

**DRAFT last revised March 11, 2009**

Note: Draft memoranda produced by the consultants do not necessarily reflect the most recent study group discussions or minutes. Ideas expressed in recent and future study group meetings will be reflected in future versions of memoranda. Consultants and study groups will begin to identify the gaps at the March 23 Public Workshop.

**Davidson Comprehensive Plan Existing Conditions Memorandum**

ENVIRONMENTAL SUSTAINABILITY

**Background**

The Town of Davidson has reached an important juncture in its history at the fringes of the Charlotte region's suburban sprawl. While surrounding municipalities and counties have welcomed more "unchecked" development, the Town of Davidson has worked to maintain its small-town, rural character. The Town has been one of the most progressive municipalities in the State of North Carolina in promoting smart growth and open space protection. This Comprehensive Plan will be a continuation of Davidson's progressive environmental and open space protection approach, but also an expansion towards a more comprehensive approach focused on sustainability.

The Town of Davidson is located in northern Mecklenburg County. Davidson's land development patterns over time have a strong connection to its natural heritage. Davidson College was sited because it was known by founders in the early 1800s to be the highest elevation in the North Carolina Piedmont between the Catawba and Yadkin Rivers. Today, it is in the northern reaches of the Charlotte metro urban expansion. The Charlotte region has been one of the fastest growing urban areas in the United States and rapid suburban sprawl is occurring in surrounding municipalities and counties as shown in Figure 1 below.



Figure 1. Landsat satellite images in 1984 (left) and 2001 (right). Impervious surface is represented in the black tone. From the American Forests Report.

The Town of Davidson itself has also grown substantially within its planning jurisdiction in the past ten years (see Figures 2 and 3).

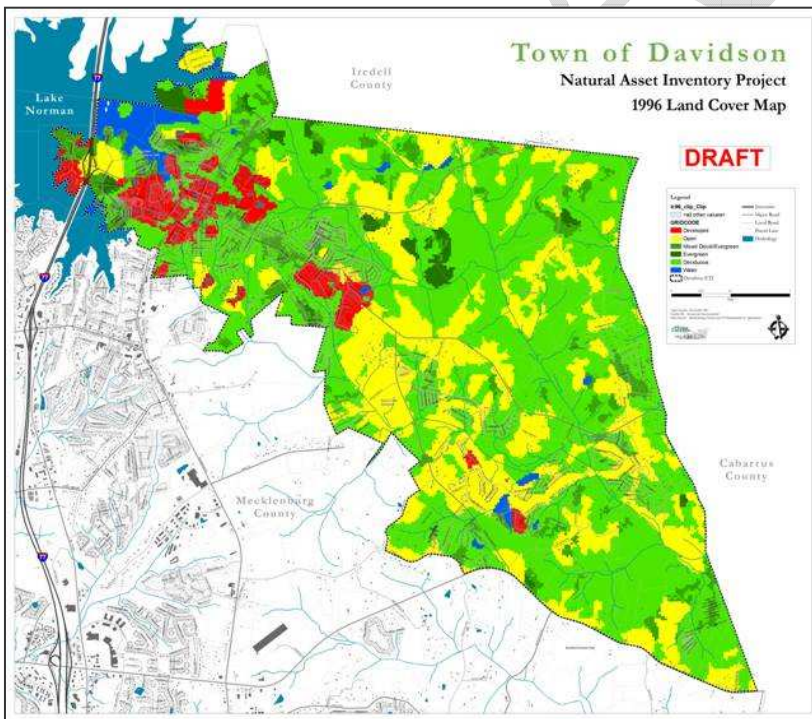


Figure 2. Land cover map in 1996.

