

# **APPENDIX A**

## **Purpose and Goals of Design Criteria**

This appendix provides information pertaining to the purpose and goals for developing the Design Criteria for each of the natural features evaluated as part of the Natural Resources Corridor mapping project. The primary purpose of the Design Criteria is to protect the natural features and their role in the ecosystem. The primary goal of the Design Criteria is to preserve the natural identity of Shakopee as a riverfront community.

The specific purpose and goal for each of the natural features has been researched, analyzed, and reviewed by the Environmental Advisory Committee. Based on this process, the following purpose and goal for each natural feature has been concluded.

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## Section 1 Lakes and Streams

Conserve the function lakes and streams provide such as water quality and flood control to retain and enhance the plant and animal communities associated with these ecosystems and provide recreation and open space for people.

1. **Protect Shoreland Areas.** Shoreland areas to protect water quality, provide flood control, retain and enhance the plant and animal communities associated with these ecosystems, and provide recreation and open space for people.
  - a. Lakes and streams and their associated shorelines provide habitat for fish, waterfowl, songbirds, frogs, turtles, mammals, butterflies, etc. Providing for native shoreland vegetation (both terrestrial and aquatic) provides food, habitat dwellings, freedom of plant and animal movement across unfragmented areas, and animal protection and cover.
  - b. Lakes and streams and their associated shorelines of native vegetation helps stabilize shoreland property by reducing wave erosion caused by wind and watercraft. It also protects water quality by reducing erosion, and trapping sediment and pollutants.
  - c. Native vegetation on along the shore absorbs nutrients that can cause excessive aquatic vegetation growth and algae blooms in lakes and streams. In turn, a natural shoreline reduces the maintenance required for manicured lawns.
  - d. Native shoreland vegetation slows runoff and allows water to filter through the soil and recharge groundwater.
2. **Consistent with Comprehensive Plan.** The purpose is consistent with the 2004 Shakopee Comprehensive Plan Update, as noted below:
  - a. The following efforts shall be made in the protection and preservation of wetlands, drainage ways and floodplains within the City (**Comprehensive Plan, p. 165-166**).
    - i The City will continue to implement the Shakopee Comprehensive Storm Water Management Plan NPDES Permit which includes water resource management practices, guidelines and programs for managing storm water drainage, enhancing water quality, and controlling flooding through the development review process and its capital improvement program. . .
    - ii Require public open space and public access to all remaining lakeshore and large wetland complexes within the Lake and Agricultural – Wetland Interchange Regions.
    - iii Monitor septic systems in environmentally sensitive areas to maintain water quality of community lakes, rivers and streams.
    - iv The City will require lot sizes and development densities to be exclusive of wetlands, drainage ways, and watercourses to protect environmentally sensitive areas from the encroachment of development. . .
    - v The City will work with the applicable Watershed Districts to establish a wetland-banking program for wetlands that cannot be saved on City projects. The banking plan will include restoring previously filled or drained wetlands as part of an overall plan that benefits the public. The City will consider establishing measures to acquire natural

vegetation strips around the perimeter of all wetlands, lakes, streams and major drainage channels. . .

- vi The City will promote the maintenance and/or restoration of existing public storm water drainage facilities (drain tiles, ditches, drainage ways, ponds), as necessary.
- vii Preserve natural drainage ways, and where feasible, reconstruct former natural drainage ways to handle stormwater runoff.
- viii Monitor and manage natural and man-made lakes, streams, and ponds for water quality.
- ix Conserve a variety of natural resource areas including wetlands, peat soils, ground water recharge areas, woodlands, lakeshore lines and watercourses

b. Establishing guidelines for the greenway corridors will be a first step in the goal to keep natural systems intact and incorporate them into developments in environmentally sensitive ways. Special management guidelines will be developed to preserve and improve the habitat, natural functioning and scenic qualities of the greenways.

- i. Support the establishment of a greenway plan that works toward linking together areas of natural resources that include wetlands, slopes, the Prior Lake/Spring Lake Outlet Channel, tree canopies, rivers, lakes, drainage ways and other significant natural resources as to create a continuous greenway corridor. (Comprehensive Plan, Greenway Policies, p.162)
- ii Provide for vegetative buffers along lakes, wetlands, ponds, creeks, and drainageways. (Comprehensive Plan, Implementation Plan, p. 171).

2. **Eco-system Management.** These design criteria adopt the perspective of ecosystem management: development and protection decisions need to be based on understanding the inter-relationship of the natural feature components of the ecosystem (i.e., woodlands, wetlands, slopes, wildlife and endangered species, lakes and shorelands, etc.). The individual components of the ecosystem, also referred to as green infrastructure, needs to be connected in order to function appropriately, just as the individual components of the City's street, water, and sewer systems must be connected in order to function.

