"Examine each question in terms of what is ethically and aesthetically right, as well as what is economically expedient. A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."

— Aldo Leopold, A Sand County Almanac and Sketches Here and There

CONTENTS

USING THE AUDIT TOOL

The goals of the audit tool are:

1. Identify regulations that directly prohibit or are ambiguous, contradictory or silent on the use of green infrastructure practices
2. Identify regulations pertaining to parking, frontage and streetscapes that could be updated and amended to reduce impervious surfacing requirements
3. Identify conditional uses in zoning districts that are potential sources of stormwater pollution and determine if additional standards are in place to protect water quality

Questions related to impervious surfacing requirements — parking standards, roadway widths, public safety access areas, etc. — are also included in the audit because the reduction of impervious surfaces and effective impervious areas reduces the volume of stormwater that must be managed, and can significantly improve water quality in a community's rivers and streams.

The audit also includes questions regarding supplemental standards and review requirements for conditional or "hot spot" land uses. These are land uses that have a higher potential to contribute to stormwater runoff pollution and include animal-related facilities; establishments producing grease and food waste; contractor and municipal yards with outdoor storage areas; landscaping and garden centers with outdoor use of water, pesticides and fertilizers; and gas stations and any type of vehicle repair or fueling station. Stormwater runoff from these types of land uses can be a significant source of bacteria and pathogens, sediment, nutrients and toxic chemicals, but this can be addressed through site plan standards and stormwater treatment practices.

Each section of the audit tool addresses a key code and ordinance topic area where green infrastructure and impervious surfacing barriers are found. The topic areas are:

- Architectural Design Standards
- Coastal Hazards
- Community Outreach and Education
- Construction and Post-Construction Management
- Landscaping
- Parking
- Permeable Materials and Surfacing
- Pollutant Reduction Through Site Plan Review
- Post-Construction Stormwater Standards and Long-Term Maintenance
- Public Works Standards
- Purpose Statements and Community Plans
- Sanitary and Storm Sewer Disconnections
- Stormwater Management Standards
- Subdivisions and New "Greenfield" Development
- Zoning

Scoring

You will answer questions about your codes and ordinances to determine if they are preventing green infrastructure implementation or resulting in the spread of impervious surfaces.

While a clear "yes," "no" or "question" response would be ideal, in practice, an answer to a question is often more nuanced. For example, a "yes" response may be dependent upon staff approval. You are also likely to find a practice that is permitted in one section is contradicted in a different section of the regulations. For example, pervious pavement might be allowed in one section of the code, but in another, all paved surfaces are required to be seal coated, which cancels any benefit of using permeable material. The scoring matrix (A+, A, A-, B, C, D, F) was developed to help identify code nuances and internal conflicts.

Using the scoring matrix, you will indicate whether a code, policy or operation is creating a barrier with regard to green infrastructure. The code language is considered a barrier to green infrastructure implementation if it:

- Contains language prohibiting or unintentionally discouraging the use of a green infrastructure practice;
- Includes ambiguous or unclear language about the use of a green infrastructure practice;
- Is silent on the topic or practice with no statement that identifies green infrastructure as a potential, acceptable practice; or
- Allows a practice in one area of the code but prohibits or disallows in another.

An example of grading classifications and a completed audit section follows.

The **barrier** column indicates where you could encounter a barrier in the community's codes and ordinances. This could include a type of code, policy or specific operational code. It may be necessary to check several areas within the code to determine if a practice is fully enabled or if it is restricted by other sections of the code.

Use this column to note **code references and language** that you find related to the audit question.

Assign the audit question a **grade** by using the scoring matrix. Compile the grades in the report card at the end of the audit to help you identify areas of the code where barriers exist.

Are there supplemental provisions for protecting or buffering wetlands that are above state requirements?

Barrier	Tips	Code References and Language	Notes, Ideas and Strategies	Grade
Subdivision Planned unit development Supplemental regulations	Many communities require additional setbacks and/or demarcation with fencing or plantings along wetland buffers.			

Tips give context and suggestions on how to approach the audit question.

Use the **notes, ideas and strategies** column to write down suggestions for overcoming code barriers or improving language.

YOUR GREEN INFRASTRUCTURE AUDIT

The scoring matrix helps indicate whether a code, policy or operation is enabling, conditional, ambiguous, discouraging or conflicted with regards to green infrastructure. An example of an audit question and grading follows.

Most local regulations are available online and can be downloaded as a document. As you use the audit tool to work through the codes and ordinances, highlight the language in the particular regulation for potential amendment and make note of it on the audit tool for easy reference.

Record your grades on the report card in this book or download a copy at **gowisc.edu/greenreportcard.**

A+	Practice is enabled and described specifically; clearly allowed and approved as-of-right
A	Practice is specifically allowable/ as-of-right approval, but some ambiguity or potential conflict
A–	Practice is enabled or encouraged, with discretionary approval
B	Practice is mentioned but without standards or guidance for use
C	No policy or standards adopted, but not disallowed
D	Limitations or prohibitive language in the code, but could potentially be approved
F	Practice prohibited by code language, or an active conflict would prevent approval

EXAMPLE OF SCORING MATRIX CLASSIFICATIONS

Examples of code language for each classification and [justification or explanation of scoring]

Do parking lot edge landscaping requirements (islands and edges) specifically allow or encourage use as stormwater control areas? Is a standard adopted?		
Grade	**Classification**	**Details and comments**
A+	Practice is enabled and described specifically; clearly allowed and approved as-of-right	Perimeter landscape areas shall be designed and installed to function as stormwater management areas or, where not required for stormwater management, to provide naturalized landscaping. A combination of vertical features such as green walls and fencing, along with a mix of plantings, shall be used to provide sufficient visual screening of the parking lot area. [Landscape areas are clearly intended to be designed for stormwater management function.]
A	Practice is specifically allowable/as-of-right approval, but some ambiguity or potential conflict	The use of perimeter landscape areas to infiltrate and treat stormwater is strongly encouraged; however, the plan commission shall require at a minimum one tree or woody shrub every ten (10) linear feet within the perimeter landscape area. [Encourages use of landscaping for stormwater management, but requires woody plantings at specific intervals that could conflict with bioretention designs.]
A–	Practice is enabled or encouraged, with discretionary approval	The use of perimeter landscape areas for bioretention, swales or other stormwater may be approved by the plan commission so long as the visual screening intent of this Section is accomplished through a combination of fencing, tree planting and vegetation. [The plan commission has discretionary approval (may or may not approve) and the listed standards for what the applicant must accomplish are not specific.]
B	Practice is mentioned but without standards or guidance for use	Portions of perimeter landscape areas may be designed as swales if approved by the plan commission. [Approval is discretionary and standards for what situations would be approvable are not specified.]
C	No policy or standards adopted, but not disallowed	Perimeter landscape areas shall be designed to accomplish 75% opacity within two years of planting. [While it can be difficult to design a perimeter landscape as a bioretention area and to achieve 75% opacity, it is potentially allowable.]
D	Limitations or prohibitive language in the code, but could potentially be approved	Perimeter landscape buffers shall be comprised of landforms, lawn areas, ground cover, shade trees, flowering trees, evergreen trees, shrubs and flowers. [While stormwater management or bioretention is not specifically prohibited, neither bioretention nor 'grasses' are listed; language "shall be" often interpreted to mean that no plantings or uses are allowed other than those listed.]
F	Practice prohibited by code language, or an active conflict would prevent approval	Perimeter landscape areas shall be graded into a berm or landform with a minimum slope of 2:1 topped by a planting plan that will form a dense evergreen screen within two years of planting. [Does not allow for water inflow or native plantings.]

EXAMPLE OF COMPLETED AUDIT TOOL QUESTIONS

An example of a completed Architectural Design Standard section of the audit tool

Are rainwater-harvesting and stormwater-control elements acknowledged in design standards?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Design guidelines Architectural standards	Include illustrations or definitions of green roofs, planter boxes and cisterns; this ensures reviewers and designers will know that these elements are allowed or encouraged.	None. No mention of "rain barrel" or "cistern" anywhere in our municipal code, zoning or historic district, but it doesn't say that they are not allowed. Zoning administration hasn't had complaints but wonders if they're legal within the required setbacks. **[Select B for "not mentioned, not prohibited."]**	Add to the list of accessory structures in Section 24.3 that are exempt from zoning permits and setbacks, "a maximum of two rain barrels or cisterns up to 100 gallons each." Ask at landscape center whether people have requested or bought larger rainwater tanks. Discuss if bigger tanks should require plan commission review during upcoming meeting on misc. zoning issues.	B

Are green infrastructure practices suitable for high-density areas (e.g., planter boxes, cisterns) allowed to extend into the right-of-way or onto sidewalks?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Municipal code Design guidelines Architectural standards Table of dimensional standards	Most zoning ordinances specify what elements, like awnings or signs, may extend into the public right-of-way. Planter boxes and cisterns often need to be added to this list and allowed to extend at least 24 inches into the right-of-way or other setbacks.	Village Code Chapter 8.3(b) states, "No portion of any building or structure may extend into the right-of-way." Zoning administration says a structural planter box might be allowed if trustees approved it but isn't sure. **[Select D for "prohibitive language, but possible option for approval."]**	Ask university extension staff for photos of planter boxes along village street and in other communities so the Architectural Advisory Committee can see what these look like and make a recommendation.	D

