

CITY OF SOMERVILLE, MASSACHUSETTS  
KATJANA BALLANTYNE  
MAYOR  
DEPARTMENT OF INFRASTRUCTURE & ASSET MANAGEMENT  
ENGINEERING DIVISION



## LOW IMPACT DEVELOPMENT AND GREEN INFRASTRUCTURE ASSESSMENT

Date: September 15, 2022

RE: Reporting on the Assessment of Low Impact Design and Green Infrastructure Regulatory Review for the 2016 Massachusetts Small Municipal Separate Storm Sewer Systems (MS4) General Permit

---

The City of Somerville (City) is permitted to discharge stormwater by the Massachusetts Small Municipal Separate Storm Sewer Systems (MS4) General Permit. We, the City, administer a Stormwater Management Program responsible for ensuring compliance with this MS4 General Permit. For the fourth permit year, permittees are required to perform an assessment of their local regulatory mechanisms that affect the creation of impervious cover and green infrastructure. This memorandum describes the methodology and results of the Somerville's such assessment.

### 1. Overview and Purpose of This Assessment

Runoff from stormwater creates challenges in urban environments, both taxing the capacity of the drainage infrastructure and providing transport of surface pollutants to local waterways. Cities like Somerville can limit these adverse effects of runoff by decreasing the total amount of stormwater that enters their drainage systems. Low Impact Development (LID) practices and Green Infrastructure (GI) promote infiltration, evapotranspiration, and other use mechanisms for stormwater runoff, decreasing the amount of runoff that ultimately enters the stormwater system. The MS4 General Permit requires that the permittee (Somerville) evaluate whether LID practices and GI are allowed, incentivized, or hindered by the permittee's regulatory mechanisms. For those practices that are hindered, the City must establish and schedule recommendations for feasible changes that better encourage LID and GI in the City.

Section 2.3.6(b) of the MS4 General Permit focuses on evaluating the guidelines on the creation of impervious cover, specifically for streets and parking lot design:

*“The permittee shall develop a report assessing current street design and parking lot guidelines and other local requirements that affect the creation of impervious cover. This assessment shall be used to provide information to allow the permittee to determine if changes to design standards for streets and parking lots can be made to support low impact design options. If the assessment indicates that changes can be made, the assessment shall include recommendations and proposed schedules to incorporate policies and standards into relevant documents and procedures to minimize impervious cover attributable to parking areas and street designs... The local planning board and local transportation board should be involved in this assessment.”*

Similarly, Section 2.3.6(c) of the MS4 General Permit requires that the permittee additionally evaluate existing regulations pertaining to the specific Green Infrastructure practices included in the quote below:

*“...the permittee shall develop a report assessing existing local regulations to determine the feasibility of making, at a minimum, the following practices allowable when appropriate site conditions exist:*

- i. Green roofs;*
- ii. Infiltration practices such as rain gardens, curb extensions, planter gardens, porous and pervious pavements, and other designs to manage stormwater using landscaping and structured or augmented soils; and*
- iii. Water harvesting devices such as rain barrels and cisterns, and the use of stormwater for non-potable uses.”*

If these practices are not allowed in the Somerville, we must determine what prevents or discourages their use and whether changes in local regulations could be made to allow them.

## **2. Methodology**

To perform this assessment, the City of Somerville utilized tools published by the Center for Watershed protection. These tools, *The Code & Ordinance Worksheet: A Tool for Evaluating Development Rules in Your Community (2017)* and accompanying *Code And Ordinance Worksheet (COW) Scoring Spreadsheet*, were designed to help communities evaluate local development regulations to identify revisions that allow or require site developers to minimize impervious cover, conserve natural areas, and use runoff reduction practices to manage stormwater. We reviewed all relevant regulatory guidance, including Somerville’s Code of Ordinances and other planning documents, for regulatory requirements and planning guidance relating to the following four categories:

- Residential Streets and Parking Lots
- Lot Development
- Conservation and Natural Areas
- Runoff Reduction

For each category, we identified specific development and infrastructure practices as being either present or absent.

### [Scoring Spreadsheet Overview \(Attachment A\)](#)

The Center for Watershed Protection’s *COW Scoring Spreadsheet* presents nearly one hundred specific questions on model development principles. These questions are further tailored to the type of community undergoing review - Somerville identifies as a highly urban landscape. The highly urban landscape is described as a community which includes historic population centers that provide commerce, civic, and cultural activities for the surrounding area. These landscapes have a pedestrian-orientation with sidewalk systems and are often served by mass transit. Public sewer and water systems are the norm here. Urban landscapes include both medium and high-density areas and primarily experience redevelopment rather than new development as there are very few unbuilt areas.

The *COW Scoring Spreadsheet* as completed for the City of Somerville can be found in Attachment A.