3. **Water Quality and Shoreline Habitat.** The primary elements of risk associated with development near lakes and streams include degradation of water quality, loss of critical habitat for both water-based and land-based plant and animal communities, and the visual and character impacts from modifying the appearance of shorelands. These design criteria reflect the current state of scientific research on mitigating risks to water quality and shoreline habitat.

## Section 2 Wetlands

Conserve wetlands and the critical functions they provide in the ecosystem for water quality, flood control, habitat, recreation, and open space.

1. **Protect Values and Functions.** The primary purpose of the Design Criteria contained in this section is to protect Shakopee's wetland areas and the function that wetlands provide for water quality, flood control, habitat, recreation, and open space. The goal of wetland design criteria is to better sustain the green infrastructure role that wetlands play as a critical component of the eco-system and how developed areas co-exist with natural systems.
2. **Consistency with Comprehensive Plan.** The purpose is consistent with the Shakopee Comprehensive Plan Update, as noted on page 166: "The City will consider implementation of a wetland overlay district as part of the Zoning Ordinance to establish buffer areas around wetlands." Similarly, the Implementation Plan states that the City will implement the following strategies:
  - a. Provide for vegetative buffers along lakes, wetlands, ponds, creeks, and drainageways;
  - b. Identify opportunities for restoration of degraded streams and wetlands;
  - c. Pursue and implement, as deemed necessary, the following changes to City (zoning) ordinances: 1.b. Enforce environmental protections related to wetland, shoreland, and floodplain protections. Establish vegetative buffers along rivers, creeks, wetlands, and water courses.
3. **Protection Preferences Assigned.** The City has completed a natural resource inventory in 2002 and assigned qualitative values to wetlands based on local preferences. These preferences, along with established natural resource assessments, provide the basis for these Design Criteria.
4. **Remediation and Restoration.** The Design Criteria address the primary purpose of protecting the function of existing wetlands, but also the secondary purpose (consistent with the 2004 Comprehensive Plan Update) of how remediation can restore or improve wetland functions. Wetland capacity that disappeared when historic wetlands were drained or filled for agricultural or development reasons can be restored through appropriate incentives or alternative regulation where appropriate.

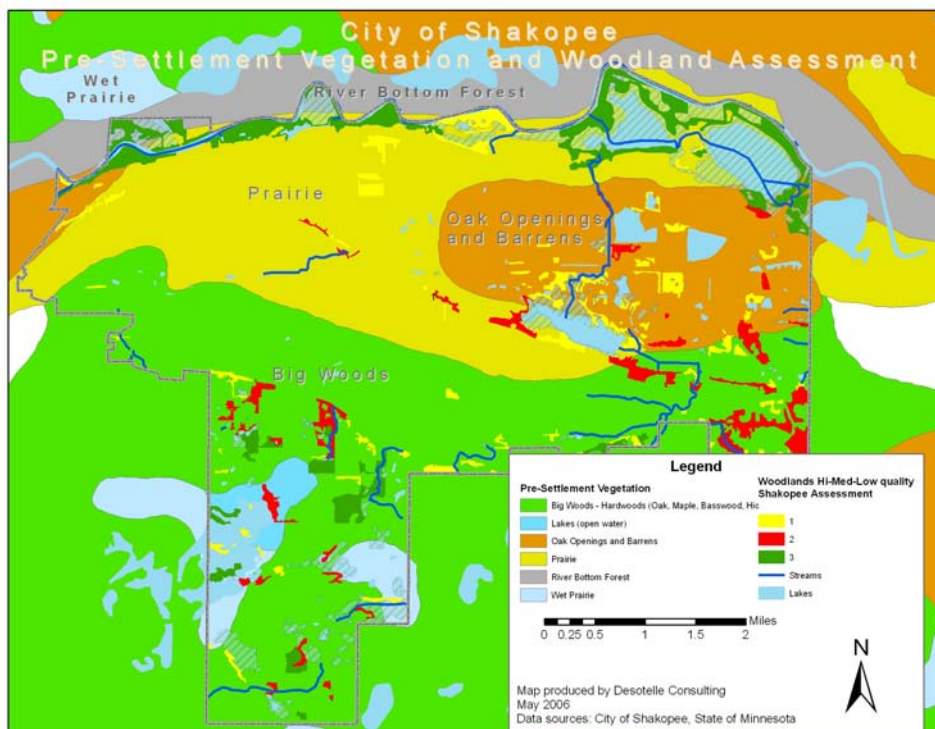
## Section 3 Woodlands

Conserve the various size woodland patches and reduce woodland fragmentation to better sustain ecosystem functions.