EXAMPLE OF COMPLETED AUDIT TOOL QUESTIONS (continued)

Do design standards allow siting of stormwater-control measures along façade?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Design guidelines Architectural standards Zoning setbacks	Zoning often will limit the structures that can be attached to a building façade or located within a setback. Codes should specify that rain barrels or cisterns and planter boxes may be sited along façades or extend into setbacks.	Village Design Guidelines show photos and illustrations of planter boxes along façades, but they don't say that they're for "stormwater control" or give allowable dimensions. **[Select A- for "allowable, but no specific guidance or standards."]**	In our next revision, add a note to the Design Guidelines that states: "Planter boxes are designed to treat stormwater runoff and approval by the village engineer is encouraged." Have the municipal planner make a note that planter boxes should be encouraged when talking to applicants.	A-

Do standards allow for the waiver of design or architectural provisions to accommodate stormwater-control measures (planters, cisterns, green roofs, etc.)?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Design guidelines Architectural standards Zoning setbacks	Where a community provides for waivers of architectural standards, "siting of green infrastructure measures" should be a specific reason for the grant of a waiver.	The Historic Overlay District prohibits "non-historic features" from being attached to any building façade or sited in a front yard. **[Select D for "limitations or prohibitive language in the code, but could potentially be approved."]**	Could argue that rain barrel was used historically and not as limiting as "rain barrels shall not..." Add language allowing waivers from historic standards or roof design upon compatibility review by a design or historic commission.	D

EXAMPLE OF COMPLETED AUDIT TOOL QUESTIONS (continued)

Are pitched roofs required? If so, is a waiver or provision for green roofs or rainwater harvesting made?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Design guidelines Architectural standards Zoning setbacks	If design standards require pitched roofs of a certain slope (i.e., 3:1) or for buildings to match adjacent roof pitches, some allowance for changing pitch should be made for rainwater harvesting or green roof installation.	Design standards require new buildings to "match the prevailing roof pitch and design of the adjacent structures" or to have a minimum pitch. **Select D for "limitations or prohibitive language in the code, but could potentially be approved."]**	Add language allowing a waiver where the review board finds that the intent of the regulations is met. Consult with a local architect on how to illustrate a compatible design that doesn't "match" the roof pitch.	D

Are green infrastructure practices suitable for high-density areas allowed or encouraged in streetscapes (e.g., tree boxes, sidewalk bioretention areas, curb bump-outs)?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Design guidelines Streetscape standards Architectural standards	Streetscape standards often need amendments to specifically enable stormwater trees, sidewalk bioretention or curb bump-outs to be included in renovated or new streets.	The streetscape for all new buildings in a commercial sub-district requires a specific pattern of concrete sidewalk and curbing at the end of each block. **[Select F for "Practice prohibited by code language, or an active conflict would prevent approval." Would likely require a code change to achieve.]**	Cannot deviate from the adopted standard that precludes incorporation of green or vegetated features. Add a supplemental illustration and text showing an option for a curb bump-out that incorporates plantings and bioretention. Provide these alternatives to the city engineer for review.	F

ARCHITECTURAL DESIGN STANDARDS

Design guidelines, architectural standards, streetscape designs and specific dimensional standards in zoning may need to be modified to enable green infrastructure practices. Reviewing standards with an eye to whether practices such as planter boxes, curb bump-outs, rainwater harvesting cisterns or green roofs would be allowed can highlight areas that may need revision.

Are rainwater-harvesting and stormwater-control elements acknowledged in design standards?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Design guidelines Architectural standards	Include illustrations or definitions of green roofs, planter boxes and cisterns; this ensures reviewers and designers will know that these elements are allowed or encouraged.			

Are green infrastructure practices suitable for high-density areas (e.g., planter boxes, cisterns) allowed to extend into the right-of-way or onto sidewalks?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Municipal code Design guidelines Architectural standards Table of dimensional standards	Most zoning ordinances specify what elements, like awnings or signs, may extend into the public right-of-way. Planter boxes and cisterns often need to be added to this list and allowed to extend at least 24 inches into the right-of-way or other setbacks.			

Do design standards allow siting of stormwater-control measures along façade?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Design guidelines Architectural standards Zoning setbacks	Zoning often will limit the structures that can be attached to a building façade or located within a setback. Codes should specify that rain barrels or cisterns and planter boxes may be sited along façades or extend into setbacks.			

Do standards allow for the waiver of design or architectural provisions to accommodate stormwater-control measures (planters, cisterns, green roofs, etc.)?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Design guidelines Architectural standards Zoning setbacks	Where a community provides for waivers of architectural standards, "siting of green infrastructure measures" should be a specific reason for the grant of a waiver.			

Are pitched roofs required? If so, is a waiver or provision for green roofs or rainwater harvesting made?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Design guidelines Architectural standards Zoning setbacks	If design standards require pitched roofs of a certain slope (i.e., 3:1) or for buildings to match adjacent roof pitches, some allowance for changing pitch should be made for rainwater harvesting or green roof installation.			

Are green infrastructure practices suitable for high-density areas allowed or encouraged in streetscapes (e.g., tree boxes, sidewalk bioretention areas, curb bump-outs)?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Design guidelines Streetscape standards Architectural standards	Streetscape standards often need amendments to specifically enable stormwater trees, sidewalk bioretention or curb bump-outs to be included in renovated or new streets.			

COASTAL COMMUNITIES

Located at the end of the watershed "pipe," coastal communities face unique challenges related to stormwater management, including beach swimming advisories, excess nutrients and eutrophication, and coastal erosion. Taking a look at local codes and ordinances that deal with stormwater outfalls, ravine and bluff protection, and erosion control can help reduce the amount of sediment and contaminants entering coastal areas.

Is protection of bluffs and ravines described in the Comprehensive Plan and ordinance?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Comprehensive plan Zoning Special purpose ordinance	Provide a policy basis in the comprehensive plan that supports the adoption and revision of standards, such as, "Adopt setbacks and planting standards that will lead to the creation of a buffer along vulnerable bluffs and ravines."			

Are there review procedures over and above other code provisions for activities in proximity to bluffs and ravines?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Comprehensive plan Zoning Special purpose ordinance	Requiring setbacks for new or expanded structures and impervious surfaces, and limitations on clearing or grading where erosion could be exacerbated are common provisions of a bluff and ravine protection ordinance.			

Grades:

Are there provisions or setbacks from bluffs and ravines for new or expanded structures?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Comprehensive plan Zoning Special purpose ordinance	Requiring setbacks for new or expanded structures and impervious surfaces, and limitations on clearing or grading where erosion could be exacerbated are common provisions of a bluff and ravine protection ordinance.			

Are there provisions or setbacks from bluffs and ravines for new impervious surfaces?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Comprehensive plan Zoning Special purpose ordinance	Requiring setbacks for new or expanded structures and impervious surfaces, and limitations on clearing or grading where erosion could be exacerbated are common provisions of a bluff and ravine protection ordinance.			

Are there provisions on clearing and grading near bluffs and ravines?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Comprehensive plan Zoning Special purpose ordinance	Requiring setbacks for new or expanded structures and impervious surfaces, and limitations on clearing or grading where erosion could be exacerbated are common provisions of a bluff and ravine protection ordinance.			

Can foundation drain, roof leaders or sump pump discharges be sited where discharge will exit on the slope of a bluff or ravine? What is the review process, if any?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Comprehensive plan Zoning Special purpose ordinance	Ensuring some review of clear water discharges can identify cases where relocation or re-direction to a permeable or vegetated area may provide better protection against erosion.			

Has the community identified stormwater outfalls flowing directly onto beaches or into streams that flow directly to beaches?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Comprehensive plan Zoning Special purpose ordinance	Identification of outfall locations and contributing drainage areas helps prioritize investments in stormwater improvements.			

COMMUNITY OUTREACH AND EDUCATION

Local activities and investments also support implementation of green infrastructure. Pilot projects, education and training for boards, and staff training on handling inquiries about downspout disconnection or rain barrels are all important parts of a green infrastructure strategy.

Is there a local ordinance or policy limiting the application of pesticides or herbicides on public property?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Municipal policy Staff knowledge	Pesticides and herbicides can affect soil function and capacity to absorb water and pollutants. Many communities have adopted policies or procedures limiting the use of pesticides and herbicides for noxious and invasive plants to spot treatments.			

Has green infrastructure education been provided to staff involved in plan reviews? This includes staff in public safety, engineering, parks and recreation, economic development, and planning and zoning.				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Municipal policy Staff knowledge	Training staff, appointed boards and elected officials helps provide a common base of knowledge about green infrastructure techniques and their applicability in this climate and region.			

Has green infrastructure education been provided to planning boards and elected officials?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Municipal policy Staff knowledge	Training staff, appointed boards and elected officials helps provide a common base of knowledge about green infrastructure techniques and their applicability in this climate and region.			

Has a rain barrel or rain garden pilot program been done in your community?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Municipal policy Staff knowledge	Pilot projects allow the public to visit and "see for themselves" how green infrastructure techniques look and work once installed.			