The review was divided into four sections of regulatory mechanisms that impact the creation of impervious area and stormwater management:

- 1. Residential Streets and Parking Lots** – Traditional design of residential streets and parking lots often prioritize impervious areas. Wide streets, cul-de-sac orientations, and large parking stall dimensions and volume requirements all lead to the creation of impervious surfaces. While these designs are important to ensure that mobility can be maintained and roads are sized to fit emergency vehicles, often more impervious area is created than is strictly necessary. This

section is designed for the identification and review of specific policies that address the limitations to impervious area and whether minimums required could be feasibly reduced in design standards. Review included regulatory mechanisms in the following categories:

- Street Dimensions and Configuration
  - Right of Way Dimensions
  - Location of Utilities
  - Parking Ratios and Volume Requirements
  - Parking Lot, Drive Lane, and Stall Dimensions
  - Parking Lot Material and Landscaping Requirements
- 2. Lot Development** – The size and shape requirements of lots determine a great deal about the amount of impervious area that is required. Lot development requirements and standards focus on lot size and shape, housing density, and overall design of neighborhoods which affect both their appearance and their capacity to minimize runoff. Review included regulatory mechanisms in the following categories:
- Open Space Design and Management
  - Setbacks and Frontage Dimensions
  - Sidewalks and Driveway Design and Materials
  - Rooftop Runoff Management
- 3. Conservation and Natural Areas** – Beyond their ecological value, maintaining existing natural areas limits the creation of impervious surfaces near critical landscapes. This section addresses codes and standards that promote, or impede, protection of existing natural areas and incorporation of open spaces into new development. Review included regulatory mechanisms in the following categories:
- Natural Buffer Systems
  - Clearing and Grading Requirements
  - Tree Conservation Requirements
  - Land Conservation Incentives
- 4. Runoff Reduction** – Targeting specific best stormwater management practices in requirements of new and re-development projects presents a clear and measurable path to achieving runoff reduction and water quality standards of receiving bodies. Clear requirements and goals make it easier for developers to meet and maintain stormwater standards. Review included regulatory mechanisms in the following categories:
- Stormwater Codes
  - Stormwater Outfalls
  - Installation & Post-Construction Maintenance of Practices
  - Off-site Compliance with Standards

### Documents and Policies Reviewed

For this assessment, the City reviewed its planning and development policies, which include municipal codes, guidelines, and numerous planning documents. The ordinances, regulations and planning efforts reviewed for this report are summarized below.

The Somerville, MA *Code of Ordinances* provide the legal framework for governance in the City. The codes most relevant to this assessment can be found in Chapters 11 and 12 of Part II of the Code of Ordinances:

**Chapter 11 – Public Works** generally outlines the duties, responsibilities, and authority of the Department of Public Works. *Article III – Division of Highways, Electric Lines and Lights* specifically describes the requirements for street and driveway design and modification. *Article VI – Division of Engineering* describes design requirements and authority relating to underground utilities and the management of stormwater runoff. *Section 11-145 – Stormwater Runoff (Article VI)* affirms the City’s commitment to limiting the creation of impervious cover:

*“On any lot in the City of Somerville, no impervious surface shall be constructed, expanded or altered such that it generates an increase in stormwater runoff onto adjacent lots or any public or private right-of-way.”*

*Article VII – Sewers* includes requirements relating to the City’s stormwater infrastructure.

**Chapter 12 – Streets, Sidewalks, and Other Public Places** generally outlines the requirements for design of and activities permitted in public spaces. *Article VI – Tree Preservation Ordinance* specifies the criteria for tree removal and the addition of new trees and shrubs and it established City positions and an Urban Forestry Committee responsible for oversight Somerville’s tree preservation policies. *Article VII – Complete Streets Ordinance* outline’s the City’s efforts to incorporate complete streets principles into new and existing streets. *Article X – Native Planting Ordinance* established minimum standards for the use of vegetation by the City.

The City also maintains the location, length, and width of public and private streets in Appendix C – City Streets of Somerville’s Code of Ordinances.

*Somerville’s Zoning Ordinance* is applicable to all real property within the City of Somerville, with exceptions for only City and State used or occupied property. *Somerville’s Zoning Ordinance* sets the land use policies for the land property in Somerville.

**General Requirements for Each Zoning District** For each zoning district included in Sections 3 through 6 of this memorandum, design standards and requirements are presented, including for the following categories:<sup>1</sup>

- Building Types Allowed
- Lot Dimensions, Building, and Parking Setbacks
- Lot Development (Lot Coverage and Green Score)
- Facade & Architectural Design Guidelines
- Use Provisions and Occupancy
- Parking & Mobility Requirements
- Public Realm & Sidewalks

**Land Platting, Landscaping, and Sustainable Development** are included as Section 10 – Development Standards. Lot dimensions are discussed in Section 10.1, which generally prohibits

---

<sup>1</sup> Some categories of design standards are not included for all zoning district types.

irregular lot shapes. Landscaping standards are defined in Section 10.3, including the requirement for regular maintenance of landscaping, landscape buffers in some zoning districts, and perimeter plating and landscape islands in parking lots. Additionally, “all existing lot area uncovered by structures or impermeable surfaces must be landscaped” by some material that does not create additional impermeable surface area. Sustainable development, Section 10.10, includes language for the use of green roofs and stormwater reuse.

