COASTAL VISUAL QUALITY

A GUIDE TO PROTECTING THE SCENIC RESOURCES OF WISCONSIN'S LAKE SUPERIOR SOUTH SHORE

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Introduction

This publication is intended to serve as a general guide to protecting the scenic resources and aesthetic quality of Wisconsin's Lake Superior south shore. This publication does not attempt to assess scenic beauty, but rather to identify known and potential scenic resources and to suggest methods for protecting and preserving the scenic beauty of this unique environment.

Scenic beauty is perhaps the most widely recognized natural asset of Wisconsin's south shore. The combination of unique coastal landforms, forestlands, wetlands, water and wildlife contributes to the region's exceptionally high scenic value. The focal point of the visual environment is Lake Superior itself, the largest freshwater lake on earth. The heavily forested coastline and the land-water interface enhance the scenic qualities of the landscape. Natural features which add interest to the scenic landscape include numerous rivers and streams, waterfalls, wetlands, sandy/rocky beaches and shoreline features such as cliffs and exposed rock. From the top of coastal bluffs, views may extend for 20 miles or more across the open waters of Lake Superior, depending on weather conditions. Along portions of the coast, nearshore islands help to frame views and provide human scale to the flat horizontal plane of Lake Superior.

Why is it important to protect Scenic Beauty?

The concept of scenic beauty has long been recognized as an important community resource and its protection has been mandated by both state and federal legislation. Along the south shore, scenic beauty is not only important from an aesthetic perspective, it is essential to economic health and to the quality of life of residents. The tourism and recreation based economy of the south shore relies on a healthy foundation of natural resources, including scenic beauty in order to attract visitors to the

area. The importance of scenic resources requires that we develop ways to understand and measure them so we can better manage and protect them.

Beauty is in the Eye of the Beholder, Right?

There are well established, objective methods to determine the scenic beauty of a landscape. Similarly, there are objective methods to evaluate the impacts of visual change on that landscape. Government agencies including the U.S. Forest Service and Bureau of Land Management have long used objective methods to inventory visual resources and to evaluate the impacts of land management decisions.

The phrase, “beauty is in the eye of the beholder,” is often used to emphasize an element of subjectivity in determining scenic quality, yet, contemporary visual preference and public opinion surveys demonstrate a level of consistency in what people find visually attractive. Qualitative approaches have been used to measure various landscape characteristics that contribute to scenic beauty (i.e. identifying unique landforms, vegetation characteristics and diversity). Other evidence suggests that certain landscape qualities can be used to formulate an evaluation, and that aesthetic impact can be measured (Buhyoff & Riesenmann, 1979). The use of geographic information systems (GIS) technology has enabled researchers to predict the scenic beauty of landscapes using reproducible methods over large areas (Bishop & Hulse, 1994). Other studies in the psychology of visual perception indicate that response to visual stimuli may also be predictable.

Visual Resource Management and Public Policy

Visual resource management has long been a part of both federal and state public policy. Numerous federal laws require all federal land management agencies to consider scenery and aesthetic resources in land management planning, resource planning, project design, implementation and monitoring. Federal legislation referencing visual resources includes,

Wilderness Act of 1964
Wild and Scenic Rivers Act of 1968
National Trails System Act of 1968
National Environmental Policy Act of 1969
Environmental Quality Act of 1970
Forest and Rangeland Renewable Resources Planning Act of 1974
National Forest Management Act of 1976
Surface Mining Control and Reclamation Act of 1977
Public Rangelands Improvement Act of 1978

Federal agencies such as the U.S. Forest Service (USFS) and the Bureau of Land Management (BLM) have adopted methods for assessing visual information. The Forest Service uses the Scenic Management System (SMS) to identify visually sensitive areas and sites on National Forests, while the BLM uses the Visual Resource Management system (VRM) to classify visual management areas and to evaluate visual resource impacts of proposed activities.

In Wisconsin, there are at least 15 references to scenic or natural beauty within State Statutes, and over 75 references within the Administrative Rules (Chenoweth, 1991) which govern the practices and procedures of the Wisconsin Department of Natural Resources (WDNR). WDNR has established aesthetic guidelines for management of state and county forests. These guidelines divide a forest area into zones, based on the impact of forestry activities on the scenic values of the area, as viewed by the public. Chapter 281.31, Wisconsin State Statutes and NR115, Wisconsin Administrative Code establish the WI Shoreland Management Program which provides that shoreland zoning regulations shall "further the maintenance of safe and healthful conditions; prevent and control water pollution; protect spawning grounds, fish and wildlife habitat; control building sites, placement of structures and land uses and reserve shore cover and natural beauty." Chapter 202.01 of the Wisconsin Administrative Code establishes the Wisconsin Scenic Byways program, administered by the Wisconsin Department of Transportation (WisDOT). This program allows for the portions of the state trunk highway system which possess "unusual, exceptional, or distinctive scenic features" to be designated as Scenic Byways.

Under Wisconsin's Public Trust Doctrine, lakes and rivers are public resources, owned in common by all Wisconsin citizens. The Doctrine grants all citizens the right to boat, fish, hunt, ice skate, and swim on navigable waters, as

well as enjoy the natural scenic beauty of navigable waters, and enjoy the quality and quantity of water that supports those uses. The Wisconsin Supreme Court and Court of Appeals have repeatedly upheld that the enjoyment of natural scenic beauty is a public right[1]. In a 1973 state Supreme Court case involving a boathouse (Claflin v. DNR), the court stated that "specific structures may be determined to be detrimental to the public interest on the ground that they impair natural beauty. This is a proper basis for denial of a permit. The natural beauty of our northern lakes is one of the most precious heritages Wisconsin citizens enjoy. It is entirely proper that that natural beauty should be protected as against specific structures that may be found to mar that beauty."

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[1] Muench v. Public Service Commission, 261Wis. 492 (195 1), Claflin v. DNR, 58 Wis.2d 182 (1972), Sterlingworth Condominium Assoc. v.DNR, 205 Wis.Zd 702 (Ct. App. 1996).

Characterizing coastal scenic beauty

The Coastal Setting

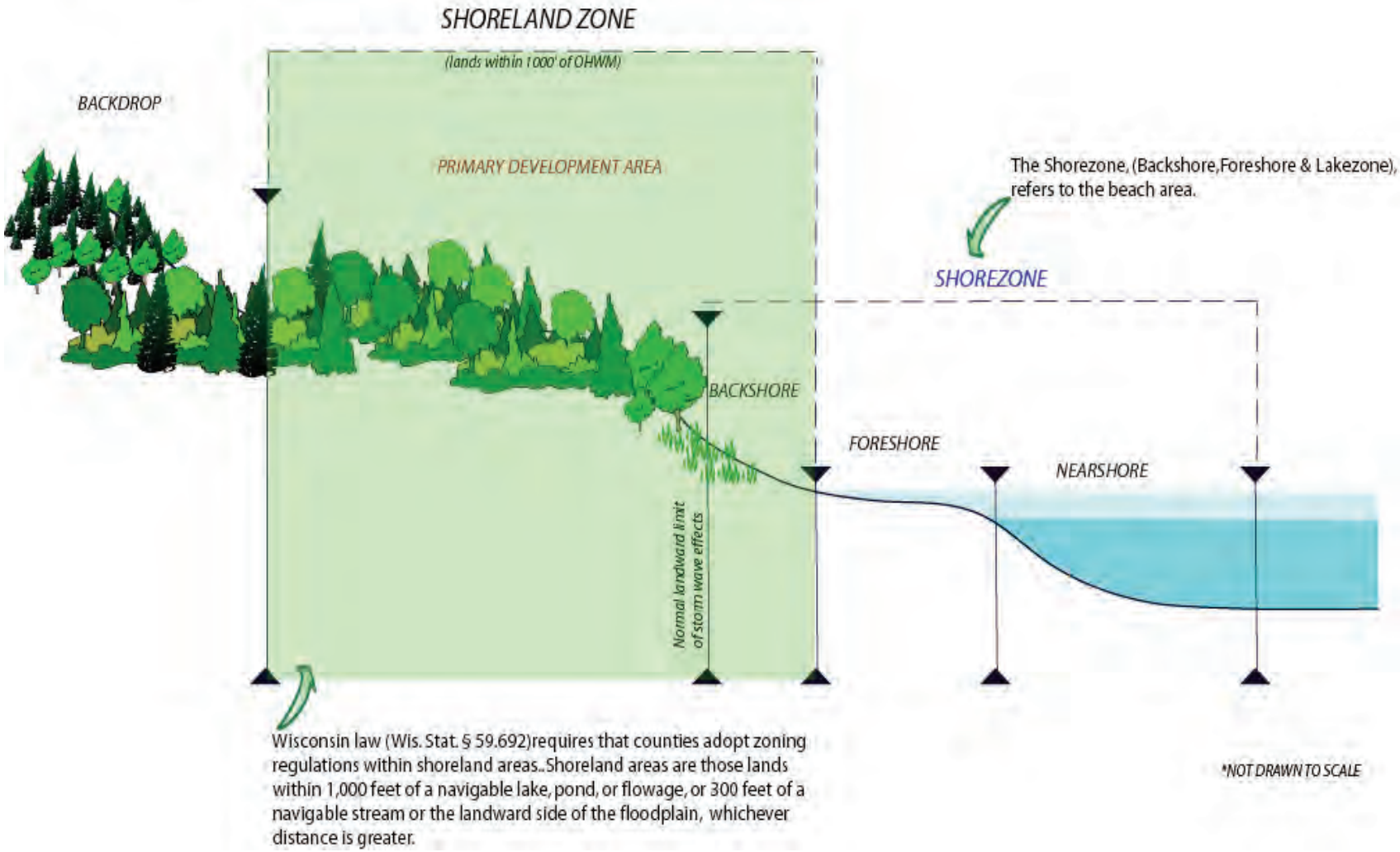
Since Lake Superior is the focal point of the south shore visual environment, it is important to understand how human use and development near the lake can heavily influence scenic beauty. Many of the south shore's scenic attributes, such as cliffs, river mouths, coastal wetlands, beaches and water are found near the land-water interface.

The beach area is commonly referred to as the **Shorezone**. In terms of scenic beauty, this zone is of concern due to human use and alteration and the presence of docks, piers and other accessory buildings. The shorezone itself is comprised of the nearshore, backshore and foreshore zones. The **Backshore Zone** includes lands lying between the ordinary high water mark and the normal landward extent of the coastal floodplain influenced by wave run-up. In Wisconsin, new housing development is not permitted within the backshore zone, although certain accessory structures may be permitted. The **Foreshore Zone** includes the active littoral zone along the shoreline up to the ordinary high water mark (OHWM). Permitted development may include docks and piers. The **Nearshore Zone** is an indefinite zone extending lakeward from the upper limits of the beach. The **Shoreland Zone** includes all lands lying within 1000 feet of the ordinary high water mark (OHWM) of the lake. This zone was established by statute as part of the state's shoreland protection standards. In the context of scenic beauty, this zone is of significant concern as these lands are highly desirable for home and recreational development. The **Backdrop, or** background area refers to lands lying beyond 1000 feet of the shore. When viewed from the water, visually prominent development or landscape alteration in the backdrop can influence scenic beauty (refer to Photo 1).

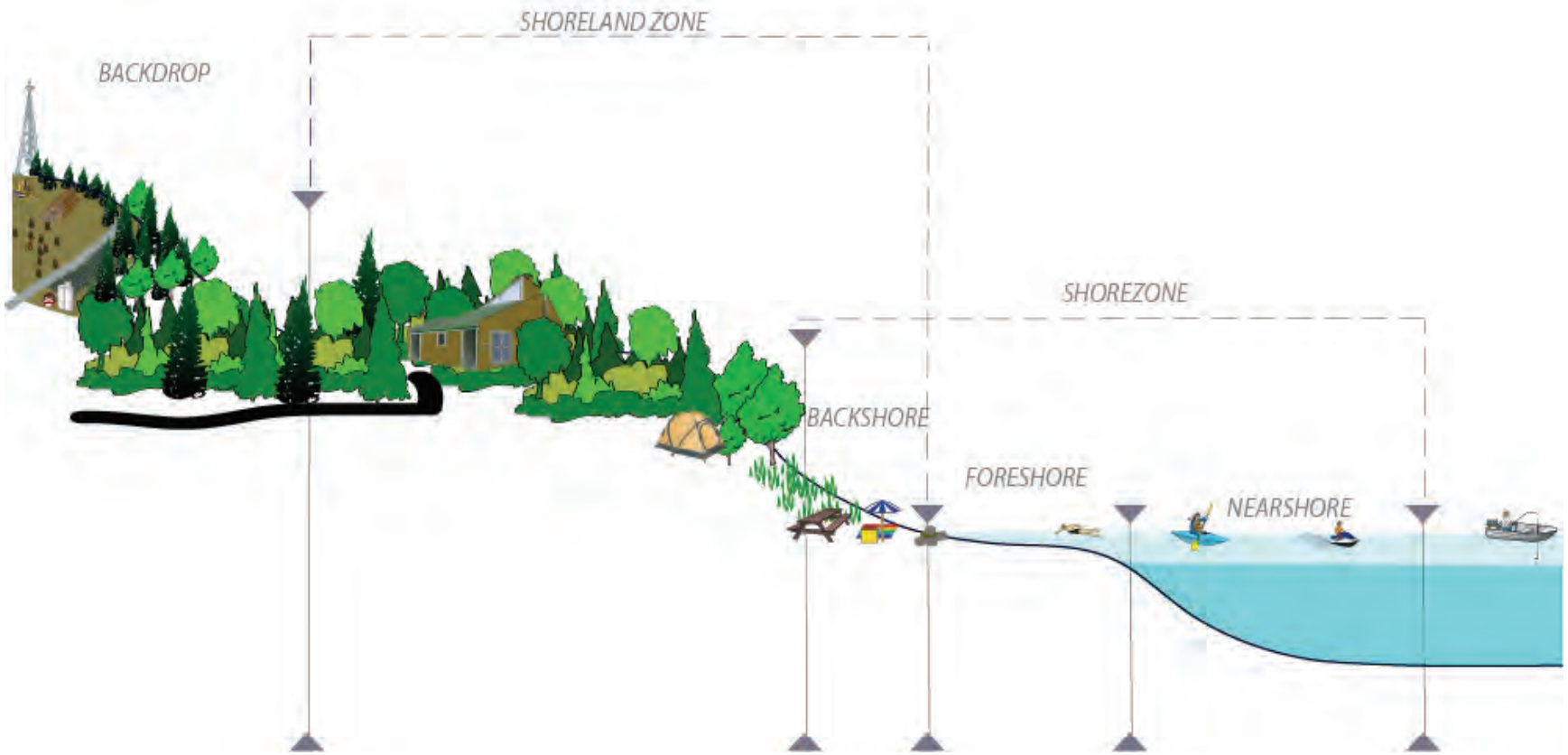
<u>Primary human use/development in the Shorezone</u>
Docks, piers, accessory buildings
Shoreline modifications
Boating, swimming, fishing
Sunbathing and other beach uses
In-water recreational structures
Marinas and public access facilities

<u>Primary human use/development in the Shoreland Zone</u>
Commercial & residential development
Outdoor recreation
Transportation
Utilities and infrastructure
Logging and land clearing activities

THE COASTAL SETTING



HUMAN USE AND DEVELOPMENT IN THE COASTAL SETTING



Vividness, Intactness & Unity

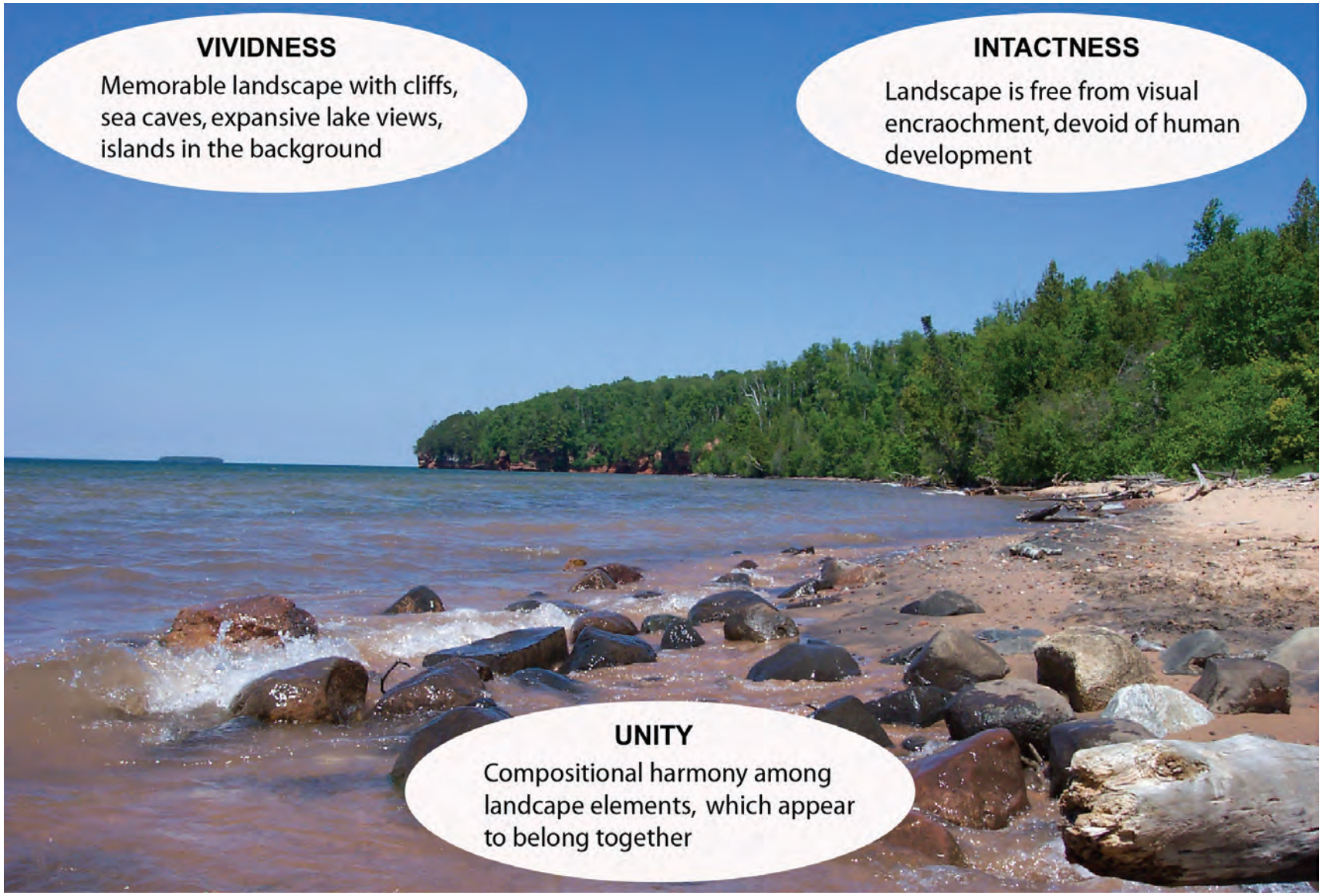
The concept of scenic beauty can be generally characterized as a harmonious relationship between landscape and design elements which is visually pleasing to the observer. The concept of scenic beauty can be described using the concepts of vividness, intactness and unity.

Vividness describes the visual power or memorability of landscape components as they combine in a visual pattern. Distinct landscape and coastal features such as forests, cliffs, bluffs, islands, rock and sea caves are examples of natural elements which contribute to vividness. When framed against the backdrop of the vast waters of Lake Superior these scenes become distinct, striking and visually pleasing.

Intactness describes the visual integrity of the natural and artificial landscape and its freedom from encroaching elements. A landscape where all elements appear to belong together would have a high level of intactness. Introducing cultural modifications into a naturally dominated setting is the greatest threat to intactness.

Unity represents the visual coherence and compositional harmony of the landscape considered as a whole. Unity also describes the visual coherence of landscape elements and the compositional harmony of the landscape.

An area with high scenic beauty usually possesses a high degree of all three of these characteristics. At the individual site or project level, scenic beauty is also defined in terms of the visual sensitivity within the viewshed of the proposed action and the ability of the landscape to absorb visual changes (Visual Absorption Capability). Locations with a high level of visual sensitivity are generally described as areas where high concentrations of people may be present or areas that are readily accessible to large numbers of people. These locations include designated scenic areas (byways, overlooks, or other designated scenic locations), public recreation areas (such as the Apostle Islands National Lakeshore), and significant historic or archaeological locations.


VIVIDNESS
Memorable landscape with cliffs, sea caves, expansive lake views, islands in the background
INTACTNESS
Landscape is free from visual encraochment, devoid of human development
UNITY
Compositional harmony among landcape elements, which appear to belong together

Landscape Elements

Vividness, intactness and unity are broad indicators used to describe scenic beauty. These indicators are a function of the more localized landscape and development characteristics such as landforms, shorelines, vegetation, land uses, historic/cultural resources and architectural design.

Landforms

Landforms are defined as a variety of natural shapes and forms of topography**.** These features include natural contours, slope, visible contours of hilltops and tree lines, bluffs and rock outcroppings.

The scenic value of the landform is a function of the continuity, shape, form and composition. Landforms which exhibit abrupt or dramatic elevation change, unique form and/or contain distinctive geologic or other natural features are generally of the highest scenic value.

There are three primary topographic units which comprise the upland of Wisconsin's Lake Superior coast. Douglas County and western Bayfield County are generally characterized by a level clay plain, which is between 30 and 100 feet above lake level. This plain is broken by numerous ravines and streams which transport upland runoff to the lake. These topographic features are also found to a lesser extent in Ashland and Iron Counties

The Bayfield Peninsula of northern Bayfield County is characterized by undulating topography with large hills and rock outcroppings. Surface drainage features have not dissected the landscape as sharply as those areas within the level clay plain. On the northern tip of the peninsula, elevation quickly rises from lake level (601 feet) to over 1,000 feet, with several prominent hills and ridges in excess of 1,300 feet.

The third primary topographic unit occurs in Ashland County, and includes the southwestern portion of Chequamegon Bay and the Kakagon Sloughs. These areas form expansive plains of peat and muck soils, which do not rise significantly above lake level.

Shoreline characteristics

The physical characteristics of the shoreline play an important role in defining overall scenic beauty. Along the south shore, variation in shoreline type is common. Shoreline types range from sand and gravel beaches to exposed rocky cliffs. The sea caves found along the northern shores of the Bayfield Peninsula and the Apostle Islands are a unique scenic resource, which further enhances local scenic values. Other natural features within the shorezone area such as the outlets of

rivers and streams and coastal wetlands contribute to the overall scenic quality and add elements of diversity and complexity to the visual environment. Nearshore features such as exposed rock and islands frame views and provide an element of scale to the landscape. The prominent shoreline types found along the south shore include clay bluffs, sandstone bluffs, sandstone caves, sloughs and sand beaches.

Red Clay Bluffs

High clay bluffs are present along portions of the south shore. At several locations these features rise to nearly 100 feet above the level of the lake. Along the bluffs, erosion is significant, particularly in areas from Bark Point (Bayfield County) to Wisconsin Point (Douglas County) and from Iron County to the White River (Ashland County). Clay bluff erosion contributes sediment to Lake Superior giving nearshore waters a reddish hue following rain events and the spring meltdown. The clay bluffs are visually unique when compared to other south shore shoreline types. The exposed red clay soils of actively eroding bluffs tend to sharply contrast with green upland vegetation and the deep blue hue of Lake Superior.

Sandstone Bluffs

In contrast to the clay bluffs, the sandstone bluffs found along the Bayfield Peninsula are generally considered to be high quality visual resources. Several natural factors contribute to the visual and aesthetic qualities of these areas. The unique, varied and irregular shapes, curves, colors and topographic variation combines with exposed rock and natural vegetation to create a visually prominent environment. The interactions between the shoreline and the water further enhance the visual setting. Along the secluded bays found interspersed throughout this shoreline type, lightly colored beach sands contrast with the prominent red sandstone of the bluffs. Lakeward views from the bluffs are greatly enhanced by the presence of the Apostle Islands, which serve to provide a sense of scale and to frame views.

Sea Caves

The sandstone sea caves of the northern Bayfield Peninsula are arguably the most unique and visually exceptional shoreline type found along the south shore. These caves are the result of wave action which has eroded away the base of sandstone bluffs at the water line forming delicate arches, vaulted chambers, and intricate passageways. Many of these caves are large enough to accommodate small boats or other watercraft. The high visual and aesthetic quality associated with these features is a function of both the unique physical environment and the vegetated natural setting. As with the sandstone bluffs, interaction between the water and the sea caves enhances the visual setting. Lakeward views are also enhanced by the presence of the Apostle Islands.

Sand Beaches

These shorelines can be characterized as barren or sparsely vegetated habitats on sand beaches exposed to regular wave-wash and ice-scouring. Continual erosion and deposition of sand prevents the development of stable plant communities. Sandy beaches are most common in coves, bays, or bay mouths but are also present along gently curving or relatively straight sections of shore such as Chequamegon Point. Sand beaches are generally considered to have high scenic value, enhanced by the color contrast between the sand, water and riparian vegetation.

Sloughs

Within the Kakagon Sloughs area of Ashland County, water and vegetation combine to from a unique and distinct visual landscape. The sloughs are the largest functioning estuarine system on the upper Great Lakes and support numerous wetland plant communities, including extensive beds of wild rice. The sloughs are separated from Lake Superior by a long coastal sand spit, another unique visual feature. The surrounding upland forests provide an element of enclosure to the visual environment.

Vegetation

The diversity, maturity and condition of natural vegetation can play an important role in overall scenic quality. Vegetation also serves to minimize the visual impact of human development by screening it from view. Dense forest conditions prevail along much of Wisconsin's south shore. Occasional disruptions in the vegetative continuity are caused by logging, farming and other land clearing activities associated with human use and development.