Is a review or procedure in place for rain garden construction and planting native plants in yards and lawns?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Municipal policy Staff knowledge	Having a written procedure (even if not formally adopted) for common requests greatly facilitates both the use of these techniques and managing neighbor inquiries and public concerns. It is equally important to ensure that all staff know to transfer questions to a knowledgeable person or department.			

Is a review or procedure in place for downspout disconnection and rain barrel installation?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Municipal policy Staff knowledge	Having a written procedure (even if not formally adopted) for common requests greatly facilitates both the use of these techniques and managing neighbor inquiries and public concerns. It is equally important to ensure that all staff know to transfer questions to a knowledgeable person or department.			

Is a review or permit process in place to facilitate the disconnection of foundation drains?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Municipal policy Staff knowledge	Having a written procedure (even if not formally adopted) for common requests greatly facilitates both the use of these techniques and managing neighbor inquiries and public concerns. It is equally important to ensure that all staff know to transfer questions to a knowledgeable person or department.			

Who answers inquiries and what is his or her level of knowledge?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Municipal policy Staff knowledge	Having a written procedure (even if not formally adopted) for common requests greatly facilitates both the use of these techniques and managing neighbor inquiries and public concerns. It is equally important to ensure that all staff know to transfer questions to a knowledgeable person or department.			

CONSTRUCTION AND POST-CONSTRUCTION MANAGEMENT

Many municipal code provisions relate to how previously open and unbuilt land is managed during and after construction. Construction-phase provisions focus on limiting erosion and also on preventing damage to trees, plants and soils, all of which maintain natural functions including stormwater control. How open-space areas are planted, maintained and managed after construction also affects stormwater management and natural functions. It should be considered during development planning and review.

Does the ordinance require or promote preservation of native vegetation at development sites?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Stormwater ordinance [construction provisions] Subdivision Planned unit development	Many planned unit developments or subdivision provisions encourage or require areas of well-established or native vegetation, particularly stands of mature trees, to be incorporated into reserved open space or landscaped areas on the site where possible.			

Does the ordinance require or encourage limiting clearing and grading at development sites (e.g., construction-site phasing, clearing limit demarcation requirements, prohibitions on construction equipment storage)?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Stormwater ordinance [construction provisions]	Requiring construction phase activities and limits of disturbance to be identified is an important and straightforward measure. Inspections should include limits of disturbance, tree protection and hydric soil areas.			

Are the limits of disturbance shown on site plans required to be physically marked on the construction site?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Stormwater ordinance [construction provisions]	Requiring construction phase activities and limits of disturbance to be identified is an important and straightforward measure. Inspections should include limits of disturbance, tree protection and hydric soil areas.			

Does the ordinance include construction-phase inspection of limits of disturbance?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Stormwater ordinance [construction provisions]	Requiring construction phase activities and limits of disturbance to be identified is an important and straightforward measure. Inspections should include limits of disturbance, tree protection and hydric soil areas.			

Do site and erosion control plans require identification, site marking and protection of mature trees?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Stormwater ordinance [construction provisions] Site plan Subdivision Landscape standards	Requiring construction phase activities and limits of disturbance to be identified is an important and straightforward measure. Inspections should include limits of disturbance, tree protection and hydric soil areas.			

Are native or hydric soils required to be identified, demarcated and protected from disturbance and construction activity?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Stormwater ordinance [construction provisions]	In areas where infiltration is needed to manage stormwater or where soils are highly erodible, these should be identified on erosion control plans and specifically protected from disturbance and compaction during construction.			

Are management plans required for open space and conservation areas set aside in development?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Subdivision Planned unit development	The value of open space areas for habitat, stormwater management and natural functions is affected by both vegetative cover (e.g., trees, plantings) and by management (e.g., mowing, removing invasive plants). Reviewing a plan for vegetation and management helps identify opportunities for resource protection and the level of maintenance needed.			

If open space or conservation areas are required, does a minimum percentage have to be managed in a natural condition (e.g., maintained as woodland, deep-rooted plantings or native vegetation instead of turf)?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Subdivision Planned unit development	The value of open space areas for habitat, stormwater management and natural functions is affected by both vegetative cover (e.g., trees, plantings) and by management (e.g., mowing, removing invasive plants). Reviewing a plan for vegetation and management helps identify opportunities for resource protection and the level of maintenance needed.			

Are there supplemental provisions for protecting or buffering wetlands that are above state requirements?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Subdivision Planned unit development Supplemental regulations	Many communities require additional setbacks and/or demarcation with fencing or plantings along wetland buffers.			

Has the community identified historic stream channels and waterways? Are any of these features protected from modification or development?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Subdivision Planned unit development Stormwater ordinance	Areas where historic stream channels and ponds have been filled in or modified are often prone to flooding. They may be good areas to incorporate into stormwater management features, open space or landscaping.			

LANDSCAPING

Each landscaping feature can be considered a critically important water quality protection measure. The design and management of "everyday" landscaping features — including trees, medians, tree lawns, buffer strips, landscaped borders, foundation plantings and how snow storage is handled — can greatly benefit water quality without adding cost for applicants or municipal projects.

Do preliminary or sketch plans include stormwater measures and landscape techniques for initial review?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Procedures [Site plan, Planned unit development, Subdivision]	Early review of land use concepts helps identify opportunities to integrate green infrastructure into landscaping and drainage.			

Is a consolidated plan for landscaping, grading/drainage and stormwater-control measures encouraged or required?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Procedures [Site plan, Planned unit development, Subdivision] Stormwater ordinance	Putting grading/drainage and landscaping plans on the same sheet illustrates where and how landscaping and stormwater management can be integrated.			

Is the use of deep-rooted or native plants, plants with habitat value, or edibles allowed or encouraged in the landscaping standards?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Landscape standards Design guidelines	Explicitly listing or illustrating the use of native plantings, deep-rooted plants or other alternatives to turfgrass and shrubs tells site planners up front that the community encourages these types of plantings.			

Is there a process or standard to waive numerical, spacing and species requirements for stormwater-control measures in required landscape areas?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Landscape standards Design guidelines	Specific dimensional standards, such as a requirement to space trees 25 feet apart, may conflict with the design of vegetated stormwater controls. Waivers can allow variation where needed to accommodate green infrastructure.			

Do visual buffer and screening provisions enable a variation in plantings or substitution of fencing if co-designed for stormwater?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Landscape standards Design guidelines	Codes often require buffers between properties or uses be composed of a "dense evergreen hedge" or similar. Codes can be modified to provide an option for integrating vegetated stormwater-control measures where needed using a combination of fencing and plants for screen and buffer areas.			

Do vegetated stormwater management areas such as bioretention areas, rain gardens, stormwater trees or other plantings count toward required landscape minimums?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Landscape standards Design guidelines	Requiring ornamental landscaping in addition to bioretention areas or other green infrastructure is a significant barrier; often, there will not be enough area on the site to accommodate both.			

Is berming of setback and landscape areas along right-of-ways required and/or habitually preferred as a method of visual screening?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Landscape standards Street standards Design guidelines	Requirements for berms will limit or entirely prevent the use of "edge" areas and road frontage for stormwater management.			

Are naturalized landscaping standards and requirements promoted for use in stormwater treatment practices?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Stormwater ordinance Landscape standards Subdivision	Communities may have standards that encourage or require naturalized landscaping or native plantings in and around stormwater ponds and swales.			

Are there minimum landscaping requirements for parking lots? Perimeters, islands or both (e.g., percentage of parking landscaped, number of trees per parking spaces, canopy coverage)?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Site plan Parking standards Landscape standards	Parking lot landscaping — both perimeter and island — can mitigate urban heat island effects and can be co-designed as green infrastructure for stormwater treatment.			

Is there a minimum size for parking lot landscape islands?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Site plan Parking standards Landscape standards	Parking lot islands must be large enough (typically a 100-square-foot minimum) to have sufficient soil volume for healthy tree and plant growth.			

Do parking lot edge landscaping requirements (islands and edges) specifically allow or encourage use as stormwater-control areas? Is a standard adopted?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Site plan Parking standards Landscape standards	Actively encouraging the use of islands and perimeters for green infrastructure gives important direction to site planners.			

Are flush curbs and/or curb cuts allowed to direct runoff into vegetated landscaped islands?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Site plan Parking standards Landscape standards	Allowing breaks in curbs or the use of wheel stops/barriers enables co-design of islands and perimeters for storm-water, while also protecting adjacent landscaping.			

Are green walls defined or encouraged? Do they count toward required landscaping?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Landscape standards Definitions Design guidelines	Green wall systems are gaining popularity and have many applications for land-scaping and screening; some definitions of "fence" may be too specific to allow green walls.			

Is turfgrass required in new subdivisions or construction? Could deep-rooted plants be substituted?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Subdivision Landscape standards Site plan Stormwater ordinance [construction provisions]	Subdivision regulations often require lots to be "sodded." Standards should state that native or deep-rooted plantings may be used, even if temporarily, on new residential lots.			

Do the standards encourage or require that turfgrass be used only for active recreation areas?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Subdivision Landscape standards Site plan Stormwater ordinance [construction provisions]	In subdivisions or planned unit developments with common open space, or large-lot commercial development, limiting turfgrass to active recreation areas encourages the use of deeper-rooted plants and trees that reduce runoff volumes and sediment loads.			