**Green Score** is an environmental sustainability performance standard created for urban landscapes, discussed in Section 10.4, to incentivize elements that manage stormwater, filter pollutants, reduce urban heat island, provide habitat, sequester carbon dioxide, and improve air quality. Green Score is calculated by awarding points for landscape elements and weighting the points by the total lot area. Rather than requiring specific landscape elements for each development, each zoning district stipulates a minimum and ideal Green Score. Thus, the Green Score incentivizes and requires green development while allowing for flexibility in the design for each individual development.

**Parking & Mobility** includes guidance and requirements for both bicycle parking and motor vehicle parking. Parking space and drive aisle dimension requirements are provided in Section 11.2 as well as design standards for parking structures and provisions for special cases involving underutilized parking. Section 11.3 outlines the calculation used to “allow parking to be shared between uses on the same lot or between buildings on the same block when the actual demand for parking is less than the total number of spaces required ... for each individual use.”

**Public Realm** refers to the urban environment visible and accessible to the public, inclusive of both spaces and the building walls that frame them. Section 13.2 specifically covers thoroughfares and their required design standards.

Somerville’s *Engineering Site Permit Rules and Regulations* are applicable to redevelopment projects in the City – nearly every construction project in Somerville. These Rules and Regulations dictate how Site Project Reviews are administered and what design standards must be met. Among these design standards are those related to stormwater management including infiltration system standards, porous pavement, and Best Management Practice (BMP) design.

Somerville’s Traffic Rules & Regulations outline the various rules for operating vehicles in the City. It includes a description and framework for the Neighborhood Traffic Management & Calming Program in Article XIV.

In addition to the regulatory framework presented above, the City has been aggressive in our planning efforts – many of which acknowledge the importance of stormwater management and create goals for the City moving forward. Though the reports created out of these efforts are non-binding, they illustrate the City’s commitment to stormwater management and its vision and broad goals for the future. The following planning documents were reviewed for this assessment and are available at [somervillema.gov](http://somervillema.gov).

Relevant City Planning Efforts
SomerVision2040 Comprehensive Plan (2021)
Green Stormwater Infrastructure Planning & Guidance Document
City of Somerville Climate Change Vulnerability Assessment (2017)
Somerville Climate Forward: Somerville’s Community Climate Change Plan (2018)
Urban Forest Management Plan (2021)

Somerville Open Space & Recreation Plan: 2016 – 2023
A Snapshot of Public Space, Public Life in Somerville, MA (2016)
Open Space Creation Task Force Strategy Memo (2019)
Citywide Drainage and Water Quality Master Plan (2021)
Somerville’s Streets: An Overview of Policies and Plans
City of Somerville Traffic Calming Program

Multiple City staff and departments were engaged in gathering these reports and discussion of their contents. The following departments and offices were included in the development of the above list and were consulted in the development of this assessment report: Department of Infrastructure and Asset Management, Department of Public Works, and the Office of Strategic Planning and Community Development.

### 3. Analysis

For our analysis, we compared the City’s regulatory documents and policies, as described in Section 2 above, with the development standards presented in the *COW Scoring Spreadsheet*. The completed spreadsheet can be found in Attachment A. Analysis is presented in the four categories: Residential Street and Parking Lots, Lot Development, Conversation and Natural Areas, and Runoff Reduction. For each category, we have identified ways in which the City meets model development standards and opportunities for improvement, if applicable. It should be noted that Somerville is a highly urbanized, highly developed City, with little room for new development. Most projects in Somerville are redevelopment projects, proposed either by private developers or the City through annual improvement projects. Thus, our analysis reflects Somerville’s unique development landscape.

#### Residential Streets and Parking Lots

From bike lane construction to green infrastructure, Somerville is committed to thoughtful streetscape design. Working alongside city planners and engineers, our Mobility Division is tasked with the planning, design, implementation, and evaluation of street design within the City. Their involvement in street reconstruction and private development projects ensures that mobility and mode shift goals are considered whenever street construction is planned. Though few new streets are built annually, Somerville maintains robust guidelines and requirements for street design that do not needlessly create impervious area.

