

# 3

## Chapter Three: Natural Resources



The relationship between the Village of Cottage Grove and its natural features provides a valuable point of reference. It sets up a framework for analysis, suggests possible locational advantages that the Village may possess for certain land uses, and hints at the relationship between the Village and the rest of the region. The natural resource base, especially environmentally sensitive areas with respect to soils, steep slopes, wetlands, and floodplains, are critical factors in local planning decision making. These are typically arranged in and along environmental corridors. Maintenance of these, and other environmentally sensitive natural features, is important for both the visual attractiveness of the community, as well as for the prevention of severe developmental or environmental problems that may be difficult and costly for the Village to correct in the future.

## **A. Natural Resources Inventory – Land Resources**

### **Environmental Corridors**

Environmental corridors are, in effect, a composite of the most important individual elements of the natural resource base and have immeasurable environmental, ecological, and recreational value. These environmental corridors contain almost all of the best remaining woodlands, wetlands, and wildlife habitat. Protection of environmental corridors from additional intrusion by incompatible land uses, and thereby from degradation and destruction, is an essential planning objective for the preservation of open natural spaces, that the Village continues to prove it is “ahead of the curve” on achieving.

In the Village, the features that define environmental corridors include:

- Floodplains – as designated by the Wisconsin Department of Natural Resources (WisDNR) and the Federal Emergency Management Agency (FEMA).
- Wetlands – as designated by the WisDNR.
- Shoreland – all areas within 1,000 feet of the ordinary high water mark of navigable lakes, ponds, flowages and within 300 feet of the ordinary high water mark of navigable rivers or streams.
- Drainageways – areas within 75 feet of the ordinary high water mark of a perennial stream and all areas within 50 feet of an intermittent stream or open channel drainageway.
- Woodlands – areas where the combined canopy area of trees cover a minimum of 80 percent of an area of one acre or more.
- Steep slopes – areas that contain a gradient of 12 percent or greater.
- Ridgetops – areas located within 100 feet of, and at higher elevation than, areas designated as steep slopes.
- Other areas of permanently protected open space.

Within the Village of Cottage Grove, environmental corridors are scattered throughout the planning area. These corridors are shown on most of the maps in this Plan, and have been a primary determinant of the recommended land use and transportation patterns.

### **Hilltops and Ridges**

An important natural feature that is often overlooked in comprehensive planning efforts is hilltops and ridgetops. Hilltops are particularly noticeable west of the Village in the form of a drumlin field. Hilltops and ridgetops serve to define the horizon – and perhaps provide a “natural edge” for a community. Large structures constructed on top of them (including homes) tend to be visually prominent – especially if not blending with the area’s rural-agricultural character in terms of color, material, or style. These high points also serve to define cost-effective urban service expansion areas or sequences. Each drumlin within the planning area is a prominent hilltop, with several located within the Village proper. A prominent ridge is located along Interstate 94 between CTH N and Buss Road. A second prominent ridge is located parallel to and east of Buss Road, and forms the divide between portions of the Door Creek watershed.