Diverse forests, grasslands and wetlands provide a variety of natural textures and colors to the landscape of the south shore. Along the Bayfield Peninsula, historic farmsteads, outbuildings, pastures and cultivated fields with adjoining forestlands create a pleasant patchwork of farmland and forest.

Coastal Land Use and Development

Human development is the single greatest threat to coastal scenic beauty. While the perception of the impacts of coastal development is subjective, development clearly does have the potential to change the visual landscape. Coastal development factors which negatively impact scenic quality include inappropriate siting/screening, design, scale, density and finish of structures such that they become visually dominant landscape elements. In places where human development encroaches on the natural landscape, the

viewer is distracted from elements of the natural environment, or these elements may simply no longer exist. In contrast, when development is subordinate to the surrounding environment, the viewer can appreciate the component parts of the natural scenery as a whole.

The scenic resources of the south shore are being threatened by the increasing presence of human development on the coastal landscape. In recent years, the coast has experienced significant development pressure, resulting in alteration of the natural landscape for recreational/residential development purposes.

Historic/Cultural

Historic landscapes and historically significant landscape elements within the landscape can influence overall scenic value and general rural character. Historic landscapes can be defined as those associated with identified/recognized historic structures, settlement patterns or archaeological sites. These landscapes include the individual component element(s) and contributing setting, such as an old farmhouse set against a traditional rural agricultural backdrop.

The individual historic elements within the landscape include those that have been used, shaped, or modified over time by human activity or occupancy as part of an evolving cultural and historical process in the natural use and development of the land. Along the south shore, examples of these elements include historic buildings, homes/farmhouses, lighthouses and infrastructure or facilities associated with maritime heritage.

Many historically or culturally significant resources are listed in the National Register of Historic Places. In order for a property to be listed as a historic landscape in the National Register, it must possess significance in at least one of the four aspects of cultural heritage specified by the National Register criteria, including:

- ❒ Properties associated with events that have made significant contributions to the broad patterns of history. This includes landscape values which illustrate important events and activities that led to a community's development.
- ❒ Properties associated with the lives of persons significant in our past.
- ❒ Properties embodying the distinctive characteristics of a type, period, or method of construction; possessing high artistic values; or representing a significant and distinguishable entity whose components may lack individual distinction.
- ❒ Properties that have yielded or are likely to yield, information important to prehistory or history.

Architectural

Unique and/or distinguishing architectural characteristics can enhance the scenic beauty of the developed landscape. Design characteristics associated with a period, style or method of construction may enhance visual interest. Designs which include use of indigenous materials or craftsmanship or unique or rare architectural designs may also have high scenic value. Lighthouses are an example of unique architectural designs associated with coastal landscapes and local history.

Design Elements

Visual perception of mass and space consists of the four basic design elements of form, line, color and texture. These are the foundational visual elements present in all landscapes which are important in describing and evaluating the visual impacts of activities on the landscape. Modifications which repeat the basic design elements found in the natural landscape reduce contrast and blend into the natural surroundings.

Communications tower is masked to resemble natural vegetation thus repeating the basic design elements found in the natural landscape

Land disturbance creates unnatural “terrace” effect and adds textural contrast to the landscape

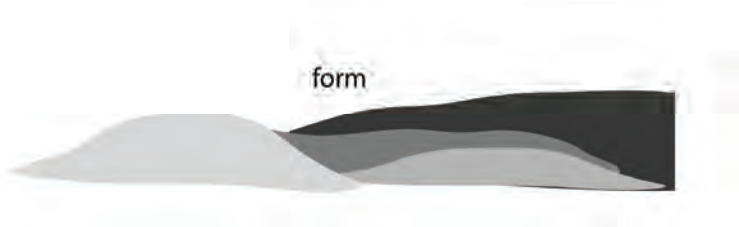
Linear shoreline, unbroken by development or cultural modification

Roadway follows natural curves and contours

Landscape disturbances such as logging, mining and human development can add ‘unnatural’ contrast to the landscape

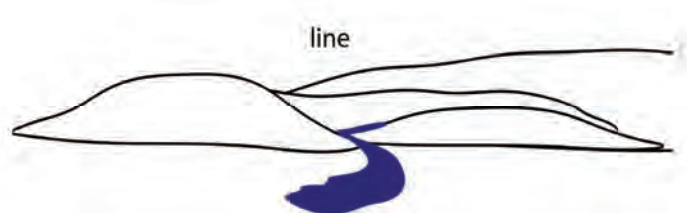
Form

Form describes the bulk, or shape or the landscape or individual landscape elements. On a large-scale form is represented in natural landforms, glacial features, etc. On a smaller scale, form can be represented in individual landscape features such as rocks and trees. Man creates form through the construction of structures and other development.



Line

Line is a connection between two points. Examples of natural lines include bluff and ridge lines, coastal shorelines, the horizon or transitions in vegetation types. Man-made lines include roadways, fences, bridges and structures. Elongated straight lines rarely occur in natural setting, which generally favors curves, and free-form lines.

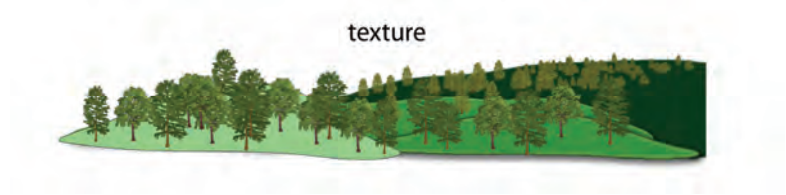


Color

Color describes the visual sensation dependent on the reflection or absorption of light from a given surface. Colors that occur most frequently in natural settings are greens, blues, and varying shades of brown. Balanced natural and complimentary color combinations are generally pleasing to the human eye. Conversely, colors which do not harmonize well with the surrounding landscape can detract from the scenic value.

Texture

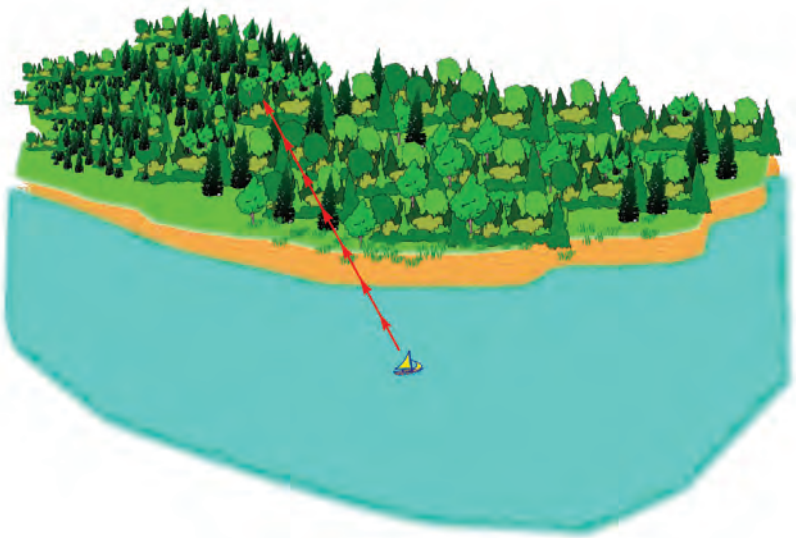
The Bureau of Land Management's Visual Resources Manual defines texture as "the visual manifestations of the interplay of light and shadow created by the variations in the surface of an object or landscape." Texture describes the relative coarseness of a surface, and can be described as a range from smooth to coarse.



Coastal Viewsheds

A “viewshed” defines the land area visible from a given location. Viewsheds can include views from locations on land towards the lake as well as from the lake toward the land. Land based scenic views include those from public lands, access points and recreational areas, trails, roadways and designated scenic view points. These publicly accessible locations provide a form of visual access to the coast.

THE LANDWARD PERSPECTIVE



THE LAKEWARD PERSPECTIVE

Consideration of the unique visual characteristics of the coast, as viewed from the water, is becoming increasingly important. Growth in tourism and recreation has resulted in increasing numbers of people experiencing scenic views from on or near the water. Protection of the shoreward views will ensure that the aesthetic values which attract people to the region remain intact.

The shoreward visual component becomes especially significant in areas which receive a high degree of human use. Along the south shore, these areas include urban waterfronts, the Apostle Islands and Chequamegon Bay. Coastal-related recreational activities such as boating, fishing, kayaking, and sailing are very popular on-water activities within these areas.

During the winter months, the Apostle Islands/Chequamegon Bay area is a popular winter sports recreation destination. Shoreward views may be more accessible in some areas during the winter months when the bay is frozen and people can venture onto the ice. Popular winter activities within these areas include snowmobiling, ice fishing, skiing, and dogsledding.

Landscape Visibility

Landscape visibility is a function of many interconnected variables. The area which is visible from a given location (observation point) is dependant upon the context of the observer (i.e. elevation of observer or point being observed), duration of the view, level of detail which is discernable from the observation point, seasonal variation, and the number of viewers (USFS, 1974).

The area which is visible from a given location is often referred to as the “seen area”, or “viewshed.” The boundaries of a viewshed are usually the high points of the surrounding landscape, such as bluff tops and ridgelines. The viewshed itself can be divided into visibility zones, referred to as “distance zones”, which relate to the level of detail which can be seen at varied distances. These zones are referred to as foreground, middleground and background, with the foreground being nearest to the observer and the background the furthest. Distance zones may vary in length according to relative visibility from travel routes or observation points. Distance zones figure prominently in the determination of scenic beauty as distance from a view has a significant influence on the relative visibility of features on the landscape. The scenic beauty of a landscape may be accentuated or diminished based on landscape features which can, or cannot be seen from key observation points. A subdivision set in the foreground of a view from a scenic overlook will likely diminish the scenic view. If the same subdivision were set in the background, it may not be visible at all, and thus have no significant impact of the quality of the view.

In the above photo, the foreground includes the field and fence line. The barn is in the middleground, with the distant Mt. Ashwabay and horizon in the background.

Photo 1: Visible distances from observation point (Near Sioux River). Note development clearly visible at over 2 miles.

The **foreground** area is that portion of the visible area nearest to the observer, extending from 0.25 -0.50 miles from the point of observation. The **middleground** describes the area between the foreground and background which is visible from a travel route or observer position. According to Bureau of Land Management guidelines, the middleground extends from the foreground to "a point where the texture and form of individual plants are no longer apparent in the landscape, and vegetation is apparent only in pattern or outline."

Along portions of the south shore, landward surface elevations rise abruptly from the shore of the lake. The steep gradient occurring within the first 1/2 to 1 mile inland exposes much of the middleground, making it visible from the lake and surrounding shoreland areas. The **background** describes the area beyond the middleground. Within this zone, bluff lines and peaks may be visible at distances of 5 miles or further from the observer. Background components of lakeward views may include islands, distant shorelines and ridges.

In **Photo 1**, the viewer is looking northwesterly from a vantage point along the shore near the mouth of the Sioux River. From this vantage point, development is clearly visible in the background.

Photo 2 illustrates the effect of the viewing context on landscape visibility. In this photo, the observer is positioned atop a bluff at a golf course nearly a mile away from the lake. The height of observation relative to the

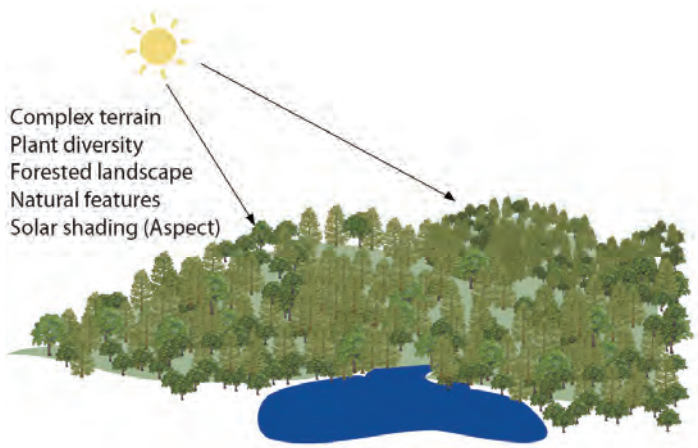
surrounding terrain allows for viewing of distant islands and the far eastern shores of Chequamegon Bay, nearly 12 miles away.

Photo 2: Eastward view from Apostle Highlands Golf Course

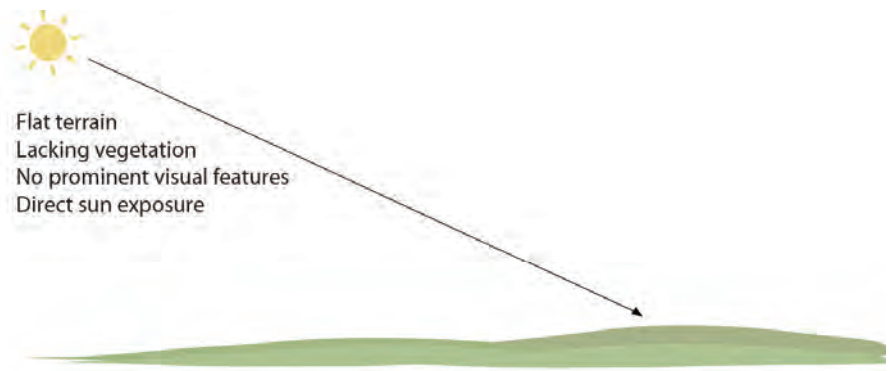
Visual Absorption Capability

Simply because a landscape has been altered or contains human development does not necessarily signify that it has low scenic beauty. Some landscapes have inherent natural characteristics which serve to absorb visual change. Forested, complex landscapes, like those found along the south shore, generally have a greater ability to absorb visual change than landscapes which are open, exposed or lack vegetation.

The ability of the landscape to absorb the visual effects of human alteration is referred to as visual absorption capability, or VAC. VAC is commonly used by landscape architects and resource management agencies to identify potential impacts of proposed projects on visual resources. VAC is determined by landscape characteristics such as slope, type and diversity of vegetation and topographic aspect. Other conditions such as soil types and geologic conditions are sometimes also used. Together, these factors collectively influence the degree to which the landscape is capable of absorbing visual change without losing its character or scenic value.



Increased VAC



Low VAC

In general, the VAC increases as slopes decrease and as vegetation increases in height, diversity and density. Landscapes with a visual continuity broken by undulating terrain, lakes, rivers and wetlands may also be better able to absorb the impacts of land disturbing activities. Landscapes which are bare, exposed, steep, or which lack natural variation in visual continuity generally have low ability to absorb visual change. VAC is commonly used in *visual impact assessments* as a means to identify the potential visual impacts of a proposed development. Understanding VAC may also help communities and public agencies evaluate the potential visual impacts of new roads, infrastructure or other landscape altering activities.

VAC Factors

Slope Steep, bare slopes have virtually no capacity to screen development. Vegetative cover also tends to hard to be establish once disturbed.

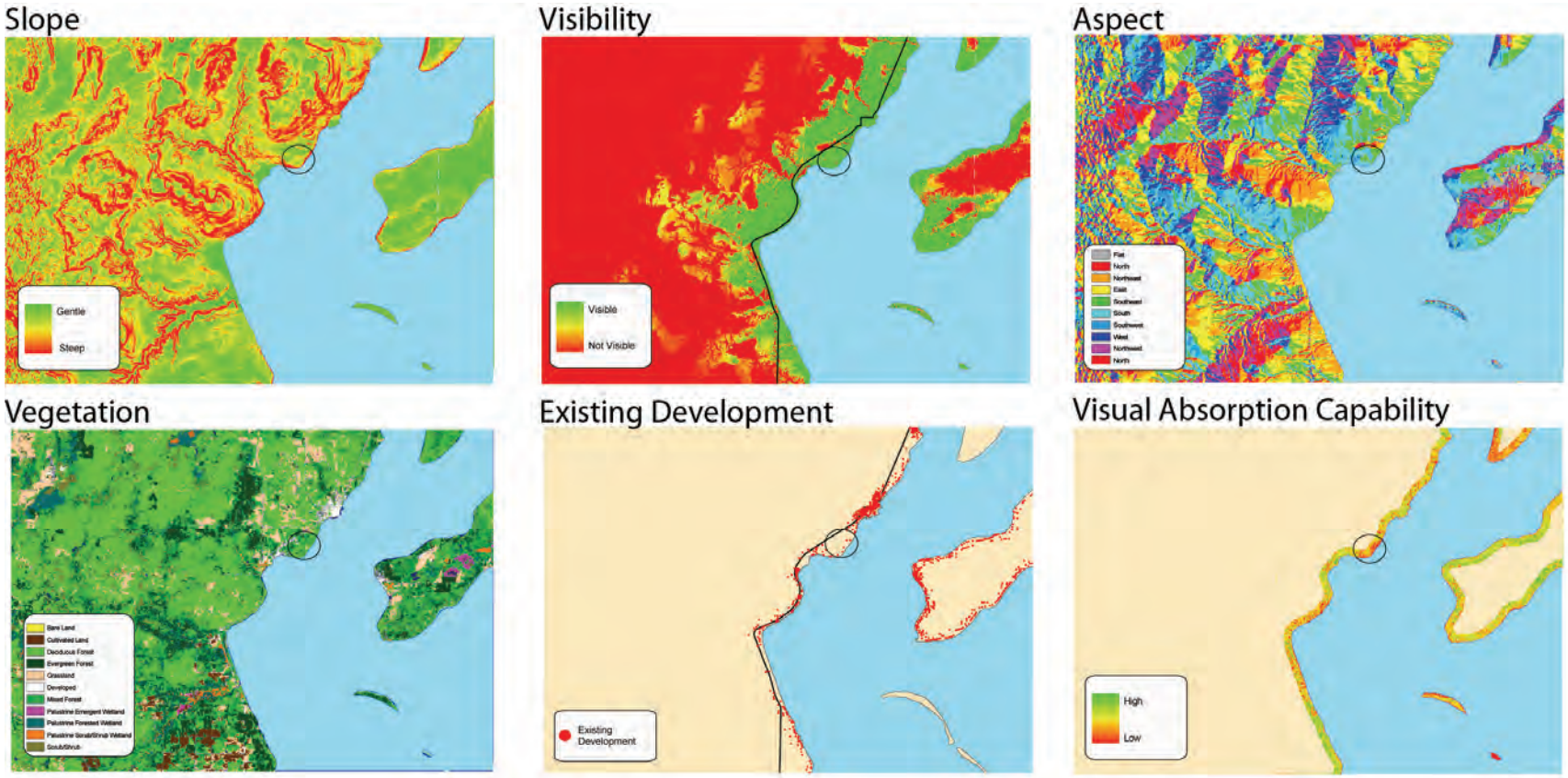
Vegetation Vegetation type and diversity strongly influences VAC. Conifer and mixed forest landscapes provide the best protection, while bare landscapes or landscapes with low or sparse vegetation are highly vulnerable. Deciduous forests may also provide visual screening during the leaf-on period.

Visibility A measure of the extent to which an area may be visible from surrounding areas, the relative number of viewers, the period of the view, view distance and context of the view.

Land Use Refers to the degree and type of existing development. Where visually prominent development already exists, the ability of the landscape to absorb the visual impact of new development is generally higher than that of a similar undeveloped area. A visual impact assessment would also consider the nature of the proposed development (size, height, cleared area, etc.)

Aspect The direction a slope faces. Slopes facing to the north are more shaded, resulting in less visible detail. South facing slopes are front lit, making them more visible.

Figure 1: VAC example analysis site



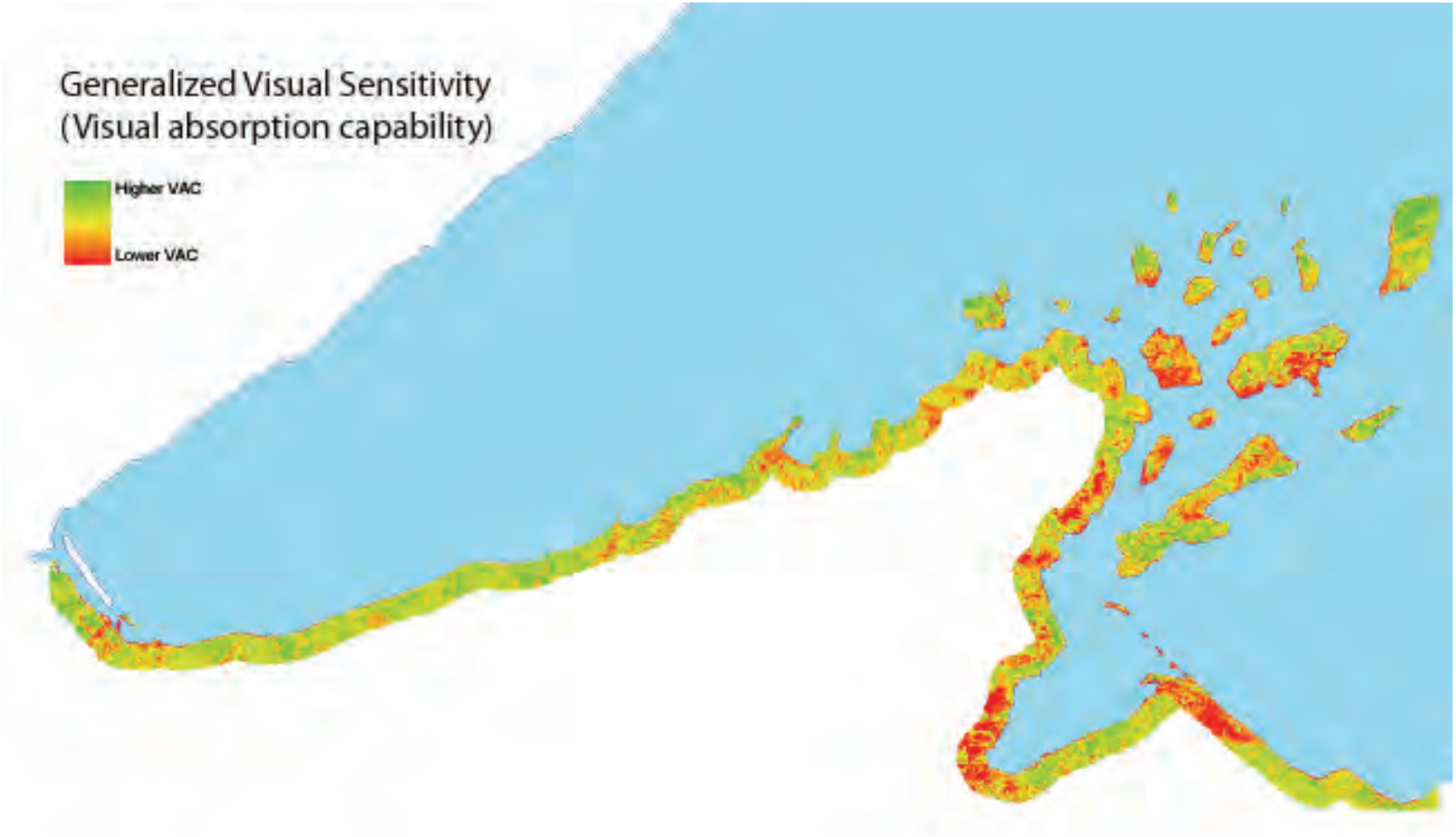
The sample analysis above relates to a fictional proposed large-scale coastal development north of Pikes Bay in Bayfield County. In this example, the five aforementioned VAC factors were used to formulate a generalized model of visual absorption capability. Based on the 5 VAC factors, the proposed development site has a potentially low ability to absorb visual change.

Slope conditions at the proposed site are generally quite steep along the coast, moderating inland. Steeper slopes (represented by the red on the map) are generally more

highly visible than flatter landscapes. The site is predominantly coved by deciduous vegetation, which provides limited screening during the leaf-off months. The site is also highly visible from roadways (green area on the map), the water and publicly accessible sites along the coast and has little existing development. Finally, the landscape has a south to southeast aspect which means it receives more direct sunlight than north-facing slopes. In this case, each of the individual VAC factors indicates that the site will likely have a low ability to absorb visual change. This assumption is confirmed when each of the factors are weighted equally and combined in a simple model (bottom right image).

Map1 depicts a generalized visual absorption capability model of the south shore. Coarse spatial data sources and a simplified classification scheme were used to create a model that generally represents the potential visual sensitivity of the south shore. Site specific evaluation would be necessary to determine actual local VAC characteristics. Similar to the example depicted in **Figure 3**, the coast-wide model uses equal weighting for each of the 5 VAC factors.

Map 1: South Shore Generalized VAC



Source: NWRPC

Visual Resources of Wisconsin's Lake Superior south shore

The Physical Environment

Figure 2: Wisconsin's Lake Superior South Shore

Wisconsin's Lake Superior south shore stretches nearly 153 miles from the working port at Duluth/Superior in the west to the Montreal River, and border with the Upper Peninsula of Michigan in the east. An additional 169 miles of coastline are present along the 22 islands of the Apostle Islands archipelago.

The Lake Superior coast of Douglas and western Bayfield Counties is characterized by a generally flat shoreline with areas of unstable, eroding clay bluffs. The shoreline is on a clay plain with perched water and has a wetland fringe of mostly shrub/shrub, forested, and sedge meadow wetland types. Underlying soils are heavy red clays, which are deeply cut by ravines and water channels. Along the far western boundary lies the City of Superior, the largest urban area in Northern Wisconsin and an international port city.

The 50,000 acre Brule River State Forest (BRSF) is located in eastern Douglas County. This property was established in 1907 to protect the Bois Brule River, one of the most scenic and historic rivers in the Midwest. The entire 44-mile length of the river is contained within the BRSF boundary, as is approximately 8.4 miles of Lake Superior coastline.