Section 13.2 of *Somerville’s Zoning Ordinance* outlines the requirements for the development of any new thoroughfare. Notably, a Throughfare Permit is necessary following a Site Plan Approval, and all must be designed according to the most current edition of the National Association of City Transportation Officials (NACTO) street design guidelines. Thoroughfares must be engineered and constructed as required by the City Engineer, in consultation with the Director of Public Space & Urban Forestry as necessary. Standards, including roadway dimensions, for specific thoroughfare types are also prescribed. The minimum roadway and right-of-way dimensions are not needlessly large – while still allowing for emergency vehicle use, these minimums are small enough that they do not require an excessive amount of impervious surface for a given roadway. In special cases, exceptions have been made to these minimums, further reducing the amount of impervious area created. Inefficient roadway layouts, such as cul-de-sacs, are prohibited. For existing roadways, curb extensions are permitted and are often added to roadways as part of Somerville’s Traffic Management and Calming Program. Utilities are required to be placed under the paved section of the right-of-way to limit cleaning and allow a compact development footprint.

The nearly complete Somerville Avenue Utilities and Streetscape Improvements Project is a relevant and recent example of streetscape designed with stormwater in mind. Below grade, we added a large concrete culvert beneath Somerville Avenue which will serve as stormwater storage, increasing capacity of our stormwater infrastructure and decreasing flooding. Above grade, green stormwater infrastructure was added, including new planted areas, bioretention, and permeable surfaces on bike paths. Combined, these will collect and filter runoff from 25% of the project area and make for a reduction of 0.7 acres of impervious surface.

Parking requirements in Somerville, as outlined in *Somerville's Zoning Ordinance*, reflect local demand. The required ratio varies by the zoning district, use, and proximity to public transit, and they can be negotiated with developers in areas of highest demand. Shared parking, which is identified in the ordinance to “help reduce impermeable surfaces and stormwater runoff and pollution,” is allowed and encouraged, based on a calculation presented in *Section 11.3 Shared Parking*. Minimum required parking lot dimensions are smaller than industry standard, surface parking is prohibited in some zoning districts, and natural landscaping is required in large lots. Still, we are seeking to optimize our use of streetscape area and undergoing a Parking & Curb Use Study to inform future parking policy in the City.

Parking and thoroughfare space in Somerville is in high demand, and so paved areas are already limited and thoughtfully managed. No new changes to the policies and requirements governing these areas are recommended at this time.

### Lot Development & Sidewalks

Large lots and substantial setback and frontage requirements can inadvertently increase impervious area by increasing the amount of driveway and sidewalk surface needed. Despite having strict limitations on irregularly shaped lots, which often mitigate the effect of these requirements, the lot development standards in Somerville generally do not contribute to needless creation of impervious area. Lot sizes are already quite small in Somerville, with the median residential lot size in Somerville approximately 3,500 square feet<sup>2</sup>. Per *Somerville's Code of Ordinances: Chapter 11, Article III §11.88 Driveway Construction*, a permit for a new driveway must be approved by the City Engineer and meet the requirements of *Somerville's Zoning Ordinance*. For residential zoning districts, “driveways must be paved with paving stones, grass pavers, pervious concrete, or porous asphalt unless graded to direct runoff onto onsite permeable areas or granted a waiver by the City Engineer to mitigate adverse site conditions. Ribbon driveways are encouraged.” Maximum driveway widths are prescribed for each zoning district ranging between 12 feet for residential districts and 24 feet for all else. These maximum widths are excessive and in practice are rarely met. It is recommended that Somerville decrease the minimum width requirements of driveways to 9 feet for single lane and 18 feet for two lanes.

The design of Somerville's sidewalks must incorporate Americans with Disabilities Act (ADA) requirements as well as those for increased mobility and decreased impervious area. Section 13.2 of *Somerville's Zoning Ordinance* requires that large trees be planted in sidewalks for all new thoroughfares with appropriate accommodation for root growth. Trench drains are often used to maximize water infiltration into the soil provided for street trees.

---

<sup>2</sup> From Section 4. Residential Land Use (p4-8) *Trends in Somerville: Land Use Technical Report*. May 2011. City of Somerville Office of Strategic Planning and Community Development.



Utilizing rooftops to capture runoff is allowed and encouraged in Somerville, though no green roofs have been installed in the City to date. Temporary storage of rainwater in storage tanks however, such as in rain barrels or cisterns, is permitted in Massachusetts and Somerville has run programs to assist residents in acquiring rain barrels in the past. Additionally, the Section 10.10 of *Somerville's Zoning Ordinance* states that stormwater should be reused onsite for irrigation or other purposes to every extent practicable, with potential incentives in the form of credits against stormwater impact fees for the use of green roofs or other onsite stormwater management practices.

### Conservation and Natural Areas

There is minimal conservation or natural area in Somerville that is under the City's jurisdiction; much of the land abutting the Alewife Brook or Mystic River is owned by state agencies. However, Somerville makes great effort to preserve our smaller natural areas and individual trees. Much of this is covered in the City's *Tree Preservation Ordinance*, one goal of which is to reduce topsoil erosion and stormwater runoff. The ordinance establishes requirements for both public and private tree removal and City positions responsible for overseeing the requirements of the ordinance and Somerville's urban forest. In 2021, Somerville completed an Urban Forest Management Plan outlining goals including an increase to the number of native trees and vegetation through the City's own tree planting program and private development. There are some additional requirements in *Somerville's Zoning Ordinance* for landscaping such as the need for a separate permit for a lot with a steep slope. Much of the natural landscaping requirements for development are included in the discussion of Green Score below.