- 1. Protect Wooded Areas.** Woodland resources of any quality or significant size are so rare in Shakopee that all woodland areas should be retained to the fullest extent possible. The primary purpose of the Design Criteria contained in this section is to protect Shakopee's remaining important wooded areas as defined in the Shakopee Natural Resources Corridor map. Woodland protection does not refer to individual tree protection. Rather, it is the protection of various size woodland patches and the reduction of woodland fragmentation. The goal of patch protection and reduction of fragmentation is to better sustain ecosystem functions over time.
- 2. Pre-Development Vegetation.** As illustrated in Figure 3.1, below, prior to European settlement, over half of the land area of Shakopee was covered by three woodland habitats: Big Woods; Oak Openings and Barrens; and River Bottom Forest. Over 90% of this habitat has been removed for agriculture and development.
- 3. Protect Water Quality.** A secondary purpose of the woodland Design Criteria is to maintain water quality. Many of the remaining important woodland areas in Shakopee are located in close proximity to streams and lakes. These woodland areas serve an important role in slowing down stormwater runoff, preventing erosion, aiding in infiltration, and providing shade to cool water temperatures.
- 4. Community Character.** A final purpose of the woodland Design Criteria is to maintain wooded areas for community character. Because of the relative scarcity of wooded areas in Shakopee, their presence is highly valued as a visual relief within a landscape of grassland.

Figure 3.1: Extent of Pre-Settlement Woodland Cover in Shakopee.

This illustration shows the remaining woodland cover in Shakopee according to the 2002 Natural Resources Inventory (MLCCS) as compared to the pre-settlement extent of woodlands.



## Section 4 Upland Vegetation

Conserve the remaining native upland vegetation areas and encourage restoration efforts to take place to connect isolated, naturally vegetated locations.

1. **Protect Upland Vegetation Areas.** The primary purpose of the upland vegetation design criteria is to protect areas in Shakopee with high quality non-woody upland vegetation where proposed or existing development presents a risk to Shakopee's remaining native habitat. The design criteria are also designed to allow restoration efforts to take place, provide for connection of isolated high value vegetation areas, and recognize the Comprehensive Plan (2004 Plan update, or most recent variation).
2. **Consistency with Comprehensive Plan.** The purpose is consistent with the Shakopee Comprehensive Plan (as updated in 2004), as noted below:
  - a. The Comprehensive Plan emphasizes the need for proper environmental protections and performance design criteria mandating future development be respectful of existing natural environment within the City. In response to these objectives, the City will implement the following strategies: 1. Re-evaluate and amend the City's development regulations pertaining to the following items: a. Establish zoning design criteria that outline the conditions for the creation of greenway corridors. . . c. Re-evaluate and amend the City's landscape and tree preservation requirements to address issues related to tree preservation, provisions of native vegetation, control of invasive or exotic plant species (Comprehensive Plan, Implementation Plan).
  - b. The detailed inventory of the community's unique habitats and functioning ecosystems. . . can then be used to set priorities for protection of sensitive or unique habitats and to determine appropriate standards for any future development. . . The natural resource inventory should be used to: . . . 2. Identify special natural areas for permanent protection – either by private or public action. 3. Identify opportunities for restoration of degraded streams, wetlands, woodlands, savannas, prairies, and native natural areas. 4. Determine appropriate locations for greenway corridors (Comprehensive Plan, Natural Resources Plan Policies).
  - c. Encourage re-vegetation and management of areas to restore native habitat and natural aesthetic qualities that contribute to environmental quality (Policy #2, General Natural Resource Policies).
  - d. One concept directed in the Comprehensive Plan is the establishment of greenway corridors. The purpose of the greenway is as follows: . . . (2)The greenways will preserve the ecological functions of the City's environmentally sensitive areas. In this respect, land use development within the greenways will be limited to low densities. Urban land uses will be allowed at the periphery of the greenways with subdivisions and site design that preserves the view sheds into the greenways. . . (3) The greenways are intended to provide a diversity of natural features and habitat. This is to allow for wildlife habitat and to facilitate wildlife movement through areas dominated by human activities. In this respect, the greenways will be configured to include both low lands and upland areas (Comprehensive Plan, City Wide Land Use Plan).
  - e. The City shall consider development of greenway corridors to identify and connect the community's natural systems and areas. . . **Greenways enhance the ecological function and aesthetic quality of natural areas and open spaces by interconnecting them, thereby countering habitat fragmentation and loss.** In Shakopee, greenway corridors will serve to

protect environmentally sensitive areas such as the outlet channel for the Prior Lake/Spring Lake Watershed District, **natural habitat**, wetlands, woodlands, drainage ways and excessive slopes (Greenway Corridor Policies, emphasis added).