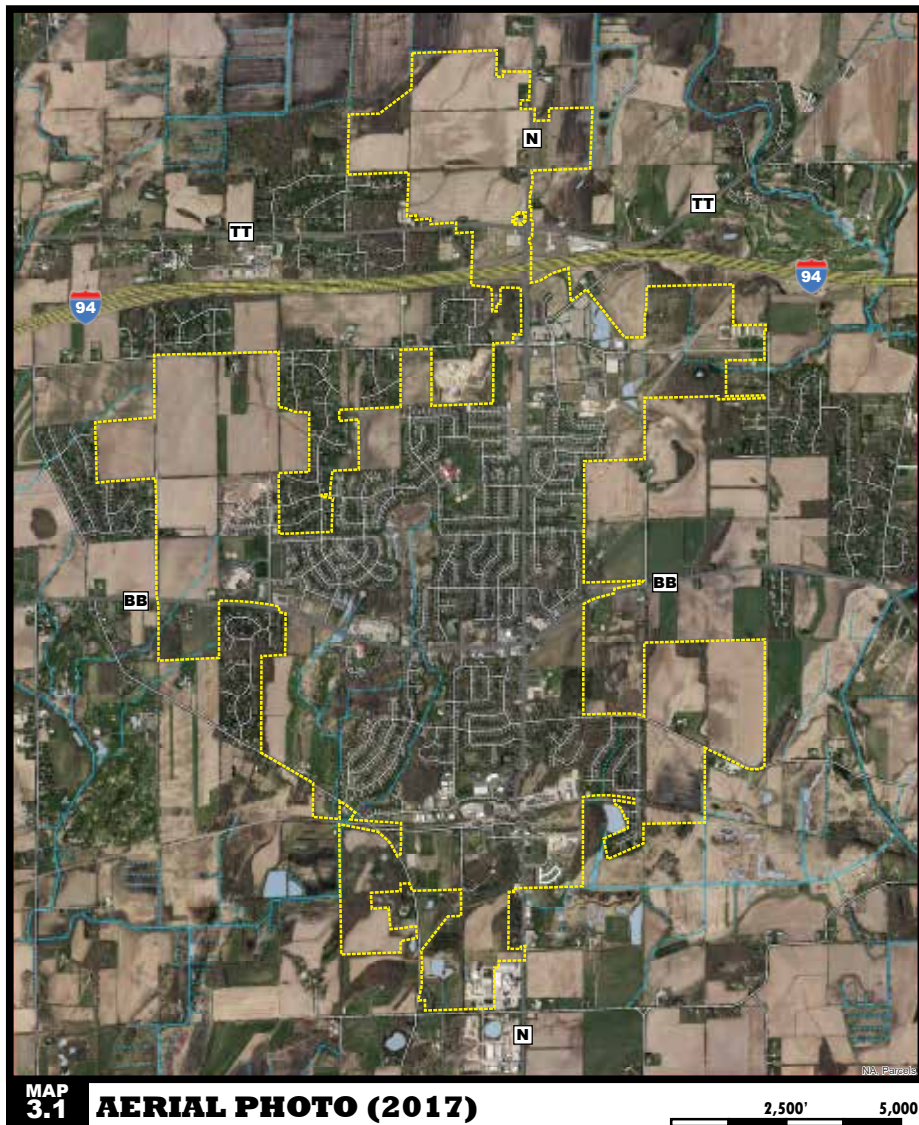
### **Landforms and Topography**

Landforms in the area in and around the Village of Cottage Grove are basically glacial drift features. The most notable feature is the collection of drumlins and related hills that are scattered throughout the planning area, generally running in a northeasterly-southwesterly direction. The Village is located on the drainage divide between the Door Creek/Yahara River Basin and Koshkonong Creek Basin. The highest point in the planning area is about 1,015 feet above sea level in the northeast part of the Village and the lowest point is about 850 feet above sea level near the tributary to Koshkonong Creek at the southeast corner of the planning area.

### **Metallic and Non-Metallic Resources**

There are no metallic mining operations in the State of Wisconsin.





**Surface Water**

- Lakes and Ponds
- Perennial Stream
- Intermittent Stream
- Constructed Drainage



Source: Dane County Land Information Office  
 AMENDED OCTOBER 21, 2019

There are no active mining facilities within the Village; however, there are active mining facilities in the Village’s extraterritorial jurisdiction within the Town of Sun Prairie and the Town of Cottage Grove. These areas contain sandy deposits that are ideal for extraction sites. One is located just south of Gaston Road, immediately west of CTH N.

**Soils**

Soil suitability is a key factor in determining the best and most cost-effective locations for new development. According to the Dane County Soil Surveys, most of the planning area is covered by soils rated as generally unsuited, or poorly suited, for development utilizing septic systems.