Steep topography with exposed rock and clay bluffs are found along the Bayfield Peninsula, which stretches roughly from the community of Herbster eastward to the City of Washburn. Along this portion of the coast, cliffs rise to over 100' above lake level. Numerous sand beaches are also found within the bays of the Peninsula.

The Apostle Islands archipelago forms a string of 22 islands surrounding the northern portion of the Bayfield Peninsula. These islands are remnants of sedimentary rocks deposited in Lake Superior more than 600 million years ago. Of these islands, Madeline is the largest and the only which sustains a year-round population.

Figure 3: Bayfield Peninsula and the Apostle Islands

Congress created the Apostle Islands National Lakeshore in 1970 and expanded its boundaries in 1986. The Lakeshore boundaries encompass 21 of the 22 islands within the archipelago, and a 12-mile segment of mainland shoreline. In December 2004, 80 percent of the Lakeshore, or 33,500 acres, was designated as a federal Wilderness Area (Gaylord Nelson Wilderness Area). This is Wisconsin's largest wilderness area, and the first to be designated within a National Lakeshore.

To the south of the Bayfield Peninsula lie Chequamegon Bay and the coastal cities of Washburn and Ashland. Here the sandstone and clay bluffs of the Bayfield Peninsula give way to a relatively flat clay plain and coastal wetlands. The Kakagon Sloughs, often referred to as "the everglades of the north", lie east of the City of Ashland on the 125,000 acre Bad River Indian Reservation. The U.S. Fish and Wildlife Service designated this coastal wetland complex as a national landmark because of the presence of numerous threatened and endangered species.

Traveling further east into Iron County, the sand and gravel beaches gradually give way to steep eroding bluffs. Sand and gravel beaches occur in the area of Saxon Harbor, Iron County's only Harbor of Refuge.

Scenic Shorelines

Coastal shorelines are a major component of the south shore visual environment. From steep clay bluffs to rock-infused shores, cliffs, wetlands and sandy beaches, the south shore coastline possesses many unique natural visual characteristics. In 1964, a report[2] published by the State Department of Resource Development, sought to characterize the visual features of the Lake Superior coastline. On the basis of differing physical features, the report recognized 13 distinct "shoretypes" of the mainland coast. More recently, the National Oceanic and Atmospheric Administration (NOAA) classified Lake Superior coastal shorelines as part a comprehensive shoreline assessment program. The assessment categorized 20 unique shoreline types along the south shore. **Map 2** represents a generalized version of the shoreline classifications. Coast-wide shoreline types are summarized in **Table 1**.

Significant public and tribal land holdings result in large portions of the coastal shore remaining relatively undeveloped. Conversely, privately owned coastline, particularly on the Bayfield Peninsula, has developed rapidly over the past two decades. With the increased desirability of coastal property, these landscapes will likely experience additional population growth and development in the future.

Photo 4: Fringing Wetlands, Sioux River, Bayfield County

Photo 3: Gravel Beach, Chequamegon Bay Bayfield Co.

[2] Wisconsin's Lake Superior Shoreline (Wisconsin Department of Resource Development, 1964)

Photo 5: Sand Beach Douglas Co.

Photo 6: Exposed, Solid Man-made Structures, Ore dock, Ashland Co**.**

Photo 7: Eroding bluffs/sand beaches, Iron Co.

Photo 8: Exposed Rocky Cliffs, Bayfield Co**.**

Photo 9: Exposed Rocky Cliffs, Chequamegon Bay, Bayfield Co.

Photo 10: Gravel Beach, Montreal River, Iron Co.

Photo 11: Riprap Revetments, Groins, and Jetties, Bayfield Co.

Photo 12: Sand Beach, Stockton Island, Ashland Co**.**

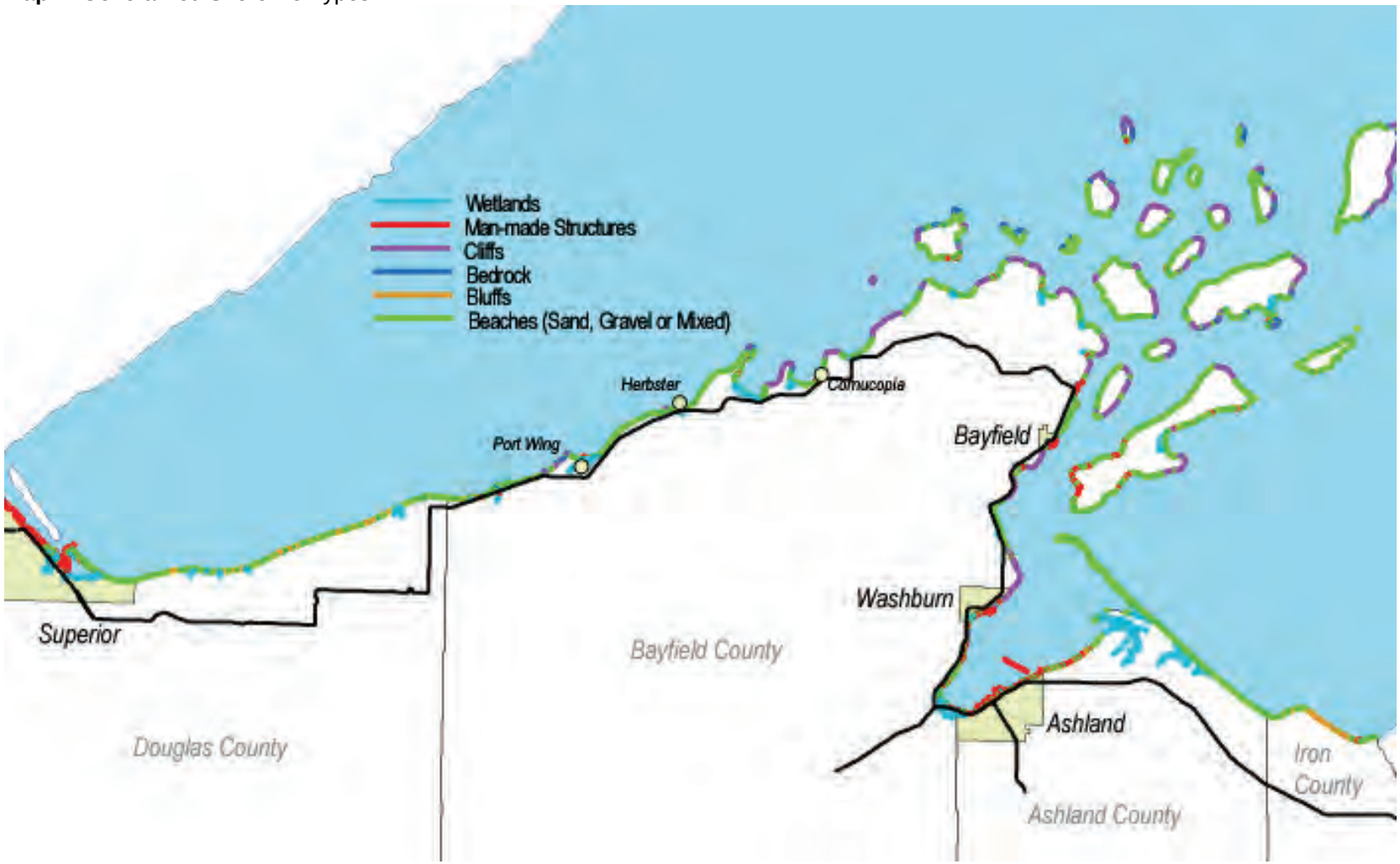
Photo 13: Eroding bluffs/sand beaches, Bayfield Co.

Table 1: Shoreline Types

Shoreline Type	**Length (miles)**	**Percentage**
Eroding Scarps in Unconsolidated Sediments	5.5	1.16%
Eroding Scarps in Unconsolidated Sediments/Sand Beaches	2.8	0.59%
Exposed Rocky Cliffs	65.8	13.92%
Exposed, Solid Man-made Structures	4.4	0.93%
Extensive Wetlands	93.2	19.72%
Fringing Wetlands	11.7	2.48%
Fringing Wetlands/Riprap , and Jetties	0.1	0.02%
Fringing Wetlands/Sand Beaches	0.1	0.02%
Gravel Beaches	46.1	9.75%
Gravel Beaches/Shelving Bedrock Shores	4.5	0.95%
Mixed Sand and Gravel Beaches	83.8	17.73%
Mixed Sand and Gravel Beaches/Shelving Bedrock Shores	0.6	0.13%
Riprap Revetments, Groins, and Jetties	28.6	6.05%
Riprap Revetments, Groins, and Jetties/Sand Beaches	0.5	0.11%
Sand Beaches	91.3	19.31%
Sand Beaches/Shelving Bedrock Shores	0.2	0.04%
Sheltered Sand/Mud Flats	0.4	0.08%
Sheltered, Solid Man-made Structures	7.4	1.57%
Sheltered, Solid Man-made Structures/Exposed, Solid Man-Made Structures	0.2	0.04%
Sheltered, Vegetated Low Banks	12.5	2.64%
Shelving Bedrock Shores	13.0	2.75%
Total	**472.7**[3]	**100.00%**

[3] includes man-made structures and interior portions of coastal estuaries.

Map 2: Generalized Shoreline Types



Source: Environmental Sensitivity Index, NOAA

Scenic Highway Corridors & Roadside Vistas

Primary Travel Corridors

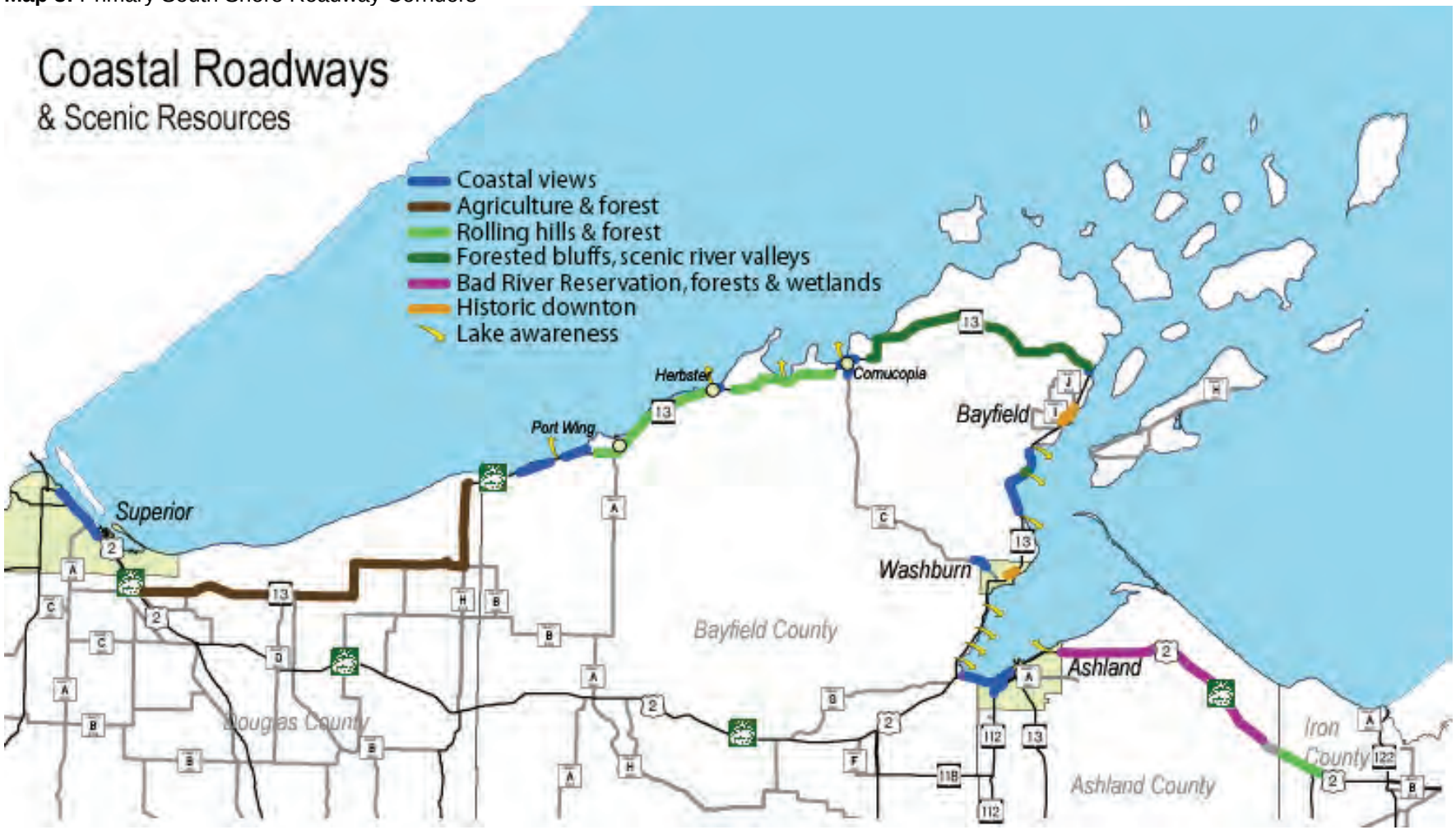
Scenic coastal highways provide opportunities to experience the visual resources of the south shore by motor vehicle or bicycle. An interconnected network of federal, state, county and local roadways provides travelers with sweeping views of Lake Superior, forested uplands, river valleys, farms, coastal communities and the surrounding rural countryside. During the fall months, thousands of visitors travel the many “color tour” routes along the south shore. Arguably, the coastal visual experience reaches its pinnacle during this time of year when the dramatic color of the coastal landscape is set against the contrasting backdrop of an inland sea.

The principal travel corridors along the south shore include State Highway 13 and U.S. Highway 2. These routes receive the highest traffic flow and provide the greatest level of connectivity between coastal communities. Several county highways and town roads are also located within the coastal area. These roads are generally less traveled and can provide motorists and cyclists with additional opportunities to view scenic coastal resources.

State Trunk Highway 13 is one of several major north-south routes that link the attractions of the south shore to the larger population centers to the south. Winding through the hills and forests of the Bayfield peninsula, Highway 13 provides an intimate perspective on Lake Superior and south shore coastal communities. Along its 93-mile journey from Ashland to Superior, Highway 13 provides drivers with sweeping views of Lake Superior, the Apostle Islands and the rolling topography of the south shore. The coastal portion of Highway 13 is also part of the Lake Superior Circle Tour (LSCT) a 1,300 mile designated scenic route circling Lake Superior. A transportation objective of the Bayfield County Land Use Plan (2002) is to promote and encourage the designation of STH 13 as a scenic byway.

In Wisconsin, **US Highway 2** provides an east-west linkage from Hurley to Superior. This route generally provides a less intimate experience than Highway 13 and does not directly abut the coast for most of its 140 miles. However, US 2 does provide visual access to the historic waterfront of the City of Ashland and southern Chequamegon Bay. US 2 also parallels the waterfront through much of the City of Superior, offering views of Lake Superior, St. Louis Bay and the Minnesota shoreline. Passing through Superior motorists have an opportunity to view maritime infrastructure and an array of large vessels from all over the world. Two segments of US 2 in northern Wisconsin are also part of the Lake Superior Circle Tour.

Map 3: Primary South Shore Roadway Corridors



Source: NWRPC

Several scenic County Highways and local roads also bisect the coastal landscape. County highways with prominent coastal scenic views include,

- ❒ **Highway's J** and **I** in the Town of Bayfield (Bayfield County) provide scenic vistas of Chequamegon Bay and the many farms and orchards of the Bayfield Peninsula.

- ❒ **Highway C** which bisects the Bayfield Peninsula from Cornucopia to Washburn provides coastal views and a visual perspective on the forested interior of the Bayfield Peninsula.

- ❒ **Highway H** on Madeline Island in the Town of LaPointe, Ashland County. This road is the only County road in Wisconsin found on an island. A seasonal extension connects CTH H with the mainland via an "ice road" during the winter months.

- ❒ **Highway A** in Iron County connects State Highway 122 with Saxon Harbor. This roadway provides scenic views of Lake Superior.

Photo 14: View of Bad River valley, USH 2- Iron Co.

Photo 15: Orchard with Lake Backdrop, CTH J –Bayfield Co.

Photo 16: USACE Demo Area and Roadside Pull-out, STH 13-Bayfield Co.

Photo 17: Sioux River Valley & Costal Views, STH 13-Bayfield Co.

Photo 18: Ridges and River Valleys, Northern Bayfield Peninsula, STH 13- Bayfield Co.

Photo 19: Chequamegon Bay, USH 2 – City of Ashland

Photo 20: Brule River Valley, STH 13, Douglas County

Photo 21: Coastal Awareness, Eastern Bayfield Peninsula, STH 13 – Bayfield Co.

Photo 22: Scenic Views, Ski Hill Rd – Bayfield Co.

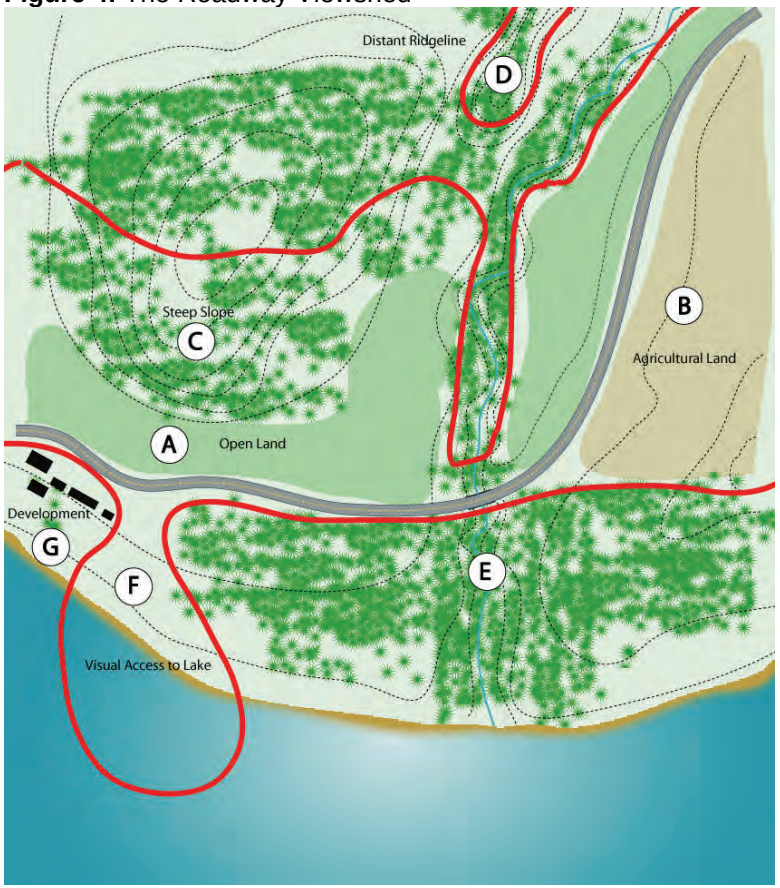
The Roadway Viewshed

The roadway viewshed defines the limits of the visual corridor, or the area which can be seen by a highway traveler during normal weather conditions. This corridor varies significantly with location, topography, vegetation density, development or other physical barriers. Forest clearings and other open space lands adjoining coastal roadways can provide visual access to the lake, allowing motorists to see coastal waters from their vehicles. **Figure 4** depicts a "typical" example of a south shore coastal roadway and viewshed.

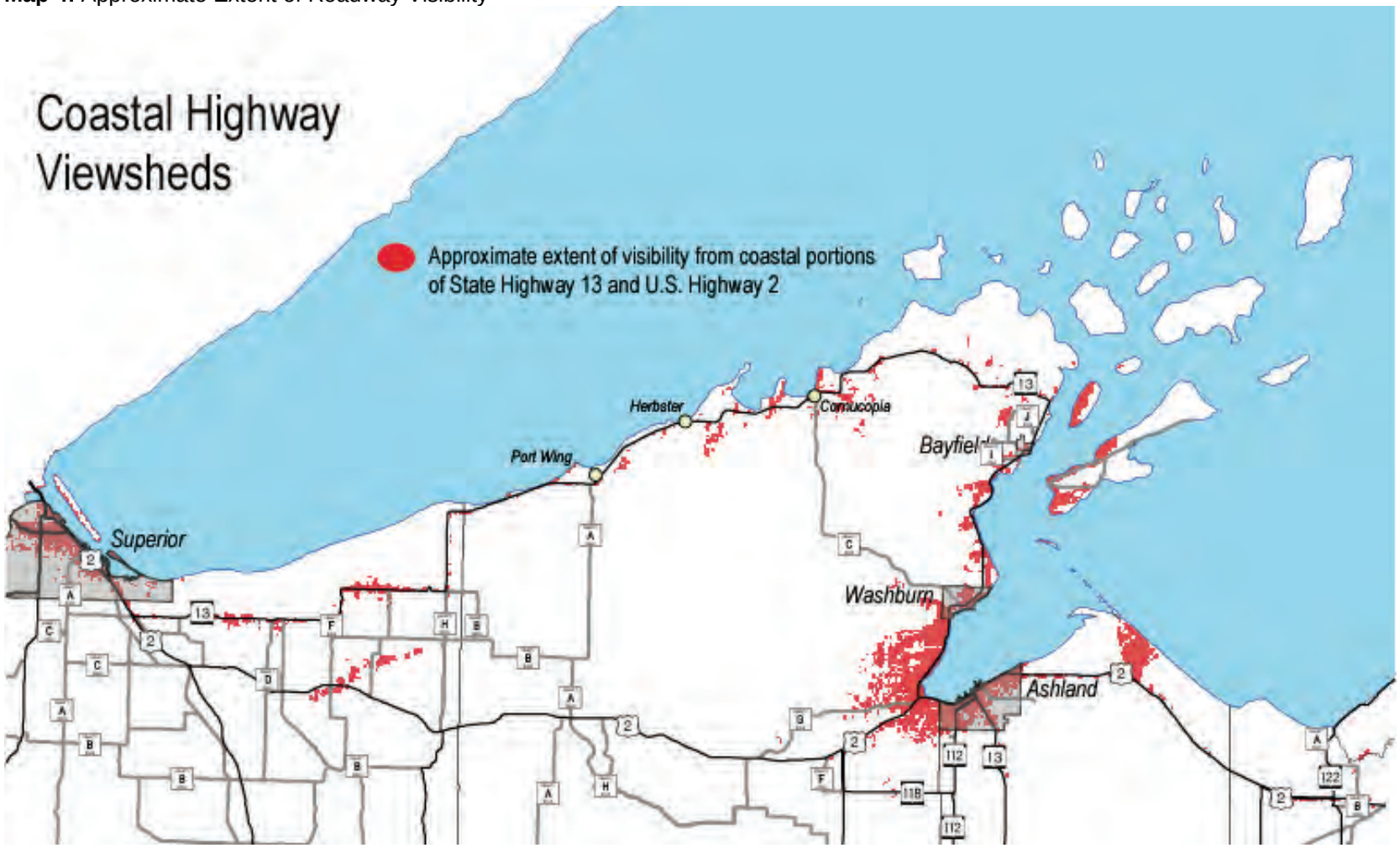
In this example, the relatively flat and open agricultural lands (**points A** & **B**) are easily visible from the roadway. At **point C**, topographic relief increases and forest vegetation is present. Because of the steepness of the slope (15-25%), the road-facing side of the bluff remains visible, even with the presence of heavy vegetative cover. **Point D** is also visible from the roadway. This distant ridgeline is higher in elevation that the nearby river valley and adjoining flat lands. When viewed from the roadway, this ridgeline becomes part of the background. At **point E**, dense forest vegetation greatly limits visibility beyond the right-of-way. This condition is relatively common along many south shore roadways.

Point F represents an "opening", or vegetation free zone, which provides visual access to the lake. In reality, these openings can span from just a few feet to ½ mile or more width. At **point G**, the visual access is obstructed by the presence of development. At this location, structures are at a sufficient height and width as to obscure the view from the roadway.

Figure 4: The Roadway Viewshed



Map 4: Approximate Extent of Roadway Visibility



Source: NWRPC, USGS Digital Elevation Models

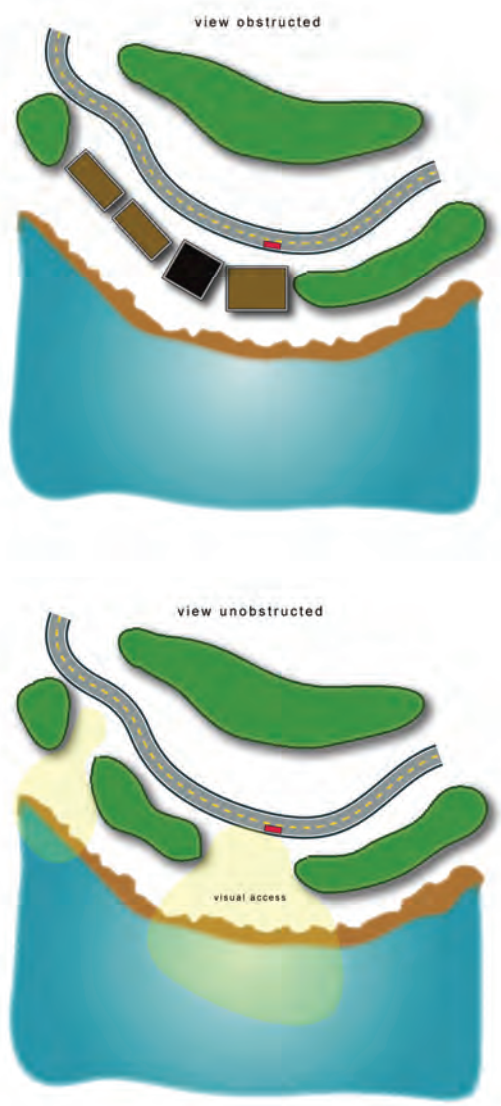
South Shore Roadway Viewsheds

Map 4 depicts the generalized highway viewshed of the south shore. The model was created using digital elevation data to model surface features. The model indicates that the greatest area of visibility from primary roadways (Highway 2 & Highway 13) extends along the eastern Bayfield Peninsula and Chequamegon Bay. The coastal roadway viewshed has significant local variation based on the height of viewing locations and surrounding terrain. Other factors which influence the viewshed include height of vegetation, human development, topographic aspect, and the viewing angle. The encroachment of coastal development on the visual corridor is evident at several locations along Highway 13, particularly in areas where the road right-of-way closely parallels the coastline. The impact of development on views from roadways is illustrated in **Figure 5**.