3. **Ecosystem Approach.** These design criteria adopt the perspective of ecosystem management: The whole system is greater than the sum of all its parts. development and protection decisions need to be based on understanding the inter-relationship of components of the eco-system (i.e., woodlands, endangered species, wetlands, slopes, etc.). Individual components of the ecosystem, also referred to as green infrastructure, must frequently be connected in order to function appropriately, just as the individual components of the water, wastewater, and transportation systems must be connected in order to function.
4. **Integrate Development.** These design criteria are designed to integrate new development with Shakopee's remaining natural habitat heritage areas, and to ensure that these areas continue to function as habitat and open space into the future.

## Section 5 Wildlife Habitat

Conserve existing wildlife habitat and allow restoration efforts to connect isolated wildlife habitat areas.

1. **Protect Wildlife Corridors and Habitat.** The primary purpose of the wildlife design criteria is to protect areas in Shakopee with wildlife corridors and habitat where proposed or existing development presents a risk to existing habitat or corridors. The design criteria are also designed to allow restoration efforts to take place, provide for connection of isolated habitat areas, and recognize the Comprehensive Plan Natural Resources Corridor (2004 Plan update, or most recent variation).
2. **Consistency with Comprehensive Plan.** The purpose is consistent with the Shakopee Comprehensive Plan (as updated in 2004), as noted below:
  - a. The City shall consider development of greenway corridors to identify and connect the community's natural systems and areas. Greenways are defined as continuous corridors that provide for the movement of wildlife and protection of natural resources. (Comprehensive Plan Update, Natural Resource Plan, Greenway Policies).
  - b. A greenway plan should be developed to link the major natural features to the local park system, and established wildlife habitat including the Minnesota Valley National Wildlife Refuge (Comprehensive Plan Update, Natural Resources Plan, Greenway Corridor Policies).
  - c. The greenways are intended to provide a diversity of natural features and habitat. This is to allow for wildlife habitat and to facilitate wildlife movement through areas dominated by human activities. In this respect, the greenways will be configured to include both low lands and upland areas. (Comprehensive Plan, City-Wide Land Use Plan).
  - d. Establish and maintain conservation areas for wildlife management and education and scientific purposes. (Comprehensive Plan Update, Natural Resource Plan Policies, #9).
  - e. The numerous wetlands, drainage ways, and floodplains throughout the City are valuable for their role in floodwater retention, ground water recharge, nutrient assimilation, and wildlife habitat. The preservation of wetlands and floodplain areas is viewed as essential in land use planning to retain the natural features of the City and to protect the natural functions of the amenities. (Comprehensive Plan Update, Natural Resources Plan).
3. **Ecosystem Perspective.** These design criteria adopt the perspective of ecosystem management: The whole system is greater than the sum of all its parts. development and protection decisions need to be based on understanding the inter-relationship of components of the eco-system (i.e., woodlands, endangered species, wetlands, slopes, etc.). Individual components of the ecosystem, also referred to as green infrastructure, must frequently be connected in order to function appropriately, just as the individual components of the water, wastewater, and transportation systems must be connected in order to function.
4. **Integrate Development.** These design criteria are designed to integrate new development with Shakopee's remaining natural habitat heritage areas, and to ensure that these areas continue to function as habitat and open space into the future. Shakopee's remaining areas that provide wildlife habitat and movement are.

## **Section 6      Endangered and Threatened Species**

Conserve the ecosystem upon which species classified as endangered, threatened, or of special concern depend for survival.

- 1. Conserve Ecosystems.** The primary goal of this design standard is to conserve the ecosystem upon which species classified as endangered, threatened, or of special concern depend for survival, and to ensure compliance with the federal Endangered Species Act of 1973 and Minnesota's Endangered Species Statute and associated rules.
- 2. Comply with State Rules.** Minnesota's Endangered Species Statute and the associated Rules impose a variety of restrictions, a permit program, and several exemptions pertaining to species designated as endangered or threatened. A person may not take, import, transport, or sell any portion of an endangered or threatened species. However, these acts may be allowed by permit issued by the Minnesota Department of Natural Resources.

## Section 7 Steep Slopes and Bluffs

Conserve steep slope and bluffs that help shape Shakopee's community character for future generations.