### Runoff Reduction

Per *Somerville's Code of Ordinances: Chapter 11, Article VI §11.146 Managing Adverse Impacts of Stormwater Runoff*, the *Engineering Site Permit Rules & Regulations* govern much of the requirements for stormwater runoff best management practices (BMPs) in new and redevelopment. For all projects designated "medium" and "large," the following are required in the Site Permit Application:

- Runoff hydrology calculation and stormwater management system
- Water quality calculations for Total Suspended Solids and Total Phosphorus (large projects only)
- Sediment & Erosion Control Plan (large projects only)

These requirements ensure that developments are meeting standards for best practice in stormwater management. The designs are held to stringent design standards outlined in the *Engineering Site Permit Rules & Regulations*, including allowances for inspections of stormwater BMPs though there is room for more explicit language granting runoff reduction practice easements and inspector right-of-way. For "medium" and "large" projects, design standards require that "Low Impact Development (LID) site planning and design strategies must be used to the maximum extent feasible," and that there may be "no increase in runoff volume or peak from across all property lines and drainage outlets."

### About the "Green Score"

Unique to Somerville is our "Green Score," a tool used to incentivize urban landscape elements that manage stormwater, filter pollutants, reduce the urban heat island, provide habitat, sequester carbon dioxide, and improve air quality. Rather than requiring individual design elements for every development, the Green Score allows developers to select design elements that work best for their property while still prioritizing elements of green infrastructure. For any new or substantial renovation to a principal building, a developer must meet a minimum Green Score according to the project's zoning district. The score itself is calculated as the combined weighted value of all landscape elements divided by the total land area of a lot. Landscaped areas that earn a higher Green Score correlate to a higher environmental sustainability than sites that earn a lower score. Green Score bonus credit can also be earned for actions such as depaving a lot area or



ensuring that 50% of irrigation is harvested rainwater. Landscape elements that receive credit towards a Green Score are presented in the table below.

<b>Green Score Eligible Landscaping Elements</b>	
<b>Soils:</b>	
	Landscaped areas with a soil depth < 24"
	Landscaped areas with a soil depth ≥ 24"
	Pervious paving with 6-24" of subsurface soil or gravel
	Pervious paving > 24" of subsurface soil or gravel
<b>Ground Cover</b>	
	Turfgrass, mulch, and inorganic surfacing materials
<b>Plants</b>	
	Vegetation < 2' tall at maturity
	Vegetation ≥ 2' tall at maturity
<b>Trees</b>	
	Small Tree
	Large Tree
	Preserved Tree
<b>Engineered Landscape</b>	
	Vegetated Wall
	Rain gardens, bioswales, and stormwater planters
	Green roof < 6" of growth medium
	Green roof with 6" – 10" growth medium
	Green roof with 10" – 24" growth medium
	Green roof > 24" growth medium

A full description of the Green Score is provided in Section 10.4 of *Somerville's Zoning Ordinance*.

#### **4. Recommendations and Implementation Schedule**

Somerville has a robust set of regulatory mechanisms and design standards that incentivize and require Low Impact Development practices and Green Infrastructure. In our analysis, however, we have identified three areas when a change in our ordinances could enable improved stormwater management practices. Recommendations for these two areas and their implementation schedule goals are presented in the table below.

Recommendation	Implementation Schedule
1. Update <i>Somerville's Zoning Ordinance</i> to reduce minimum driveway widths.	June 2025
2. Consider adding provisions for runoff reduction practice easements and inspector right of entry to <i>Somerville's Code of Ordinances</i> .	June 2025
3. Develop procedures for managing and inspecting private BMPs, and for verifying that private BMPs are properly operated and maintained.	June 2025

ATTACHMENT A

*Code And Ordinance Worksheet (COW) Scoring Spreadsheet,*

The COW Scoring Spreadsheet was designed to help communities evaluate their local development regulations to identify revisions that allow or require site developers to minimize impervious cover, conserve natural areas, and use runoff reduction practices to manage stormwater. For detailed instructions on using the COW Scoring Spreadsheet, see *The Code and Ordinance Worksheet: A Tool for Evaluating the Development Rules in Your Community*. This document is available for free download on <https://owl.cwp.org> and was published by the Center for Watershed Protection in 2017.

Copyright © 2017 Center for Watershed Protection, Inc.  
Material may be quoted provided credit is given

INSTRUCTIONS: For all "Yes" answers, enter the associated number of points in the Yes column. BLUE questions are worth two points; ORANGE questions are worth 0.5 points. All other questions are worth 1 point. If the answer is "No", "N/A" or if the codes do not address the question, put an "X" in the appropriate column.

