6. Environment

The Chesapeake Bay Preservation Ordinance and the Environment section of the Policy Plan guide environmental planning efforts in Fairfax County. Adopted by the county, the Chesapeake Bay Preservation Ordinance aims to protect streams and the Chesapeake Bay from pollution that may result from development. The Policy Plan includes goals and objectives that reflect the belief that environmental protection and preservation are important contributors to a high quality of life. At the same time, the Policy Plan recognizes the need to balance environmental protection and planning for the development and redevelopment of the county.

Resource Protection Areas and Resource Management Areas

In an effort to protect the Potomac River and the Chesapeake Bay, the Commonwealth of Virginia requires certain localities to designate Chesapeake Bay Preservation Areas. Resource Protection Areas (RPAs), one of the more restrictive types of Chesapeake Bay Preservation Areas, are delineated in Fairfax County. RPAs are corridors of environmentally sensitive land located alongside or near the shorelines of streams, rivers, and other waterways. RPAs supply important biological and ecological functions such as protecting water quality, filtering pollutants out of stormwater runoff, reducing the volume of stormwater runoff, and preventing erosion.

Most types of new development are prohibited in RPAs. Redevelopment of existing uses, infrastructure improvements, and some other types of RPA disturbance are permitted. Other uses may be granted through a waiver process, which requires an assessment of the water quality impacts and an explanation of proposed best management practices to mitigate the potential RPA encroachment or other adverse impacts to the RPA.

The Lincolnia PD contains approximately 365 acres of RPA generally delineated along Backlick Run, Indian Run, and Turkeycock Run as shown in the Environment Map (Figure 6.1). This RPA acreage comprises approximately 17.8 percent of the Lincolnia Planning District (PD), inclusive of roads. The condition of the RPA varies throughout the study area. Certain portions of the RPA, primarily by Little River Turnpike, Braddock Road, and I-395 are diverted underground through piping. The Policy Plan recommends that where practical and to the greatest extent possible, redevelopment can be an opportunity to restore impacted areas to a more natural state.

Resource Management Areas (RMAs) are a less restrictive category of Chesapeake Bay Preservation Areas. Development is permitted in RMAs as long as it meets applicable water quality goals and performance criteria, including stormwater management standards and erosion and sediment control requirements. In Fairfax County, RMAs consist of any land that is not designated as an RPA.

Steep Slopes and Marine Clay

Approximately 152 acres of land in the study area consist of steep slopes equal or greater than 15 percent, also shown in Figure 6.1. Areas containing steep slopes comprise approximately 7.4 percent of the study area, inclusive of roads. The slopes generally correspond with portions of the RPAs. The