The Village contains primarily silt loams and loam soils, including the Batavia, Boyer, Dodge, Griswold, Kidder, Plano, Ringwood and Wacousta soil series. This association is characterized by very poorly drained, poorly drained, somewhat poorly drained, and well drained soils with a silty or loamy subsoil and are underlain by silt loam, sandy loam, or gravelly sandy loam. Most of these soils are suitable for development and have 2 to 12 percent slopes. Kidder soils are found in steep areas (over 20 percent slope), which are often drumlins.

Soils within wetland areas and the floodplain at the southeast edge of the Village consist of Houghton mucks, Orion silt loam and Sable silty clay loam. These soil types have severe to very severe limitations to development due to high compressibility, very low bearing capacity, seasonal high water table and occasional flooding. Development should be prohibited in these areas.

**Steep Slopes**

Generally, the planning area is predominated by gently rolling or flat areas. Steep slopes (exceeding 12 percent) occur very infrequently and only for very short runs. These areas are scattered throughout the planning area and are generally associated with either directly adjacent waterways or drumlin systems. In general, within the planning area, the northern or northeastern ends of

drumlins have the steepest slopes – often 20 percent or greater.

## Woodlands

The planning area contains scattered wooded areas. Most of these are located on the steepest slopes of the drumlins, and in lowland woodlands in inter-drumlin wetlands and along river and stream corridors. The most common species are oak, elm, and maple. The sparsely wooded condition of the remainder of the planning area is due to a combination of rich soils, few steep slopes, and residential development activity which tends to place high value on wooded sites. As such, the remaining woodlands in and around the Village are valuable contributors to the area’s character and beauty; particularly, the relatively uncommon upland oak savannah groves. The general health of the woodland and the quality of the species present or presence of invasive species may contribute to preservation decisions.

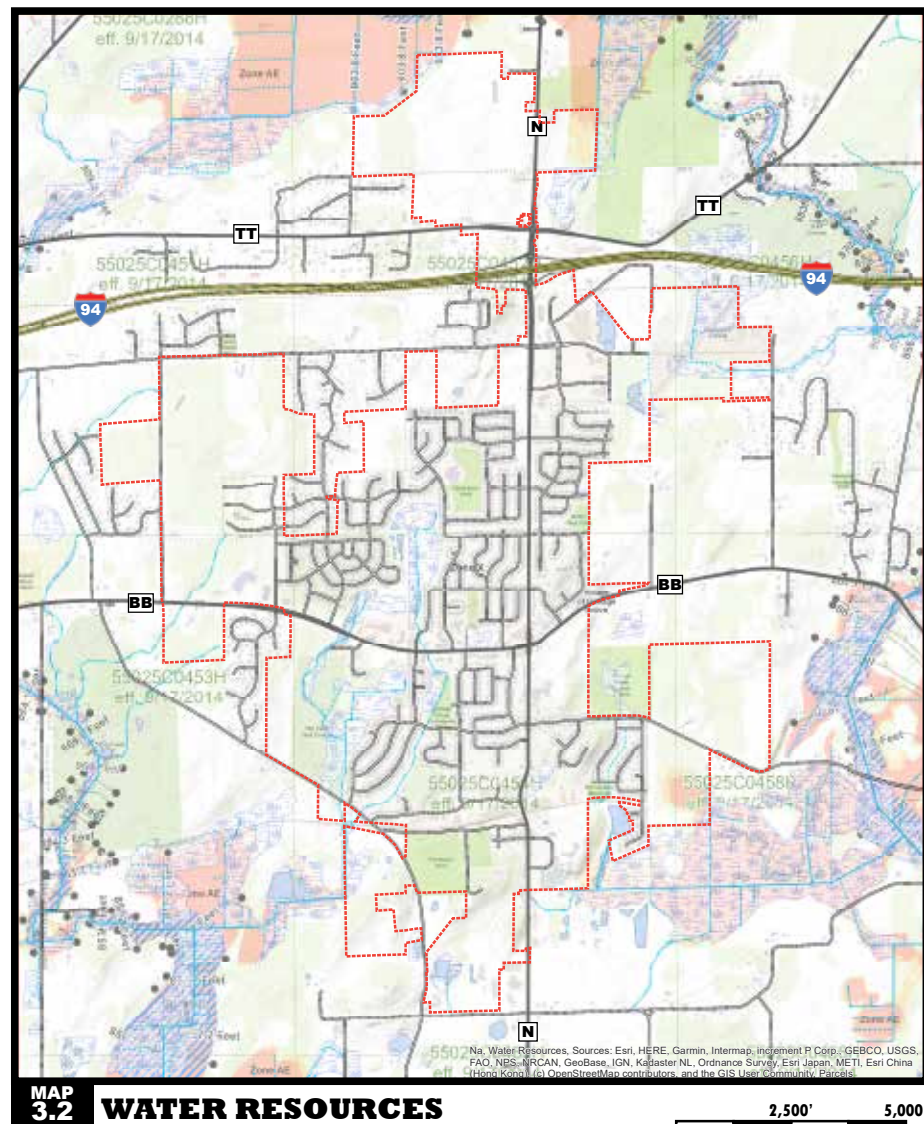
## B. Natural Resources Inventory – Water Resources

