

Hiawatha Valley Atlas

A Tool for Land Use Decisions



Red Wing to Wabasha, Minnesota

2006

Maps

Base map of the Hiawatha Valley: Red Wing to Wabasha, Minnesota	1
St. Lawrence Edge	2
Depth to Bedrock	3
Depth to Watertable	4
Areas Containing Steep Slopes	5
Potential for Soil Erosion	6
Areas Containing Flood-prone Soils	7
Soils with poor Suitability for Homes with Basements	8
Susceptibility of Groundwater to Pollutants	9
Designated Trout Streams and Their Watersheds	10
Sites of Biodiversity Significance	11
Prime Farmland and Farmland of Statewide Significance	12
Potential Aggregate Resource Areas	13
Protected (Public) Waters and Adjacent Shoreland	14
Recreation Areas and Facilities	15
Archeological and Historical sites	16
Areas Visible from the Great River Road	17

Caution: These maps are large scale general data layers and should not be used for site specific projects. Use these for initial planning purposes only. Please contact data sources for meta-data and assistance.

Introduction

The Hiawatha Valley Atlas is a set of maps and narratives concerning factors relevant to regional land-use planning. It is a companion to the Hiawatha Valley Partnership Presentation and Ordinance Matrix.

The Hiawatha Valley, the corridor from Red Wing to Wabasha Minnesota, is nationally recognized for its breathtaking scenery. The Great River Scenic Highway in the Hiawatha Valley is rated second only to the Pacific Coast Highway in California and Oregon.

Real estate has become the investment of choice in the new millennium. This has triggered a rash of investment in second and third homes and supportive services. Residential housing developments are transferring valuable agricultural land and environmentally sensitive areas into paved-over land tracts. The Hiawatha Valley's water, natural beauty and location make it prime for a development boom.

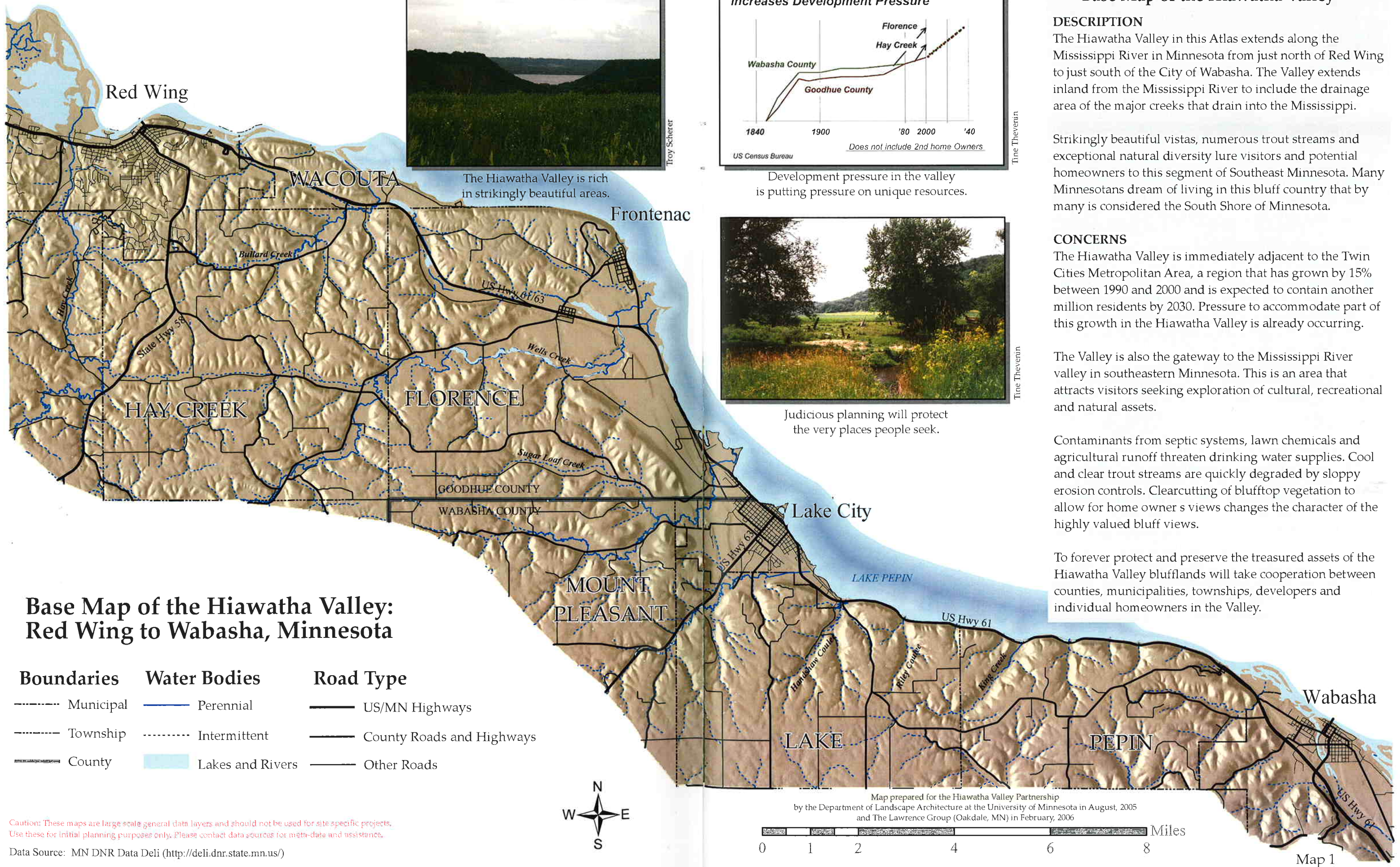
The Hiawatha Valley contains environmental and geologic intricacies that are not common knowledge. The purpose of the Hiawatha Valley Partnership Project is public environmental education preparatory to land use decisions.