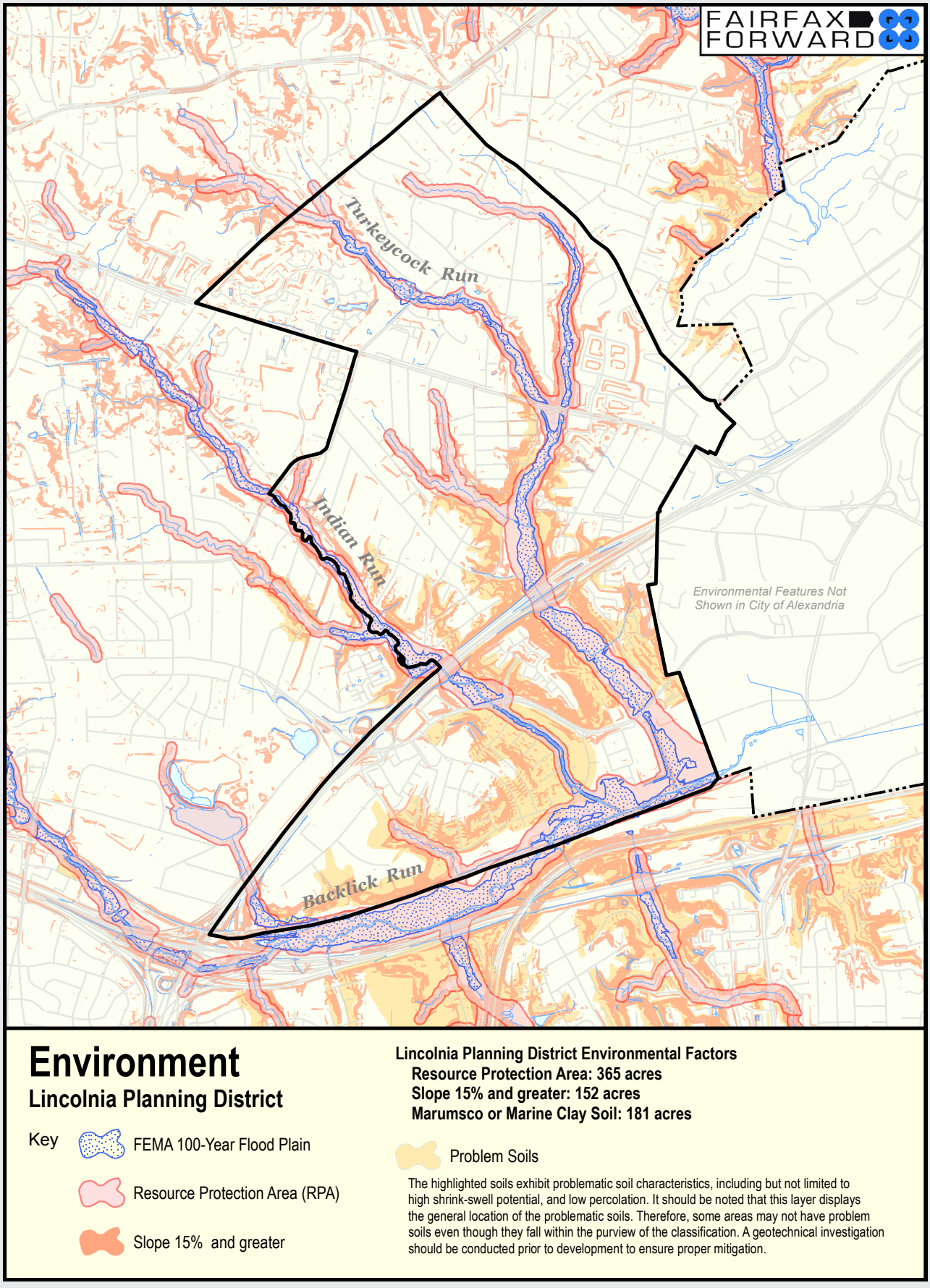

Figure 6.1 Environmental features in the Lincolnia Planning District.
Source: Fairfax County DPZ/GIS

Lincolnia PD is characterized by significant areas of Marumsco soil or marine clay, totaling approximately 181 acres. Similar to the presence of steep slopes, marine clay is present within or near portions of the delineated RPAs.

Marine clay is prone to shrinking when dry and swelling when wet. If there is inadequate engineering design and construction of a foundation built on marine clay, the shrinking and swelling can cause uneven settling and cracking in floors and walls over time. Additionally, marine clay has poor drainage properties and can cause slope instability or landslides.

Steep slopes and marine clay may result in significant development constraints. Issues with development or redevelopment that result from these the presence of these features should be addressed through detailed geotechnical analyses and mitigation measures in advance of any ground disturbing activities.

Environmental Quality Corridors

Environmental Quality Corridors (EQCs) are defined by the Comprehensive Plan as an open space system designed to link and preserve natural resource areas and provide passive recreation. The core of the EQC system is the county's stream valleys, which include the 100-year floodplains, adjacent steep slopes, and wetlands.