Question		Total Possible Points	Yes	No	N/A	Codes are Silent
<b>Code Area</b>						
<b>Street Width</b>						
1	Is the minimum roadway width allowed for streets in neighborhoods with low volume roads (less than 400 average daily trips according to AASHTO, 2001) between 18-22 feet (where bicycle lanes are not present)?	1	1			
2	Are curb extensions that narrow the roadway (such as pinchpoints, gateways, and chicanes) permissible?	1	1			
3	Are permeable paving materials allowable on low-use streets and/or parking lanes?	1	1			
<b>Street Length</b>						
4	Does the subdivision, Planned Unit Development, or Unified Development ordinance identify reducing street length as a goal of neighborhood street design?	1		X		
<b>Right-of-Way Width</b>						
5	Is the recommended right-of-way width for a low-volume residential street less than 45 feet?	1		X		
6	Does the code allow utilities to be placed under the paved section of the right-of-way to limit clearing and allow compact development footprint?	1	1			
7	If street trees are required, is the planting area required to be at least 6 feet to provide sufficient rooting space to support large trees?	1	1			
<b>Cul-de-Sacs</b>						
8	Do the street or subdivision standards allow street layouts that minimize the use of cul-de-sacs?	1	1			
9	Is the minimum radius for cul-de-sacs 48 feet or less?					
10	Can a landscaped island be created within the cul-de-sac?					

Question			Total Possible Points	Yes	No	N/A	Codes are Silent
		<i>Yes, and the cul-de-sac must be graded to the island with an overflow to the storm drain system, so that it can be used for stormwater treatment (2 pts.)</i>					
		<i>Yes, but curbing is required or the island must be raised, limiting its use for stormwater treatment (1 pt.)</i>					
<b>11</b>		Are alternative turnarounds such as hammerheads and loop roads allowed?					
		<i>Yes, alternative turnarounds are specifically mentioned in the ordinance with specific design/construction guidance provided by reference</i>					
		<i>Yes, alternative turnarounds are allowed, but no specific guidance provided on design</i>					

Question		Total Possible Points	Yes	No	N/A	Codes are Silent
<b>Vegetated Open Channels</b>						
<b>12</b>	Are open section vegetated channels allowed where density, topography, soils, and slope permit?					
<b>13</b>	Are runoff reduction practices permissible within curb extensions or landscape strips?					
<b>Parking Ratios</b>						
<b>14</b>	Do parking ratios reflect local parking demand?	1				
	<i>Yes, they are based on a local study of parking demand, or are based on ITE or ULI values and adjusted for local conditions.</i>		1			
	<i>No, we simply use the ITE or ULI values, base them on a neighboring community's standards, or we do not know where they came from.</i>					
<b>15</b>	Are parking requirements set as maximums?	1				
			1			
<b>Parking Codes</b>						
<b>16</b>	Are shared parking arrangements allowed?					
	<i>Yes, shared parking is allowed by-right (2 pts.)</i>	2	2			
	<i>Yes, shared parking is allowed with special exception (1 pt.)</i>					
<b>17</b>	Are parking ratios reduced if shared parking arrangements are in place?	1	1			
<b>18</b>	Is the parking ratio reduced when multi-modal transit (e.g., mass transit, bike share or car share programs) is provided?	1	1			
<b>19</b>	Can the number of parking spaces be reduced and additional parking be maintained as green space until needed for redevelopment projects?	1				X



Question		Total Possible Points	Yes	No	N/A	Codes are Silent
20	Are parking credits provided when nearby on-street parking is available?	1	1			
<b>Parking Lots</b>						
21	Is the minimum stall width for a standard parking space 9 feet or less?	1	1			
22	Is the minimum stall length for a standard parking space 18 feet or less?	1	1			
23	Is a fixed proportion (eg., 15%) of the spaces at larger commercial parking lots required to have smaller dimensions for compact cars?	1		X		
24	Can pervious materials be used for parking areas, including spillover or special event parking? (2 pts.)	2	2			
<b>Structured Parking</b>						
25	Are there any incentives for developers to provide parking within garages rather than surface parking lots?	1	1			
<b>Parking Lot Runoff</b>						
26	Is a minimum percentage of a parking lot required to be landscaped? (2 pts.)	2	2			
27	Is the use of runoff reduction practices within landscaped areas, setbacks, or parking areas allowed? (2 pts.)	2	2			
28	Are flush curbs and/or curb cuts and depressed landscaped areas allowed so that runoff can be directed into vegetated landscaped islands or runoff reduction practices?	1	1			
29	Are dimensions for landscaped areas sufficient to plant large trees?	1				
	<i>Yes, a minimum width 6 feet or greater is specified</i>		1			
	<i>No, a minimum width less than 6 feet is specified</i>					