### Drainage Basins

The northwest parts of the Village lie within the Door Creek drainage basin, which drains southerly into Lake Kegonsa and the Yahara River. The southern and eastern part of the Village is in the Koshkonong Creek drainage basin, which drains southeasterly into Lake Koshkonong and the Rock River.

### Floodplains

Flood hazard areas within the planning area are located along the Koshkonong Creek and Door Creek. These have been identified and mapped by the FEMA for risk management purposes. The 100-year flood plain—where the flooding probability is greater than 1% in any given year—is generally restricted to no development by State Statute-authorized local zoning. Floodplains are included within environmental corridor areas as depicted on the maps in this Plan. However, refer to the National Flood Insurance Rate Maps (FIRM) produced by FEMA for official delineation and



Source: Dane County Land Information Office, WDNR, FEMA



elevation of floodplain boundaries.

### Groundwater

Groundwater resources are plentiful in the planning area at both shallow and deep levels. The shallow dolomite aquifers are likely to be linked to certain surface water features. In areas of granular soils, these aquifers are susceptible to contamination from both surface and subterranean sources. Most private wells draw from this shallow aquifer. The deep sandstone and limestone aquifers in the planning area are generally of higher quality and considered substantially less susceptible to contamination. In this regard, a few deep common wells are preferred over numerous shallow private wells.