Public development policy ignoring environmental realities would risk blighting the Hiawatha Valley's beauty and devaluating its natural assets. Inappropriate development could even contaminate the valley's drinking water.

The maps in this Atlas are designed to show where specific issues may be especially important to making informed land use decisions. This is not to replace on-site inspection which is necessary for a fully informed land use decision.

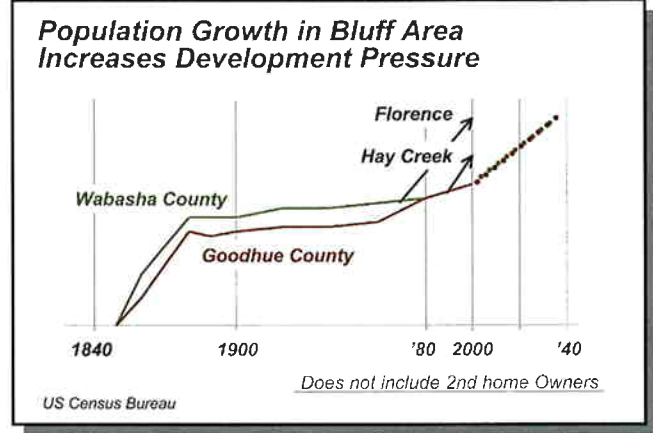
Cooperation is needed to protect and preserve the unique assets that make this valley special and beautiful. Together we can make that happen.

The maps and general layout were prepared for the Hiawatha Valley Partnership by the Department of Landscape Architecture at the University of Minnesota and The Lawrence Group, Oakdale, MN



The Hiawatha Valley is rich in strikingly beautiful areas.

Troy Scherer



Development pressure in the valley is putting pressure on unique resources.

Tina Thevenin



Judicious planning will protect the very places people seek.

Tina Thevenin

Base Map of the Hiawatha Valley

DESCRIPTION
The Hiawatha Valley in this Atlas extends along the Mississippi River in Minnesota from just north of Red Wing to just south of the City of Wabasha. The Valley extends inland from the Mississippi River to include the drainage area of the major creeks that drain into the Mississippi.

Strikingly beautiful vistas, numerous trout streams and exceptional natural diversity lure visitors and potential homeowners to this segment of Southeast Minnesota. Many Minnesotans dream of living in this bluff country that by many is considered the South Shore of Minnesota.

CONCERNS
The Hiawatha Valley is immediately adjacent to the Twin Cities Metropolitan Area, a region that has grown by 15% between 1990 and 2000 and is expected to contain another million residents by 2030. Pressure to accommodate part of this growth in the Hiawatha Valley is already occurring.