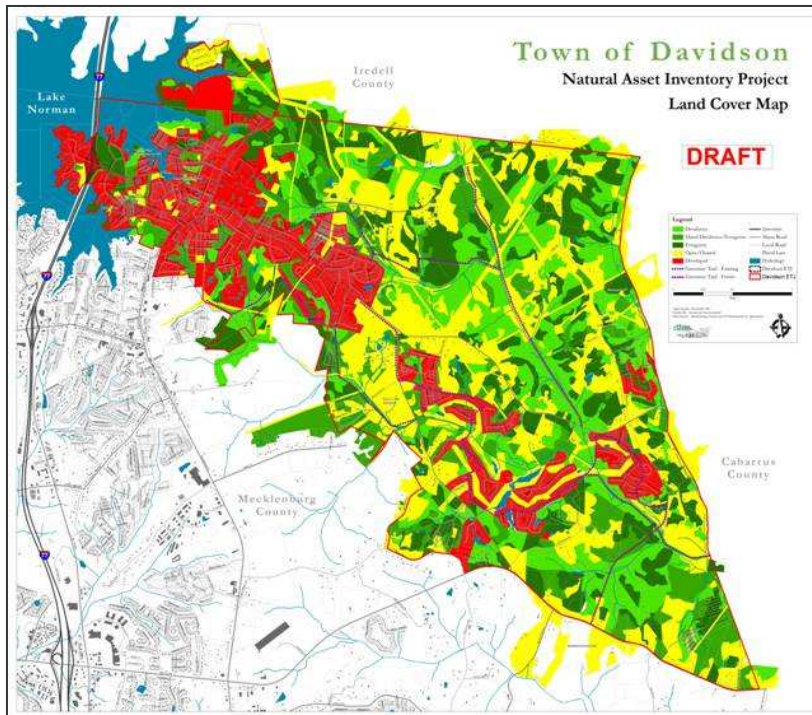


Figure 3. Land cover map in 2007, generated during Natural Assets Inventory work.

Over the past fifteen years, the Town of Davidson has addressed growth issues and its goals of protecting its small-town, walkable feel with rural, scenic, open spaces. The General Plan of 1993 called for “compact development patterns....to retain visual character and to preserve open spaces” and the preservation of agriculture and walkable spaces. The Davidson Land Plan of 1995 called for sustainable growth, compact and mixed-use development, retaining its small town character, and open space conservation.

Observing significant loss of open space and tree cover locally and regionally, the Town of Davidson created an Open Space Plan in 2001. This plan studied existing conditions and policies and created an implementation plan to achieve the following open space goals as described in the report:

- Preserve 50% of the ETJ as open space (first stated as goal in 1995 Land Plan)
- Provide public access to 50% of the open space within the ETJ
- Encourage walkable, mixed-use communities
- Protect the scenic quality and character of the rural areas
- Protect water quality
- Retain equity for ETJ landowners

The Open Space Plan explored several alternatives for achieving this goal, including density bonus incentives, mandatory cluster ordinance, a bond-funded Purchase of Development Rights program (PDR), modified road design standards, and more strict stormwater management regulations. The Open Space Plan resulted in revised subdivision policies in the rural area, requiring 50% open space set aside and half of that being publicly accessible. With these policies and requirements in place, it was still

evident that stronger policy language was needed as a 50% set aside didn't guarantee that the most ecologically important sites on property parcels were being protected.

Because of this, the Town of Davidson began the process of developing a town-wide Natural Assets Inventory, or Greenprint, to map its landscapes and document its resources in more detail. The objective of the Davidson Greenprint was to locate and identify the natural and working lands integral to the character of Davidson and allow that information to guide the protection of a sustaining network of open spaces, surface waters, and tree cover through sound development policy. New mapping databases such as land cover, topographic moisture index, prime farmland soils, and slope were developed. GIS databases were developed that presented quantitative reports of landscape features at the parcel-level and sub-basin watershed level. More importantly, new GIS mapped layers showing detail such as hardwood forests, steeper slopes, tree canopy, and hydric will help the Town of Davidson have more readily available information for decision-making and future development procedures.

While the Town of Davidson has taken measures to protect open spaces, scenic vistas, its rural character, and ecological integrity over recent years, this plan will expand to a more comprehensive environmental sustainability approach. It will still encompass important issues like open space protection but will also address new issues such as sustainable local agriculture, smart growth, emissions reductions, and green building. Environmental sustainability is one area of the current ordinance that is not comprehensive in its approach or containing specific policy language. The Comprehensive Plan will establish a new, comprehensive list of policies for the Town of Davidson, keeping the Town at the cutting edge and lead in environmental and energy consciousness.