Iron County to Bayfield County

Beginning in eastern Iron County and traveling westward, the viewshed is primarily limited to the roadway corridor right-of-way. Distant ridges of the Penokee Range are occasionally visible to the south of Highway 2. As the roadway enters northern Ashland County and the Bad River Indian Reservation, a large land area becomes visible as the terrain descends into the Bad River valley. Passing through the historic City of Ashland, the roadway merges with Highway 13 and the lower Chequamegon

Figure 5: Obstructed vs. unobstructed views



Bay region becomes visible. From the City of Ashland westward to Fish Creek in Bayfield County lies the largest expanse of coastline visible from a major public roadway along the entire south shore.

State Highway 13 Corridor on the Bayfield Peninsula

Several prominent scenic views and vistas are found along the Highway 13 corridor from Washburn to Red Cliff. This segment includes sweeping views of the Lake Superior coast, the Apostle Islands and surrounding forested hills and bluffs. The culturally modified visual environment includes the historic coastal cites of Washburn and Bayfield. Within these communities, the visual experience includes coastal views, and unique historic brownstone buildings.

Douglas County Line to the City of Superior

From the Douglas County line, Highway 13 travels westward towards the City of Superior. Along this segment, scenic vistas include agricultural lands, woodlands, forested ridges and scenic river valleys. Along this route, Highway 13 crosses numerous rivers and creeks, including the Bois Brule, Poplar, Middle and Amnicon Rivers. Traveling USH 2 through the City of Superior, travelers are exposed to views of the Superior/Duluth harbor, Lake Superior and the distinct bluff line of Minnesota's north shore.

Public Access Points and Scenic View Points

There are numerous public access points along the south shore mainland coast. These sites include boat landings, parks, picnic areas, campgrounds, marinas, beaches, and other publicly accessible locations. Public access points provide visitors with visual access to the lake and adjoining coastal areas. Many sites have parking areas and user facilities such as benches, picnic tables, restrooms or other amenities. In terms of scenic beauty, public access points are important because of their accessibility and level of use, especially during the busy summer season. For many visitors to the coast, these sites represent a large part of their visual experience of the coast. The attractiveness of the sites themselves, and the quality of views from these sites should be a consideration when planning for scenic and recreational resources.

A scenic vantage point can be defined as any location that affords an extensive scenic view. These sites are located on lands that are accessible to the public and usually contain interpretive features such as kiosks, signs, or exhibits designed to educate and inform the public of natural, cultural and recreational resources or local history. Along the main travel corridors of the south shore, designated scenic vantage points include the US Highway 2 overlook in Iron County and Eagle Bluff Scenic Overlook on County Highway “D”, 1 mile west of Hurley.

South Shore Public Access Points

Ashland County
Second Landing
Bayview Park
Kreher Park
Ashland Marina Park
Scenic Overlook Park
Memorial Park
Maslowski Beach
Big Bay State Park
Big Bay Town Park
School House Beach
North End Park
Grigg's Landing
Ashland Waterfront Trail

Bayfield County

Short Bridge
Long Bridge
Bono Creek
Prentice Park
West End Park)
Wikdal Memorial Boat Landing
Washburn Walking Trail
Washburn Marina
Coal Dock
Memorial Park
Sioux River Slough
WDNR Access
Bayview Town Park
Onion River
Pikes Bay Marina
Bayfield Boat Landing
Broadstreet Beach
East Dock Park
Apostle Islands Marina
Bayfield City Dock
Memorial Park
Dalrymple Campground
Roys Point Marina
Buffalo Bay Marina
Russell Recreation Area
Little Sand Bay
Point De Tour Campground
Meyers Beach
Cornucopia Wayside
Siskiwit Bay
Cornucopia Public Harbor & Marina
Lost Creek Bog SNA
Bark Bay Slough
Bark Point Launch
Clover Town Park
Boat Launch
Town Clover Playground and Beach
Cranberry River
Port Wing Boreal Forest SNA- East
Port Wing Harbor Beach
Port Wing Harbor Boat Launch
Flag River Access
Port Wing, Boreal Forest SNA- West
Hwy B Wayside
N Riverloop Road
USACE Demo Site
Fish Creek Bridge

Douglas County

Mouth of the Brule River
Jack Pine Drive
Windy Lane
Beck’s Road
Middle River Road
Amnicon River
Mouth of Middle River
Boat launch
Loon's Foot Launch
Wisconsin Point
Carnes Point
Dutchman's Creek
Nemadji Picnic Area
Old Stockade Site

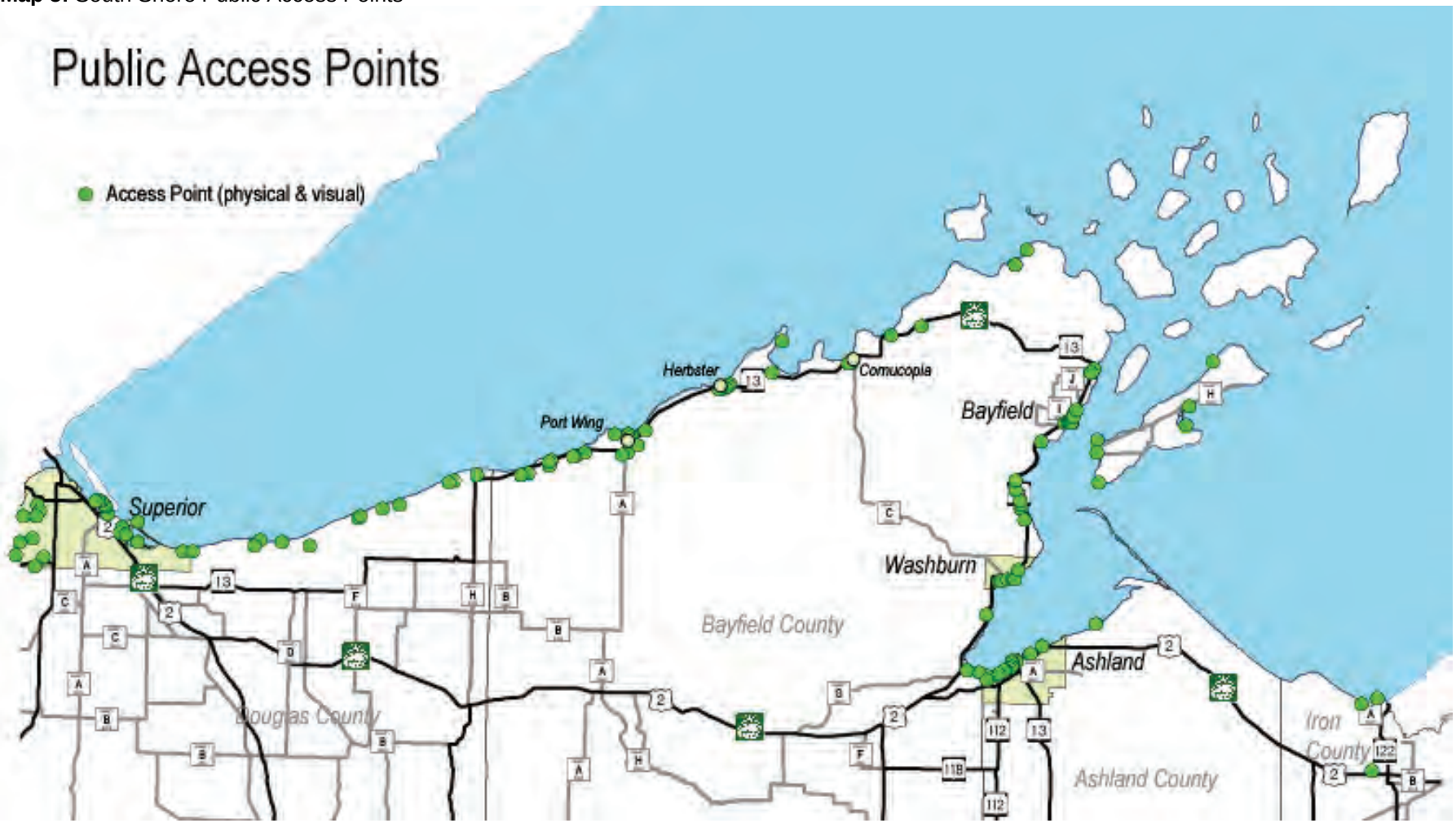
City of Superior

Barker's Island
Superior Bay Fishing Site
Richard I. Bong WWII/Heritage Center
Arrowhead Pier
Billings Park Boat Launch
Dwight's Point Trail
Pokegama Bay Boat Access
McClure's Landing
Chase's Point Trail
St. Louis River Boat Launch

Iron County

Saxon Harbor
USH 2 Scenic Overlook

Map 5: South Shore Public Access Points



Source: NWRPC

Photo 23: Marina Overlook, City of Ashland

Photo 24: Road End Access – Brule River State Forest

Photo 25: View from Bark Point Boat Launch, Bayfield County

Photo 26: STH 13 Wayside Historical Marker (distant views of Madeline Island),Bayfield Co.

Photo 27: Clover Town Park, Bayfield Co**.**

Photo 28: Waterfront Trail, City of Washburn

Photo 29: Wayside with Distant Lake Views, USH 2, Iron Co.

Photo 30: Kreher Park, City of Ashland

Photo 31: Penokee Range, USH 2 Wayside, Iron Co.

Public Lands

Public lands are usually visited by the general public, in part, for the purpose of enjoying their visual beauty. These lands provide opportunities for the public to recreate, relax and to experience the sights and sounds of nature. In today's rapidly urbanizing environment, public lands serve as a form of "visual refuge", where the public can experience naturally-appearing views, uninhibited by significant cultural modification.

Virtually all public lands have some scenic value. Some have exceptionally high scenic value due to their uniqueness and harmonious composition. The presence of prominent visual features (cliffs, sea caves, expansive beaches, etc.) in these landscapes further enhances their scenic beauty. On the south shore, public lands play an important role in the shaping the visual beauty of the region as a whole. Because human uses are limited and development activities are generally prohibited or restricted, the aesthetic qualities of these landscapes are generally retained to a greater extent than the surrounding privately-owned lands. However, public lands are not totally devoid of human use and landscape alteration. Logging is perhaps the most prevalent landscape altering activity on public lands in the region.

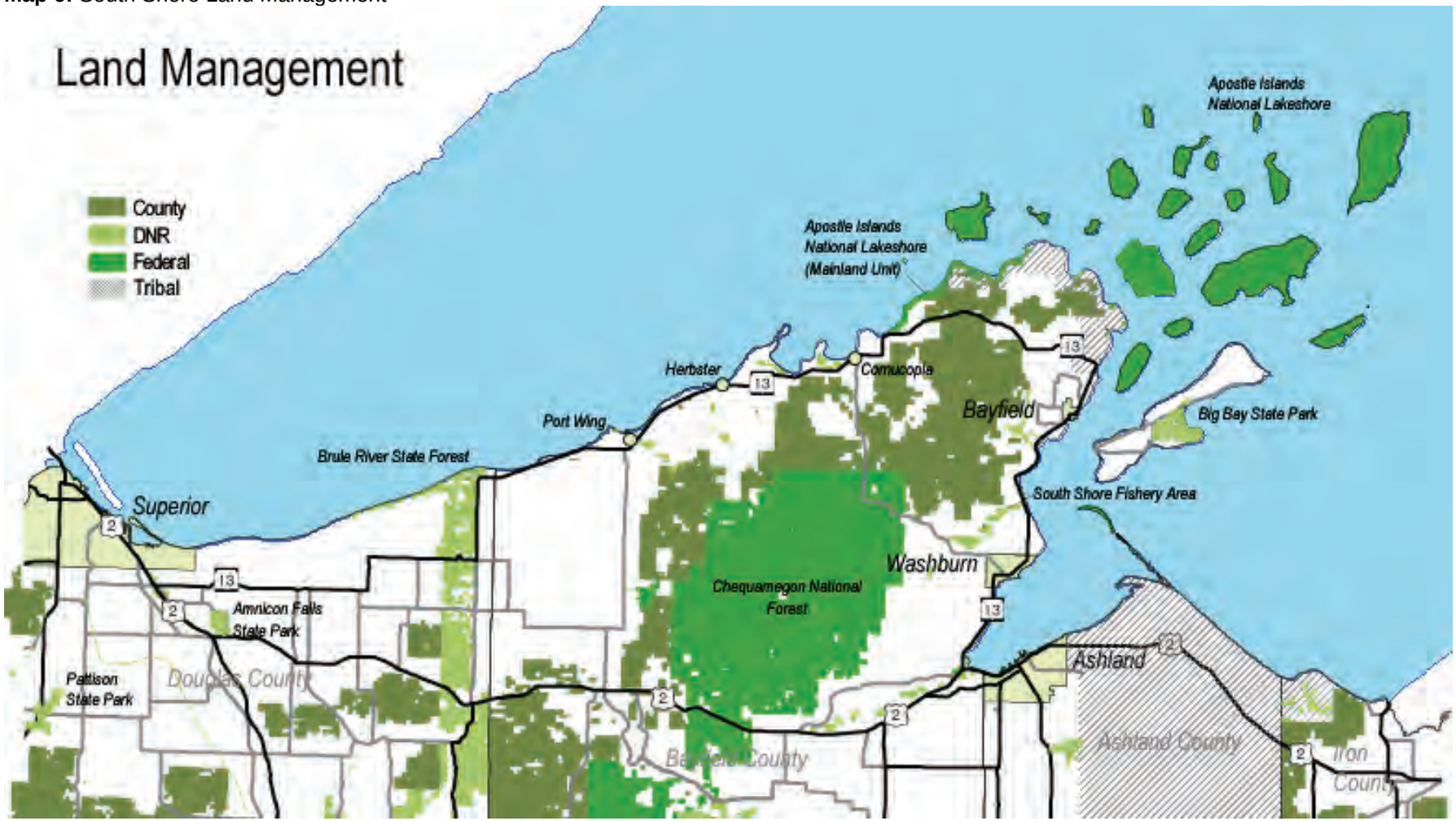
Public lands can serve as a gateway to the scenic resources of the Lake Superior coast. In addition to providing scenic and aesthetic benefits, public lands also provide the public with access to visual resources. Most public land management policies allow some form of ingress and egress on these lands. Depending upon management objectives, foot travel, bicycle, snowmobile, ORV (off-road vehicle), or passenger vehicle travel may be permitted.

Having recognized the significance of scenic quality to the public, many resource management agencies have incorporated visual resource management into their land management planning activities. Along the south shore, public lands are managed by a wide range of federal, State and local agencies. Each agency follows own standards and guidelines relative to scenic beauty.

Federal and state land management policies established by national or statewide priories may not reflect, or may even conflict with local interests. Locally established land management policies, such as those guiding the management of county forest, lands have the potential to greatly influence local scenic beauty. Local public land management strategies should directly reflect a community (or county's) comprehensive plan. Community goals, objectives and policies outlined in the comprehensive plan should be used as a basis for local public land management planning (i.e. county forest management plans). Plan integration is encouraged in the state's County Forest Plan template, which declares

“This County Forest Plan will complement, and should be a part of other comprehensive planning efforts within the County.” By integrating these planning efforts, the broad vision, goals, objectives and policies of the comprehensive plan could directly translate into public land management policies which emphasize visual resource protection and consider the visual impacts of land management decisions.

Map 6: South Shore Land Management

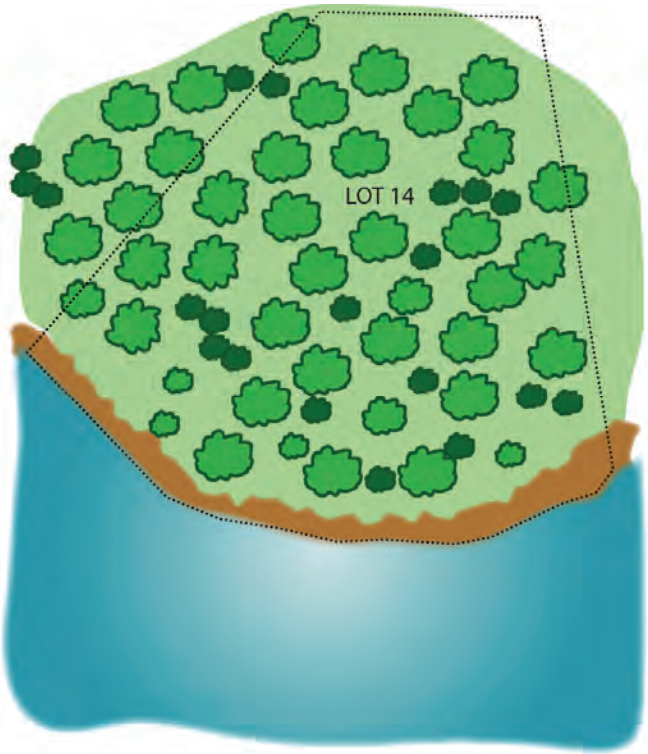


Source: WDNR GIS data

Tools to protect scenic beauty

Coastal Siting and Design Guidelines

Preserving the scenic beauty of the south shore starts with the landowner. Because private landowners own most of the lands adjoining south shore, they are the **key** to its future. The principals and methods described in this section are designed to be used as voluntary guidelines to preserve the visual beauty of the Lake Superior coast. These guidelines are intended to support and ensure private landowners' opportunities to manage and use their properties, while minimizing potentially negative visual impacts.



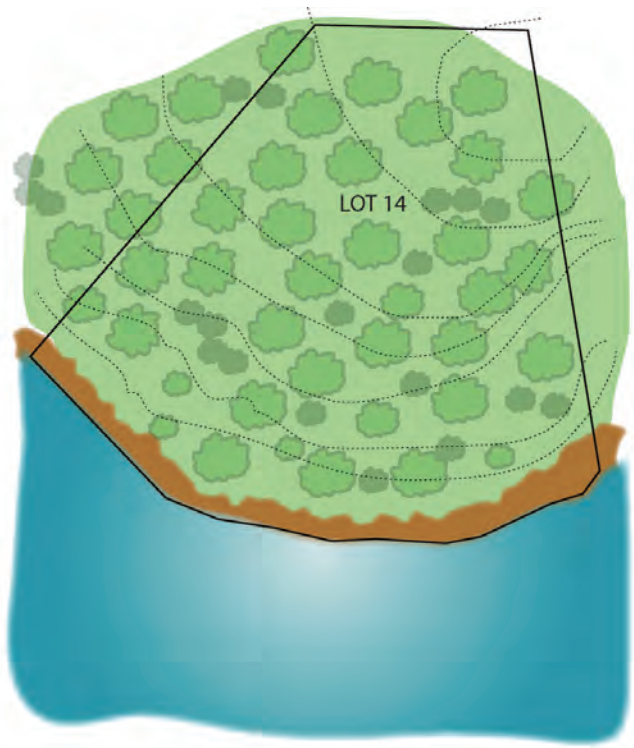
Choosing a Building Site

Choosing an appropriate building site is one of the first steps in the development process. The location of a development on a property strongly influences its visual impact to surrounding areas. By following a few basic guidelines, it is possible to minimize the overall visual disturbance of development. It is far easier, less expensive and generally more effective to address scenic beauty issues at the siting stage rather than later in the development process.

Topography and Vegetation

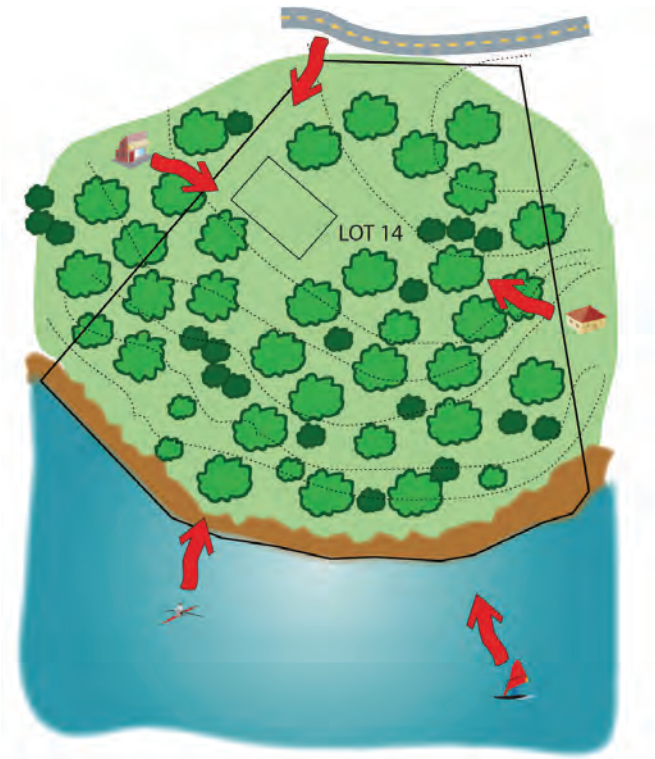
When evaluating potential building sites look for natural features such as hills, rock outcrops or ridges that could help screen your proposed development from viewing areas. If possible, avoid choosing a building site directly on a ridgeline, hills or other prominently visible areas. Instead choose sites which are below the peak or at the base of the feature. If possible, try to select a site with a northerly solar orientation. North facing slopes are generally back lit resulting in more shading with less detail and texture visible. This siting choice must be weighed against the solar gain benefits provided by a south-facing topographic aspect. Homes using solar power would require a south-facing array.

Site plans should be designed to retain as much of the natural vegetation as possible. Existing vegetation can be extremely effective in screening the development from view and controlling erosion. If lake views are desired, a narrow viewing corridor may be cleared (see local requirements) to provide visual access to the water.

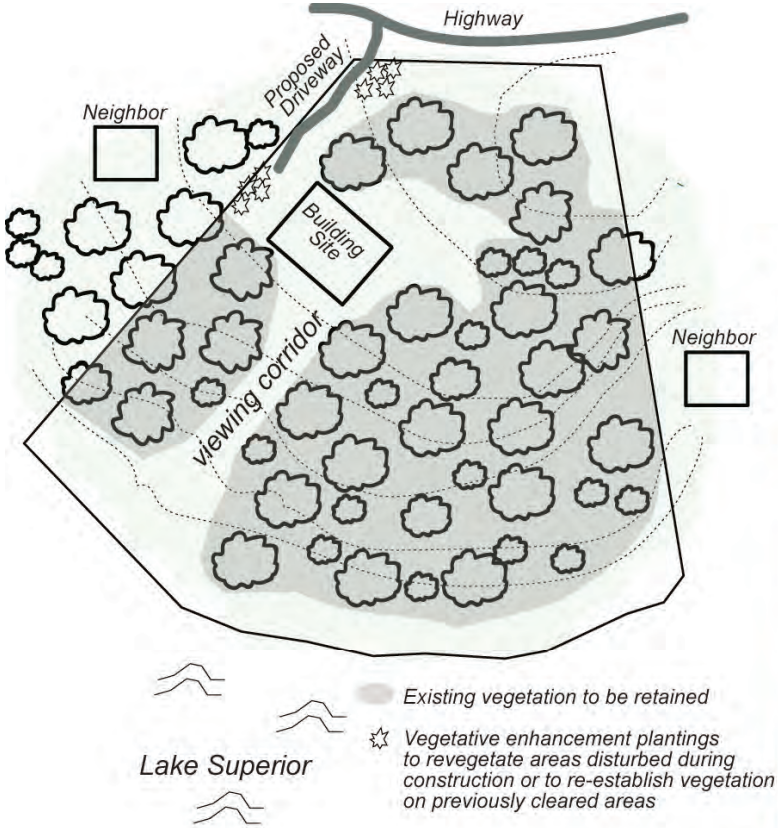


Analyze Potential Visibility

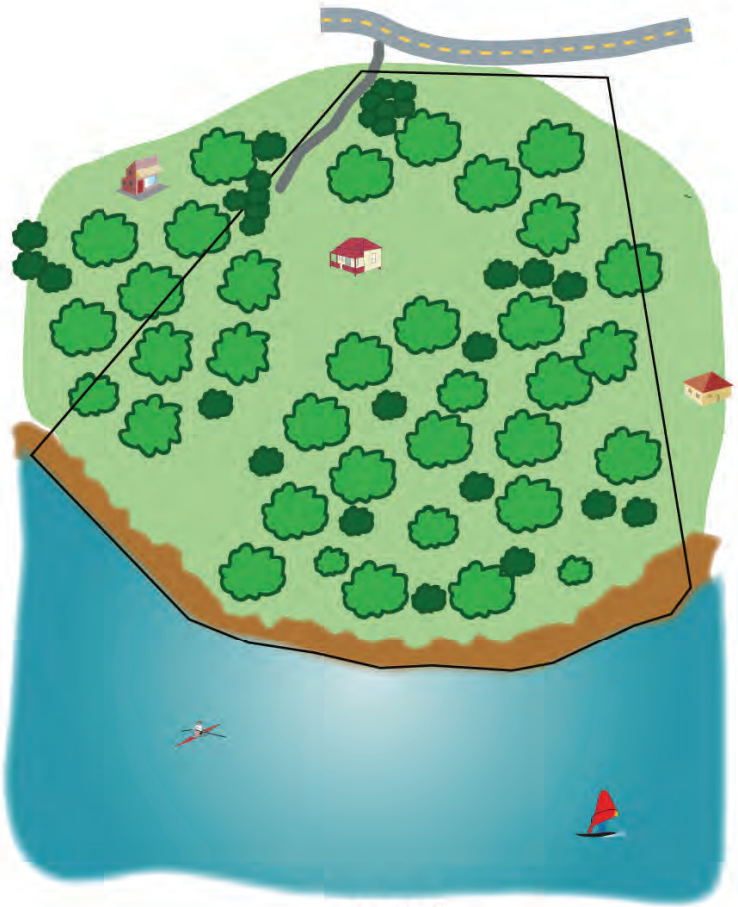
The selection of an appropriate building site should consider the potential visibility of the development. Using topographic maps and aerial photos, it is possible to formulate a rough estimate of site visibility based on required land clearing, elevation and proximity of nearby homes and buildings or other viewing locations. These locations would include the lake, public roads, trails, recreation areas and other publicly accessible locations.