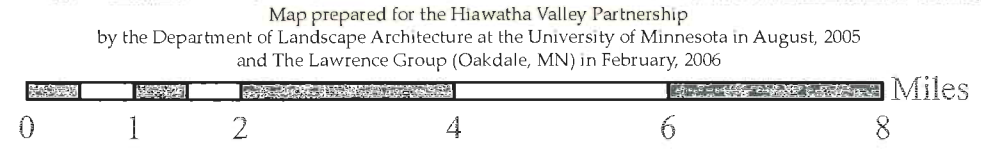
The Valley is also the gateway to the Mississippi River valley in southeastern Minnesota. This is an area that attracts visitors seeking exploration of cultural, recreational and natural assets.

Contaminants from septic systems, lawn chemicals and agricultural runoff threaten drinking water supplies. Cool and clear trout streams are quickly degraded by sloppy erosion controls. Clearcutting of blufftop vegetation to allow for home owner s views changes the character of the highly valued bluff views.

To forever protect and preserve the treasured assets of the Hiawatha Valley blufflands will take cooperation between counties, municipalities, townships, developers and individual homeowners in the Valley.

Base Map of the Hiawatha Valley: Red Wing to Wabasha, Minnesota

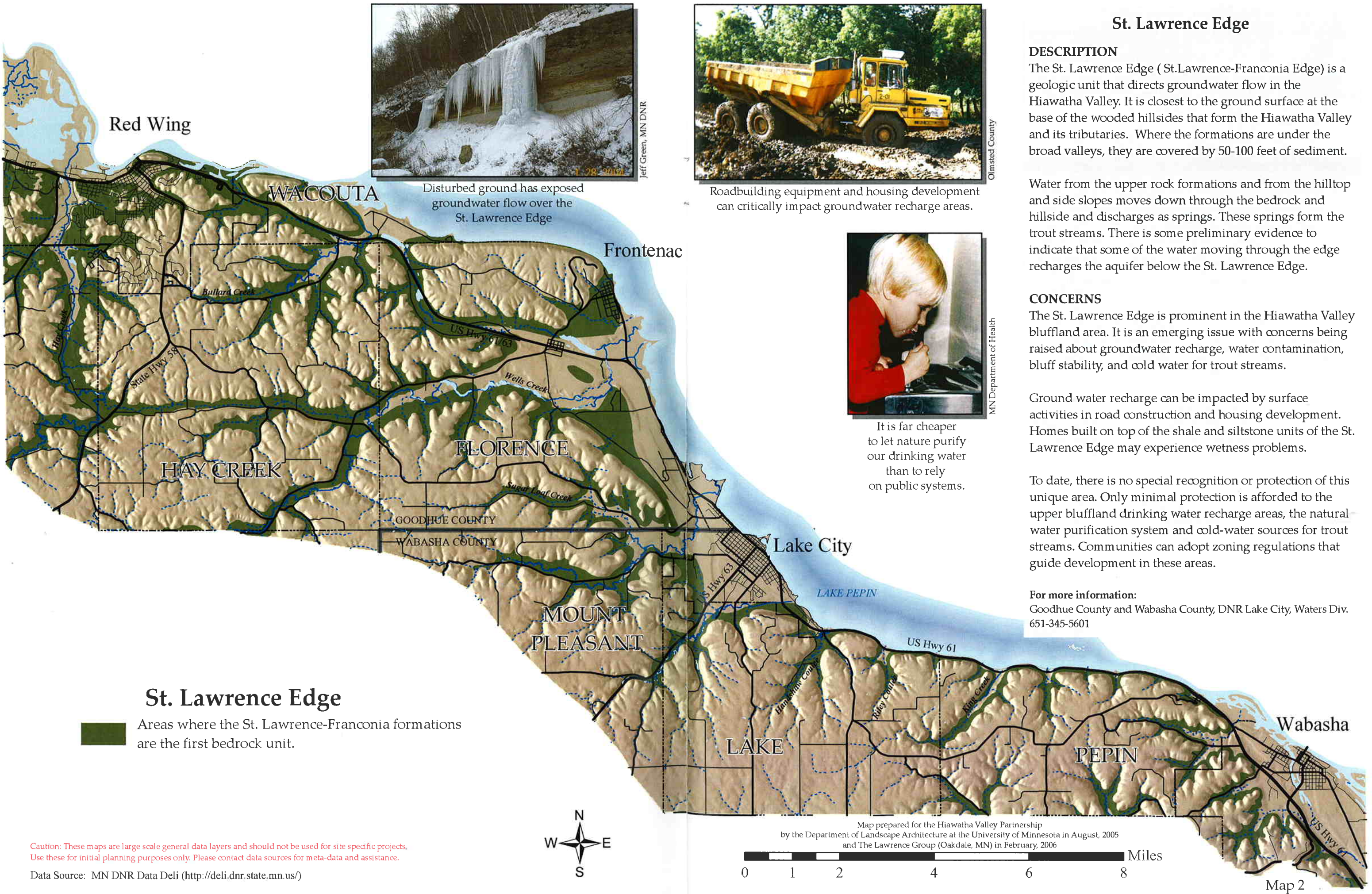
Boundaries	Water Bodies	Road Type
----- Municipal	— Perennial	— US/MN Highways
----- Township	----- Intermittent	— County Roads and Highways
----- County	— Lakes and Rivers	— Other Roads