### **Public Interest**

The Town of Davidson has made strong efforts to engage the public through the formation of study groups and public workshops during the comprehensive planning effort. It is most evident that the residents of Davidson want the Town to retain its small-town, rural character and to protect open spaces for recreation and nature. In a recent survey, 87% of residents support funding open space with their tax dollars.

Previous to the comprehensive plan development, a number of entities and planning processes have revealed that there is not only the continued interest in protecting open space, but there is an emerging interest in overall sustainability and carbon footprint consciousness in the Town of Davidson. Local agricultural sustainability, alternative transportation, green building techniques, and alternative energy are concepts that have gained support and momentum. For example, the recently adopted Davidson Bicycle Transportation Plan received significant support and interest from the public with clear desires shown to make bicycling a viable transportation alternative to the automobile. Davidson College has also made a strong commitment towards environmental stewardship and sustainability with the signing of the American College and University Presidents Climate Commitment letter, numerous campus environmental programs, and the conversion of buildings into LEED (Leadership in Energy and Environmental Design) certified structures.

With new federal leadership and momentum in living more “green” as a country and as individuals, the time is right for new, comprehensive sustainable policies for the Town of Davidson. Town residents support these initiatives and want to provide their input and assistance.

## **Issues to Address**

The future success of Davidson and other cities may be judged by the ability to adapt and meet challenges presented by the need to be more sustainable. The Environmental Element of the Comprehensive Plan will build upon previous efforts in the Town of Davidson and contain policies and actions required to meet those challenges and improve the long term health of local residents and regional ecological systems. In doing so, the Town of Davidson will be an important model for surrounding municipalities and counties faced with the same challenges and pressures of continued population growth and urban/suburban expansion. The Town of Davidson is uniquely positioned, as a municipality in one of the fastest growing regions in the country, to champion sustainable approaches including those that will improve the health and integrity of air and water resources.

The Town of Davidson will need to define “sustainability” for itself, drawing on national examples and its own needs. The most widely used definition says that a sustainable practice “meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland Commission, United Nations). The World Conservation Union defines it as “improving the quality of human life while living within the carrying capacity of supporting ecosystems.”

A number of specific issues have been identified by the Town of Davidson, planning focus group, and its citizens. These include:

### Preservation of Open Space & Significant Habitat:

#### *Quality of Open Space*

The Town’s rural open space policy has been effective in preserving undeveloped property and allows the developer several options for the use, ownership and conservation practices of the open space. However, it sometimes fails to prioritize the natural landscape above development potential and often yields publicly inaccessible or unusable space. Utility easements and rights of way are commonly dedicated as open space. Similarly, private or community septic fields are being dedicated as open space in rural subdivisions. The quality and usability of these types of open space is questionable for habitat and air and water quality protection.

#### *Farmland Conversion and Land Valuation*

Land values have escalated in the rural area making it more attractive for farmers to sell property for development, or in some cases unavoidable because of increased property taxes. Even with the assistance of state-sponsored present-use-value taxation programs for active farms, agricultural land is being lost at a rapid pace. Where land waits for

development, it transitions into a successive mixed scrub forest. Trends in the agricultural economy have also changed the landscape as farmers move from crop production to livestock and timber management. Wheat, cotton and bean fields become a mixture of pasture, hay fields, and seedling pine forests. Local farms are essential to the sustainability of a community by minimizing risk of diseases carried by foreign produce, transportation costs of foods, and industry monopolization.

#### *Contiguous Open Space*

Open space connectivity has proven difficult to achieve across property lines. Especially where an area plan or comprehensive plan is absent, it is difficult to decide which open spaces should be preserved during the master plan process. Continuity of open space is critical to sustainable animal habitat because it provides safe corridors for migration and large tracts for large animal habitat.

#### *Scenic Viewshed Preservation*

Much of Davidson's natural heritage is associated with expansive views of farmland and tree-topped rolling hills. Public open spaces, such as greenways and parks, are optimally located to take in permanently protected areas. Viewsheds are difficult to map since local topography permits long views and are more difficult to protect since the viewshed includes hundreds of acres of potentially developable property.