EQCs typically encompass delineated RPAs. Unlike RPAs, there are no regulatory requirements for the protection of EQCs. However, the preservation of EQCs is long-standing county policy and is currently achieved through the development review process, acquisition of parkland, and the donation of easements. The EQC policy is intended to identify, protect, and enhance an integrated network of ecologically valuable land and surface waters, as outlined in Objective 9 of the Environmental section of the Policy Plan. A preserved network of the county's natural landscape can provide corridors for wildlife movement and open space which may be used for passive recreation. EQCs also help mitigate pollution relating to water quality, microclimate control, and/or reductions in noise.

The Cameron Run Watershed

The Cameron Run Watershed Management Plan (WMP) was adopted by the Board of Supervisors in 2007. The Cameron Run WMP intends to complement the Policy Plan and support the federal Clean Water Act and the Chesapeake Bay Preservation Ordinance. According to the Cameron Run WMP, a watershed can be defined as the land that drains to a particular point along a stream. The Lincolnia PD falls entirely within the Cameron Run watershed that spans 42 square miles. Thirty-three square miles of this watershed are in Fairfax County, and the remainder is within the cities of Falls Church and Alexandria.

The Cameron Run watershed has an extensive history of development beginning at the turn of the 20th century. The Impervious Surfaces Map (Figure 6.2) displays the amount of streets, sidewalks, buildings, parking lots, and pools that cover the study area. According to the spatial analysis, approximately 711 acres, or 35 percent, of the Lincolnia PD is covered by impervious surfaces.