1. **Protect Steep Slopes and Bluffs.** The primary purpose of the steep slope Design Criteria is to protect areas in Shakopee where proposed or existing development near steep slopes present a risk to Shakopee's prominent natural features that help shape Shakopee's community character, to Shakopee's natural resources in or adjacent to bluff and steep slope areas, and to the long-term viability of housing and infrastructure. The goal of steep slope design criteria is to recognize the risk associated with steep slopes both to the sustainability of development on those sites and the risk to adjacent green infrastructure.
2. **Consistent with Comprehensive Plan.** The purpose is consistent with the Shakopee Comprehensive Plan Update, as noted below:
  - a. As Shakopee becomes a more popular place to live, the environmental resources need ever more protection and management. In order to protect these resources the City must have policies and guidelines for natural areas, open space, slopes, soils, surface waters, and groundwater. In addition the plan needs to recognize special areas and issues that impact the natural environment, and establish direction or guidelines to minimize negative impacts on the environment (2004 Natural Resources Plan).
  - b. Protect wetlands (as required through the Wetland Conservation Act), excessive slopes, woodlands, significant natural habitats, and scenic views, as identified in the Land Cover of Southern Scott County, A Natural Resources Inventory of the City of Shakopee, Jackson, and Louisville Townships from environmentally insensitive development. (2004 Natural Resources Plan).
  - c. The City shall consider development of greenway corridors to identify and connect the community's natural systems and areas. Greenways are defined as continuous corridors that provide for the movement of wildlife and protection of natural resources. They are generally vegetated, linear in shape, and follow natural waterways or land features such as wetlands, slopes, valleys, and ridgelines. Greenways enhance the ecological function and aesthetic quality of natural areas and open spaces by interconnecting them, thereby countering habitat fragmentation and loss. In Shakopee, greenway corridors will serve to protect environmentally sensitive areas such as the outlet channel for the Prior Lake/Spring Lake Watershed District, natural habitat, wetlands, woodlands, drainage ways and excessive slopes (2004 Natural Resources Plan).
3. **Slope and Bluff Priorities.** The primary elements of risk associated with development on bluffs and steep slopes are the visual and character impacts from losing prominent natural features and views, and the physical impacts to the bluff and slopes. Physical impacts include risk of soil erosion, risk of increased velocity and volume from storm water into adjacent waterways, importance of slopes and bluffs to some habitat, and difficulty and increased cost of installing infrastructure and buildings on an incline.

## Section 8 Recreation Opportunities

Enhance Shakopee's recreational opportunities to allow residents to gain an appreciation for natural resources.

- 1. Enhance Recreation Opportunities.** The primary purpose of the Design Criteria contained in this section is to enhance Shakopee's recreation opportunities so residents can gain an appreciation for the natural resources within the City. The goal of the recreation opportunities design criteria is to allow people to make a connection with the environment so that the significance of the green infrastructure within the City is realized as a critical component of the eco-system and how recreation opportunities can co-exist with natural systems.
- 2. Park, Trail, and Open Space Plan.** The purpose is consistent with the mission statement for the Shakopee Park, Trail, & Open Space Plan Update: *"Our mission is to provide, develop, protect, and enhance excellent park and recreation services, open spaces, and natural resources that contribute to a high-quality of life for our residents."*
- 3. Updated Plan.** Currently, Shakopee's Park, Trail, & Open Space Plan is in the process of being updated for the 2008 submittal. This plan will provide direction for the Shakopee park and recreation department through the year 2030.

## **Section 9      Accessibility/Infrastructure**

The primary purpose of the Design Criteria contained in this section is to utilize existing infra-structural components of the City, such as the stormwater system, and available easements, such as drainage and utility easements, as part of the Natural Resources Corridor.

## Section 10      Connectivity

Ensure recreational or natural resource connections between areas identified on the Natural Resources Corridor map.

1. The primary purpose of the Design Criteria contained in this section is to ensure recreational or natural resource connections between areas identified on the Natural Resources Corridor map that do not have natural features providing corridor connections. The goal of connectivity is to provide people connections between natural resource features identified on the Natural Resources Corridor map.
2. The purpose is consistent with the mission statement for the Shakopee Park, Trail, & Open Space Plan Update: *“Our mission is to provide, develop, protect, and enhance excellent park and recreation services, open spaces, and natural resources that contribute to a high-quality of life for our residents.”*
3. Currently, Shakopee’s Park, Trail, & Open Space Plan is in the process of being updated for the 2008 submittal. This plan will provide direction for the Shakopee park and recreation department through the year 2030.
4. The Design Criteria address the primary purpose of protecting and enhancing open spaces and natural resources to provide recreational opportunities for Shakopee residents.