#### *Management of Conserved Open Space*

There are several weaknesses with current Planning Ordinance requirements regarding open space preservation. If open spaces are not properly managed, there is risk of conversion to developed or compromised natural resources.

#### *Rural Sprawl*

In the rural area, residential development is the primary permitted land use. Current policies do not set maximum lot sizes, and especially where public wastewater systems are not available, individual lots are on average two acres or greater in size. In larger lot subdivisions, homes are not satisfactorily clustered and create fragmented, marginal pockets of common or privately-owned open space.

#### *Wetland Buffers*

The Davidson Planning Ordinance has made great strides toward stream and water quality protection with its SWIM and lakeshore buffer requirements. However, wetlands are not addressed, in spite of their critical role in water quality protection and habitat provision. Large wetlands in Davidson most often occur along major streams, but may also occur in upland areas.

#### Management of the Tree Canopy:

##### *Tree Canopy Loss*

American Forests studied change in tree canopy and impervious development between 1984 and 2001, and showed a 22% decrease of tree canopy throughout Davidson's planning jurisdiction. The Davidson Natural Assets Inventory estimated that deciduous forests covered approximately 58% of Davidson's planning jurisdiction in 1996 but

dropped to 21% by 2006. Pine forests, mixed-type new growth and developed land uses took the place of most of the lost hardwood canopy during the same period. American Forests estimated that local tree canopy loss could cost nearly \$13 million to repair storm water, air quality and public health. Tree canopy helps maintain moderate temperatures, clean pollution, prevent soil erosion, and provide animal shelter and food. A large maturing tree can clean the air 60 to 70 times better than a small tree (US Forest Service), and should be considered a part of the Town's infrastructure and energy conservation strategies.

Tree canopy loss is primarily the consequence of weak tree preservation policies. The current process of development approval also undermines tree preservation efforts by separating site engineering and building design from open space and tree canopy preservation. So, even if trees are preserved in plan, the process for development approval could still require removal to accommodate infrastructure improvements.

#### *Landscape Requirements*

Where street trees are required in new developments, trees are usually of two species (willow oaks and red maples). Diversity minimizes the impacts of diseases targeting specific trees and to provide animals various types of food and shelter. The installation and maintenance of new street trees is often done incorrectly, threatening to starve the tree of nutrients, oxygen or root stability.

#### Environmental Sustainability Policies:

Environmental sustainability is one area of current ordinances for the Town of Davidson that is not yet comprehensive in its approach or containing specific policy language.

#### **Strategies**

The following list includes just some of the strategies that will address the above issues and help guide in the development of recommendations for the Environmental Element of the Comprehensive Plan.

- The environmental focus group for this planning process, comprised of local experts and Davidson residents, will help define key elements and policy strategies to fit the Town of Davidson.
- A new set of policies will be more comprehensive in nature, addressing issues of water resources, land conservation, climate change, solid waste and recycling, energy, emissions, green building and low impact development, and local food/agriculture.
- Many environmental and sustainability policies will be applicable to other elements of the Comprehensive Plan, requiring a coordinated approach to policy development.
- A more comprehensive toolbox for land acquisitions and open space protection, that provides economic benefit for landowners, will need to be developed for key open space properties within the Davidson planning boundary.

- Linkages between open spaces to provide contiguous open space and corridors should be identified and protected through policy additions.
- Policies that include incentives for developers and builders should be developed for development practices and green building.
- Coordination with other jurisdictions on pollutant impacts will be critical for regional ecological health.
- Regarding local food and agriculture, incentives should be developed to preserve farmland and a new focus on local/regional food planning and community gardening is needed.
- A comprehensive, regional approach to water resources is needed with cooperation from Mecklenburg County, surrounding counties, and surrounding municipalities to address water quality and supply, stream buffers, groundwater recharge, wetlands, and other water bodies.
- A public education strategy to teach overall sustainability and the impact each citizen can make to improve the environment is needed.
- Create safer spaces for bicyclists and pedestrians to encourage alternative transportation.

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