Are snow storage areas required to be shown on site plans?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Subdivision Landscape standards Site plan Stormwater ordinance [construction provisions]	Snow storage should be required to be shown on site plan applications. Storage should be located in areas where melting and infiltration can occur and spring residue removed, without affecting the performance of stormwater treatment practices or leading to sedimentation and pollution in adjacent streams and wetlands.			

Is snow storage in bioretention areas prohibited or discouraged, unless the area is specifically designed for snow storage (i.e., grass swales)?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Subdivision Landscape standards Site plan Stormwater ordinance [construction provisions]	Snow storage should be required to be shown on site plan applications. Storage should be located in areas where melting and infiltration can occur and spring residue removed, without affecting the performance of stormwater treatment practices or leading to sedimentation and pollution in adjacent streams and wetlands.			

Are street trees required or encouraged along streets (residential, commercial, other or all)?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Site plan Subdivision Landscape standards Public works specifications Design guidelines	Street trees help attenuate stormwater flows and pollutants, especially if planted in sufficient volumes of well-aerated soils. This can be specified in a stormwater management plan.			

Are tree lawns and terraces allowed or encouraged to be designed as stormwater treatment areas rather than turfgrass and trees only?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Landscape standards Public works specifications Municipal code	Some tree lawn or terrace areas may be suitable for use as stormwater management areas or can be landscaped with deeper-rooted plantings. Maintenance responsibility and an approval procedure should be specified.			

Can landscaped islands for stormwater treatment be created within culs-de-sac or medians?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Public works specifications	If standard specifications do not allow for different engineering designs (i.e., "all medians shall be composed of…"), some variance procedure or alternative standard may be needed.			

Are native plantings specifically allowed in front yards or lawn areas?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Municipal code Nuisance weeds ordinance Landscape standards	Consider establishing a written review or approval procedure, simple standards requiring demarcation of edging and bordering with native and deep-rooted plants and a procedure for mowing if noxious weeds or lack of maintenance occurs.			

PARKING

Measures that allow for reductions in the total impervious area devoted to parking, both through reductions in the total volume of required parking and in the requirements for landscaping and surfacing, are crucial to reducing stormwater runoff volumes. In addition to the landscaping issues discussed above, zoning regulations govern parking space sizes and the total number of spaces required on individual development sites, and whether parking can be shared among uses in a building, shopping center or office park.

Do parking ratios reflect current Urban Land Institute or Institute of Transportation Engineers recommended ratios of spaces per square feet of gross floor area?

Barrier	Tips	Code References and Language	Notes, Ideas and Strategies	Grade
Zoning Off-street parking and loading standards	Parking ratios should be updated to reflect recent professional survey data on parking demand for uses such as restaurants, medical offices and banks to reflect changing consumer and worker patterns.			

Are the uses in the parking regulations updated to reflect contemporary development types (e.g., drive-through pharmacies, large home improvement stores) and eliminate outdated ones (e.g., video rental, photo processing, men's clothiers)?

Barrier	Tips	Code References and Language	Notes, Ideas and Strategies	Grade
Zoning Off-street parking and loading standards	The table of uses can be reviewed to incorporate expected types of development and eliminate outdated ones, so that parking requirements are both easy to administer and not excessive.			

Note Vehicle trip end refers to the origin or destination of a vehicle trip (e.g., work commute, grocery run). Each trip has two ends.

Are parking ratios set as maximum or median (rather than minimum) requirements?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Off-street parking and loading standards	Many communities set maximum parking ratios, which effectively prevent "over-parking." In some cases, the required amount of parking is the maximum that may be built; in others, up to 120% of the requirement is allowed.			

Do dense districts eliminate on-site parking requirements or have reduced requirements?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Off-street parking and loading standards	In downtowns or mixed-use districts where walking among uses can be expected, parking ratios per individual use may be substantially reduced or even eliminated, especially if municipal or on-street parking is available.			

Is the parking ratio reduced if shared parking arrangements are in place or multi-modal transit (e.g., mass transit, bike-n-shower facilities) is provided nearby? (Note distance to transit.)				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Off-street parking and loading standards	Parking ratios can be reduced where transit access is likely to reduce vehicle trip ends, or for offices, etc., that provide storage and other facilities promoting bicycle commuting.			

Are there incentives to developers to provide parking within garages rather than surface parking lots [structured parking funded/incentivized where suitable to zoning district]?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
TIF policy Zoning Planned unit development Development agreements				

Is the minimum stall width for a standard parking space 9 feet or less?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Off-street parking and loading standards				

Is the minimum stall length for a standard parking space 18 feet or less?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Off-street parking and loading standards				

Are flexible space sizes and/or compact parking spaces allowed or encouraged? What percentage or limits?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Off-street parking and loading standards	Allowing a certain number or percent of spaces (often 20% to 25%) to have reduced sizes and to be labeled "compact" can reduce total parking surface area.			

Is the use of shared parking arrangements promoted?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Off-street parking and loading standards	Encouraging shared parking among uses in the same building or on the same site is a key strategy to reduce parking surface area.			

Is a shared parking agreement format, calculation and administration procedure for changes in use in place?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Off-street parking and loading standards	Rather than requiring each applicant to justify the number of spaces in a shared parking plan, a table with formulas can be provided to streamline the process. Providing a simple format for tracking changes in use also makes administration and enforcement easier.			

Is the use of off-site parking arrangements promoted?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Off-street parking and loading standards	Required parking may be provided on properties owned by others, provided an agreement is recorded ensuring that the spaces will be made available to the permitted use.			

Is an off-site parking agreement or recording document provided or adopted?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Staff knowledge	Providing a sample agreement acceptable to the municipal attorney facilitates administration and enforcement.			

How many off-street parking spaces per residence are allowed or required? How many driveway spaces are allowed or required?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Off-street parking and loading standards Subdivision Municipal code	Residential parking requirements affect the amount of impervious cover on individual home sites.			

Is there a maximum number of cars or area of off-street or driveway parking per single family residence?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Off-street parking and loading standards Subdivision Municipal code	Setting a maximum number of vehicles or off-street spaces can avoid expansive driveways. Alternatively, any driveway area above and beyond what is required for a standard driveway can be required to be permeable or grasscrete surfacing.			

Is there a prohibition on parking on vegetated areas or required yards*?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Off-street parking and loading standards Subdivision Municipal code	Allowing vehicles to park on required yards or vegetated areas results in soil compaction and reduces infiltration capacity. Cars and RVs can be required to be parked on improved or graveled areas.			

*A required yard is the area that lies between a property line or right-of-way and an object required to be set back, such as a structure. A yard is more commonly known as a setback.

PERMEABLE MATERIALS

Standards for parking, driveways and loading areas tend to be included in zoning, while standards for construction of driveway aprons, streets, alleys, sidewalks and streetscapes usually are found in public works standards or even municipal code.

Does the municipality have experience with permeable material, curbless streets or other green infrastructure measures?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Local knowledge	Taking a group tour to a permeable paving site or bringing in university or state departments of natural resources or environmental protection staff to talk about options can help build knowledge.			

Are standard specifications or performance standards adopted or referenced for permeable materials?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Public works standards Local knowledge	Many state departments of natural resources or environmental protection and the American Society of Civil Engineers publish standards that can be referenced in local standards or codes.			

Must a sealant be used on improved surfaces, and, if so, can that provision be waived?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Public works standards	When adding allowances for permeable surfacing, communities must ensure that any requirement for sealants is modified or waived for permeable surfacing.			

Are low-volume street sections allowed or encouraged to be permeable?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Subdivision Public works standards and specifications	A good place to start can be to write a general waiver in the code allowing permeable surfacing "upon review and approval of the village/city engineer," or making an as-of-right allowance in parking stalls, with other areas allowed with engineering review.			

Can parking lanes along streets be constructed with permeable surfacing?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Subdivision Public works standards and specifications	A good place to start can be to write a general waiver in the code allowing permeable surfacing "upon review and approval of the village/city engineer," or making an as-of-right allowance in parking stalls, with other areas allowed with engineering review.			

Is the width or total surface area of driveways limited (e.g., as percent of lot area)? Can permeable driveways exceed that limitation?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning (lot coverage or general regulations) Public works standards	Many communities limit driveway widths to 20 feet for residential and 24 feet or 30 feet for non-residential uses, or limited as a percent of total lot area. In dense settings, permeable driveways may be allowed to exceed limits.			

Are driveway aprons allowed or encouraged to be permeable?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning (lot coverage or general regulations) Public works standards	Many communities require all driveway aprons to be constructed of concrete. This can have the effect of prohibiting installation of French drains at driveway aprons. A provision ensuring that French drains for infiltration or permeable surfacing can be allowed behind the apron can be added to the code to ensure this important stormwater reduction option is allowable.			

POLLUTANT REDUCTION THROUGH SITE PLAN REVIEW

A number of uses have the potential to cause polluted runoff unless outdoor areas are properly managed and reviewed. Providing additional review of these uses can be especially important where TMDLs are in place or where receiving waters are used for swimming, boating and fishing.