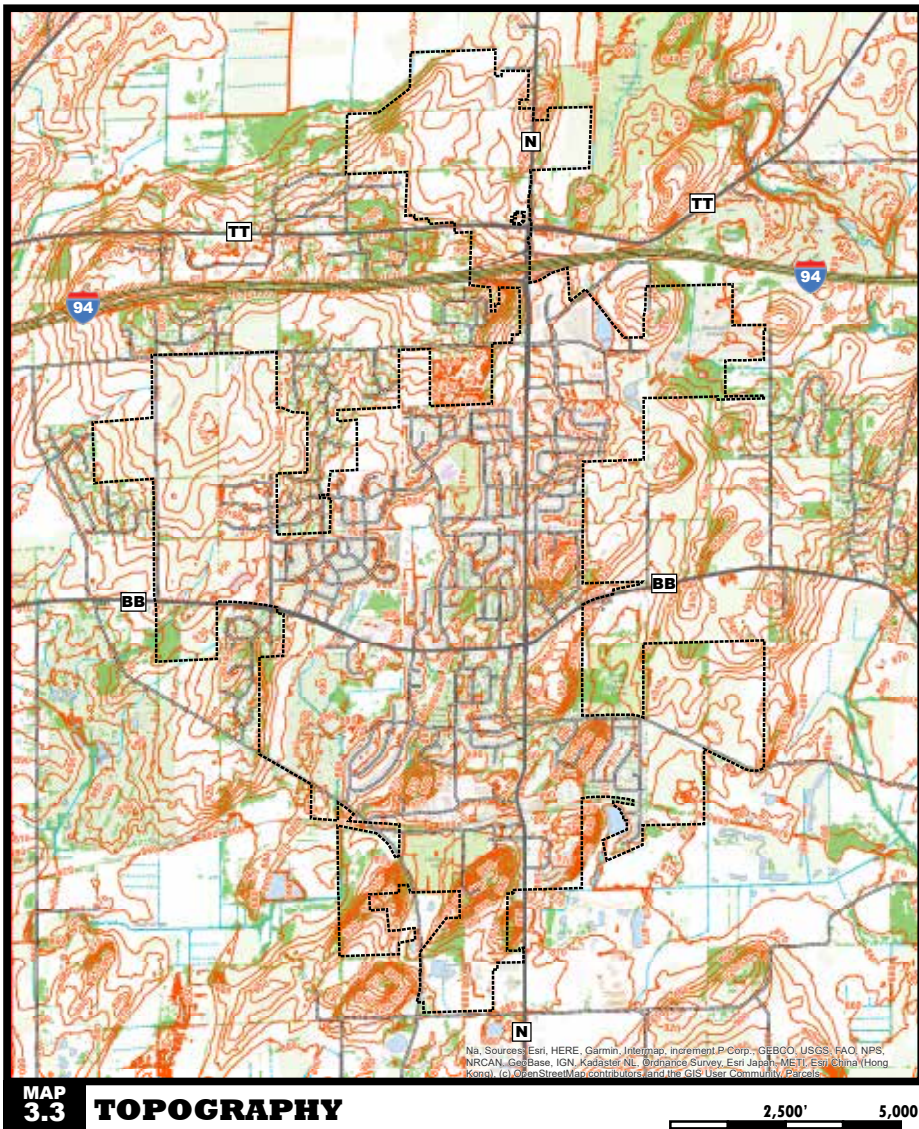
The Village has a Wellhead Protection Plan and accompanying wellhead protection ordinance. As the Village expands, there will be a need to update this Plan and the overlay zoning district pattern.

### Rivers and Streams

The primary surface water bodies in the planning area are Koskonong Creek to the east and Door Creek to the west. The Village does not discharge its municipal wastewater into these water bodies because it is served by the Madison Metropolitan Sewerage District (MMSD) via a force main generally located along the Wisconsin and Southern railroad line from Vilas Road into the City of Madison. The ultimate outfall of MMSD is Badfish Creek located south of the City of Madison.

### Wetlands

Wetland areas are located along streams and drainageways and in isolated low spots. Most of the significant wetlands in the Cottage Grove area are immediately west and southeast of the Village, associated with tributaries of Door Creek and Koskonong Creek. There are also two isolated wetland areas within the Village, west of Forrester Drive and north of Cottage Grove Road. These wet-



- Slopes & Tree Cover**
- 20' Contour
- Steep Slope - 12% to 20%
- Steep Slope - More than 20%
- Tree Cover

lands have been identified and mapped by WisDNR. These areas are important for aquifer recharge, groundwater and surface water quality improvement, and wildlife habitat. Generally, these areas are restricted to no development by State Statute-authorized local zoning.

Wetlands are included within environmental corridor boundaries, as depicted on all the maps in this Plan. However, refer to the WisDNR Wetland Inventory Maps for official delineation of wetland boundaries.

### **C. Wildlife Habitat and Recreation Resources**

#### **Rare and Endangered Species**

WisDNR, through its Natural Heritage Inventory (NHI), maps and documents locations of rare or endangered terrestrial and aquatic species. To find out if a proposed project may impact rare species, developers may request from WisDNR an Endangered Resources Review. Through this process WisDNR will identify for the applicant rare species, high-quality natural communities, and significant natural features in or near the proposed project area.

#### **Protected Areas**

According to the Dane County Parks & Open Space Plan, 2012-2017, the McCarthy Youth and Conservation Park was founded as a “place where kids from the city could learn about nature.” The park provides both active use areas (including group camping and 4.3 miles of biking/hiking/equestrian trails) and conservancy uses (including prairie and wetland restorations). In 2011, a new group camping area was completed along with several restoration projects. The Dane County Parks & Open Space Plan, 2012-2017 includes recommendations to acquire additional lands to the east, north, and west of the park, and to prepare a park master plan to provide a common vision for further park development and management.

