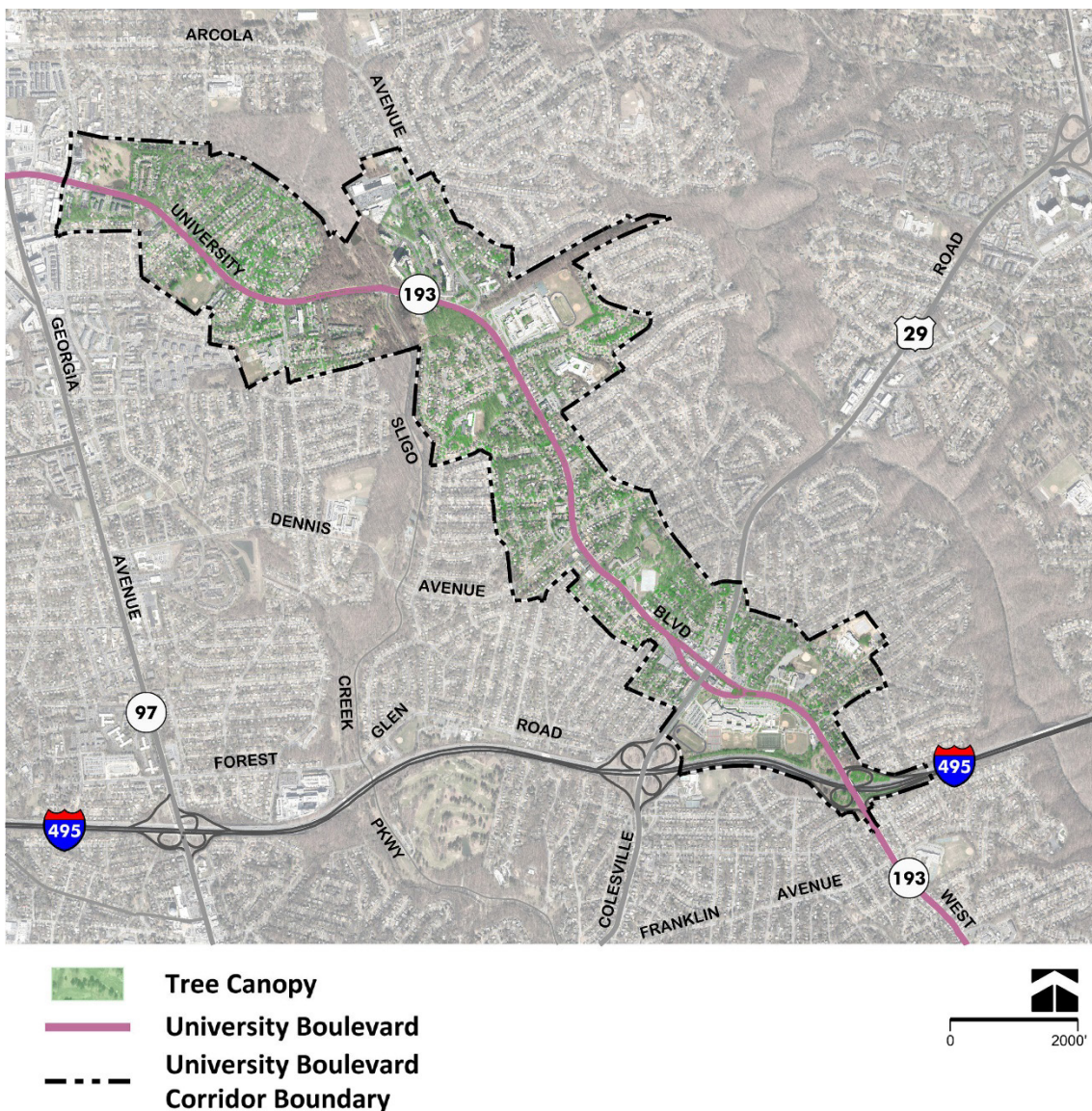


CHAPTER 7: ENVIRONMENTAL SUSTAINABILITY

The overarching goal of the environmental sustainability recommendations for the Plan is to create a green, healthy, and resilient community that contributes to a high quality of life for residents of the Plan area.

Many of the existing land uses have been in place for many years and reflect both positive and negative environmental attributes associated with the long history of the development. Positive attributes include some mature tree canopy coverage especially on lots in the older, established residential areas, as shown in Figure 61. Negative environmental conditions are associated with a land use design intended to facilitate automobile use, including the broad University Boulevard as a central transportation feature, a system of disconnected streets, and driveways and parking lots. The environmental impacts of this auto-centric design include increased runoff from storms, degraded water quality and aquatic habitats, diminished air quality, and urban heat island effect. These impacts are worsening as climate change magnifies the problems.