Are standards and requirements adopted for trash areas and dumpsters?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Municipal code Zoning Supplemental regulations Conditional use requirements	Ensuring that trash is covered and fully contained, with trash storage areas graded or curbed to drain away from storm drains and surface waters, both prevents animals from getting into trash and prevents polluted runoff.			

Are trash/dumpster areas required to have four-sided enclosures?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Municipal code Zoning Supplemental regulations Conditional use requirements	Effective measures require a four-sided enclosure with a locking gate rather than simply "visual screening."			

Are trash/dumpster areas required to be covered?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Municipal code Zoning Supplemental regulations Conditional use requirements	Some communities with swimming beaches or sensitive water resources require trash and dumpster area covers, which reduce the potential for bacterial transport. Covers are not inexpensive but are available from commercial suppliers.			

Are trash/dumpster areas reviewed for drainage?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Municipal code Zoning Supplemental regulations Conditional use requirements	A provision can be added to ensure that drainage from trash and dumpster areas is generally directed away from storm drains toward a grass or vegetated area, or at a minimum that storm drains are not located directly under dumpsters.			

Are there supplemental standards for potentially polluting uses?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Municipal code Zoning Supplemental regulations Conditional use requirements	Better trash and outdoor area management at any business or activity that handles food or animals, such as dog day care centers or restaurants, can reduce bacteria, grease/oil and nutrient loads to the storm drain system. See the "Stormwater Pollution Prevention for Restaurants" video at go.wisc.edu/ok7974.			

Are there standards for gas and auto repair stations?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Municipal code Zoning Supplemental regulations Conditional use requirements	Auto-related uses should be reviewed to ensure fueling or repair areas meet published standards, and no potentially polluting materials such as washer fluids, oil or parts are stored outside unless completely covered.			

Are there standards for food-related uses?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Municipal code Zoning Supplemental regulations Conditional use requirements	Food-related uses warrant extra scrutiny to ensure trash-handling areas, delivery areas and grease traps are properly designed and installed.			

Are there standards for animal-related uses (e.g., dog daycare centers, kennels)?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Municipal code Zoning Supplemental regulations Conditional use requirements	Outdoor areas at animal-related facilities should be reviewed to ensure that drainage from washing or rainfall will be directed into a sanitary drain or vegetated area well away from storm drains, surface waters or wetlands.			

Are there standards for outdoor storage areas?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Municipal code Zoning Supplemental regulations Conditional use requirements	Outdoor storage and contractors' yards can become substantial sources of nutrients, toxics, metals or sediment in runoff. Review should ensure vegetated buffers, grading plans or other measures are in place.			

Are there standards for contractors' yards?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Municipal code Zoning Supplemental regulations Conditional use requirements	Outdoor storage and contractors' yards can become substantial sources of nutrients, toxics, metals or sediment in runoff. Review should ensure vegetated buffers, grading plans or other measures are in place.			

Are there standards for other potentially polluting uses?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Municipal code Zoning Supplemental regulations Conditional use requirements	Locally, other uses such as nurseries and garden centers might benefit from supplemental review of outdoor areas and activities.			

POST-CONSTRUCTION STORMWATER STANDARDS AND LONG-TERM MAINTENANCE

Having methods in place to inspect and manage stormwater treatment systems during and after construction is important to the long-term performance of green infrastructure.

Does the municipality have a stormwater utility or user fee to provide a dedicated funding source for stormwater management?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Municipal code	Many communities have local, fee-based funding or a formal utility for storm-water management. Where fees are not currently charged, these may be adopted by referendum under some state laws.			

Is there construction-phase inspection of stormwater treatment practices to ensure conformance with the site and stormwater management plan?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Stormwater ordinance Written policies and procedures	Stormwater ordinances should explicitly require inspection of stormwater treat-ment systems during the construction phase, which is critical to function and performance.			

Is there a process for regular post-construction inspection of stormwater treatment practices for both private and publicly maintained facilities?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Stormwater ordinance Written policies and procedures	Regular post-construction inspections can be reported to the municipality, if a tracking system is in place, or system owners may keep their inspection reports on file.			

Are maintenance agreements required for stormwater treatment practices and landscaped areas that accept stormwater runoff?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Stormwater ordinance Municipal maintenance agreement	Providing a model maintenance agreement ensures that developers understand the municipality's requirements for ongoing maintenance and reporting.			

Have model maintenance agreements been developed or adopted?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Stormwater ordinance Municipal maintenance agreement	Plan review and public works staff benefit from a working knowledge of green infrastructure maintenance needs, such as sweeping frequencies for permeable surfacing or how to identify invasive plants in bioretention areas.			

Have maintenance needs for green infrastructure practices been communicated and understood among staff involved in plan review or inspection?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Staff knowledge	Plan review and public works staff benefit from a working knowledge of green infrastructure maintenance needs, such as sweeping frequencies for permeable surfacing or how to identify invasive plants in bioretention areas.			

PUBLIC WORKS STANDARDS

Public works standards, which may be part of subdivision regulations, adopted as a separate ordinance or adopted administratively by the municipality, control key aspects of municipal infrastructure and stormwater systems. Public works staff and commissioners should be actively involved in audits and provide input on how different changes or alternatives would work.

Do drainage systems allow any use of drain restrictors to hold water back on streets for temporary stormwater storage during larger storm events?

Barrier	Tips	Code References and Language	Notes, Ideas and Strategies	Grade
Zoning Subdivision Department of public works standards	In some communities, providing temporary flood storage on streets can decrease the need for large (and costly) storage facilities. In others, however, this is not practiced.			

Is the minimum pavement width for local streets in medium density residential developments less than 22 feet? Can other widths be reduced?

Barrier	Tips	Code References and Language	Notes, Ideas and Strategies	Grade
Zoning Subdivision Department of public works standards	Contemporary standards for roadway widths often are much narrower than what is required in subdivision or public works standards. Comparing local standards against updated guidance can identify where local standards may be changed.			

Are private streets allowed? If so, are reduced roadway widths or alternative drainage permitted for private streets?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Subdivision Department of public works standards	Some communities will allow reduced street widths or waive curb-and-drain requirements if streets are designated as private roads. This can be a strategy for reducing effective imperviousness.			

Is there a maximum driveway width (e.g., 20 feet for residential/24 feet at roadway opening, 26 feet for commercial/30 feet at roadway opening)?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Subdivision Department of public works standards	Driveway widths and widths at roadway openings can be limited to support both better access management and reduced imperviousness.			

Do codes allow utilities to be placed under the paved section of the right-of-way or tree lawns? Under what circumstances?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Subdivision Department of public works standard	If utilities can be placed under a paved surface rather than requiring an additional grass strip adjacent to the right-of-way, the total area in paved plus grass strip surface is reduced.			

What is the minimum cul-de-sac radius (e.g., <35 feet)? Can it be modified, and by whom, when and why?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Fire protection ordinance Department of public works standards	Contemporary engineering standards for culs-de-sac call for a 35 foot radius (70' diameter).			

Are alternative turnarounds such as "hammerheads" allowed? What is the approval process?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Fire protection ordinance Department of public works standards	"Hammerheads" and T-style turnarounds can reduce the total land consumption and impervious area needed on a site, especially in subdivisions and commercial sites.			

Can grasscrete be used to meet public safety and fire access needs?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Fire protection ordinance Department of public works standards	Many types of commercially available permeable surfacing have sufficient structural strength to support fire trucks and can be plowed; these can be substituted for asphalt in areas of a site that must provide fire truck access to buildings.			

Can minimum sidewalk or multi-purpose path width in the community be varied by path segment and type (note widths)?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Department of public works standards Subdivision Planned unit development	Varied widths for sidewalks and recreation paths allow flexibility to reduce impervious surface where appropriate but ensure wide paths where greater use is expected.			

Are vegetated open channels allowed in lieu of curb and gutter, and for what uses (e.g., residential, commercial)?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Department of public works standards Subdivision	Options for swale drainage, or partial curb-and-drain profiles with inlets for bioretention can allow for enhanced water quality and infiltration.			

Can traffic calming measures be co-designed as stormwater-control measures?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Department of public works standards Streetscape standards	It is helpful to state specifically that islands and bump-outs that act as traffic calming measures are encouraged to be co-designed to provide stormwater management or green infrastructure functions.			

Is a standard or review process defined for removing impervious surface?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Department of public works standards	In communities that are redeveloping, it is useful to have a standard for demolition or removal of impervious surface and replacement with sufficient soil and vegetation to enable stormwater infiltration. The Environmental Protection Agency Great Lakes Region has developed a useful model standard.			

Is the specified width of tree lawn based on street section and neighborhood type? Is it adequate to support trees at maturity (6 feet in most cases)?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Subdivision Department of public works standards	Tree lawns or terraces should be at least 6 feet wide in most cases, with sufficient soil depth and composition to support healthy tree growth. A municipal forester or extension staff can advise on widths, soils and depths.			

PURPOSE STATEMENTS AND COMMUNITY PLANS

Ensuring that comprehensive or master plans specifically call out green infrastructure, water quality and watershed protection in goals and objectives will provide crucial policy support for updating regulations, securing grant funds for pilot projects and setting a tone for integrating water resource protection into municipal investments and development review.