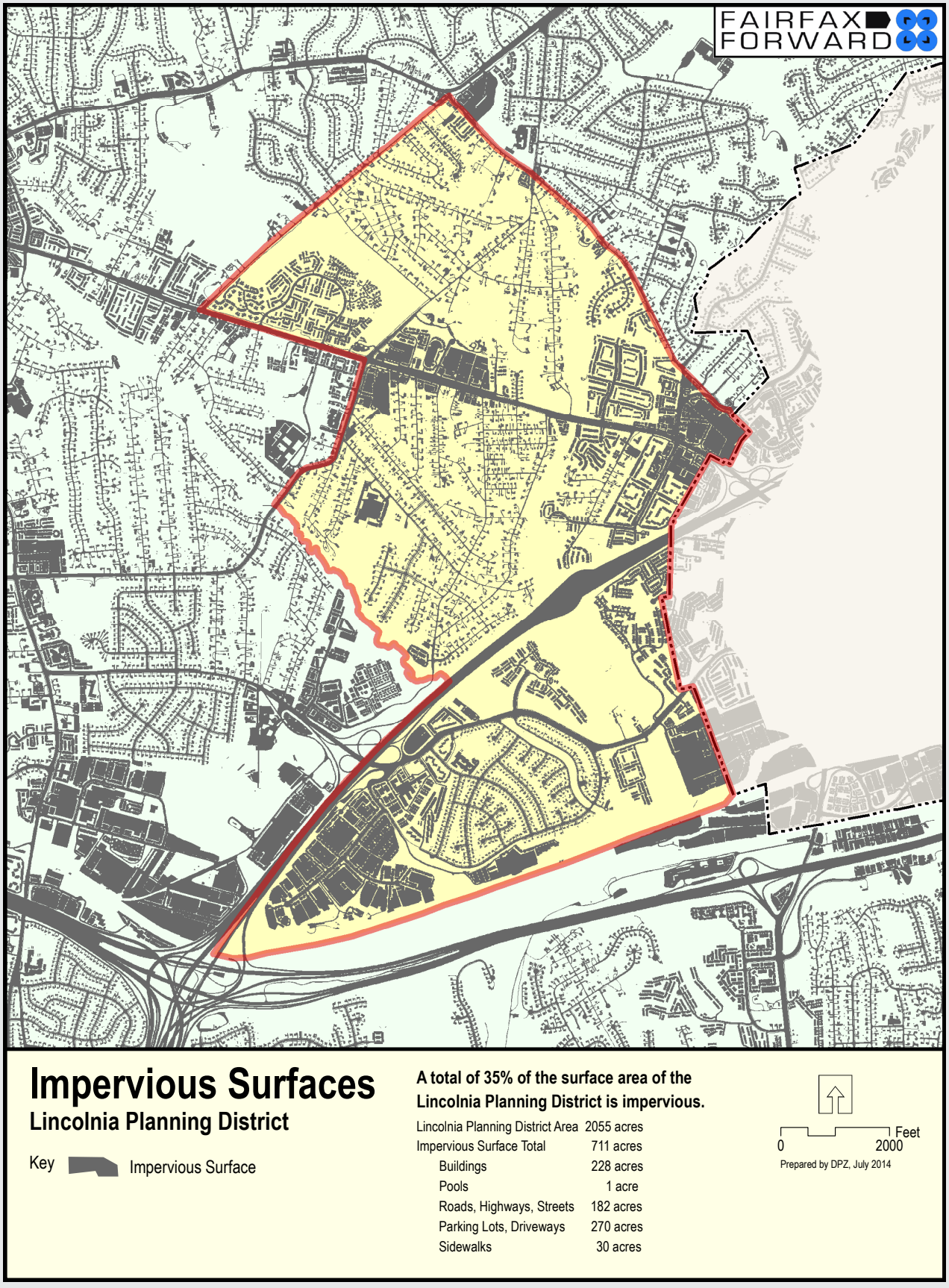

Figure 6.2 Impervious surfaces in the Lincolnia Planning District.
Source: Fairfax County DPZ/GIS

The Cameron Run WMP cites the 2001 Stream Protection Baseline Study that includes data collected from streams throughout the county. The study determined the Cameron Run watershed is in Watershed Restoration Level II, which is categorized by high development density, significantly degraded stream habitat conditions, and substantially impacted biological communities. Several streams within the Cameron Run watershed fail to meet water quality standards specified by the federal Clean Water Act, and are therefore included in the Virginia Department of Environmental Quality's list of impaired streams.

The Cameron Run WMP identifies physical and policy-based solutions to address the condition of the Cameron Run watershed. Physical solutions include incorporating low impact development (LID) practices into single projects, for example bioretention at the edges of a parking lot. Distributed LID techniques over a larger area, such as placing rain barrels throughout neighborhoods are also suggested. Other physical solutions include adding new ponds or small detention areas, retrofitting existing dry detention ponds, and stream restoration throughout the Cameron Run watershed.

Policy recommendations in the Cameron Run WMP include supporting legislation that provides incentives for VDOT to use LID techniques in its projects, providing incentives for developers to reduce runoff through an expedited review process for projects that include conservation design techniques and LID components in their site plans, and conducting frequent inspections during the building process to ensure compliance with permit conditions pertaining to landscaping requirements and adequate prevention of stormwater runoff. More information about the Cameron Run WMP may be found online at: http://www.fairfaxcounty.gov/dpwes/watersheds/cameronrun.htm

Subwatersheds

Watersheds encompassing more than one stream can be broken down into smaller geographic units called subwatersheds. The Cameron Run watershed is comprised of eight subwatersheds, all of which are assessed in the Cameron Run WMP. Portions of the Backlick Run, Indian Run, and Turkeycock Run subwatersheds fall within the Lincolnia PD. The Lincolnia PD is predominantly within the Turkeycock Run subwatershed.

A stream physical assessment was conducted in 2002-2003. The stream physical assessment found in the Turkeycock Run subwatershed, 35 percent of the streams were in poor condition and 65 percent were in fair condition. Turkeycock Run is affected by inadequate buffers, eroded stream banks, and obstructions of stream flow. Projects recommended to improve the condition of Turkeycock Run include construction of LID measures, provision of erosion control, and the addition of culverts at specific locations.

A U.S. Geological Survey (USGS) monitoring station is located at Turkeycock Run. Established in 2007, the monitoring station provides an opportunity to identify conditions and trends in water quality and quantity. The information collected can be used to evaluate the benefits of watershed improvement projects. The findings from 2007-2012 can be found online through the USGS Publications warehouse at http://pubs.er.usgs.gov/publication/sir20145073. In the future, data collected from the monitoring station can be used to evaluate how land use changes in Lincolnia affect local waterways.