Question		Total Possible Points	Yes	No	N/A	Codes are Silent
<b>30</b>	Do vegetated stormwater management areas count toward required landscape minimums?	1	1			
<b>Open Space Design</b>						
<b>31</b>	Do the ordinances require or allow open space subdivisions?					
	<i>Yes, they are required in a designated open space zoning district (2 pts.)</i>					
	<i>Yes, open space designs are an allowable option (through an overlay zone) (1 pt.)</i>					
<b>32</b>	Is land conservation or impervious cover reduction a major stated goal or objective of the open space design ordinance?					
<b>33</b>	Is a minimum percentage of the buildable portion of the site required to be set aside as open space?					
	<i>Yes, at least 50% (2 pts.)</i>					
	<i>Yes, less than 50% (1 pt.)</i>					
<b>34</b>	Is the open space determined through a stepwise design process where open space is identified first?					
<b>35</b>	Is open space design a by-right form of development versus a more burdensome conditional use or warrant?					
<b>36</b>	Are flexible site design criteria available for developers that utilize open space or cluster design options (e.g., setbacks/lot lines, road widths, lot sizes and shapes)?					
<b>37</b>	Are density bonuses and/or penalties used to encourage use of open space design?					
	<i>Yes, density penalties are given for conventional development. (2 pts.)</i>					
	<i>Yes, density bonuses are provided for open space designs that exceed the minimum requirements for open space protection, up to an established maximum. (2 pts.)</i>					
	<i>Yes, density bonuses are provided for open space designs that exceed the minimum requirements for open space protection, with no cap on density bonuses. (1 pt.)</i>					
<b>Setbacks and Frontages</b>						
<b>38</b>	Are irregular lot shapes (e.g., pie-shaped, flag lots, zipper lots) allowed in the community?	1		X		
<b>39</b>	Does the code allow for variances to setback and frontage requirements?	1		X		
<b>Sidewalks</b>						
<b>40</b>	Can minimum sidewalk widths for residential neighborhoods be reduced to 5 feet where safe and appropriate? (2 pts.)					
<b>41</b>	Can alternate pedestrian networks (e.g., paved trails through common areas, walkways and bike trails connecting cul-de-sacs to other streets) be substituted for sidewalks in the right-of-way?					
<b>42</b>	Are alternative sidewalk designs that provide sufficient soil rooting volume for street trees (e.g., pop-outs or bulb-outs, curving sidewalks, tree islands) allowed?	1	1			
<b>43</b>	Are alternative sidewalk construction materials that increase infiltration allowed?	1	1			

		Question	Total Possible Points	Yes	No	N/A	Codes are Silent
<b>Driveways</b>							
	<b>44</b>	Are minimum driveway widths 9 feet or less (one lane) or 18 feet or less (two lanes)?	1		X		
	<b>45</b>	Can pervious materials (e.g., grass, gravel, permeable pavers, etc.) be used for residential driveways? (2 pts.)	2	2			
	<b>46</b>	Can a "two track" design be used for residential driveways?	1	1			
	<b>47</b>	Are shared driveways permitted in residential developments?	1	1			
<b>Open Space Management</b>							
	<b>48</b>	Does the open space design ordinance require identification of an entity (e.g., conservation organization, community association) who will be responsible for managing the open space? (2 pts.)					
	<b>49</b>	Can open space be managed by a land trust or other qualified public or private land conservation organization (e.g., municipal parks department) through conservation easements or transfer of ownership?					
	<b>50</b>	If open space cannot be managed by a third party, are there enforceable requirements to establish an association that can effectively manage the open space?					
	<b>51</b>	Are secure and permanent funding arrangements required to be established for the long-term management and maintenance of open space?					
	<b>52</b>	Are there standards for the open space requiring interconnections, prioritized lists of resources to be conserved, and access standards?					
	<b>53</b>	Are allowable and unallowable uses for open space in residential developments defined?					
	<b>54</b>	Are long-term management plans that conserve natural systems required for all open space areas?					
	<b>55</b>	Is open space in a natural condition required to be protected in perpetuity by a binding conservation easement or similar legal instrument?					
<b>Rooftop Runoff</b>							
	<b>56</b>	Can downspouts be disconnected such that rooftop runoff flows to storage tanks, pervious areas, runoff reduction practices, etc.? (2 pts.)					
	<b>57</b>	Do current grading or drainage requirements allow for temporary ponding of stormwater on front yards or rooftops? (2 pts.)	2	2			
	<b>58</b>	Is temporary storage of rainwater in storage tanks (e.g., rain barrels or cisterns) permitted?	1	1			