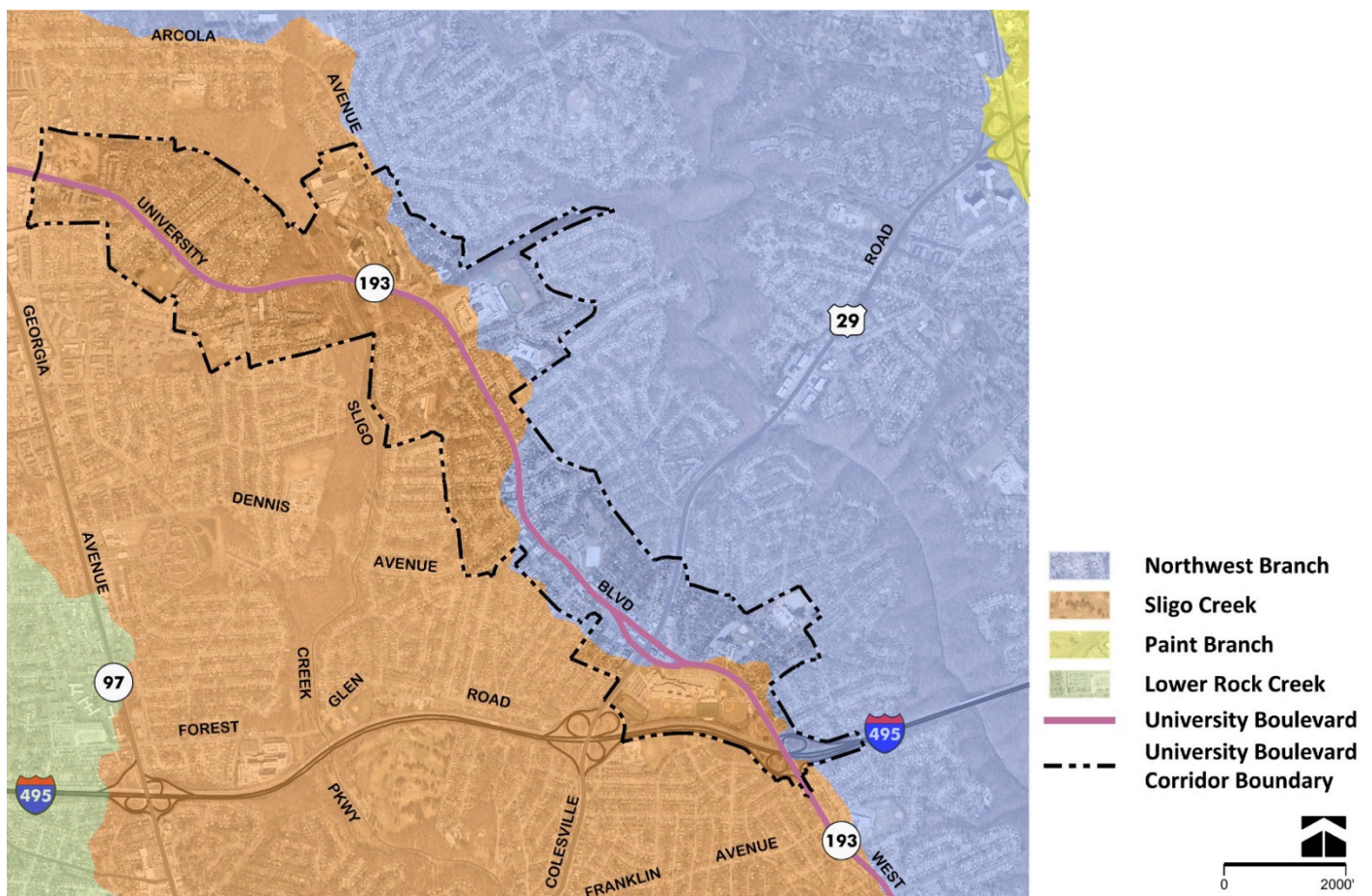
Figure 61: Tree Canopy



Particulate pollution is one of the aspects of diminished air quality that is of greatest concern. Recent research has shown that tiny particulates (2.5 micrometers or less) in polluted air can contribute to ischemic heart disease, cancer, type 2 diabetes, pneumonia and other lower-respiratory diseases, asthma, and stroke. This kind of particulate pollution (PM 2.5) is associated with emissions from the burning of fossil fuels including gasoline and diesel fuel-powered vehicles. People walking, biking or rolling along University Boulevard are exposed to PM 2.5 pollution, as are people waiting at bus stops. Trees, shrubs, and other vegetation and landscaping have been demonstrated to reduce concentrations of PM 2.5 pollution along roadways.