Are watershed water quality and green infrastructure implementation stated goals in the master plan?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Master and comprehensive plan	Example: "It is the goal of the Municipality to implement policies, investments, standards and actions, including the use of green infrastructure, that will protect and enhance water quality within the Municipality and its watersheds."			

Does the master plan describe green infrastructure and water quality outside the "drainage" or "infrastructure" chapter?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Master and comprehensive plan	Many older comprehensive plans do not discuss stormwater other than as a utility issue (i.e., drainage, flood control). Park and recreation, natural resource, landscaping, design and sustainability goals all can reference the potential for multiple benefits from incorporating green infrastructure techniques in private and municipal projects.			

Do master plan objectives and recommended actions include green infrastructure pilot projects, new standards, design manual or other measures?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Master and comprehensive plan	Specific language such as “complete a permeable paving demonstration project in a municipal parking lot” or “update the downtown design guidelines to include green infrastructure features” helps in grant applications.			

SANITARY AND STORM SEWER DISCONNECTIONS

Stormwater and other "clean water" sources should not be directly connected to the sanitary sewer system and may be prohibited from connection in combined sewer areas. Infrastructure inspections help ensure that illegal connections and potential bacteria sources are eliminated. Green infrastructure such as green roofs and cisterns or other practices that direct clean water discharges to rain gardens or permeable areas can reduce demands on the storm drain system, reduce street flooding and provide a water supply for landscape features.

Is an inspection process in place that verifies that clean water sources do not enter the sanitary sewer in separate sewer areas?

Barrier	Tips	Code References and Language	Notes, Ideas and Strategies	Grade
Operational Sewer ordinance	Some communities have specific procedures for determining if clean water sources are connected to sanitary sewers and for requiring property owners to disconnect or replumb if found. These sources usually include air conditioner condensate, sump pump discharge and roof downspouts.			

Are there restrictions on downspouts being directly connected to the sanitary sewer?

Barrier	Tips	Code References and Language	Notes, Ideas and Strategies	Grade
Sewer ordinance Public works standards Building code	In combined sewer overflow areas, downspout connections may be prohibited by the sewer ordinance.			

Can rooftop runoff, air conditioning condensate, sump pump discharges or other "clean water" sources be discharged to pervious areas?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Code (plumbing, building or sewer)	Code language can clarify how these sources should be treated, for example, "Clean water sources including but not limited to…may be discharged to lawns or pervious areas a minimum of three (3) feet from any building foundation or property line and provided no water is discharged in such a manner as to cause icing on any improved surface."			

Is temporary storage of rainwater on rooftops permitted?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Code (building, plumbing, public works specifications)	Look for any prohibition that would prevent using drain restrictors or a green roof from holding back drainage rather than sending it directly into a downspout.			

At any routine point-of-sale, is the condition of lateral sewer pipes inspected?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Operational Sewer ordinance	Most communities only inspect at time of initial construction. Point-of-sale inspections may be done if there is a private property infiltration or inflow reduction program. Community education on sewer laterals also can be valuable.			

STORMWATER MANAGEMENT STANDARDS

Technical provisions in the stormwater ordinance are particularly important to review with the municipal engineer or consulting engineer. Involving applicants' engineers who are familiar with how provisions are interpreted also can be helpful in understanding where and how the ordinance or standards could be modified to encourage use of green infrastructure.

What design criteria (such as those from state departments of natural resources, environmental protection or conservation) are adopted or referenced in stormwater management plan requirements?

Barrier	Tips	Code References and Language	Notes, Ideas and Strategies	Grade
Stormwater ordinance	Referring to your state's conservation practice standards (if applicable) or other published design criteria can help designers and plan reviewers gain confidence that green infrastructure measures are designed correctly.			

Have primary types of green infrastructure practices (e.g., bioretention/rain gardens, permeable surfacing, rainwater harvesting, vegetated swales, green roofs) been defined in the stormwater ordinance or zoning regulations?

Barrier	Tips	Code References and Language	Notes, Ideas and Strategies	Grade
Stormwater ordinance	Adding definitions of different green infrastructure practices is especially important to providing guidance and encouragement to applicants and effective standards for its use in the community.			

What design storm is used for sizing stormwater-control measures?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Stormwater ordinance	Requirements to size stormwater systems for very large storms can discourage the use of green infrastructure or distributed practices, and may lead to other maintenance issues. A one- or two-year storm typically is consistent with the use of green infrastructure practices and with state standards.			

Do sizing requirements vary by soil type?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Stormwater ordinance	If designers must assume a "D" soil regardless of on-site conditions, runoff volumes will be larger than otherwise needed, which may discourage the use of green infrastructure practices. Most state standards provide for variation in curve numbers based on soil type.			

Are green infrastructure practices counted toward meeting the volume control requirements for a site?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Stormwater ordinance	It is very important for the local ordinance to be clear about how the local engineer will "credit" the volume managed by different green infrastructure practices. Some communities limit the volume credit for permeable surfacing, which discourages its use. Often, state departments of natural resources or environmental protection and university extension staff can provide guidance on this issue.			

Are green infrastructure practices counted toward meeting the water quality requirements for a site?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Stormwater ordinance	The local ordinance should specify that green infrastructure practices are acceptable to the municipal engineer for meeting TSS and pollutant reduction goals.			

Does the use of permeable materials reduce the stormwater quantity required to be managed? If so, is this a written or informal standard?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Stormwater ordinance	To encourage the use of permeable surfacing, stormwater management plans must "count" these areas as permeable (or at least at a lower runoff curve number than impervious surfaces) and provide credit for volume reduction as well.			

Are there reduced [or modified] stormwater-control requirements for redevelopment and infill sites (e.g., waivers of quantity control requirements, fee-in-lieu options)?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Stormwater ordinance	Providing less stringent volume and treatment requirements for small or "infill" projects helps encourage infill and redevelopment.			

Is there a process for identifying or requiring measures that reduce stormwater runoff when existing developed sites are modified, even if a full stormwater management plan is not required?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Stormwater ordinance	Through zoning or stormwater ordinances, communities can require applicants to make "low-hanging fruit" modifications to sites to improve stormwater management when development occurs, even if a full stormwater management plan is not required. These include modifying parking lot landscaping to accept sheet flow, replacing low-use paved areas with permeable surfacing, replacing turfgrass with deeper-rooted vegetation and adding trees.			

Is there a reported preference for wet ponds with fountains as an aesthetic approach?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Staff knowledge	Moving community preferences from encouraging wet ponds with fountains towards distributed, naturalized stormwater treatment can take time and education. A statement in the stormwater ordinance or comprehensive plan encouraging consideration of different landscaping and stormwater strategies is important.			

Are incentives provided (within the utility fee structure or elsewhere in the code) to developers who reduce impervious cover, conserve natural areas or implement stormwater reduction practices such as green rooftops, rain barrels and rain gardens (e. g., reduced stormwater utility fees, stormwater credits)?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Stormwater utility ordinance credit policy	Where municipalities have a stormwater utility or fee, it is very helpful to provide language that specifically allows credits for treatment with green infrastructure practices as well as "ponds."			

SUBDIVISIONS AND NEW "GREENFIELD" DEVELOPMENT

Amending regulations related to new development can help reduce the footprint, and consequently the spread, of impervious surfaces. Suggestions include reducing minimum requirements for lot sizes, lot frontage and setbacks and allowing for shared driveways.

Are there provisions that encourage minimizing total impervious surfaces on new development sites (if they are consistent with building patterns in the zoning district)?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Subdivision Planned development unit regulations	Reducing lot widths and minimum sizes reduces the amount of land area disturbed for new development, the total length of roadway and associated impervious surface required, and the amount of turf-grass for lawn — all of which reduce the volume of runoff and pollutant loads associated with new development. Guidance on conservation subdivisions or "smart growth" can provide useful standards and examples.			

Are flexible dimensional criteria available for developers using planned development units, open space or cluster design options (e.g., setbacks, lot sizes and shapes, road widths)?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Subdivision Planned development unit regulations	Reducing lot widths and minimum sizes reduces the amount of land area disturbed for new development, the total length of roadway and associated impervious surface required, and the amount of turf-grass for lawn — all of which reduce the volume of runoff and pollutant loads associated with new development. Guidance on conservation subdivisions or "smart growth" can provide useful standards and examples.			

Are flexible standards (planned development units, open space or cluster options) as-of-right or discretionary? What is the minimum lot size for an open space subdivision or a planned development unit?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Subdivision Planned development unit regulations	Reducing lot widths and minimum sizes reduces the amount of land area disturbed for new development, the total length of roadway and associated impervious surface required, and the amount of turf-grass for lawn — all of which reduce the volume of runoff and pollutant loads associated with new development. Guidance on conservation subdivisions or "smart growth" can provide useful standards and examples.			

Can lot frontage requirements be waived in a planned development unit or open space subdivision?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Subdivision Table of dimensional standards Planned development unit regulations	Lot frontage requirements (i.e., length of a lot that must abut a street) are often a hold-over from earlier zoning goals. Reducing lot frontage requirements can help spur redevelopment along commercial strips and, in subdivisions, reduces the total length of roadway required. Provisions can be drafted that ensure each lot has sufficient legal access to a public roadway, without requiring large frontages.			