Beginning in Cottage Grove and ending in Waukesha, the Glacial

Drumlin State Trail travels through ten small towns, farmlands, and glacial topography along 52 miles of abandoned rail corridor. The trail was developed in 1986 to provide year-round recreation opportunities such as cycling, hiking, snowmobiling, and cross country skiing. The Glacial Drumlin State Trail is listed on the Aldo Leopold Legacy Trail System.

Patrick Marsh, located to the north of Cottage Grove in the rapidly urbanizing area of Sun Prairie, was the first wetland mitigation bank site in Wisconsin. The marsh is used as an outdoor classroom for students at Patrick Marsh Middle School and is also a popular area for fishing, bird watching, walking, and nature study. Patrick Marsh is also listed as one of Wisconsin’s Land Legacy Places, which identifies and provides preservation objectives for places of ecological importance.

The Norman Vethe School Forest, located east of Cottage Grove Elementary School just north of E. Taylor Street, is a 68-acre facility owned by the Monona Grove School District. The School District used WisDNR funds to install prairie restoration areas and trails on the property.

### **D. Natural Resource Preservation Goals, Objectives, and Policies**

#### **Goal:**

1. Protect natural resource features in the Cottage Grove area.

#### **Objectives:**

1. Preserve environmental corridor features including waterways, floodplains, wetlands, ground water recharge area, steep slopes (greater than 12%), wildlife habitat, scenic vistas and woodlands through the adoption and implementation of environmental protection zoning and subdivision ordinance standards.
2. Encourage environmental corridors and their component natural resource features to be depicted on all site plans and preliminary plats and certified survey maps in order to facilitate



preservation of natural resources.

3. Use the Village's zoning, subdivision, and official mapping powers to protect waterways, shorelines, wetlands, and floodplain areas.
4. Encourage the cleanup of contaminated sites that threaten the public health, safety, and welfare.
5. Work with surrounding communities to encourage an orderly, efficient development pattern that preserves natural resources and minimizes conflicts between urban and rural uses.

**Policies:**

1. Encourage the protection of the Village's natural resource base from development through the strategic use of the Zoning Ordinance, Subdivision Ordinance, and Official Map.
2. Use public acquisition, dedication, or conservation easements to preserve critical natural resource areas where feasible.
3. Encourage all site plans, preliminary plats, and certified survey maps to accurately depict all environmental corridor natural resource elements (e.g. wetlands, floodplains, steep slopes, drainageways, etc.) that are found on the site.
4. Utilize subdivision review authority and official mapping authority to protect environmental corridors within the Village limits and its extraterritorial area.
5. Provide input to Dane County during the master planning process for McCarthy Youth and Conservation Park, when that process commences.

**E. Natural Resources Programs and Recommendations**

**Continue to Prioritize the Protection of Environmental Corridors**

The Village has a two-pronged approach to ensuring that environmental corridor features are protected. First, the Village en-

forces overlay zoning standards for environmental corridors that defines specific features to be protected from development. The definition, purpose, determination, and requirements for each of these types of features are described in detail in the Village's overlay zoning district standards. Areas of woodlands, steep slopes, floodplains, and wetlands are shown in Map 3.1, 3.2, and 3.3.

The second approach to protecting environmental corridors is through the Village's site planning review process. All development must go through site plan review as specified by the Village Zoning Ordinance. Site planning review is a "safeguard" to ensure that all proposed developments address and protect the components of environmental corridors. This is expanded on in several sections of the Village's zoning and subdivision ordinances.

Further, the Village Subdivision Ordinance provides special provisions for lands deemed to be "environmentally sensitive" – giving the Village Board, as recommended by the Plan Commission, the ability to impose special conditions on plats or CSMs. The Village may consider strengthening its Subdivision Ordinance to include provisions that preliminary plats show environmental corridor areas and other areas protected under the Village's overlay zoning district for natural features.