Sligo Creek Stream Valley Park is a significant natural feature that cuts across the Plan area from north to south and provides important environmental, recreational, and health benefits to the community. The park's large forest and tree canopy areas improve air quality, filter runoff and improve water quality, reduce heat island effect, sequester carbon, and mitigate flooding. The stream and forest buffer provide habitat for numerous aquatic and terrestrial species. Park facilities provide opportunities for active and nature-based recreation. Time spent in forests and green spaces has proven mental health benefits. The Northwest Branch Stream Valley Park just to the north and east of the Plan area offers similar benefits. This Plan seeks to provide and improve connections that allow community members to access these parks.

Figure 62: Watersheds in the Plan Area

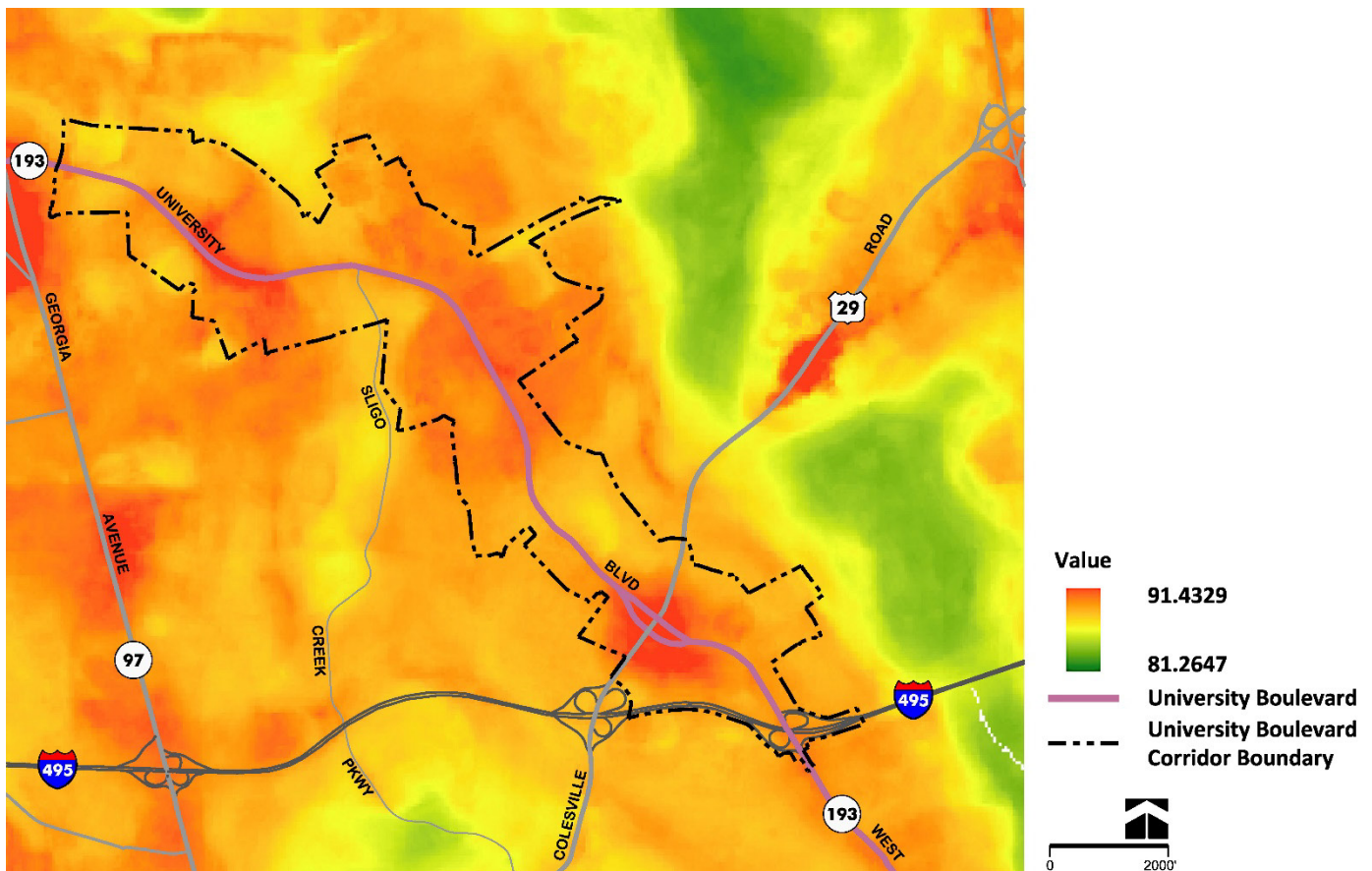


ENVIRONMENTAL GOALS

The environmental recommendations of this Plan are intended to advance the following goals:

- Address the environmental impacts of urbanization, including mitigating urban stormwater runoff, protecting water quality in Sligo Creek and the Northwest Branch (shown in Figure 62), reducing urban heat island effect (shown in Figure 63), and improving air quality.
- Address action items in the county's Climate Action Plan that relate to land use planning, including actions that contribute to reducing greenhouse gas emissions, conserving energy, and promoting resilience in the face of climate change impacts.
- Address environmental justice issues, including protecting the health and well-being of residents and visitors who belong to historically disadvantaged communities. Data indicate that significant numbers of these community members ride the bus, walk, and ride bicycles, and Montgomery County Public Schools reports that schools in the Plan area have high equity scores indicating that many Plan area students come from historically disadvantaged communities. Therefore, bus stops, pedestrian and bicycle systems, and schools should be targeted for investments that mitigate negative environmental health impacts.
- Promote the biological diversity of the county.