What is Low-Impact Development (LID)?

LID is an approach to land development or redevelopment that works with nature to manage stormwater as close to its source as possible. LID employs principles such as preserving and recreating natural landscape features and minimizing impervious surfaces to create functional and appealing site drainage. Examples of LID include rain gardens, vegetated roofs, and permeable pavements.

Source: U.S. Environmental Protection Agency (EPA)

A rain garden on a residential property.
Source: Rain Garden Design and Construction: A Northern Virginia's Homeowner's Guide. Accessible online at: http://www.fairfaxcounty.gov/nvswcd/raingardenbk.pdf

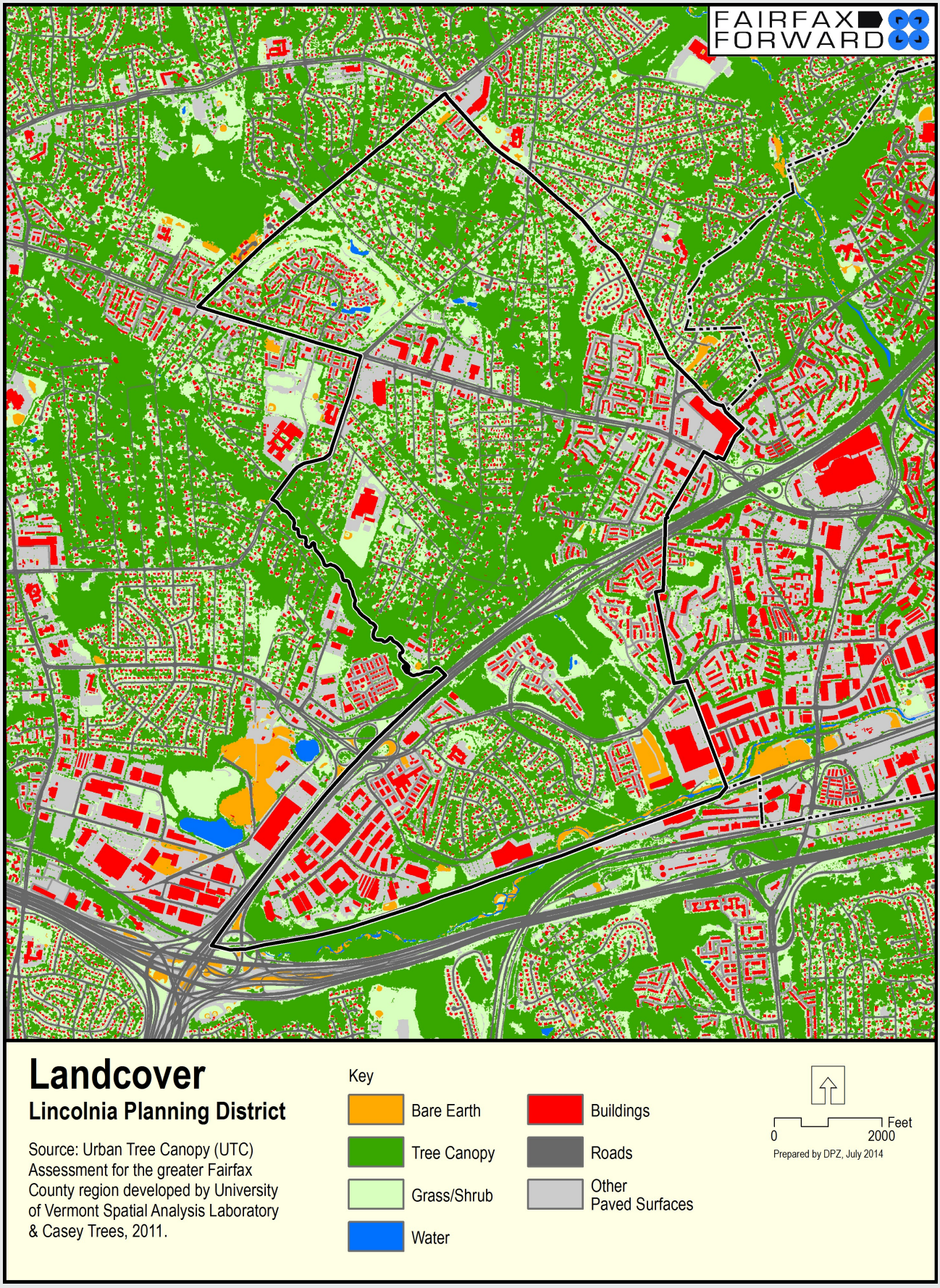

Figure 6.3 Land cover in the Lincolnia Planning District.
Source: Fairfax County DPZ/GIS

Current Regulatory Standards

In 2013, the county adopted a Stormwater Management Ordinance that will advance the goals of the Cameron Run WMP. Additionally, the Municipal Separate Storm Sewer Systems (MS4) permit mandated by the Clean Water Act and U.S. EPA regulations require the county to prevent the discharge of pollutants such as engine oil, fertilizer, and trash from MS4s into waterways to the maximum extent practicable.

Urban Forestry

Urban forestry management strives to enhance the quality of life in communities by ensuring the vitality of the urban forest and preserving the natural environment. Raising awareness about the importance of trees and forests is addressed through various countywide efforts.

The current Comprehensive Plan guidance for the Lincolnia PD states that while a majority of the planning district is developed, some sizable and largely undeveloped areas remain. The Land Cover Map (Figure 6.3) illustrates the various types of land cover within the study area which include tree canopy, buildings, roads, grass/shrub, water, cleared and unpaved surfaces, and paved surfaces such as parking lots. The map indicates a substantial amount of tree canopy that is generally associated with RPAs and/or EQCs. The Comprehensive Plan suggests these areas have not been developed due to environmental considerations and constraints such as steep slopes and slippage prone soils.