**Promote Low-Impact Development Techniques**

Low-impact development can take a variety of forms, from progressively managing stormwater to minimizing a building's overall "footprint." The Village will consider incorporating Low-Impact Development Standards in its procedures and ordinances to reduce the burden of soil erosion, organic, and chemical pollutants. The following are examples of such standards:

**Progressive Construction Site Erosion Control Practices**

Unmanaged construction sites are one of the greatest contributors to off-site sediment runoff. Under a recent change to State law, erosion control plans are required for all construction sites over 1 acre in area. The Village will consider enhancements to enforcement of erosion control ordinances and techniques for protection and con-

tinued improvement of water quality. In particular, progressive erosion control systems should be components of planned new development areas, including subdivisions and commercial projects. Erosion control techniques include silt fencing, minimizing disturbed areas, and quickly reestablishing vegetation.

### **Advance Stormwater Best Management Practices**

Stormwater Best Management Practices (BMPs) aim to control run-off volume by managing precipitation as “close to where it hits the ground” as possible, thereby facilitating infiltration of precipitation into groundwater and evaporation of water back into the atmosphere. This approach decreases peak stormwater quantities and improves the overall quality of stormwater entering rivers and creeks in the area. Best management practices for stormwater quality may include any or all of the following strategies:

- Maximizing permeable surface areas. This technique focuses on reducing impervious footprints of development sites, and breaking up large paved areas with permeable surfaces and/or vegetation. Reduced road widths should be allowed where appropriate. Impervious surfaces should be positioned and graded so they drain to natural systems, vegetated buffers, infiltration zones, or permeable soils.
- Incorporating infiltration and retention areas. Where stormwater basins are required, such basins and conveyance routes should be carefully integrated into the surrounding development pattern, incorporate native/natural edge vegetation, be aesthetically pleasing, and serve their necessary functions. Other progressive infiltration techniques include rain gardens to capture water and retain it from downspouts, green (vegetated) roofs, roof run-off directed to pervious yard areas, organic layers added to the soil to aid decomposition and filter pollutants, and sand beds to aerate and aid drainage in yards. Vegetated buffer strips are also critical to capture runoff and filter particulates, such as adjacent to parking lots (see Figure 3.1).
- Installing “grey water” systems: Grey water is water that has

been used for hand washing, showering, and any other uses from sinks, showers, or washing machines, but does not include water from toilets. Grey water may be reused for other purposes, especially landscape irrigation.

### **Site Inventory and Analysis**

Neighborhood and site design processes that require the thoughtful inventory and analysis of natural resources before lots are platted or buildings are placed are essential in accomplishing low-impact development. The Village will consider completion of “site assessment checklists” as part of development approvals will be incorporated into the subdivision ordinance. The checklist should include inventorying all natural resources when a development proposal, site plan, conditional use permit, or other petition is within either critical area. Also, natural resource features should be depicted on all site plans, preliminary plats, and certified survey maps, including wetlands, steep slopes, floodplains, drainageways, wooded areas, and mature trees.

### **Resource Protection and Loss Mitigation**

Once critical site features are identified, protection is the next step. Once identified, maximum clearance or removal standards for these features, or on-site mitigation where those standards cannot be met, may be considered. For example, the Village has adopted woodland/mature tree identification, protection, and mitigation (e.g., replanting) standards in zoning and subdivision ordinances to help maintain this limited resource.

### **Identifying Groundwater Recharge Areas**

As the Village develops, it will be of particular importance to identify and protect critical groundwater recharge areas. The Village will work with Dane County to remain updated on their progress in identifying critical recharge areas, and working to protect these areas and ensure that development that occurs around them minimizes adverse impacts.



## **Efficient Land Development**

Low-impact development also means focusing on techniques to minimize the amount of land required for additional growth, such as redevelopment, infill development, smaller lot sizes, and structured parking (see Housing and Neighborhood Development chapter).