Create a Site Plan



Site Sketch



As Built

Design Guidelines

Form & Scale

Building form and scale can have a significant effect on scenic beauty. Recently, a shift in shoreland development has occurred in the size of homes being constructed. In the wake of surging land values, many shoreland property owners have began to develop residential structures that are much larger than in the past. These new developments often replace existing small single-story cabins with large multi-story homes, townhouses and condominiums. When viewed from the lake, these larger structures can appear visually dominant and can obstruct views from roadways and other viewing areas.

In order to reduce the visual dominance of residential structures, it is important to minimize the overall size of the structure and the profile facing the water. Reducing the height of new structures to stay below the existing tree canopy can also serve to reduce visual dominance and can effectively screen the structure from view.

In a built-up area (culturally modified setting) it is important that new development be designed to fit into the landscape, and to compliment existing development. By designing with nature, the degree to which an activity dominates the whole landscape composition or dominates landforms can be minimized.

KEY RECOMMENDATIONS

In a *natural setting:*

(1) The form of development should relate to the landform and vegetation characteristics of the local landscape. In order to minimize visual impacts, structures should not be sited along hilltops and ridgelines. (**Figure 6**)

(2) Minimize the overall size of the structure in order to reduce its visual prominence.

(3) Keep building forms as simple as possible

(4) In areas with little relief and low vegetation, single storey developments are most easily integrated with the surroundings.

(5) Along tree-lined slopes, split level buildings with roof lines which follow the slope may be appropriate.

(6) If building on a slope, step the building foundation with the natural slope. In multi-storey dwellings, vary floor elevations to conform to natural topography. This will reduce the appearance of bulk and help to maintain the integrity of natural contours, thus allowing the structure to more easily blend into the surrounding terrain. (**Figure 7**)

Figure 6: Using Landform and Vegetation

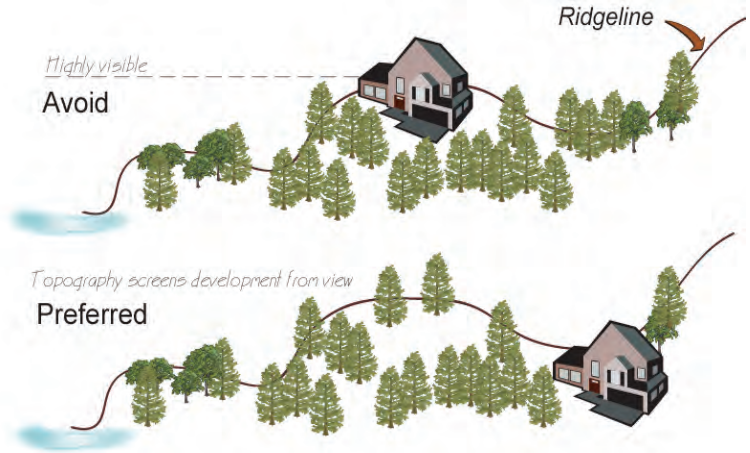


Figure 7: Building on a Slope

In a *culturally modified setting:*

(1) Where surrounding structures positively contribute to landscape character, the form of these structures should serve as a general basis for the design of new developments. (**Figure 8**)

Figure 8: Building Character

Line

Line is characterized by the “edge” appearance, which may range from a simple sharp edge to a soft gradation between two contrasting areas. In nature, lines are rarely straight, more commonly appearing as curved, jagged and uneven. Natural changes in vegetation across a landscape tend to form a transitional edge, which is not a distinct straight line but rather an interweaving of contrasting vegetation types. One of the most commonly recognized aspects of line in a natural setting is the silhouette or the outline of an object or landform seen against a backdrop. Lines are also created by water features such as the banded appearance of the parallel banks of a stream or the curved flowing lines of a sandy beach.

Development and landscape alteration introduces unnatural lines into the visual environment. Land disturbing activities such as land clearing, logging and road building introduce sharp, unnatural edges. Similarly, activities at the individual home site level can also create unnatural lines and edges. This is particularly true with regard to building above the tree canopy, which in and of itself, forms a natural line. Ridgeline and hilltop development should also be avoided, if possible, so as to retain the natural, unbroken appearance of the silhouette.

KEY RECOMMENDATIONS

In a *natural setting*:

(1) Avoid development and/or alteration of ridgelines and hilltops. If these areas are to be developed, building sites should retain sufficient tree cover to screen structures from view. Natural vegetation or a landscaped buffer should be maintained or established on the downhill slope between the viewpoint area and the building (**Figure 9**).

(2) Retain existing vegetation and transition lines between vegetation types.

(3) Development should be below the level of the forest canopy.

(4) Minimize land clearing.

(5) Wherever possible, the shoreline should be maintained as a continuous line, unbroken by structures, docks, or piers. Buildings or similar structures on the shoreline should be located in visually unobtrusive sites at the ends of stretches of beach, in bays, or other positions where not disrupting major linear landscape elements.

Figure 9: Building on the Ridgeline

In a *culturally modified setting*:

(1) New construction should not exceed the height line of existing development, and should be below the level of the forest canopy.

(2) Retain existing vegetation and transition lines between vegetation types.

(3) Use strategic vegetation plantings and/or landscape buffers to screen development from view. Use native vegetation wherever possible to reduce structure visibility and to re-vegetate cleared lands.

Color and Texture

The south shore is an environment full of rich, contrasting color. From bronze sands to vibrant forest greens, aquamarine waters and deep brown sandstone, the colors of the south shore are a quintessential component of the visual environment.

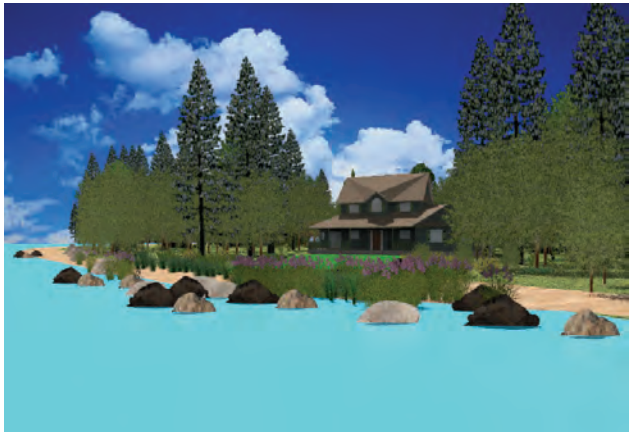
In a natural setting, the most commonly occurring colors are greens, blues, and browns in varying shades. Unnatural colors tend to contrast, rather than blend into the colors and hues of the surrounding environment. Introducing contrasting colors significantly increases the visibility of development, reduces the quality of natural views and reduces the effectiveness of visual mitigation techniques such as vegetative screening.

Smooth, highly reflective surfaces also increase structure visibility. Home design choices, such as the use of reflective roofing materials and the expansive use of glass both serve to increase glare, promoting visibility, increasing light pollution and reducing the quality of natural views. Solar applications can also be modified to reduce their visual impacts.

Colors of buildings should be selected to blend with the natural surroundings. All exterior materials and colors, including roofs, walls and fences, should be predominantly natural "earth tones," or subdued hues of blue, green or brown and should minimize contrast and glare. Roof colors should be of darker tones: browns, blacks, and dark grays. White and other bright colors which sharply contrast with the surrounding landscape should be avoided

Color choices which promote visual contrast

Color choices which reduce visual contrast



Colors of the Coastal Landscape (leaf-on period)

Sandstone bluffs & cliffs

Forest dominated shore/background

Clay Bluffs

Sand beach with forested background

Open land/forested ridge

Carved Sandstone

Seasonal Variation

Earth Tones Color Palette

Dark — Light

Grays

Reds

Browns

Golds

Greens

Blues

Preferred — Avoid

The most appropriate exterior colors will be those found in the landscape near the building site. Darker colors generally blend into the landscape better than lighter, brighter colors.

This color palette shows a range of the predominant "earth tone" colors found in the south shore coastal landscape. Not all colors represented here are found in all areas, and colors not represented may occur in certain areas of the coast. Areas with cultural modification may exhibit colors which are well outside of this general range of tones. In these areas, it is appropriate to select exterior colors which are consistent with the general character of the area.

Color in the coastal environment varies from site to site based on many variables such as vegetation type, composition and type of substrate and local aspect. Colors also vary with the changing seasons, weather and lighting conditions. Development which is hidden by vegetation during the warmer months may become more apparent during the leaf-off period, which typically extends from late October through early May. This effect may be somewhat mitigated on sites dominated by conifer/evergreen vegetative cover. During the winter months, snow, weather and lighting conditions exaggerate color contrasts which also make development more apparent. Since color varies widely across the coastal landscape, colors present at the actual development site should dictate the appropriate choices.

Munsell Color System

The Munsell Color System is a commonly used color measurement system which defines colors using the three aspects of hue, value, and chroma. You can refer to the Munsell Book of Color or use downloadable applications such as the Munsell Conversion Tool (http://www.wallkillcolor.com/), to assist in selecting colors which are appropriate for your building site.

HUE – The most obvious measure of color. Simple hues include red, green, yellow, blue and purple.

VALUE – The lightness or darkness of a color, expressed in varying scales of grays. The value is sometimes referred to as the "light reflectance value," or LRV. An LRV of 100% is pure white, while a LRV of 0% is pure black.

CHROMA – The strength, intensity, or brightness of a color.

The Munsell system describes colors using a notation system of numbers and characters. For example Munsell notation of 2.5G 5/6 describes a dark green. The first part of the notation refers to the hue. There are 10 possible hue sectors, ranging from R (red), YR (yellow-red), Y (yellow), GY (green-yellow), G (green), BG (blue-green), B (blue), PB (purple-blue), P (purple) and RP (red-purple). The 5/6 notation refers to the value (1-9) and chroma (0-28+) elements of the notation. Munsell values can be translated into RGB or CMYK values used by most commercial digital photo editing software.

KEY RECOMMENDATIONS

In a *natural setting*:

(1) When selecting exterior colors, seek to minimize the contrast between the structure and the surrounding environment by choosing subdued natural hues, or “earth tones”. Select an appropriate color based on the dominant hues of the local landscape.

(2) Roofing colors should also be limited to subdued natural hues, or “earth tones”. Choose textured roofing materials which minimize reflectivity.

(3) Avoid the use of bright colors. Choose colors with low *light reflectance values (LRV)* to minimize visual impacts during the brightest periods of the

day. Paint manufacturers commonly reference such values on product labels and swatches.

(4) Avoid the use of shiny, reflective building materials. Smooth finishes tend to reflect light and stand out in the natural landscape, while textured materials tend to less reflective.

(5) Avoid the use of color contrasting accents except in very limited places such as house numbers.

(6) Minimize the use of large windows and glass doors. Glass surfaces can be highly reflective during the sunlit hours and can increase the amount of light emanating during the night. To the greatest extent possible, avoid the use of reflective glass or coatings with a highly reflective component.

(7) Use vegetative and topographic screening to minimize the impacts of reflectivity. By providing a screen of vegetation and/or by using the natural topography to mask the structure, additional glass may be used.

(8) Reduce the number of windows in the most visible parts of the house. This will help to minimize reflectivity and consequently reduce the visual impact of your development.

(9) Building materials should be compatible with the existing visual character to the greatest extent possible.

Shoreline Vegetation

Shoreline (riparian) vegetation is a key element in the visual beauty of Wisconsin's Lake Superior coast. Prior to human settlement, the entire coastline was enveloped in a green mantle of forest and wetland vegetation. Land clearing has the potential to create an unnaturally appearing shoreline, which starkly contrasts with surrounding vegetated lands. As one traverses the coast via the water, it is easy to discern the location of physical development, simply due to the openness and contrast of these areas compared to their surroundings.

When used properly, and in conjunction with other scenic beauty protection tools such as the exterior design and siting guidelines, the visual impact of shoreline development can be mitigated through vegetation retention or enhancement. This can be accomplished while still providing the homeowner with views of the lake.

Ecological benefits of Shoreline Vegetation

Natural vegetative buffers minimize the visual impact of development, frame views, and provide general aesthetic qualities. Shoreline vegetation also acts as a natural filter, removing contaminants and sediments from runoff, which preserves the quality of water in Lake Superior. The roots of shoreline plants stabilize banks and slopes, preventing erosion. Birds, fish and other wildlife also depend on riparian vegetation for food, shelter and protection from predators.

t

With limited shoreline vegetation, this structure is highly visible from the water

Shoreline development which is partially screened by shoreline vegetation. Structure is not visible outside of the narrow viewing corridor.

This new development is well screened by shoreline vegetation

Shoreline vegetation partially screens this structure from view. (Notice reflectance cast by windows)

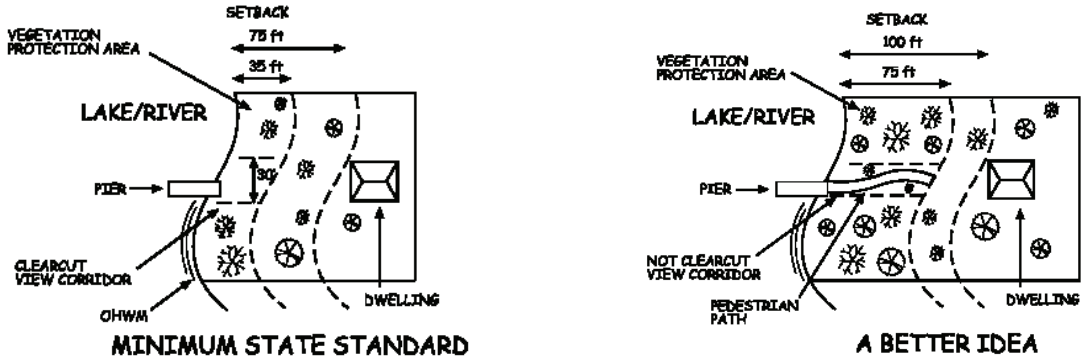
Legal Requirements for Shoreline Buffers

Both state and county regulations are in place to protect shoreline areas. These regulations also limit land clearing activities within the shoreline buffer zone, an area of diverse native vegetation that extends inland from the ordinary high water mark. Current minimum state standards require a buffer of at least 35 feet and a minimum structure setback of at least 75 feet. Each of the four coastal counties has differing legal requirements for shoreline buffers, which meet or exceed the minimum state requirements.

County	Buffer Width Requirement
Ashland	50' for new development or alteration of a structure which does not conform to current regulations
Bayfield	50' for new development. ½ structure setback for alteration of a non-conforming structure
Douglas	½ structure setback for new development
Iron	35', ½ structure setback for alteration of a structure which does not conform to current regulations

Visual Access Corridors

Current minimum zoning standards provide for up to a 30 foot wide viewing or access corridor. This minimum standard allows for removal of all trees and shrubs within the corridor. While the statutes do not expressly prohibit the clear-cutting of vegetation within the corridor, this practice should be avoided in order to maintain the visual integrity of the shoreline. If this technique is used, a maximum of 10 feet is recommended. The preferred approach involves retention of the majority, if not all of the vegetation within the shoreline buffer area. While vegetation will at least partially screen views from within the structure, a pathway or walkway could be constructed to provide direct access to the water. Examples of viewing corridors are depicted in **Figure 10**.



Source: UW-Extension

Figure 10: Viewing Corridors

Use of Native Plant Species

It is important that native vegetation is used to provide a natural appearance, wildlife habitat, and natural screening for development. Native plant species are those that were growing naturally in the area before humans introduced plants from other locations. In order to select the most appropriate plants for your location choose native plant varieties already present on your site, or those from a nearby undisturbed site. It is important that species selected are natives and not non-native or invasive species, which can have a harmful impact on the natural environment. **Figures 11-13** depict plant species native to the south shore which are recommended for landscaping, visual screening, supplementing existing natural vegetation or re-vegetating cleared areas.

Figure 11: South Shore Native Plants – Wet to Mesic Woodlands & Dry to Dry Mesic Woodlands

Recommneded Native Plant Species for Shoreline Restoration

Data Source: Shoreline Resotoration Guide, ABDI Land & Water Conservation Department

Wet to Mesic Woodland - Moist or wet, silt-loam substrate

Tall Shrubs	(Scientific Name)	(height-ft)
American hazelnut	*Corylus americana*	8-15'
Chokecherry	*Prunus virginiana*	30'
Elderberry	*Sambucus canadensis*	6-12'
Highbush cranberry	*Viburnum trilobium*	10-12'
Nannyberry	*Viburnum lentago*	10-15'
Ninebark	*Physocarpus opulifolius*	8-10'
Pagoda dogwood	*Cornus alternifolia*	16'
Pussy Willow	*Salix discolor*	15-20'
Red osier dogwood	*Cornus stolonifera*	6-18'
Round-leaved dogwood	*Cornus rugosa*	6-12'
Winterberry	*Ilex verticillata*	6'
Trees		
American mountain-ash	*Sorbus americana*	30'
Balsam fir	*Abies balsamea*	75'
Basswood	*Tilia americana*	100'
Green ash	*Fraxinus pennsylvanica*	50-75'
Hemlock	*Tsuga canadensis*	60-75'
Red maple	*Acer rubrum*	50'
Sugar maple	*Acer saccharum*	75-100'
Tamarack	*Larix laricina*	65'
Paper birch	*Betula papyrifera*	80'
Norther red oak	*Quercus rubra*	150'
Northern white cedar	*Thuja occidentalis*	50'
White pine	*Pinus strobus*	100'
White spruce	*Picea glauca*	75'
Yellow birch	*Betula alleghaniensis*	60-90'

Wet to Mesic Woodland - Moist or wet, loam-silt substrate

Grasses & Sedges		
Blue-joint grass	*Calamagrostis canadensis*	3-6'
Bottlebrush grass	*Elymus hystrix*	3-4'
Cinnamon fern	*Osmunda cinnamomea*	2-3'
Interrupted fern*	*Osmunda claytoniana*	2.5-4'
Lady fern*	*Athyrium filix-femina*	3'
Little bluestem	*Schizachyrium scoparium*	1-3'
Maidenhair fern	*Adiantum pedatum*	2'
Ostrich fern	*Matteuccia struthiopteris*	3'
Pennsylvania sedge	*Carex pensylvanica*	.5-1.5'
Sensitive fern	*Onoclea sensibilis*	1-2'
Switchgrass	*Panicum virgatum*	3-5'
Woolgrass	*Scirpus cyperinus*	3-5'

* wetttest sites

Wildflowers		
Blue verain	*Verbana hastata*	3-4'
Bunchberry	*Cornus canadensis*	.3-.5'
Butterfly weed	*Asclepias tuberosa*	1-2'
Calico aster	*Aster lateriflorus*	2-3'
Canada anemone	*Anemone canadensis*	1-2'
Canada mayflower	*Maianthemum canadense*	.5'
Downy yellow violet	*Viola pubescens*	.5-.8'
Flat-topped aster	*Aster umbellatus*	2.5-3.5'
Harebell	*Campanula rotundifolia*	1-1.5'
Jack-in-the-pulpit*	*Arisaema triphyllum*	.5-1'
Large-leaved aster	*Aster macrophyllus*	.5-1.5'
Large-flowered trillium	*Trillium grandiflorum*	1'
Obedient plant	*Physostegia virginiana*	2-3'
Pearly everlasting	*Anaphalis margaritacea*	1.5-2'
Purple-stemmed/Swamp aster	*Aster puniceus*	3-5'
Red baneberry	*Actaea rubra*	1-3'
Solomon's seal	*Polygonatum biflorum*	1-4'
Wild bergamot	*Monarda fistulosa*	2-3.5'
Wild columbine	*Aquilegia canadensis*	2-3'
Wild strawberry	*Fragaria virginiana*	4-6'
Zig zag goldenrod	*Solidago flexicaulis*	2'
Short Shrubs		
American fly honeysuckle	*Lonicera canadensis*	2-3.5'
Bush honeysuckle	*Diervilla lonicera*	1-4'
Smooth juneberry/Serviceberry	*Amelanchier laevis*	8-10'
Velvetleaf blueberry	*Vaccinium myrtilloides*	2'

Dry to Dry Mesic Woodland - Well-drained, dry, sand-sandy loam substrate

Grasses & Sedges		
Big bluestem	*Andropogon gerardii*	2-6'
Canada wild rye	*Elymus Canadensis*	2-3'
Pennsylvania sedge	*Carex pensylvanica*	.5-1.5'
Poverty oat grass	*Danthonia spicata*	1-2'
Wildflowers		
Blue giant hyssop	*Agastache foeniculum*	3-4'
Buncherry	*Cornus canadensis*	3-5'
Butterfly weed	*Asclepias tuberosa*	1.5'
Calico aster	*Aster lateriflorus*	2-3'
Canada mayflower	*Maianthemum canadense*	.5'
Downy yellow violet	*Viola pubescens*	4-8"
Dwarf red raspberry	*Rubus pubescens*	.5'

Native Plant List: Wet to Mesic Woodlands & Dry to Dry Mesic Woodlands

Figure 12: South Shore Native Plants – Dry to Dry Mesic Woodlands, Wet Meadow & Exposed Sandy Shore

Recommneded Native Plant Species for Shoreline Restoration

Data Source: Shoreline Resotoration Guide, ABDI Land & Water Conservation Department

Dry to Dry Mesic Woodland - Well-drained, dry, sand-sandy loam substrate

Wildflowers	(Scientific Name)	(height-ft)
False Solomon's seal	*Smilacina racemosa*	8"
Fireweed	*Epilobium angustifolium*	3-4'
Harebell	*Campanula rotundifolia*	1.5-2'
Lance leaf coreopsis	*Coreopsis lanceolata*	2-3'
Large-leaved aster	*Aster macrophyllus*	8-18"
Pearly everlasting	*Anaphalis margaritacea*	1-1.5'
Rough blazing star	*Liatris aspera*	1.5-3'
Smooth aster	*Aster laevis*	2-3'
Stiff goldenrod	*Solidago rigida*	1-3'
Twinflower	*Linnaea borealis*	4"
Wild bergamot	*Monarda fistulosa*	2-3.5'
Wild columbine	*Aquilegia canadensis*	2.5-3'
Wood anemone	*Anemone quinquefolia*	.5-1'
Woodland strawberry	*Fragaria vesca*	6-10"
Short Shrubs		
Bush honeysuckle	*Diervilla lonicera*	3-4'
Dwarf serviceberry	*Amelenchier spicata*	2-5'
Low bush blueberry	*Vaccinium angustifolium*	1-3'
Ninebark	*Physocarpus opulifolius*	6'
Swamp fly honesuckle	*Lonicera canadensis*	3-6'
Sweetfern	*Comptonia peregrina*	2-3'
Tall Shrubs		
American hazelnut	*Corylus americana*	8-15'
Juneberry/Serviceberry	*Amelenchier laevis*	8-10'
Trees		
Norther red oak	*Quercus borealis*	80'
Paper birch	*Betula papyrifera*	80'
Red maple	*Acer rubrum*	50'
Red pine	*Pinus resinosa*	100'
Sugar maple	*Acer saccharum*	50-75'
White oak	*Quercus alba*	75'
White pine	*Pinus strobus*	100'+

Wet Meadow - Well-drained, moist to wet, loam or clay substrate

Grasses & Sedges		
Blue-Joint Grass	*Calamagrostis canadensis*	3-4'
Bottlebrush sedge	*Carex retrorsa*	2-3'
Bebb's Sedge	*Carex bebbii*	2'
Common spikerush	*Eleocharis palustris*	2-3'
Fringed Sedge	*Carex crinita*	2-4'
Green bulrush	*Scirpus atrovirens*	3-4'
Lake sedge	*Carex lacustris*	2-4'
Rattlesnake grass	*Glyceria canadensis*	2-3'
Switchgrass	*Panicum virgatum*	3-5'
Soft rush	*Juncus effuses*	2-4'
Tussock sedge	*Carex stricta*	2-3'
Wool Grass	*Scirpus cyperinus*	3-4'
Wildflowers		
Blue flag iris	*Iris versicolor*	2-3'
Blue vervain	*Verbena hastata*	3-4'
Boneset	*Eupatorium perfoliatum*	2-3.5'
Bottle gentian	*Gentiana andrewsii*	1-2.5'
Common Milkweed	*Asclepias syriaca*	2-5'
Culver's root	*Veronicastrum virginicum*	3-5'
Flat-top aster	*Aster umbellatus*	1-5'
Grass-leaved goldenrod	*Euthamia graminfolia*	2-3'
Great St. John's wort	*Hypericum pyramidatum*	5-6'
Green coneflower	*Rudbeckia laciniata*	3-12'
Joe pye weed	*Eupatorium maculatum*	2-4'
Monkey Flower	*Mimulus ringens*	6-40'
Northern bugleweed	*Lycopus uniflorus*	2-32'
Obedient Plant	*Physostegia virginiana*	2-3'
Pale spike lobelia	*Lobelia spicata*	1-3.5'
Panicled aster	*Aster lanceolatus*	1-4'
Purple-stemmed/Swamp Aster	*Aster puniceus*	2-6'
Sensitive fern	*Onoclea sensibillis*	2'
Swamp milkweed	*Asclepias incarnata*	3-4'
Tall meadow rue	*Thalictrum dasycarpum*	2-5'
Turtlehead	*Chelone glabra*	2-3'
Wild bergamot	*Monarda fistulosa*	1-3'
Short Shrub		
Sweet gale/Bayberry	*Myrica gale*	3'
Swamp rose	*Rosa palustris*	1-4'
Tall Shrub		
Meadowsweet	*Spiraea alba*	3-4'
Winterberry	*Ilex verticillata*	6'
Steeplebush	*Spriraea tomentosa*	2-5.3'