Question		Total Possible Points	Yes	No	N/A	Codes are Silent
59	Do the stormwater BMP design specifications for green roofs address structural concerns (e.g. how to determine design load of roof)?	1		X		
60	Do local plumbing codes allow harvested rainwater for exterior uses such as irrigation and non-potable interior uses such as toilet flushing?	1	1			
<b>Buffer Systems</b>						
61	Do the development standards in the community require a vegetated buffer along waterways?	2	2			
62	Is the definition of waterway, or the regulated buffer, expansive enough to include (check all that apply):					
	<i>Perennial streams (0.5 pts.)</i>					
	<i>Ephemeral and intermittent streams (0.5 pts.)</i>					
	<i>Lakes (0.5 pts.)</i>					
	<i>Estuaries and shorelines (0.5 pts.)</i>					
	<i>Wetlands (0.5 pts.)</i>					
	<i>Vernal Ponds (0.5 pts.)</i>					
63	Is the minimum buffer width 50 feet or more?					
	<i>Yes, width is 100 feet or greater (2 pts.)</i>					
	<i>Yes, width is between 50-99 feet (1 pt.)</i>					
	<i>No, width is &lt; 50 feet</i>					
64	Are buffer widths greater for sensitive resources (e.g., designated high quality streams) or in certain zones (e.g., drinking water protection)?					
65	Is expansion of the buffer to include adjacent wetlands, steep slopes, or the 100-year floodplain required?					
<b>Buffer Management</b>						
66	Does the buffer ordinance specify that a minimum percentage of the buffer be maintained with native vegetation? (2 pts.)	2	2			
67	Does the buffer ordinance outline prohibited uses and permitted uses that have little impact to the vegetated buffer?	1	1			
68	Does the ordinance specify enforcement mechanisms?	1	1			
69	Does the buffer ordinance specify a preference for buffers to be located on a parcel of common ownership (e.g., a homeowners' association)?					
<b>Clearing and Grading</b>						
70	Is there any ordinance that requires the preservation of native soils, hydric soils, natural vegetation, or steep slopes at development sites? (2 pts.)	2		X		
71	Do regulations limit the total portion of the site that can be cleared?	1	1			
72	Are the limits of disturbance required to be shown on construction plans and physically marked at the site?	1		X		
73	Are reserve septic field areas allowed to be left undisturbed until needed?					
<b>Tree Conservation</b>						

Question		Total Possible Points	Yes	No	N/A	Codes are Silent
<b>74</b>	Is a natural resources inventory required to identify and map natural areas?	2		X		
	<i>Yes, and significant natural areas such as high quality forest stands, wildlife habitat and travel corridors, productive cropland, and specimen trees must be identified (2 pts.)</i>					
	<i>Yes, but no requirements to assess resource quality. (1 pt.)</i>					
<b>75</b>	Is there an ordinance that requires conservation of some portion of forests, specimen trees, or other native vegetation at development sites?	2				
	<i>Yes, specific conservation thresholds are identified (2 pts.)</i>					
	<i>Answer Yes, no specific conservation thresholds identified (1 pt.)</i>		1			
<b>76</b>	Do tree conservation requirements identify or reference methods for delineating and protecting the critical root zone of trees (sometimes referred to as "drip line")?	1	1			
<b>77</b>	Do forest/tree conservation requirements specify planting new trees at sites where none exist?	1	0.5			
<b>78</b>	Are trees and native plant materials permissible for landscaping in yards, common areas, and other open spaces?	2				
	<i>Yes, some portion of landscaping must include trees and other native vegetation provided in recommended species list. (2 pts.)</i>					
	<i>Yes, trees and native vegetation are allowed per recommended species list (1 pt.)</i>		1			
	<i>No, landscaping ordinance requires turfgrass or includes vegetation height standards that preclude use of native plants</i>					
<b>79</b>	Does the community have an urban forestry plan that supports/is referenced by the landscaping ordinance?	1	1			
<b>80</b>	Do landscaping requirements identify or reference specifications for soil amendments, planting methods, species selection, and maintenance?	1	1			
<b>Land Conservation Incentives</b>						
<b>81</b>	Are there any incentives to developers (e.g., open space design, density bonuses, stormwater credits, or expedited design review) to conserve land above and beyond what is already required (e.g., steep slopes, wetlands)? (2 pts.)	2		X		
<b>82</b>	Is flexibility to meet land conservation requirements (e.g. density compensation, buffer or lot averaging, transferable development rights, off-site mitigation) offered to developers? (2 pts.)	2		X		
<b>Stormwater Outfalls</b>						
<b>83</b>	Does the stormwater code contain special treatment criteria for discharges to impaired or sensitive waters, such as natural wetlands, lakes, trout streams, nutrient-sensitive estuaries, drinking water supplies, etc.? (2 pts.)	2	2			
<b>84</b>	Does a floodplain management ordinance exist that restricts or prohibits development within the 100-year floodplain? (2 pts.)	2	2			
<b>85</b>	Is there a local wetland protection ordinance?					
<b>Stormwater Codes</b>						
<b>86</b>	Do codes define rainwater harvesting and establish acceptable uses for rainwater (e.g., irrigation and toilet flushing) and corresponding treatment requirements?	1	1			