Older residential neighborhoods with relatively smaller houses on sizable lots can also contain significant forest resources. These valuable forest resources and native plant vegetation may be threatened by the potential for tear-down and rebuilding through infill lot grading, which may include redevelopment of a house or other structure with a larger footprint and/or additional ground disturbance. The planting of invasive plant species can be part of infill or new developments. Invasive species are non-native species that cause ecological or economic harm and compete with native species for the same resources.

What is a Municipal Separate Storm Sewer System (MS4)?

An MS4 is a conveyance or system of conveyances that transport stormwater runoff. MS4s are owned by a state, city, or other public entity. Polluted stormwater runoff is commonly transported through MS4s, and is often discharged untreated into local waterbodies. To prevent harmful pollutants from being washed or dumped into an MS4, localities must acquire permits for MS4s and develop a stormwater management program.

Source: U.S. EPA

Transportation Generated Noise

The Lincolnia PD is highly urbanized and predominately built-out to the maximum planned potential. The study area is traversed by several major transportation thoroughfares, including Columbia Pike, Little River Turnpike, I-395, I-495, and the Norfolk Southern Railway/Virginia Ralway Express tracks, which generate noise impacts for noise sensitive uses such as residential neighborhoods. Current county policy recommends that noise sensitive uses should be protected from the adverse impacts of transportation-generated noise.

Green Building

New development and redevelopment in the Lincolnia PD should focus on supporting the county's green building goal of using a holistic approach to reduce adverse environmental impacts of buildings and their associated facilities and landscapes. For areas in the county such as the Lincolnia PD, the Policy Plan encourages the application of energy conservation, water conservation and other green building practices in the design and construction of new development and redevelopment projects. Encouraging commitments to attain certification under established green building rating systems for individual buildings, attain the ENERGY STAR® rating where available, and the certification of new homes through an established residential green building rating system are some of the green building-related policies that are applicable to the Lincolnia PD.