Exposed Sandy Shore - Sparsley vegtated, dropped water level

Grasses & Sedges		
Blue-joint grass	*Calamagrostis canadensis*	3-4'
Fringed sedge	*Carex crinita*	2-4'
Narrow panicle rush	*Juncus brevicaudatus*	1-2'
Soft-rush	*Juncus effuses*	2-4'
Soft-stem bulrush	*Scirpus validus*	4-5'
Wool grass	*Scirpus cyperinus*	6'

Native Plant List: Dry to Dry Mesic Woodlands, Wet Meadow & Exposed Sandy Shore

Figure 13: South Shore Native Plants – Exposed Sandy Shore & Aquatic Vegetation

Recommneded Native Plant Species for Shoreline Restoration

Data Source: Shoreline Resotoration Guide, ABDI Land & Water Conservation Department

Exposed Sandy Shore - Sparsley vegtated, dropped water level

Wildflowers	**(Scientific Name)**	**(height-ft)**
Blue flag iris	*Iris versicolor*	2-3'
Blue vervain	*Verbena hastata*	3-4'
Boneset	*Eupatorium perfoliatum*	2-3.5'
Grass-leaved goldenrod	*Euthamia graminfolia*	2-3.5'
Jewelweed	*Impatiens capensis*	2-6'
Joe pye weed	*Eupatorium maculatum*	2-4'
Marsh St. John's wort	*Triadenum fraseri*	2-5'
Short Shrubs		
Meadowsweet	*Spiraea alba*	3-4'
Steeplebush	*Spiraea tomentosa*	2-3.5'
Sweet gale/Bayberry	*Myrica gale*	3'
Tall Shrubs		
Speckled adler	Alnus rugosa	15'
Winterberry	Ilex verticillata	6'

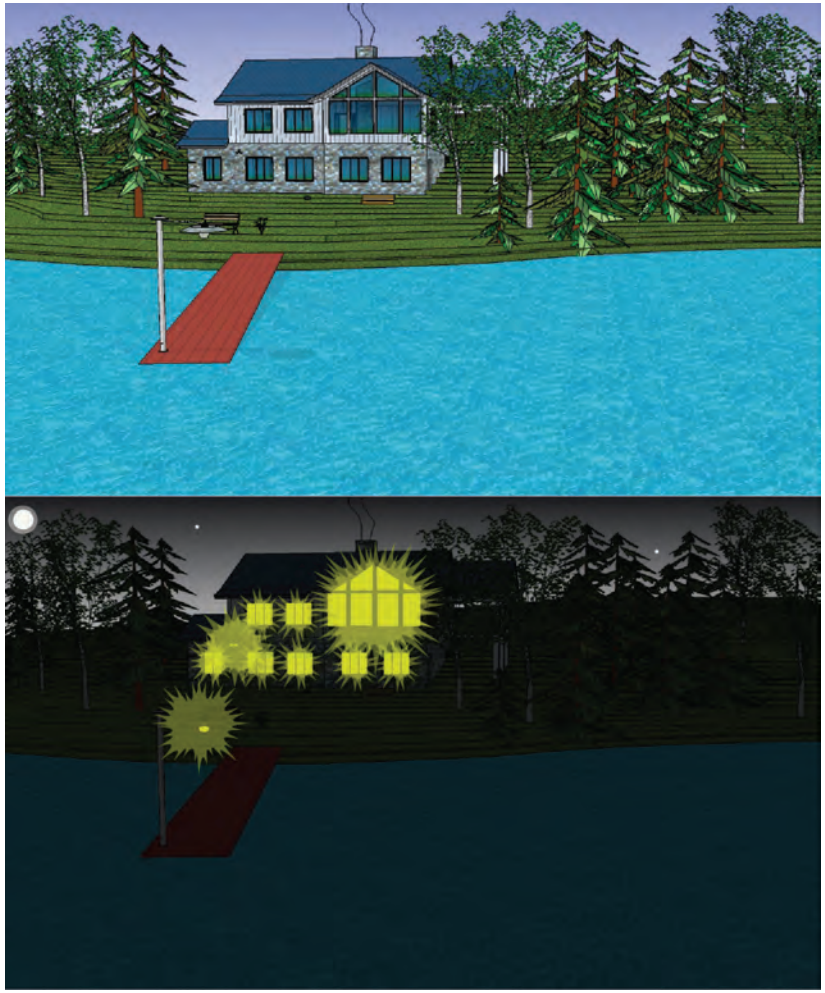
Aquatic Vegetation - Sand/gravel substrate (unless noted) in the near shore, littoral zone

Emergent (1-18" deep water)		
American bur-reed	*Sparganium americanum*	3'
American water-plantain	*Alisma subcordatum*	.5-3.5'
Arum-leaved arrowhead	*Sagittaria cuneata*	1'
Beaked sedge	*Carex rostrata*	2-4'
Blue flag iris	*Iris versicolor*	1.5-3.5'
Common arrowhead	*Sagittaria latifolia*	2-4'
Hardstem bulrush	*Scirpus acutus*	4-6'
Monkey flower	*Mimulus ringens*	1-3'
Pickerelweed	*Pontederia cordata*	4'
Rattlesnake grass	*Glyceria canadensis*	2-3'
Sofstem bulrush	*Scirpus validus*	10'
Spike-rush	*Eleocharis elliptica*	.5-1'
Sweet flag	*Acorus americanus*	2-3.5'
Tussock sedge	*Carex stricta*	2-4'
Yellow water buttercup	*Ranunculus flabellaris*	2'
Submerged		
Common waterweed	*Elodea canadensis*	1-3'
Large-leaf pondweed	*Potamogeton amplifolius*	3-6'
Wild celery	*Vallisneria american*	1-3'
Floating		
Spatterdock	*Nuphar variegata*	Floating
Watershield	*Brasenia schreberi*	Floating
Water smartweed	*Polygonum amphibium*	Floating
White water-lily	*Nymphaea odorata*	Floating

***Note: Aquatic plantings require a DNR permit**

Native Plant List: Exposed Sandy Shore & Aquatic Vegetation

Shoreland Lighting

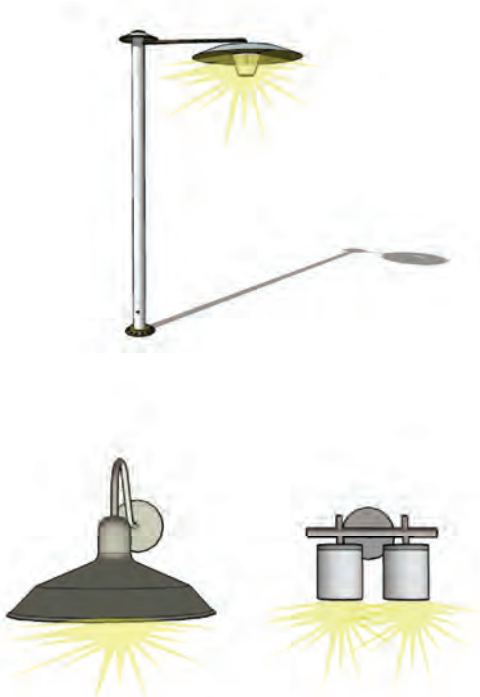


Artificial lighting helps us to find our way in the dark. It allows us to engage in activities both inside and outside of our homes regardless of the time of day and provides for a feeling of increased safety and security. When used improperly or excessively, artificial lighting can become both an environmental hazard and aesthetic problem.

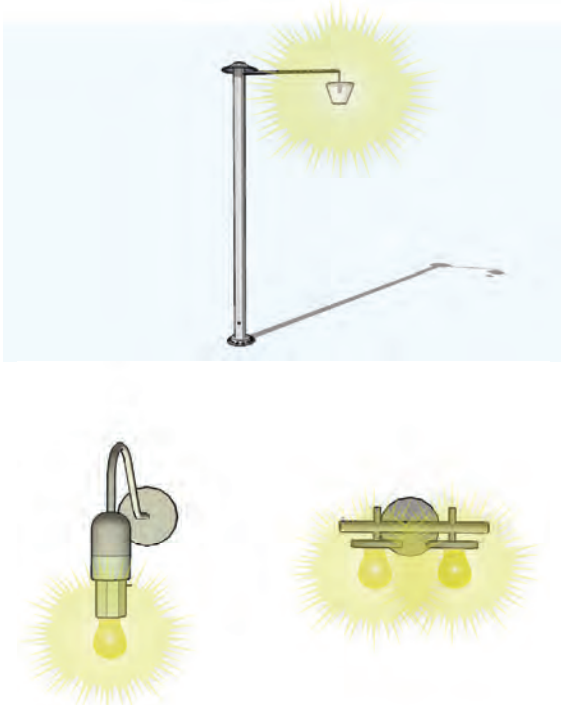
Our use of artificial lighting significantly influences the amount of light pollution in the night sky. Improperly designed or poorly configured lighting can create glare, a potential safety hazard to vehicles, pedestrians and boats. Glare is especially problematic in the shoreland environment due to the high reflectivity of water. Lighting and glare are also generally visible for great distances across open water. Excessive or improperly designed lighting can also become a nuisance when it travels across property boundaries or into areas which are not intended to be lit, a concept which is referred to as “light trespass.” Light radiating into the atmosphere can create a “glow effect” around cities and built-up areas which may be seen from several miles away. Proper lighting choices and design can improve safety and accomplish illumination needs without compromising the visual beauty of the night sky.

Figure 14: Lighting Shields

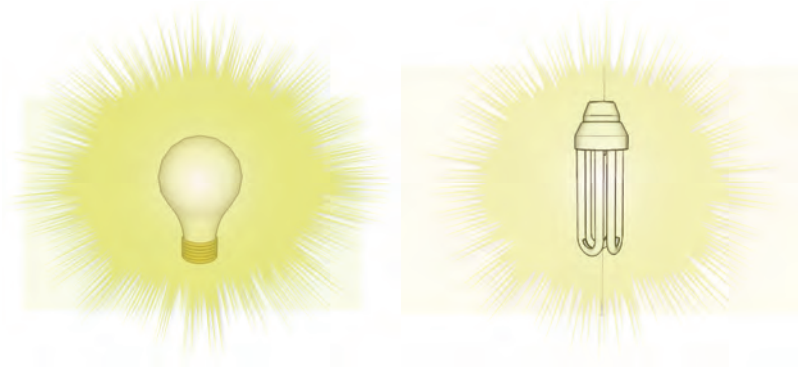
Shielded (Good Design)



Unshielded (Poor Design)



The above graphics demonstrate how the use of shields can reduce ambient light pollution and glare. Light shields direct light downward, preventing stray light from illuminating other areas or from escaping into the night sky. Fixtures which are recessed also help to reduce the amount of excess light escaping into the atmosphere.



The types of bulbs used can also play an important role in reducing visual disturbance and minimizing light pollution. Responsible lighting includes using an appropriate amount of light to accomplish the desired effect. Incandescent bulbs are the most common and most inefficient bulbs used in homes. Nearly 90% of the energy used by incandescent bulbs is wasted as heat rather than light. In contrast, compact fluorescent bulbs are significantly more efficient than incandescent bulbs and last about 4 to 10 times longer.

Table 2: Bulb Efficiency

Bulb type	**Lumens per watt**	**Life (hours)**
Incandescent	8-24	1000-2000
Compact fluorescent	50-83	7500-10,000
High pressure sodium	61-140	12,000-24,000
Low pressure sodium	100-183	10,000-18,000
Metal halide	56-125	10,000-20,000
Mercury vapor	20-63	12,000-24,000

KEY RECOMMENDATIONS

(1) Turn off both indoor and outdoor lights you are not using, or consider installing timers, motion detectors, photo cells, or occupancy sensors to reduce the amount of time your lights are on. Automated lighting controls eliminate the need for dusk until dawn lighting, reducing total light output and saving energy.

(2) Direct lights away from windows and doorways or block lights with screening such as curtains or window blinds.

(3) Develop and illumination plan for your property. Identify the locations on your property where lighting is needed for safety, security, etc.

(4) Use the least amount of lighting needed to accomplish your illumination objectives. Excess or unnecessary lighting contributes to light pollution and visual disturbance. Too much light may also reduce your ability to see by making adjacent areas appear dimmer. Using less lighting also saves energy and money. Use lower wattage bulbs, where practical, to accomplish interior and exterior lighting objectives.

(5) Direct lighting downwards by using shields or “full cut off” fixtures. Full cut off fixtures limit light output

to less than 90 degrees below the horizon. Glare is controlled by limiting output to 10 percent of the lamp output (in lumens) between 80 and 90 degrees to the horizon. Full cut off fixtures can greatly reduce the glare effect and visual impact to surrounding areas by directing light output downwards.

(6) Use low or non-reflective glass in your windows. Roofs should also use low-reflectivity materials and metal roofs should be avoided.

(7) Retrofit or reconfigure existing light fixtures. Depending upon the type of fixture it may be possible to add shielding to redirect light and reduce glare.

(8) Utilize proper positioning and aiming. Configure fixtures uniformly to illuminate the area without creating bright "hot spots".

Figure 15: Full Cut-Off Lighting

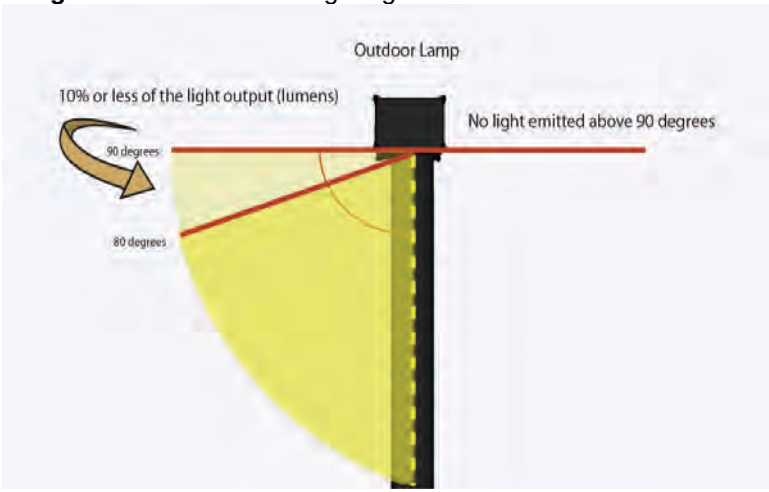
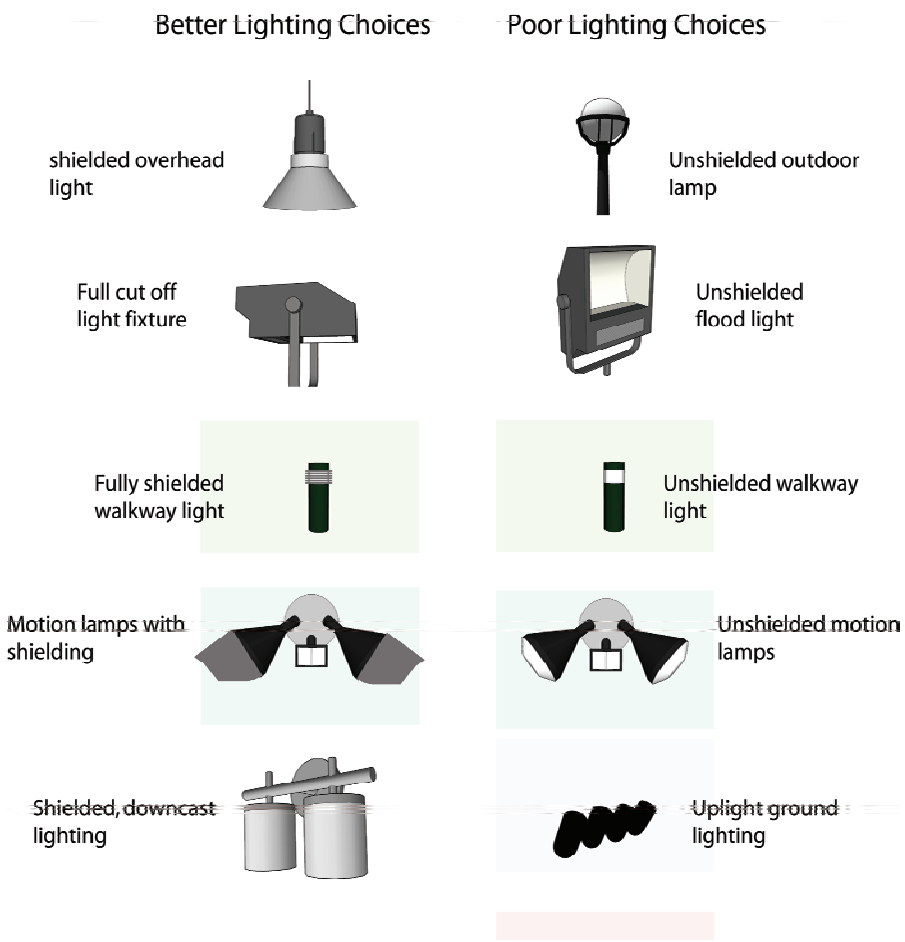


Figure 16: Sensible Lighting Choices



Shoreland Lighting Resources

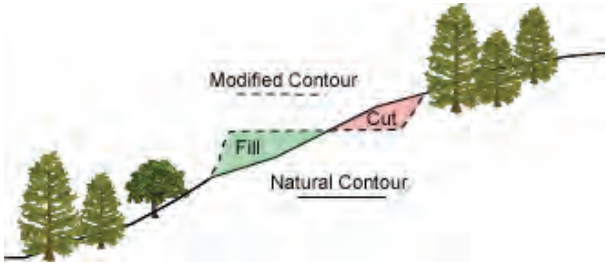
Sensible Shoreland Lighting: Preserving the beauty of the night. Publication by David S. Liebl, Robert Korth, University of Wisconsin Extension. http://www.uwsp.edu/cnr/uwexlakes/humanimpact/lighting.pdf

International DarkSky Association
Fact sheets, satellite imagery, links to research, additional light pollution information, and tips for choosing exterior lights. http://www.darksky.org/

New England Light Pollution Advisory Group
Newsletters, tips, website links. http://cfa-www.harvard.edu/cfa/ps/nelpag.html

Grading

Grading involves physical alteration of the natural contours by cutting (removing) or filling (adding) earth and rock. While some grading is necessary in virtually all projects to prepare the building site and to ensure proper drainage, excessive or unnecessary grading can have negative aesthetic and environmental impacts.



Vegetation Removal

Before earthmoving activities can begin, development sites must be cleared of vegetation. While some vegetation removal is necessary, excessive clearing can degrade scenic beauty and greatly reduce screening potential once the site has been developed. Excessive lot clearing can also result in unnaturally appearing forest openings that sharply contrast with the surrounding landscape.

Figure 17: Contouring & Grading

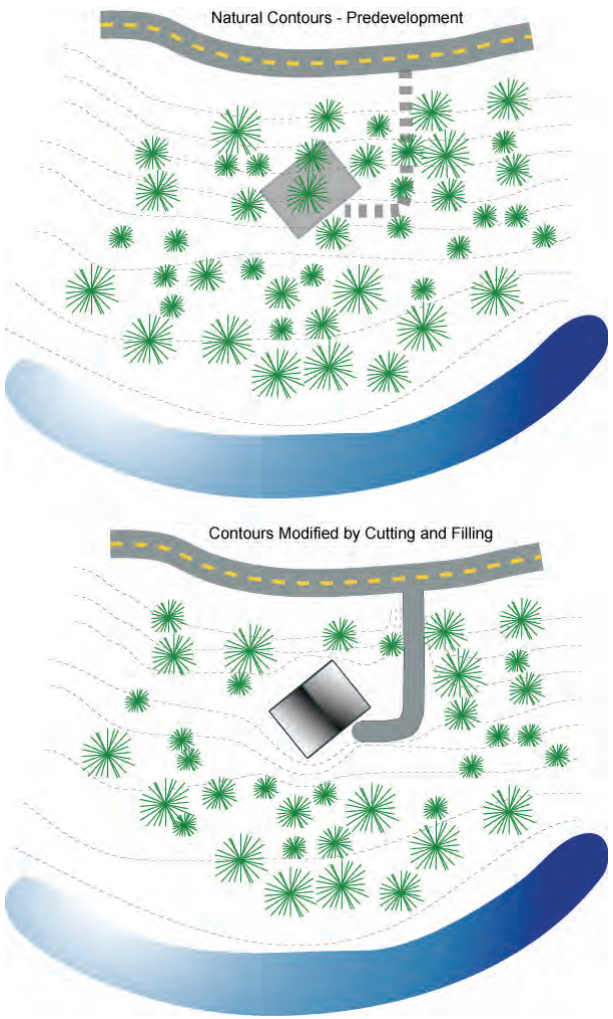
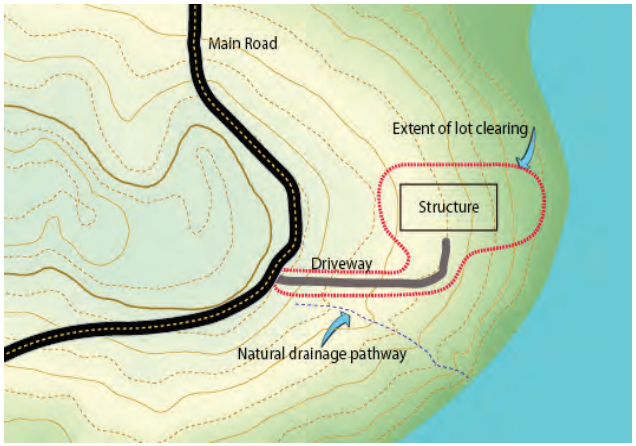
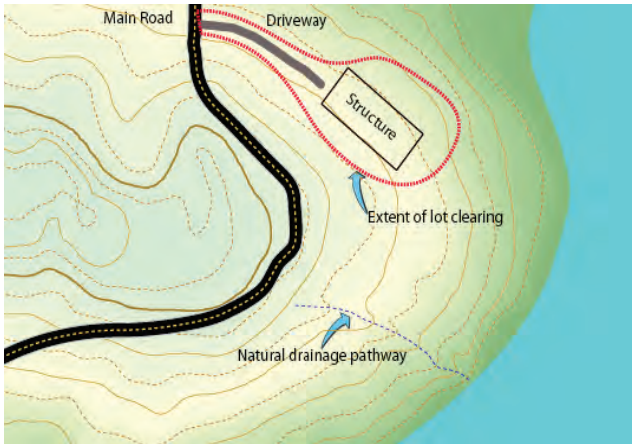


Figure 18: Building site orientation example



Development is **perpendicular** to natural contours



Development is **parallel** to natural contours

Alteration of Natural Landforms

Visual degradation caused by grading can be prominent, especially along coastal bluffs and in areas with steep topography. In addition to visual impacts, grading and other alterations have serious impacts on shoreline stability, may increase erosion, and negatively impact water drainage patterns. Modification of natural contours can detract from the visual appearance of the landscape by creating unnaturally appearing forms and shapes. In essence, the alteration of natural contours is an attempt to artificially integrate a development into a landscape, rather than designing and building within the existing natural setting.

Figure 18 depicts building orientation in two potential coastal development scenarios. In the upper diagram, both the structure and driveway are oriented **perpendicular** to the natural contours. Building at this location would likely require significant grading to provide a level building site. The cuts and fills needed to prepare this site would likely increase the visibility of this development. The dashed red line notes the extent of lot clearing. A large cleared area further increases site visibility and contrast to surrounding vegetated areas. The south shore coastline is dissected by numerous intermittent drainageways like the one shown in this example. Developing in this location would likely impact the natural drainage pattern; and without costly mitigation, could result in excessive erosion and runoff from the construction site.

In the lower diagram, the building site is oriented **parallel** to the natural contours, resulting in much less grading needed to prepare a flat building surface. The driveway is also conforms to the natural contours. This scenario would potentially have a lesser impact on natural drainage patterns, and would require less mitigation to protect water quality. Because the lot clearing area is smaller, more vegetation is retained to help screen this project from view.

In some locations, there may be no alternative to developing without substantial alteration of the natural landscape. If development must occur in these areas, the other techniques outlined in this document should be used to help minimize the visual intrusion of the project. If land alteration is unavoidable efforts should be made to restore natural contours and vegetation (with native plant species) once structures are built. Roofs should be terraced or angled to conform to the natural slope. Keeping the building height to a level below the tree canopy will also help screen the development from view.

KEY RECOMMENDATIONS

Before you build:

(1) Engage in pre-planning to identify all of the features within the scope of your project. Work to design a project that is compatible with the character and scale of the surrounding area, the topography and other natural conditions of the site. As part of the pre-planning process it will be important to fully understand you legal obligations and permit requirements associated with your project.