Are the frontage requirements standard, minimal or above usual practice?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Table of dimensional standards	Reduced setbacks (frontage, front, side and rear) can allow for reduced roadway and driveway length, and smaller areas of turfgrass.			

Are the front yard setbacks standard, minimal or above usual practice for the zoning district?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Table of dimensional standards	Reduced setbacks (frontage, front, side and rear) can allow for reduced roadway and driveway length, and smaller areas of turfgrass.			

Are the side yard setbacks standard, minimal or above usual practice for zoning district?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Table of dimensional standards	Reduced setbacks (frontage, front, side and rear) can allow for reduced roadway and driveway length, and smaller areas of turfgrass.			

Are the rear yard setbacks standard, minimal or above usual practice for the zoning district?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Table of dimensional standards	Reduced setbacks (frontage, front, side and rear) can allow for reduced roadway and driveway length, and smaller areas of turfgrass.			

Can stormwater-control measures be sited within required yard or setback areas? If so, are there any limitations on siting ponds within yards or setbacks?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning General regulations [definitions of setbacks or yards] Staff knowledge	Allowing ponds, bioretention areas or other surface stormwater controls within setbacks typically increases the density that can be achieved on the site.			

Are shared driveways allowed/encouraged? For what land uses?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Subdivision Zoning and site plan Public works standards	Allowing shared driveways among parcels or land uses can reduce both curb cuts and impervious surface area.			

ZONING

Specific aspects of the structure of a zoning code can be modified or clarified to ensure that green infrastructure practices are clearly allowed or encouraged in development and in municipally sponsored projects.

Is a description or definition of "low impact development" or "green infrastructure" included in the zoning code or stormwater ordinance?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Definitions	An inclusive definition of green infrastructure can be: "Vegetated stormwater management measures. Swales, bioretention areas, rain gardens, amended soil areas, pocket or modular wetlands, stormwater trees, vegetated or green roofs, and similar practices specifically designed to provide water quantity and water quality treatment of stormwater runoff, and to promote evapotranspiration and infiltration of stormwater."			

Do purpose statements in zoning specifically include encouraging green infrastructure or naturalized drainage?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Establishment [individual zoning districts]	Example: "It is the purpose of these standards to promote the use of green infrastructure or vegetated stormwater management measures, where suitable, to manage stormwater runoff volumes and quality."			

Is there a clear process for approving green infrastructure, flood management or environmental restoration projects? Would these projects be allowed in all zoning districts?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Individual zoning districts [site plan procedures]	The zoning code should note whether land modifications to implement wetland or stream restoration, construct stormwater retrofits or modify landscaping and grading requires plan commission, elected board or staff approval and whether approval goes through site plan, conditional use or another approval process.			

Do allowable uses for parks and other open space areas specifically include stormwater retrofits or green infrastructure projects?				
Barrier	**Tips**	**Code References and Language**	**Notes, Ideas and Strategies**	**Grade**
Zoning Table of uses [individual zoning districts]	Depending on the community, the list of permitted or conditional uses may need to include "stormwater management and green infrastructure installations" or a similar use to enable stand-alone projects.			

Green Infrastructure Audit Tool Report Card

A quick-reference summary to determine whether a code, policy or operation is enabling, conditional, ambiguous, discouraging or conflicting.

ARCHITECTURAL DESIGN STANDARDS

- ☐ Are rainwater-harvesting and stormwater-control elements acknowledged in design standards?
- ☐ Are green infrastructure practices suitable for high-density areas (e.g., planter boxes, cisterns) allowed to extend into the right-of-way or onto sidewalks?
- ☐ Do design standards allow siting of stormwater-control measures along façade?
- ☐ Do standards allow for the waiver of design or architectural provisions to accommodate stormwater-control measures (planters, cisterns, green roofs, etc.)?
- ☐ Are pitched roofs required? If so, is a waiver or provision for green roofs or rainwater harvesting made?
- ☐ Are green infrastructure practices suitable for high-density areas allowed or encouraged in streetscapes (e.g., tree boxes, sidewalk bioretention areas, curb bump-outs)?

COASTAL COMMUNITIES

- ☐ Is protection of bluffs and ravines described in the Comprehensive Plan and ordinance?
- ☐ Are there review procedures over and above other code provisions for activities in proximity to bluffs and ravines?
- ☐ Are there provisions or setbacks from bluffs and ravines for new or expanded structures?
- ☐ Are there provisions or setbacks from bluffs and ravines for new impervious surfaces?
- ☐ Are there provisions on clearing and grading near bluffs and ravines?
- ☐ Can foundation drain, roof leaders or sump pump discharges be sited where discharge will exit on the slope of a bluff or ravine? What is the review process, if any?
- ☐ Has the community identified stormwater outfalls flowing directly onto beaches or into streams that flow directly to beaches?

COMMUNITY OUTREACH AND EDUCATION

- [ ] Is there a local ordinance or policy limiting the application of pesticides or herbicides on public property?
- [ ] Has green infrastructure education been provided to staff involved in plan reviews? This includes staff in public safety, engineering, parks and recreation, economic development, and planning and zoning.
- [ ] Has green infrastructure education been provided to planning boards and elected officials?
- [ ] Has a rain barrel or rain garden pilot program been done in your community?
- [ ] Is a review or procedure in place for rain garden construction and planting native plants in yards and lawns?
- [ ] Is a review or procedure in place for downspout disconnection and rain barrel installation?
- [ ] Is a review or permit process in place to facilitate the disconnection of foundation drains?
- [ ] Who answers inquiries and what is his or her level of knowledge?

CONSTRUCTION AND POST-CONSTRUCTION MANAGEMENT

- [ ] Does the ordinance require or promote preservation of native vegetation at development sites?
- [ ] Does the ordinance require or encourage limiting clearing and grading at development sites (e.g., construction-site phasing, clearing limit demarcation requirements, prohibitions on construction equipment storage)?
- [ ] Are the limits of disturbance shown on site plans required to be physically marked on the construction site?
- [ ] Does the ordinance include construction-phase inspection of limits of disturbance?
- [ ] Do site and erosion control plans require identification, site marking and protection of mature trees?
- [ ] Are native or hydric soils required to be identified, demarcated and protected from disturbance and construction activity?
- [ ] Are management plans required for open space and conservation areas set aside in development?
- [ ] If open space or conservation areas are required, does a minimum percentage have to be managed in a natural condition (e.g., maintained as woodland, deep-rooted plantings or native vegetation instead of turf)?
- [ ] Are there supplemental provisions for protecting or buffering wetlands that are above state requirements?
- [ ] Has the community identified historic stream channels and waterways? Are any of these features protected from modification or development?

LANDSCAPING

- [ ] Do preliminary or sketch plans include stormwater measures and landscape techniques for initial review?
- [ ] Is a consolidated plan for landscaping, grading/drainage and stormwater-control measures encouraged or required?
- [ ] Is the use of deep-rooted or native plants, plants with habitat value, or edibles allowed or encouraged in the landscaping standards?
- [ ] Is there a process or standard to waive numerical, spacing and species requirements for stormwater-control measures in required landscape areas?
- [ ] Do visual buffer and screening provisions enable a variation in plantings or substitution of fencing if co-designed for stormwater?
- [ ] Do vegetated stormwater management areas such as bioretention areas, rain gardens, stormwater trees or other plantings count toward required landscape minimums?
- [ ] Is berming of setback and landscape areas along right-of-ways required and/or habitually preferred as a method of visual screening?
- [ ] Are naturalized landscaping standards and requirements promoted for use in stormwater treatment practices?
- [ ] Are there minimum landscaping requirements for parking lots? Perimeters, islands or both (e.g., percentage of parking landscaped, number of trees per parking spaces, canopy coverage)?
- [ ] Is there a minimum size for parking lot landscape islands?
- [ ] Do parking lot edge landscaping requirements (islands and edges) specifically allow or encourage use as stormwater-control areas? Is a standard adopted?
- [ ] Are flush curbs and/or curb cuts allowed to direct runoff into vegetated landscaped islands?
- [ ] Are green walls defined or encouraged? Do they count toward required landscaping?
- [ ] Is turfgrass required in new subdivisions or construction? Could deep-rooted plants be substituted?
- [ ] Do the standards encourage or require that turfgrass be used only for active recreation areas?
- [ ] Are snow storage areas required to be shown on site plans?
- [ ] Is snow storage in bioretention areas prohibited or discouraged, unless the area is specifically designed for snow storage (i.e., grass swales)?
- [ ] Are street trees required or encouraged along streets (residential, commercial, other or all)?
- [ ] Are tree lawns and terraces allowed or encouraged to be designed as stormwater treatment areas rather than turfgrass and trees only?
- [ ] Can landscaped islands for stormwater treatment be created within culs-de-sac or medians?
- [ ] Are native plantings specifically allowed in front yards or lawn areas?