Figure 63: Heat Islands in the Plan Area



ENVIRONMENTAL RECOMMENDATIONS

DEVELOP UNIVERSITY BOULEVARD AS A COOL CORRIDOR

- Design a multimodal transportation spine along University Boulevard that gives people who depend on walking, biking and transit protection from extreme heat and air pollution along walkways and bikeways and at bus stops/BRT stations. Use the following Cool Corridor strategies:
 - Incorporate tree canopy, shaded transit stops, stormwater management, and landscaped buffers into the University Boulevard cross section.
 - Identify areas along streets leading to schools where additional shade will help protect children walking to school.
 - Plant native species of trees that produce healthy tree canopies, with a double row of trees along University Boulevard, where feasible with the implementation of the University Boulevard BRT project.
 - Underground utilities along the corridor, where feasible.
 - Provide engineered shade structures where adequate tree canopy cannot be provided.
 - Include guidance for recommended tree species and adequate soil volumes to grow healthy canopy trees consistent with the *Complete Streets Design Guide*.

PROTECT AND INCREASE TREE CANOPY

- Protect and increase forests and tree canopy along road rights-of-way and on public properties.
 - Work with MCPS and Montgomery Parks to increase tree canopy at parks and schools.
- Work with MCPS and owners of other large properties with significant impervious cover and little tree canopy to reduce heat islands.
- Areas of surface parking lots on public and private properties should provide at least 50% tree canopy coverage of the parking lot area. If it can be demonstrated that 50% tree canopy cover cannot be achieved, the remaining coverage requirement can be met through installation of solar canopies, where feasible.

MITIGATE EXCESS RUNOFF AND PROTECT STREAM WATER QUALITY

- Promote the use of landscaping that helps reduce runoff on public and private property. The Montgomery County Department of Environmental Protection offers programs to help private property owners reduce runoff from their properties.
- Minimize impervious surfaces in site designs for developing and redeveloping sites.
- During development or redevelopment of private property, provide a minimum of 35% green cover of the total developed area, excluding existing forest cover on the property. The green cover may include the following, either singly or in combination:
 - Intensive green roof (6 inches or deeper)
 - Tree canopy cover
 - Vegetative cover
 - Landscaped areas
 - Rain gardens and bioswales
 - Solar energy and green roof

- Landscaping: use native plants that require less watering and fertilization; use rainwater for watering; apply Sustainable Sites Initiatives (SITES) principles.
- Use nature-based climate solutions to incorporate carbon into landscaping soils to promote fertility and vegetation growth and draw down atmospheric carbon.

PROMOTE PUBLIC HEALTH

- Provide opportunities for exercise, recreation, and mental well-being: parks and open space, trails, sidewalks, and bicycle networks.
- Include features in designs for major arterial roads and highways to include noise mitigation elements wherever feasible, including noise walls near I-495, and board-on-board fences with vegetation screens for major arterial roads.
- Provide access to health care facilities.
- Provide opportunities to buy or grow fresh produce/healthy food choices: provide opportunities for community gardens; provide spaces for farmers' markets.
- Promote an environment that minimizes light pollution.

BUILT ENVIRONMENT CLIMATE RECOMMENDATIONS

- Make attainment of net-zero carbon emissions an aspirational goal in all new development and redevelopment.
- Include as many of the following recommendations as reasonable in development plans:
 - Use native vegetation in landscaping and tree planting to sequester carbon and reduce urban heat island.
 - Include on-site renewable energy generation.
 - Orient new buildings to support the use of passive solar and renewable energy.
 - Include building design features that keep roofs cool – either green roofs or cool roofs.
 - Encourage improvements and facilities to reduce carbon emissions.
 - Promote site and building design for energy conservation and LEED certification or a comparable rating system.
 - Over parking areas where trees cannot easily be planted and maintained, for instance, rooftop garage parking, consider shading features that include solar panels.

PROMOTE NATIVE SPECIES

- Plant native vegetation that is highly attractive to pollinators and provides food sources for declining populations of native pollinator species.
- Incorporate multiple layers of native vegetation in landscaping.