(2) Select a building site where minimal grading will be needed. If you're thinking about building, consult with your local County Zoning and Land Conservation Offices. In many cases, professionals from those offices will visit your property with you to and provide technical assistance to help you select an appropriate building site. County staff can also provide you with information about local development and permit requirements. You will need to secure a building/land use permit before you begin your construction project.

Contact Information

Ashland County Zoning	(715) 682-7014
Bayfield County Zoning	(715) 373-6138
Douglas County Zoning	(715) 395-1380
Iron County Zoning	(715) 561-5414

*Contact the Wisconsin Department of Natural Resources for information and permit requirements for grading, shoreline stabilization, erosion control, stormwater, wetland crossings, etc.

(3) If possible, choose a building site which is *at least* 100 feet from public roads or the water so structures can be screened by existing vegetation and landforms.

(4) Develop a grading plan which clearly depicts vegetation removal, reconstruction and root compaction protections.

Design and grading considerations:

(5) If development must occur along a hillside, select a home design which reduces the amount of grading required. Utilize split-level designs, with stepped roofs to fit the structure into the surrounding terrain.

(6) Avoid steep slopes, ridgelines and other visually sensitive areas.

(7) Use both natural vegetation and topography to reduce the visual prominence of development.

(8) Design roads and structures to blend into the natural contours of your property. Development should be parallel not perpendicular to the slope.

(9) Minimize the disturbance of natural vegetation.

(10) Terracing along natural contours and other grading methods that respect the natural topography should be used in order to avoid the use of retaining walls, steep banks and excessive cut/fill to create buildable parcels.

(11) Smooth graded angles to reflect the natural terrain.

(12) Use landscaping to soften the visual impacts of graded areas.

Recommendations and Tools for Government

While many communities have recognized the importance of scenic beauty, protection and management of scenic resources has been a challenge for local government. In a land use and development regulatory context, scenic beauty is generally not given the same level of consideration as to other issues such as water quality protection and erosion control. While local rules and regulations sometimes provide for a minimum level of protection of visual resources, they often fall short of achieving significant results. Local governments have generally not adequately addressed scenic beauty or aesthetics within their general plans; consequently; few communities have established policies or adopted regulations specific to visual quality. Scenic beauty and aesthetics may become an even greater concern to local communities in the future. As coastal development pressure continues to escalate and more growth occurs within scenic areas, local government may come under increased pressure to adopt more comprehensive standards and guidelines.

Formulating a Scenic beauty Management Strategy

Visual Resources and Comprehensive Planning

The comprehensive planning process serves as the ideal vehicle for translating local scenic beauty issues into sound policies programs and actions. Wisconsin's comprehensive planning law currently addresses nine integrated planning elements. Within this framework, it is possible to address scenic beauty either within the context of each element, or separately as a new planning element (i.e. Visual Resources Element).

Step 1: Visual Resources Inventory

Identification of the key visual resources of the community is generally the starting point in the formulation of a comprehensive local visual resource management program. Use methods such as visual surveys, site assessment surveys or visual preference surveys to identify areas of high scenic beauty within your community.

Step 2: Visual Resources Analysis

In addition to identifying local visual resources, the community must also evaluate the condition of those resources and identify potential threats. Similar to the process used to analyze natural resources, the community must determine the level of visual resource protection, enhancement or restoration required to meet its planning objectives. A key component of visual resource analysis involves the delineation and mapping of viewsheds. Using GIS, it is possible to calculate And map a viewshed from a single location or along a linear feature such as a roadway or trail corridor. While viewshed analysis does not assess scenic beauty, it can be a useful tool for exploring the development of visual structures within the landscape. In other words, viewshed mapping can help determine which structures, objects or features can be seen from a given point on the landscape. These models can be particularly useful if you are seeking to protect the visual integrity of landscapes within scenic coastal areas, along roadway corridors or lands visible from key viewing locations. As part of the visual resource analysis, the community should consider the following questions:

Resource condition questions

- Where are the key viewing locations?
- What can be seen from the key viewing locations?
- What is the capacity of the landscape to visually absorb development (visual absorption capacity)?
- How has land use affected scenic beauty?

Resource value questions

- Where are the high-value scenic locations? (perhaps the entire coast)
- What scenic attributes do we want to protect?

- What are the threats?
- Are current regulations effective in maintaining scenic beauty?

Step 3: Set Visual Resource Goals and Policies

The next step in the planning process involves establishing goals, objectives and policies to guide local visual resource management and protection. Goals are the broad, over-riding statements that describe the ends towards which community efforts will be directed. Policy statements are intended to provide a course of action that is directed toward the achievement of identified goals.

Example Goal:

Protect scenic coastal resources

Example Policies:

- Promote a concentrated development pattern to minimize visual impacts of development
- Regulate land uses to protect scenic beauty values
- Regulate forestry activities in important scenic or natural areas
- Restore scenic qualities in visually degraded areas
- Improve public access to the coast

Step4: Implementation Programs and Actions

Once the community has established visual resource management policies, those polices must be implemented. This task is accomplished by identifying specific programs and relevant actions along with a timeline for action. Wisconsin State Statutes (66.1001(2)(i)) define the requirements of the Implementation Element as "A compilation of programs and specific actions to be completed in a stated sequence, including proposed changes to any applicable zoning ordinances, official maps, sign regulations, erosion and storm water control ordinances, historic preservation ordinances, site plan regulations, design review ordinances, building codes, mechanical codes, housing codes, sanitary codes or subdivision ordinances, to implement the objectives, policies, plans and programs contained in pars. (a) to (h). The element shall describe how each of the elements of the comprehensive plan will be integrated and made consistent with the other elements of the comprehensive plan, and shall include a mechanism to measure the local governmental unit's progress toward achieving all aspects of the comprehensive plan."

Implementation items could be included within a specific planning element (i.e. Visual Resources Element), within the Implementation Element, or both. In lieu of creating a new element, a community may wish to include scenic beauty policies, programs and actions under other existing plan elements such as land use, natural & agricultural resources and the transportation element.

Methods to Identify Visual Resources

The primary tool for evaluating scenic beauty is called a visual quality assessment. This approach can be used to measure relative scenic beauty or to evaluate the potential impacts of a proposed action on the visual environment (visual impact analysis). Visual quality assessments are used by many state and federal agencies and by local government in land use planning. The National Environmental Policy Act (NEPA), 42 USC Section 4231, requires that all actions sponsored, funded, permitted, or approved by federal agencies undergo planning to ensure that environmental considerations such as impacts related to aesthetics and scenic beauty are given due weight in project decision-making.

A visual quality assessment can be a valuable tool to assist county and local government in designing standards and guidelines to protect and preserve local scenic resources. Historically, land use planning has focused very little on landscape design, scenic beauty and aesthetics, all of which affect the well-being of community residents. Local government can easily integrate scenic beauty and aesthetics into ongoing local planning programs, including comprehensive planning activities conducted in accordance with Wisconsin's planning legislation (Chapter 66.1001). By understanding the assessment methods and the wide range of scenic beauty policies, programs and actions available, governmental units can better direct efforts at measuring, and sustaining a high-quality visual environment.

Visual Mapping

Community members are asked to define scenic resources on a map (**Figure 19**). The responses are consolidated on a single map forming a collective image. Community visual resource maps could identify individual physical features, broad visual zones, or both.

Figure 19: Community Visual Resource Map

Site Assessment Surveys

Another method for assessing scenic beauty is the use of surveys. **Figure 20** is an example of a fictional scenic

Figure 20: Site Assessment Survey

Site ID	ORIENTATION	VIEWPOINT	VIEW DISTANCE: FOREGROUND	VIEW DISTANCE: MIDDLEGROUND	VIEW DISTANCE: BACKGROUND	VIEWER POSITION: INFERIOR	VIEWER POSITION: LEVEL	VIEWER POSITION: SUPERIOR	VIVIDNESS: LANDFORM	VIVIDNESS: WATERFORM	VIVIDNESS: VEGETATIVE	VIVIDNESS: MANMADE	VIVIDNESS: AVERAGE	INTACTNESS: DEVELOPMENT	INTACTNESS: ENCROACHMENT	INTACTNESS: AVERAGE	UNITY: OVERALL	TOTAL VISUAL QUALITY
Sand Point	from	9	200'	1000'	2 mi		x		4	6	5	7	5.5	6	7	6.5	6	6
Siskiwit Bay	from	7	150'	1000'	2 mi		x		3	6	4	5	4.5	4	4	4	6	4.83

Vividness:
7 - Very High
6 - High
5 - Moderately High
4 - Average
3 - Moderately Low
2 - Low
1 - Very Low
0 - Non existent

Intactness:
7 - No development
6 - Little development
5 - Some development
4 - Average level of development
3 - Moderately high development
2 - High level of development
1 - Very high level of development

Encroachment (eyesores)
7 - None
6 - Few
5 - Some
4 - Average
3 - Several
2 - Many
1 - Very Many
0 - Non existent

Unity:
7 - Very High
6 - High
5 - Moderately High
4 - Average
3 - Moderately Low
2 - Low
1 - Very Low

Total Visual Quality
7 - Exceptional
6 - Very High
5 - High
4 - Moderately High
3 - Average
2 - Moderately Low
1 - Low

Source: Adapted from Washington State Department of Transportation "Visual quality Matrix"

beauty assessment worksheet for a segment of the Bayfield County coast. Using an assessment worksheet, scores are assigned relative to the perceived vividness, intactness and unity of the landscape at each survey site. Survey sites may include designated scenic view points or other visual access points. By having different individuals survey the same site, the average score can be calculated for each site. The site assessment method has distinct disadvantages over other methods in that it can be costly and time consuming. Surveys can be conducted by community volunteers provided they receive some limited training. Accessibility to enough people to conduct the fieldwork may also be difficult.

Visual Preference Surveys

A Visual preference survey is a technique that assists the community in determining which visual components of the community contribute positively to a community's overall image. Visual preferences are typically recorded through photography. Participants in a group meeting are then asked to examine and categorize photographs that represent both attractive and unattractive aspects of their community. The photos are then paired with participant descriptions of why they like or do not like specific scenes.

To engage the larger community, photos may be compiled on a community picture board with the images sorted by category. The community picture board could be used as a tool to survey residents during a community meeting. Attendees would be asked to examine the picture board and vote for their preferred choices. Following the community meeting the results of the voting are tabulated and summarized. Visual preference surveys can also be developed on-line, with participants asked to express their perceptions when presented with various community images.

GIS Viewshed Models

Qualitative methods can be employed to identify and map viewsheds. In a geographic information system (GIS), creating a viewshed map is a relatively simple process involving a digital elevation model (DEM) and a viewing location, or locations from which the viewshed will be calculated. Views can also be calculated along digital features representing roadways, trails or other travel routes. Elevation heights can be modified using forest cover data and building height data to achieve more realistic outputs. Viewsheds can also be derived at a variety of scales, depending upon the scale and quality of data inputs.In the computer environment, it is also possible to map line-of sight, or the area that can and cannot be seen between two points. Line-of-sight analysis can be useful in determining the potential visual and aesthetic impacts of new development.

Figure 21: Example Viewshed Model

Visual Resources Implementation Tools

Conventional Zoning

Conventional zoning generally provides for very limited protection of visual resources. This is due, in part, to the fact that conventional zoning districts have almost no relationship to aspects of community character. The net result is that development within a general residential zoning district in northern Wisconsin may be relatively indistinguishable from development within similar districts elsewhere. Conventional zoning regulations fail to address local "uniqueness" and community character issues because they are not able to adequately relate use characteristics to local surroundings and community values.

The landscape of the south shore is unique, with site conditions which can be highly variable from parcel to parcel. In this type of a landscape, the rigid standards of conventional zoning fail to consider unique local characteristics and values, and instead apply a broad "one size fits all" approach to land use regulation. In fact, conventional zoning may actually contribute to the degradation of community character by creating extensive homogeneous tracts of single-family homes on large lots, or contiguous swaths of shoreline development. Conventional subdivision design also does little to promote open space and the retention of existing screening vegetation.

In Wisconsin, counties are required to adopt and enforce the minimum state zoning standards for shoreland areas outlined in Chapter NR 115, Wisconsin Administrative Code. Counties may enact additional or more restrictive standards, including standards to preserve scenic beauty. Such standards may include, but are not limited to,

Increased building setbacks
Larger buffer zones
Increased minimum lot size
Additional vegetative screening requirements
Shoreline mitigation standards

Scenic Overlay District

An overlay district provides supplementary regulations which are superimposed upon the underlying zoning district. The underlying district standards related to setbacks, height restrictions, density and design, etc. are subordinated to enhanced visual performance standards for new development.

The increased performance standards imposed by the overlay are not designed to prohibit development, rather to reduce the visual impact of new development and to protect public views.

Overlay zoning can be relatively simple and easy to implement, and generally has several advantages over

other, more complex tools. Text can be written and boundaries mapped to incorporate only those features that are most important to the community. Boundaries can be easily defined by cross-referencing the features of interest with existing zoning district boundaries. Overlay districts can address several issues and concerns regarding proposed future land uses within the district, including home siting, lot sizes, setbacks, vegetation clearing, buffer requirements, lighting, and others. Overlays can also be easily implemented by appending existing zoning regulations. Implementation does not require substantial re-writing of the underlying zoning ordinance or other land use regulations. Because these are locally imposed regulations, the municipality retains control to protect and enhance its own resources and to determine its own future.

Land & Subdivision Regulation

In Wisconsin, the process of dividing the land into smaller parcels is done within two categories, minor land divisions and subdivisions. Minor land divisions describe the formation of two to four lots, where formerly only one existed. Subdivisions are created by the division of land into 5 or more lots of 1½ acres each or less in area or when 5 or more parcels or building sites of 1½ acres each or less in area are created by successive divisions within a period of five years. The requirements become increasingly rigorous as one progresses from minor land division to a subdivision. Subdivision ordinances typically regulate how and under what conditions a parcel of land can be divided into smaller parcels. Subdivision ordinances can also regulate aspects of development such as dimensional standards, lot size and setback requirements. Subdivision ordinances often contain development standards which are not addressed in the zoning ordinance such as design standards for drainage, roads, sidewalks, utilities and lighting. The Ordinance may also include site design criteria to promote visual quality, traditional neighborhoods, rural character or other community goals expressed in its comprehensive plan.

Subdivision Design Techniques

A prominent rural residential development model used on the south shore, and much of rural Wisconsin, is the conventional subdivision. Often referred to as the “cookie-cutter” method, this model involves the splitting of large tracts of open space into the maximum number of residential lots allowed in the zoning ordinance. The lots created using this model are oftentimes large, with significant lot clearing to make room for a home and large yards. Conventional subdivision design places little emphasis on scenic beauty and may actually contribute to the degradation of scenic values by promoting land clearing and creating homogeneous developments without regard for visual and aesthetic characteristics. Conventional subdivision regulations impose rigid lot restrictions that do not preserve distinctive scenic natural features and characteristics of the landscape. In the rural environment, conventional subdivisions can also degrade

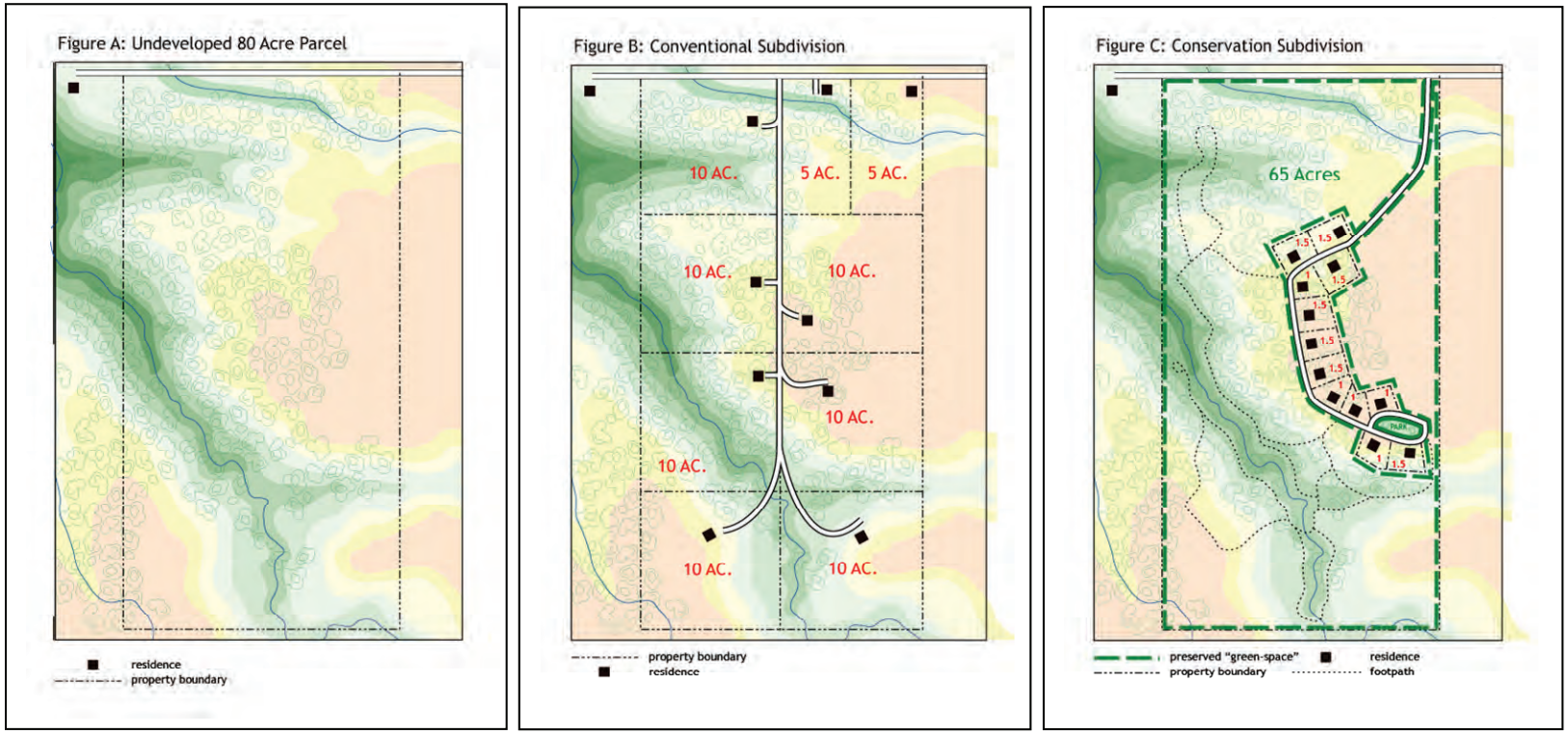
rural character by creating a monotonous or repetitive development pattern.

An alternative to the conventional model is the conservation design concept. The purpose of a conservation design is to provide opportunity for development while maintaining open space characteristics, encouraging interaction among residents through site design and protection of habitat, scenic characteristics and environmental features. A typical conservation design subdivision contains the same number of lots that would be permitted under a conventional design. The lots are typically smaller than conventional lots and are designed for single-family homes reminiscent of traditional neighborhoods found in small towns throughout America.

The compact design of a conservation subdivision allows for the creation of permanent open space (typically 50 percent or more of the buildable area). This undeveloped land typically serves as communal open space land and provides recreational, aesthetic, and social benefits to subdivision residents.

From a scenic beauty perspective, the conservation design model offers many potential benefits. Because of the large area of permanent open space and reduced lot sizes, significant natural vegetation is retained to screen development. Developed lands are sited as to avoid sensitive natural features and landforms, resulting in greater retention of the overall scenic attributes and character. Lots and roads are configured to blend into the natural landscape, rather than the inverse approach used in conventional design. The conservation design approach may also permit the development to become more congruent to its surroundings, resulting in retention of rural character and appeal. **Figure 22,** contrasts the conservation and conventional design approaches on a sample 80 acre site. The conventional approach yields 9 lots, which range in size from 5 to 10 acres. Homes and driveways are configured in a random, haphazard manner; and little, if any, green space is retained. The conservation approach also yields 9 lots, which range in size from 1 to 1 ½ acres. This approach also results in the retention of 65 acres of open space. Trails and other amenities can be sited within the open space to provide recreational and aesthetic benefits for homeowners. Natural landforms and vegetation help to screen this development from view of the highway.

Figure 22: Subdivision Design Models



Traditional vs. Conservation Design Visualization Analysis

The following graphics depict 3-D visualizations of subdivision design policy alternatives applied to "real-world" sites along the Lake Superior south shore. Two hypothetical sites were first analyzed to identify existing environmental features such as surface waters, steep slopes and wetlands. Each site was split into lots based on traditional subdivision design and a cluster-type conservation design. Three-dimensional homes were then placed on the lots in both developments.

What was the result?

Using GIS, several photorealistic 3-D views were generated for both example sites. The images depict preexisting site conditions and conditions after the hypothetical homes have been built. While generalized, this examination reveals some obvious differences in the visual aspects of both development methods. Visually, there appears to be a negligible difference between the more compact housing clusters of the conservation model and the traditional subdivision layout. However, unlike the traditional models, housing in the conservation models is configured away from the waters edge, thus screening vegetation is retained minimizing the visual disturbance as viewed from the water. The conservation models clearly depict the effect of open space retention on the surrounding visual environment. Retention of a large open space area in the conservation models ensures that development does not negatively impact the view, especially from the water. These areas are typically set aside under a conservation easement which ensures its protection from development in perpetuity. The terms of the easement can prevent detrimental land use that would negatively impacts views while allowing for recreation-oriented and aesthetic uses, which are beneficial to the residents of the subdivision.

One of the significant benefits of using the conservation design model is the ability to configure the open space component to protect visually significant features such as hilltops, ridgelines and coastal bluffs. By preserving a forested buffer around the perimeter of the site and concentrating development within the interior, visual impacts to adjacent areas can be greatly reduced. Local units of government can require these types of visual analyses to be conducted as part of the subdivision review process. A community wishing to protect scenic beauty could require applicants to demonstrate that their proposals would not significantly impact the visual character of the surrounding area.