PARKING

- [ ] Do parking ratios reflect current Urban Land Institute or Institute of Transportation Engineers recommended ratios of spaces per square feet of gross floor area?
- [ ] Are the uses in the parking regulations updated to reflect contemporary development types (e.g., drive-through pharmacies, large home improvement stores) and eliminate outdated ones (e.g., video rental, photo processing, men's clothiers)?
- [ ] Are parking ratios set as maximum or median (rather than minimum) requirements?
- [ ] Do dense districts eliminate on-site parking requirements or have reduced requirements?
- [ ] Is the parking ratio reduced if shared parking arrangements are in place or multi-modal transit (e.g., mass transit, bike-n-shower facilities) is provided nearby? (Note distance to transit.)
- [ ] Are there incentives to developers to provide parking within garages rather than surface parking lots (structured parking funded/ incentivized where suitable to zoning district)?
- [ ] Is the minimum stall width for a standard parking space 9 feet or less?
- [ ] Is the minimum stall length for a standard parking space 18 feet or less?
- [ ] Are flexible space sizes and/or compact parking spaces allowed or encouraged? What percentage or limits?
- [ ] Is the use of shared parking arrangements promoted?
- [ ] Is a shared parking agreement format, calculation and administration procedure for changes in use in place?
- [ ] Is the use of off-site parking arrangements promoted?
- [ ] Is an off-site parking agreement or recording document provided or adopted?
- [ ] How many off-street parking spaces per residence are allowed or required? How many driveway spaces are allowed or required?
- [ ] Is there a maximum number of cars or area of off-street or driveway parking per single family residence?
- [ ] Is there a prohibition on parking on vegetated areas or required yards?

PERMEABLE MATERIALS

- [ ] Does the municipality have experience with permeable material, curbless streets or other green infrastructure measures?
- [ ] Are standard specifications or performance standards adopted or referenced for permeable materials?
- [ ] Must a sealant be used on improved surfaces, and, if so, can that provision be waived?
- [ ] Are low-volume street sections allowed or encouraged to be permeable?
- [ ] Can parking lanes along streets be constructed with permeable surfacing?
- [ ] Is the width or total surface area of driveways limited (e.g., as percent of lot area)? Can permeable driveways exceed that limitation?
- [ ] Are driveway aprons allowed or encouraged to be permeable?

POLLUTANT REDUCTION THROUGH SITE PLAN REVIEW

- ☐ Are standards and requirements adopted for trash areas and dumpsters?
- ☐ Are trash/dumpster areas required to have four-sided enclosures?
- ☐ Are trash/dumpster areas required to be covered?
- ☐ Are trash/dumpster areas reviewed for drainage?
- ☐ Are there supplemental standards for potentially polluting uses?
- ☐ Are there standards for gas and auto repair stations?
- ☐ Are there standards for food-related uses?
- ☐ Are there standards for animal-related uses (e.g., dog daycare centers, kennels)?
- ☐ Are there standards for outdoor storage areas?
- ☐ Are there standards for contractors' yards?
- ☐ Are there standards for other potentially polluting uses?

POST-CONSTRUCTION STORMWATER STANDARDS AND LONG-TERM MAINTENANCE

- ☐ Does the municipality have a stormwater utility or user fee to provide a dedicated funding source for stormwater management?
- ☐ Is there construction-phase inspection of stormwater treatment practices to ensure conformance with the site and stormwater management plan?
- ☐ Is there a process for regular post-construction inspection of stormwater treatment practices for both private and publicly maintained facilities?
- ☐ Are maintenance agreements required for stormwater treatment practices and landscaped areas that accept stormwater runoff?
- ☐ Have model maintenance agreements been developed or adopted?
- ☐ Have maintenance needs for green infrastructure practices been communicated and understood among staff involved in plan review or inspection?

PUBLIC WORKS STANDARDS

- [ ] Do drainage systems allow any use of drain restrictors to hold water back on streets for temporary stormwater storage during larger storm events?
- [ ] Is the minimum pavement width for local streets in medium-density residential developments less than 22 feet? Can other widths be reduced?
- [ ] Are private streets allowed? If so, are reduced roadway widths or alternative drainage permitted for private streets?
- [ ] Is there a maximum driveway width (e.g., 20 feet for residential/24 feet at roadway opening, 26 feet for commercial/30 feet at roadway opening)?
- [ ] Do codes allow utilities to be placed under the paved section of the right-of-way or tree lawns? Under what circumstances?
- [ ] What is the minimum cul-de-sac radius (e.g., <35 feet)? Can it be modified, and by whom, when and why?
- [ ] Are alternative turnarounds such as "hammerheads" allowed? What is the approval process?
- [ ] Can grasscrete be used to meet public safety and fire access needs?
- [ ] Can minimum sidewalk or multi-purpose path width in the community be varied by path segment and type (note widths)?
- [ ] Are vegetated open channels allowed in lieu of curb and gutter, and for what uses (e.g., residential, commercial)?
- [ ] Can traffic calming measures be co-designed as stormwater-control measures?
- [ ] Is a standard or review process defined for removing impervious surface?
- [ ] Is the specified width of tree lawn based on street section and neighborhood type? Is it adequate to support trees at maturity (6 feet in most cases)?

PURPOSE STATEMENTS AND COMMUNITY PLANS

- [ ] Are watershed water quality and green infrastructure implementation stated goals in the master plan?
- [ ] Does the master plan describe green infrastructure and water quality outside the 'drainage' or 'infrastructure' chapter?
- [ ] Do master plan objectives and recommended actions include green infrastructure pilot projects, new standards, design manual or other measures?

SANITARY AND STORM SEWER DISCONNECTIONS

- [ ] Is an inspection process in place that verifies that clean water sources do not enter the sanitary sewer in separate sewer areas?
- [ ] Are there restrictions on downspouts being directly connected to the sanitary sewer?
- [ ] Can rooftop runoff, air conditioning condensate, sump pump discharges or other "clean water" sources be discharged to pervious areas?
- [ ] Is temporary storage of rainwater on rooftops permitted?
- [ ] At any routine point-of-sale, is the condition of lateral sewer pipes inspected?

STORMWATER MANAGEMENT STANDARDS

- [ ] What design criteria (such as those from state departments of natural resources, environmental protection or conservation) are adopted or referenced in stormwater management plan requirements?
- [ ] Have primary types of green infrastructure practices (e.g., bioretention/rain gardens, permeable surfacing, rainwater harvesting, vegetated swales, green roofs) been defined in the stormwater ordinance or zoning regulations?
- [ ] What design storm is used for sizing stormwater-control measures?
- [ ] Do sizing requirements vary by soil type?
- [ ] Are green infrastructure practices counted toward meeting the volume control requirements for a site?
- [ ] Are green infrastructure practices counted toward meeting the water quality requirements for a site?
- [ ] Does the use of permeable materials reduce the stormwater quantity required to be managed? If so, is this a written or informal standard?
- [ ] Are there reduced (or modified) stormwater-control requirements for redevelopment and infill sites (e.g., waivers of quantity control requirements, fee-in-lieu options)?
- [ ] Is there a process for identifying or requiring measures that reduce stormwater runoff when existing developed sites are modified, even if a full stormwater management plan is not required?
- [ ] Is there a reported preference for wet ponds with fountains as an aesthetic approach?
- [ ] Are incentives provided (within the utility fee structure or elsewhere in the code) to developers who reduce impervious cover, conserve natural areas or implement stormwater reduction practices such as green rooftops, rain barrels and rain gardens (e. g., reduced stormwater utility fees, stormwater credits)?

SUBDIVISIONS AND NEW "GREENFIELD" DEVELOPMENT

- [ ] Are there provisions that encourage minimizing total impervious surfaces on new development sites (if they are consistent with building patterns in the zoning district)?
- [ ] Are flexible dimensional criteria available for developers using planned development units, open space or cluster design options (e.g., setbacks, lot sizes and shapes, road widths)?
- [ ] Are flexible standards (planned development units, open space or cluster options) as-of-right or discretionary? What is the minimum lot size for an open space subdivision or a planned development unit?
- [ ] Can lot frontage requirements be waived in a planned development unit or open space subdivision?
- [ ] Are the frontage requirements standard, minimal or above usual practice?
- [ ] Are the front yard setbacks standard, minimal or above usual practice for the zoning district?
- [ ] Are the side yard setbacks standard, minimal or above usual practice for zoning district?
- [ ] Are the rear yard setbacks standard, minimal or above usual practice for the zoning district?
- [ ] Can stormwater-control measures be sited within required yard or setback areas? If so, are there any limitations on siting ponds within yards or setbacks?
- [ ] Are shared driveways allowed/encouraged? For what land uses?

ZONING

- [ ] Is a description or definition of "low impact development" or "green infrastructure" included in the zoning code or stormwater ordinance?
- [ ] Do purpose statements in zoning specifically include encouraging green infrastructure or naturalized drainage?
- [ ] Is there a clear process for approving green infrastructure, flood management or environmental restoration projects? Would these projects be allowed in all zoning districts?
- [ ] Do allowable uses for parks and other open space areas specifically include stormwater retrofits or green infrastructure projects?

1000 FRIENDS OF WISCONSIN
Promoting Healthy Communities

MMSD
PARTNERS FOR A CLEANER ENVIRONMENT

NOAA

ORION
PLANNING+DESIGN

Sea Grant
University of Wisconsin

seagrant.wisc.edu/greeninfrastructure