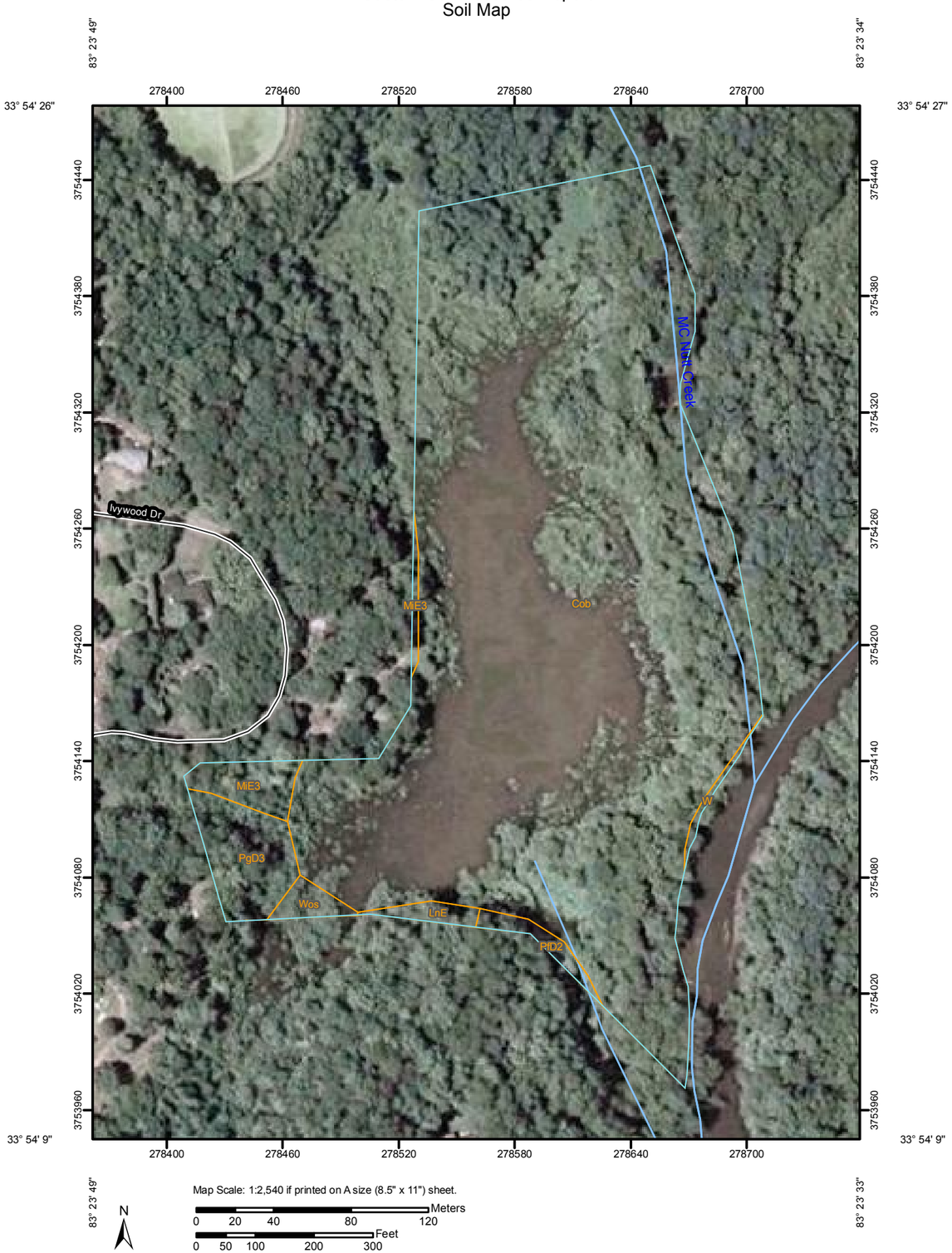
Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Map Unit Legend

Clarke and Oconee Counties, Georgia (GA623)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
Bfs	Buncombe loamy sand	1.3	0.4%
CbA	Cecil soils, 0 to 2 percent slopes, overwash	0.2	0.1%
Coa	Congaree soils and alluvial land	14.1	4.8%
Cob	Chewacla soils and alluvial land	23.9	8.1%
CYC2	Cecil sandy loam, 6 to 10 percent slopes, eroded	11.9	4.0%
LnE	Louisburg loamy sand, 10 to 25 percent slopes	26.8	9.1%
MgE2	Madison sandy loam, 15 to 25 percent slopes, eroded	145.7	49.6%
PfD2	Pacolet sandy loam, 10 to 15 percent slopes, eroded	20.8	7.1%
PgC3	Pacolet sandy clay loam, 6 to 10 percent slopes, severely eroded	18.1	6.2%
PgD3	Pacolet sandy clay loam, 10 to 15 percent slopes, severely eroded	26.8	9.1%
PhE	Pacolet-Gullied land complex, 10 to 25 percent slopes	2.2	0.7%
W	Water	2.3	0.8%
Totals for Area of Interest		**294.0**	**100.0%**

Custom Soil Resource Report
Soil Map



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Area of Interest (AOI)
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- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
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- Very Stony Spot
- Wet Spot
- Other

Special Line Features
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- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Map Unit Legend

Clarke and Oconee Counties, Georgia (GA623)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
Cob	Chewacla soils and alluvial land	16.1	92.0%
LnE	Louisburg loamy sand, 10 to 25 percent slopes	0.1	0.6%
MiE3	Madison sandy clay loam, 10 to 25 percent slopes, severely eroded	0.3	2.0%
PfD2	Pacolet sandy loam, 10 to 15 percent slopes, eroded	0.1	0.8%
PgD3	Pacolet sandy clay loam, 10 to 15 percent slopes, severely eroded	0.6	3.5%
W	Water	0.0	0.3%
Wos	Wehadkee and Alluvial land, wet	0.1	0.8%
Totals for Area of Interest		**17.5**	**100.0%**