Figure 23: Geographic Context, Amnicon Site

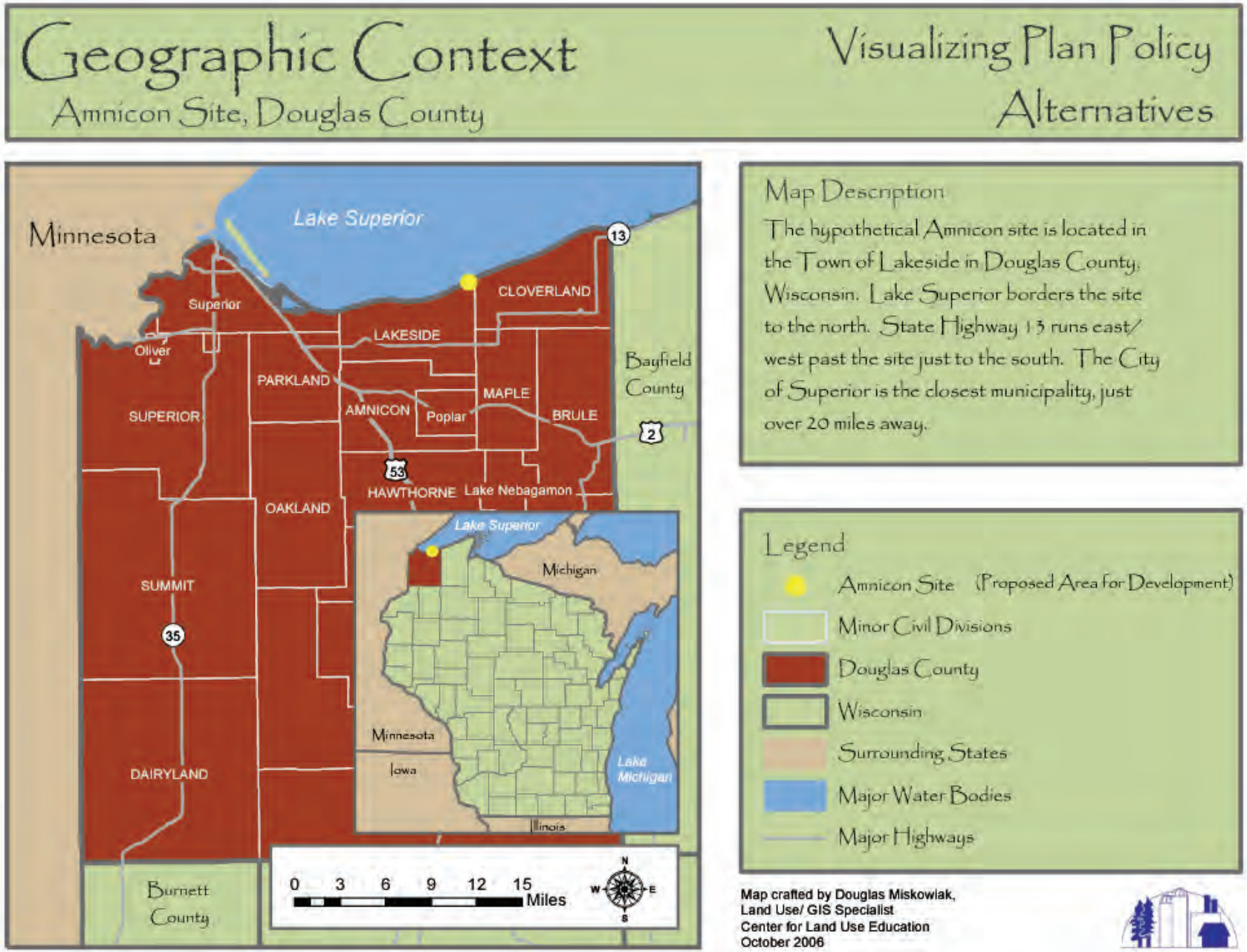
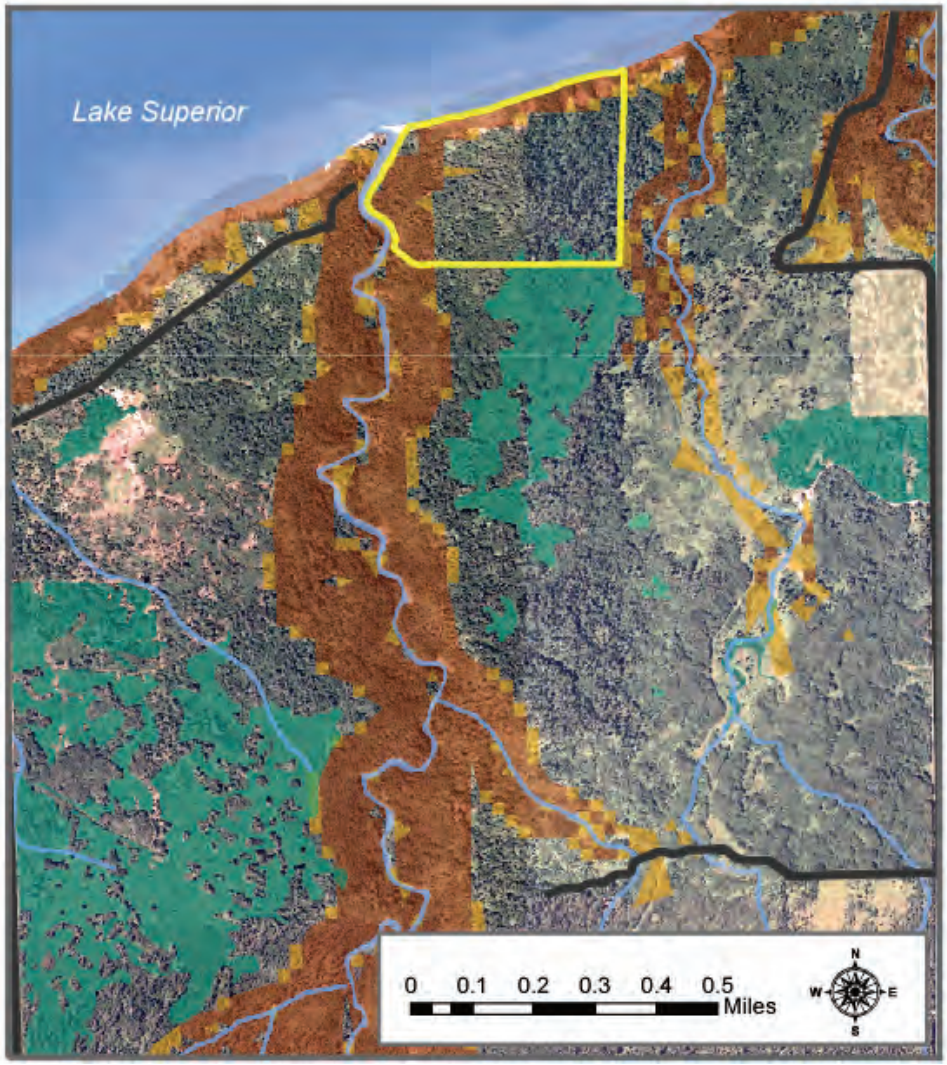


Figure 24: Environmental Features, Amnicon Site

Environmental Features

Amnicon Site, Douglas County

Visualizing Plan Policy Alternatives



Map Description

Minimizing the negative impacts on environmental features is an important development consideration. This map displays environmental features including: surface waters, wetlands, and areas of steep topography. The hypothetical Amnicon site has approximately 2,000 feet of Lake Superior shoreline and almost 1,300 feet of streams. The southeast portion of the site contains some wetlands. Steep slopes border the site's northern, western, and eastern edges.

Legend

- Amnicon Site (Proposed Area for Development)
- Surface Water
- Wetlands
- Slopes Greater Than 12.5%
- Slopes Greater Than 20%
- Existing Roads

Map crafted by Douglas Miskowiak, Land Use/ GIS Specialist and Gina John.
Center for Land Use Education
October 2006

Figure 25: Traditional Subdivision Layout, Amnicon Site

Traditional Subdivision

Amnicon Site, Douglas County

Visualizing Plan Policy Alternatives

Map Description

This map displays a hypothetical traditional subdivision proposal for the Amnicon site in Douglas County, Wisconsin. The proposal contains 15 buildable parcels at approximately four acres each. Eight parcels share the 1,900 feet of shoreline with approximately 240 feet of lake frontage each. Five parcels abut the Bardon Creek.

This proposal requires almost 6,270 feet of new roads and a bridge to cross Bardon Creek and adjacent steep slopes. The proposed road connects to existing roads on both the east and west.

Legend

- Amnicon Traditional Subdivision
- Proposed Road

Map crafted by Douglas Miskowiak, Land Use/ GIS Specialist and Gina John.
Center for Land Use Education
October 2006

Figure 26: Conservation Design Layout, Amnicon Site

Conservation Subdivision

Amnicon Site, Douglas County

Visualizing Plan Policy Alternatives

Map Description

This map displays a hypothetical conservation subdivision proposal for the Amnicon site in Douglas County, Wisconsin. The proposal contains 15 buildable parcels at approximately three-quarters of an acre each. The commons area shares almost 54 acres and over 1,900 feet of shoreline among Amnicon's future residents.

This proposal requires almost 3,250 feet of new roads and a bridge to cross Bardon Creek and adjacent steep slopes.

Legend

- Amnicon Conservation Subdivision
- Proposed Road

Map crafted by Douglas Miskowiak, Land Use/ GIS Specialist and Gina John.
Center for Land Use Education
October 2006

Figure 27: 3-D Overview, Amnicon Site

Figure 28: 3-D Perspective of Traditional Design, Amnicon Site

Figure 29: 3-D Perspective of Conservation Design, Amnicon Site

Figure 30: Geographic Context, Sawgrass Site

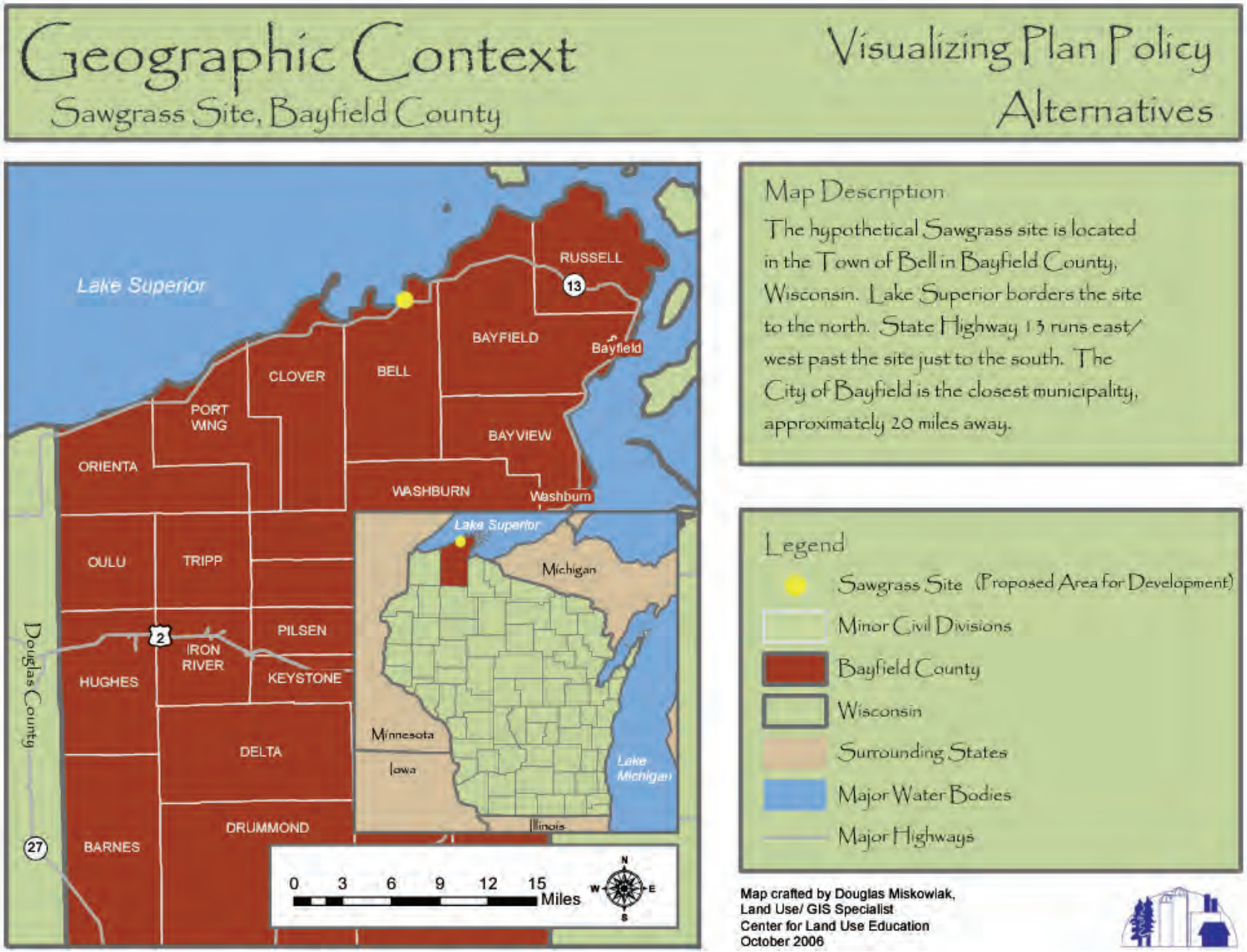


Figure 31: Environmental Features, Sawgrass Site

Environmental Features

Sawgrass Site, Bayfield County

Visualizing Plan Policy Alternatives

Map Description

Minimizing the negative impacts on environmental features is an important development consideration. This map displays environmental features including surface waters and areas of steep topography. The hypothetical Sawgrass site has approiximately 1,183 feet of Lake Superior shoreline. Although not mapped, small, wetland areas do exist on the site, along with steep slopes along the shoreline.

Legend

- Sawgrass Site (Proposed Area for Development)
- Surface Water
- Slopes Greater Than 12.5%
- Slopes Greater Than 20%
- Existing Roads
- Unpaved Roads and Driveways

Map crafted by Douglas Miskowiak, Land Use/ GIS Specialist and Gina John.
Center for Land Use Education
October 2006

Figure 32: Traditional Subdivision Layout, Sawgrass Site

Traditional Subdivision

Sawgrass Site, Bayfield County

Visualizing Plan Policy Alternatives

Map Description

This map displays a hypothetical traditional subdivision proposal for the Sawgrass site in Bayfield County, Wisconsin. The proposal contains 14 buildable parcels at approximately one and one-half acres each. Five parcels are on the lakeshore with an average of 250 feet of frontage. Over 3,500 feet of new roads are required for this proposal.

Legend

- Sawgrass Traditional Subdivision
- Proposed Roads

Map crafted by Douglas Miskowiak, Land Use/ GIS Specialist and Gina John.
Center for Land Use Education
October 2006

Figure 33: Conservation Design Layout, Sawgrass Site

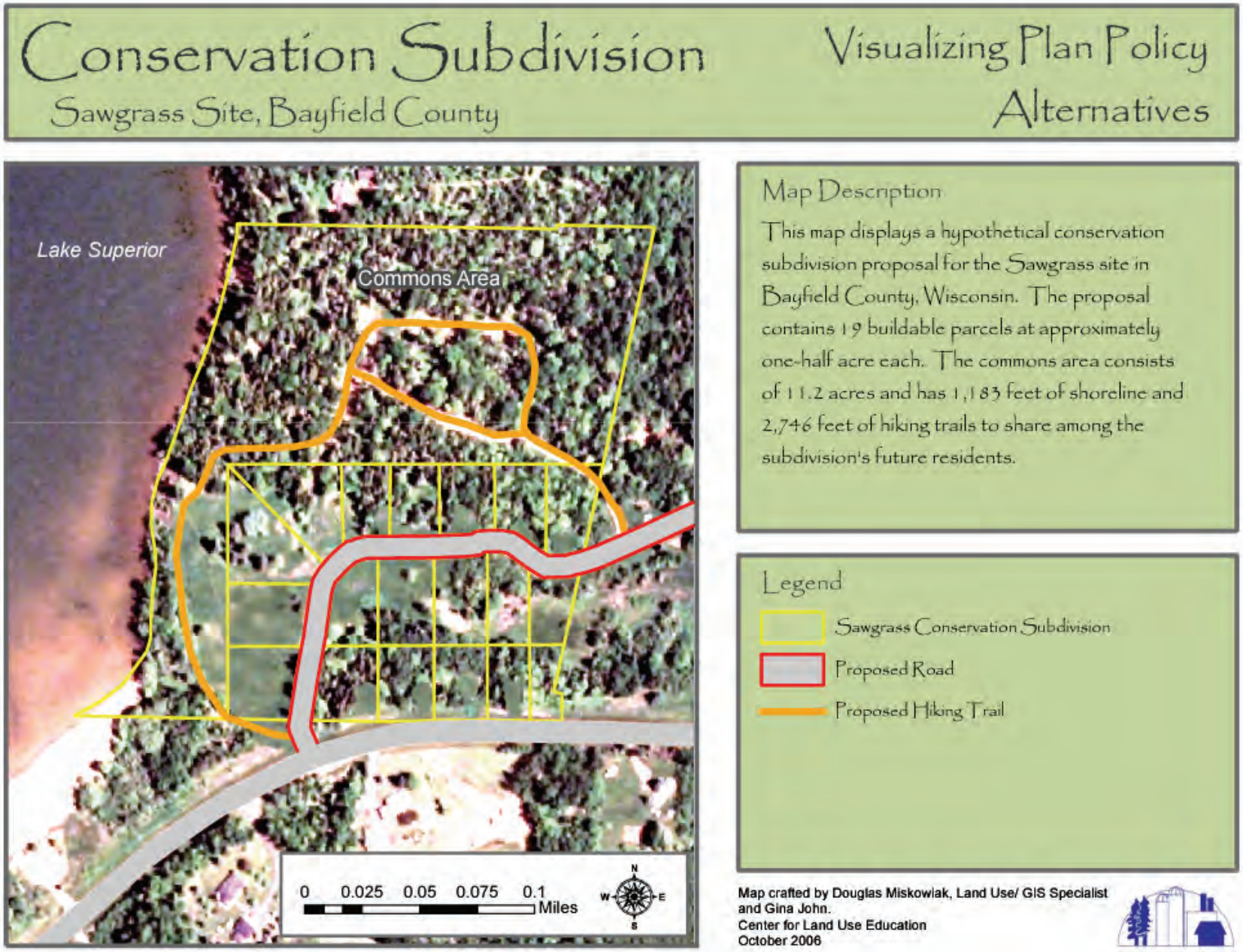


Figure 34: 3-D Overview, Sawgrass Site

Figure 35: 3-D Perspective of Existing Conditions, Sawgrass Site

Figure 36: 3-D Perspective of Traditional Design, Sawgrass Site

Figure 37: 3-D Perspective of Conservation Design, Sawgrass Site

Performance Zoning

Performance zoning can allow for greater flexibility and design variety than conventional zoning while assuring that development projects are economically and environmentally sound. Unlike conventional zoning which typically only focuses on the type of land use, performance zoning regulates the impacts of development. With this type of ordinance a zone is established on property, but instead of defining the type of uses that will be permitted, the zone establishes a number of performance standards that must be satisfied. These standards may include limits on pollution, visual impacts, land clearing, erosion, noise, building height, etc. The developer is then free to construct any use he desires, as long as the performance standards are met. Performance zoning may be more effective in preserving natural values than conventional zoning because it directly regulates the impacts of development rather than indirectly through a list of permitted uses.

Form-Based Zoning

Form-based zoning is a form of land use regulation that focuses on physical design rather than land use or function. Essentially, these types of regulations focus on what is desired by the community rather than simply on what type of development is permitted. Form-based zoning is most often employed in developed environments as a means of ensuring that new development conserves, or is consistent with the character of existing development. This tool works best when coupled with design standards to control the use of certain building materials and signage. Using a form-based approach, the community establishes design controls (height, siting, building elements, use) to ensure consistency with existing development, or to promote community values (walkability, architectural compatibility, mixed-use neighborhoods). The development of form-based zoning ordinances typically involves collaboration between government leaders, the public, planners and developers.

Siting Restrictions

Where a structure is situated on a parcel can greatly affect its visibility and the visual/scenic characteristics of the surrounding landscape. Significant existing coastal development is situated along hills and bluffs, which creates a two-fold problem. Because the parcels are set above the lake plane they are generally highly visible from lower elevations, especially from the water. In addition, structures are usually situated as close to the water as possible, limiting the potential for topographic and vegetative screening. A mass of structures sited directly along the shoreline can create a “wall-effect”, where development is visually dominant. The net result can be a dramatic degradation of shoreline aesthetics, and loss of character. This effect is becoming increasingly common on inland lakes, many of which are becoming fully built-out.

Siting restrictions could require coastal development to be set away from the prominent visual features, hilltops or ridgelines and the waters edge. Siting restrictions or other development standards could be incorporated as part of building and site plan review, zoning or land division regulations.

Telecommunications Towers

With the advent of wireless communication over the past decade came a proliferation of telecommunication towers across the rural landscape. Unfortunately, these towers are frequently located on hilltops, ridgelines or atop other natural features, making them highly visible from surrounding areas. These towers may also extend skyward 100 to 250 feet, further contributing to their visual prominence.

Section 332(c)(7) of the Federal Communications Act preserves state and local authority over zoning and land use decisions related to wireless service facilities, but also establishes specific limitations on that authority. Although local government does not have the ability to unilaterally **prohibit** these facilities, local zoning ordinances can establish performance standards related to siting, structure height, landscaping and screening requirements along with setback and separation requirements.

Additionally, communities can enact moratoriums on the construction of communications towers to allow time for analysis and ordinance development. Communities may also wish to consider offering incentives such as expedited permits, or reduced permit fees to companies who voluntarily screen or disguise their towers.

Model ordinances can be used as a resource for local government in creating local wireless communications tower ordinances. A model overlay ordinance developed by the St. Croix Valley Wireless Communication Service group for the Lower St. Croix River valley is specifically geared towards the protection of scenic and aesthetic resources. This model regulates the siting of wireless communication service facilities near the St. Croix River in western Wisconsin and eastern Minnesota, and serves as a guide for development of local ordinances in valley communities.

Signs and Billboards

Perhaps one of the greatest detractors of scenic beauty along public roadways is outdoor advertising, signs and billboards. Since the advent of roads, billboards and other roadside signs have been part of the rural landscape. In fact, there are as many as 17,000 (Clean Water Action Council of Northeastern Wisconsin, 2004) billboards along Wisconsin roads today. Outdoor advertising trends are favoring the development of more

and larger billboards, and the use of electronic billboards and signs.

These forms of advertising represent threats to more than scenic vistas, but rather to the intrinsic scenic quality of the landscape as a whole. In general, the primary arguments against billboards and other forms of outdoor advertising can be summarized as follows:

- Billboards can be visually obtrusive
- Billboards degrade intrinsic scenic character and reduce the "uniqueness" of rural byways
- Billboard proliferation obstructs views of natural landscapes
- Tree and vegetation removal along highway rights-of-way further degrades scenic beauty characteristics
- Lighted signs contribute to "light pollution"

Local government in Wisconsin can regulate billboards and off-premise outdoor advertising[4]. Counties and communities with zoning authority may wish to consider the use of **billboard prohibition ordinances** as part of local zoning codes. These ordinances essentially equate to a complete prohibition of the construction of new off-premise outdoor advertising signs and billboards. Local regulations could also be modified to include provisions preventing a new billboard from being constructed unless an existing billboard comes down.

Communities may also develop and adopt **sign ordinances**, which restrict the type, size, and location of signs within a community. These ordinances may also restrict the types of materials that can be used to construct signs.

Towns which do not have their own zoning or those who wish to have more restrictive standards than the county may adopt local **billboard control ordinances**. These ordinances may not be as effective as billboard prohibition or sign ordinances due to the fact that Town authority to regulate billboards is primarily limited to highway safety concerns.

Model ordinances are available to assist local units of government in the development of billboard and sign ordincances. Models for each of the aforementioned techniques are available online from Scenic Wisconsin at http://www.scenicwisconsin.org/modelord.htm.

Scenic Easements

An alternative approach to outright acquisition of private property for scenic preservation involves the purchase of the property's development rights. These transactions are recorded with the Register of Deeds as easements. The easement restricts the use of the land to agricultural use, open space, or other desired use in perpetuity,

[4] Wis. Stat. § 59.70(22) (counties); Wis. Stat. § 60.23(29) (towns); Wis. Stat. §62.23(7)(a) (general grant of zoning enabling authority to cities and villages).

remaining on the deed even if the land is sold or passed through inheritance.

Scenic easements do not automatically allow public access to the land. The land remains in the hands of the owner, as only the rights to use or develop it have been purchased. All remaining rights of property ownership remain with the landowner including the right to transfer ownership, swap, deed, or sell the land. A typical scenic easement would apply terms and conditions to the parcel such as permitted uses, prohibition of dumping of unsightly or offensive materials and prohibition of certain signs, billboards or other forms of outdoor advertising. Other restrictions could also be imposed depending upon the nature of the parcel or scenic beauty objectives for that area. Scenic easements may not only preserve the scenic value of a parcel, but also may benefit landowners with abutting properties. Because the visual values are preserved, land values may increase, benefiting adjoining landowners.

Visual Impact Assessments

Visual Impact Assessments (VIA) are methods for determining the potential visual effect of a proposed development on the scenic landscape. VIA's are becoming an increasingly common part of the development review process in communities across the county. Federal and state agencies are often required to conduct these analyses for NEPA compliance on proposed projects. The Wisconsin Department of Transportation conducts visual assessments in order to evaluate the visual impacts of proposed major highway and facilities projects.

Many communities are now beginning to use visual assessments to evaluate the potential visual impacts of proposed roads, subdivisions and communications towers. Within local communities, a VIA may be useful in determining whether a proposed development is consistent with community goals and objectives as expressed a comprehensive plan or visual resource management plan. In terms of practical application, VIA could be incorporated into local land/subdivision regulations, which could require an assessment as part of the permit approval process. Such assessments could be used to identify potential visual impacts and to propose project alternatives or measures to mitigate potential negative impacts such as screening, siting alternatives, building design or architectural recommendations or other visual impact mitigation measures.

VIA's may also prove to be a useful tool for assessing the visual impacts of docks and piers in coastal communities[5]. A VIA may be used to develop regulatory

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[5] **Bliven, S. and R. Kelty. 2005. Visual Impact Assessment of Small Docks and Piers: Theory and Practice. NOAA Coastal Ocean Program Decision Analysis Series No. 25. National Centers for Coastal Ocean Science, Silver Spring, MD. 42 pp.**

and/or non-regulatory approaches to mitigate visual concerns associated with small docks and piers. The VIA process must be as objective as possible. Where possible, communities electing to use this process should attempt to formulate standardized, measurable evaluation parameters. Qualitative assessments conducted by experts in this field may also be used.

Land Trusts

Land trusts are non-profit organizations that work in partnership with private landowners to help protect the natural, scenic or historic character of their property. Land trusts purchase property, accept land donations and negotiate conservation easements with private landowners. Land trusts also educate the public on the need to protect land and provide stewardship assistance to private landowners.

In 2005, The Bayfield Regional Conservancy facilitated the State of Wisconsin's acquisition of 400 acres adjacent to the Mt. Ashwabay Ski Hill. Mt. Ashwabay is an important regional recreational asset and the summer home of the Lake Superior Big Top Chautauqua. The Conservancy was also instrumental in the acquisition of the adjoining Nourse Sugarbush property, an important natural, cultural, and scenic area. Both sites, which would have been highly prized for development, are now protected in perpetuity. From a scenic beauty standpoint, this acquisition is especially significant. Because Mt. Ashwabay is set on a bluff and sensitive ridgeline overlooking Lake Superior, the property is highly visible from a significant distance. If development were to have occurred here, the visual impact would likely have been profound.

Conclusion

Scenic beauty is a core element of healthy, vibrant communities. Nowhere is this statement more clearly illustrated than along Wisconsin's Lake Superior south shore, where natural scenic beauty drives a tourism-based local economy. Over the past 20 years, skyrocketing demand for coastal property has resulted in accelerated growth and change along the south shore. Scenic coastal landscapes are being highly degraded or, in some cases, totally lost due to development which is visually incompatible with the natural surroundings. The ongoing pace of change threatens not only scenic beauty, but also the livelihood and quality of life for south shore residents. The loss of scenic beauty threatens tourism and recreation, activities which form the basis for many south shore community economies. While change may be inevitable, ugliness is not. In the absence of action, future development **will** seriously threaten the visual and aesthetic character of the south shore. Without action, the very attributes which draw people to this region will no longer exist. One needs to look no further than many of our inland lakes, or developed areas along Wisconsin's Lake Michigan coastline to gain a perspective on the potential future of the south shore.

Citizens, and government have the ability and the responsibility to ensure that growth does not compromise the visual integrity of the south shore. Voluntary actions on behalf of individuals, while important, are insufficient to address the magnitude of these issues by themselves. In the past, most government efforts to protect scenic beauty have focused on encouraging voluntary action rather than mandating controls. Voluntary action alone cannot lead to progress at the speed and scale needed to address scenic beauty issues. A combination of regulatory and voluntary approaches will be needed if we are to preserve this unique scenic environment for future generations to enjoy.