Map prepared for the Hiawatha Valley Partnership by the Department of Landscape Architecture at the University of Minnesota in August, 2005 and The Lawrence Group (Oakdale, MN) in February, 2006

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Data Source: MN DNR Data Deli (<http://deli.dnr.state.mn.us/>)



St. Lawrence Edge

 Areas where the St. Lawrence-Franconia formations are the first bedrock unit.



Disturbed ground has exposed groundwater flow over the St. Lawrence Edge

Jeff Green, MN DNR



Roadbuilding equipment and housing development can critically impact groundwater recharge areas.

Olmsted County



It is far cheaper to let nature purify our drinking water than to rely on public systems.

MN Department of Health

St. Lawrence Edge

DESCRIPTION

The St. Lawrence Edge (St. Lawrence-Franconia Edge) is a geologic unit that directs groundwater flow in the Hiawatha Valley. It is closest to the ground surface at the base of the wooded hillsides that form the Hiawatha Valley and its tributaries. Where the formations are under the broad valleys, they are covered by 50-100 feet of sediment.

Water from the upper rock formations and from the hilltop and side slopes moves down through the bedrock and hillside and discharges as springs. These springs form the trout streams. There is some preliminary evidence to indicate that some of the water moving through the edge recharges the aquifer below the St. Lawrence Edge.

CONCERNS

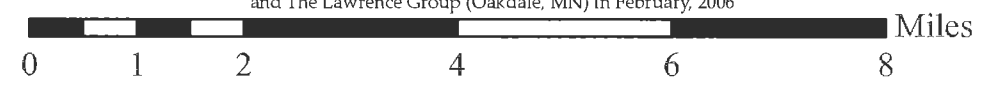
The St. Lawrence Edge is prominent in the Hiawatha Valley bluffland area. It is an emerging issue with concerns being raised about groundwater recharge, water contamination, bluff stability, and cold water for trout streams.

Ground water recharge can be impacted by surface activities in road construction and housing development. Homes built on top of the shale and siltstone units of the St. Lawrence Edge may experience wetness problems.

To date, there is no special recognition or protection of this unique area. Only minimal protection is afforded to the upper bluffland drinking water recharge areas, the natural water purification system and cold-water sources for trout streams. Communities can adopt zoning regulations that guide development in these areas.

For more information:

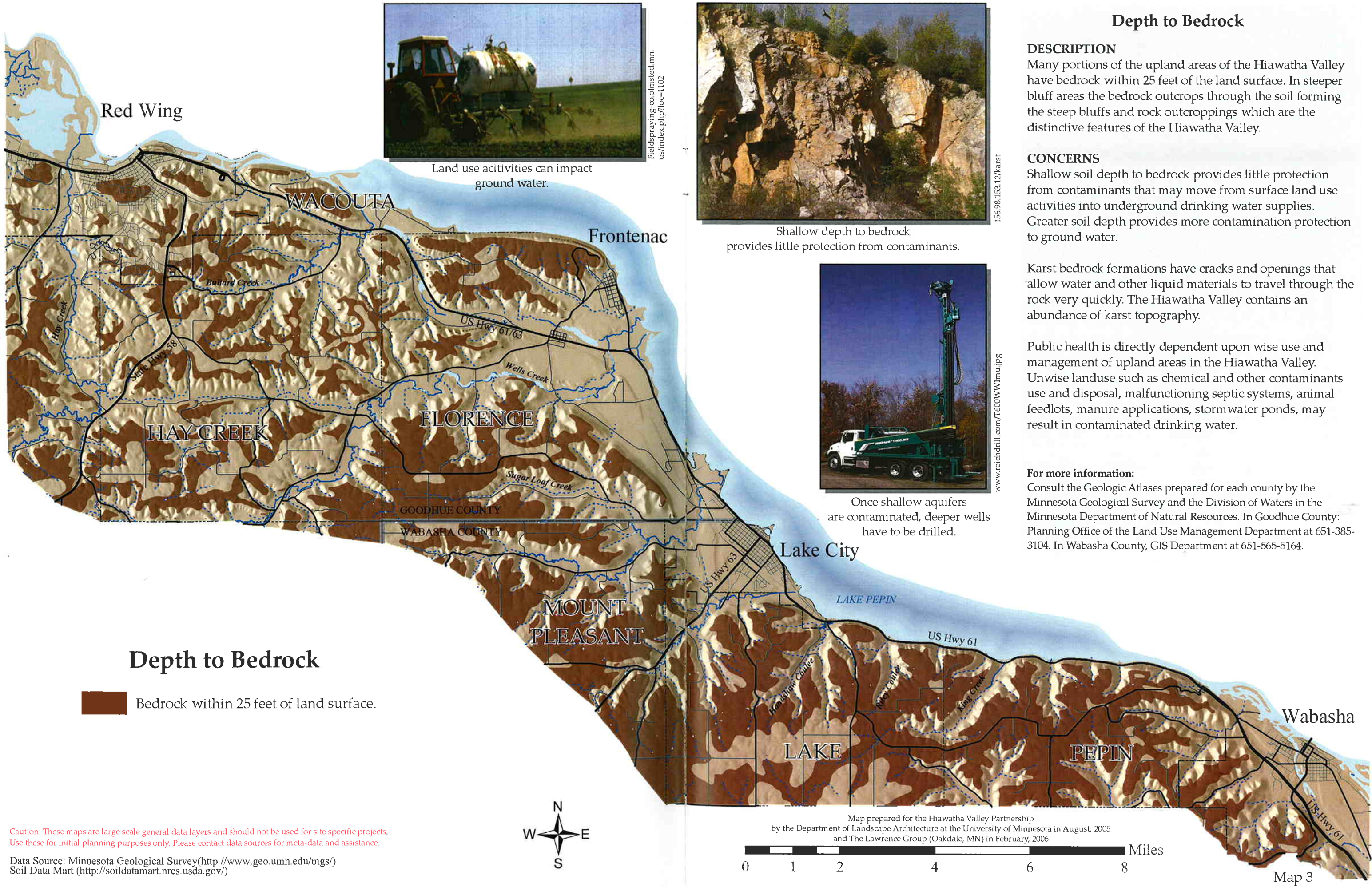
Goodhue County and Wabasha County, DNR Lake City, Waters Div. 651-345-5601



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Depth to Bedrock

Bedrock within 25 feet of land surface.



Land use activities can impact ground water.

Fieldspraying-co.olmsted.mn.us/index.php?loc=1102



Shallow depth to bedrock provides little protection from contaminants.

156.98.153.12/karst



Once shallow aquifers are contaminated, deeper wells have to be drilled.

www.reichdrill.com/7600WW1mu.jpg

Depth to Bedrock

DESCRIPTION

Many portions of the upland areas of the Hiawatha Valley have bedrock within 25 feet of the land surface. In steeper bluff areas the bedrock outcrops through the soil forming the steep bluffs and rock outcroppings which are the distinctive features of the Hiawatha Valley.

CONCERNS

Shallow soil depth to bedrock provides little protection from contaminants that may move from surface land use activities into underground drinking water supplies. Greater soil depth provides more contamination protection to ground water.

Karst bedrock formations have cracks and openings that allow water and other liquid materials to travel through the rock very quickly. The Hiawatha Valley contains an abundance of karst topography.

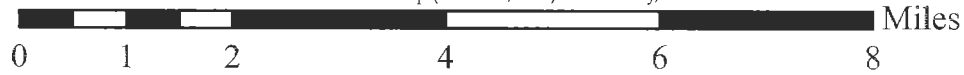
Public health is directly dependent upon wise use and management of upland areas in the Hiawatha Valley. Unwise landuse such as chemical and other contaminants use and disposal, malfunctioning septic systems, animal feedlots, manure applications, storm water ponds, may result in contaminated drinking water.

For more information:

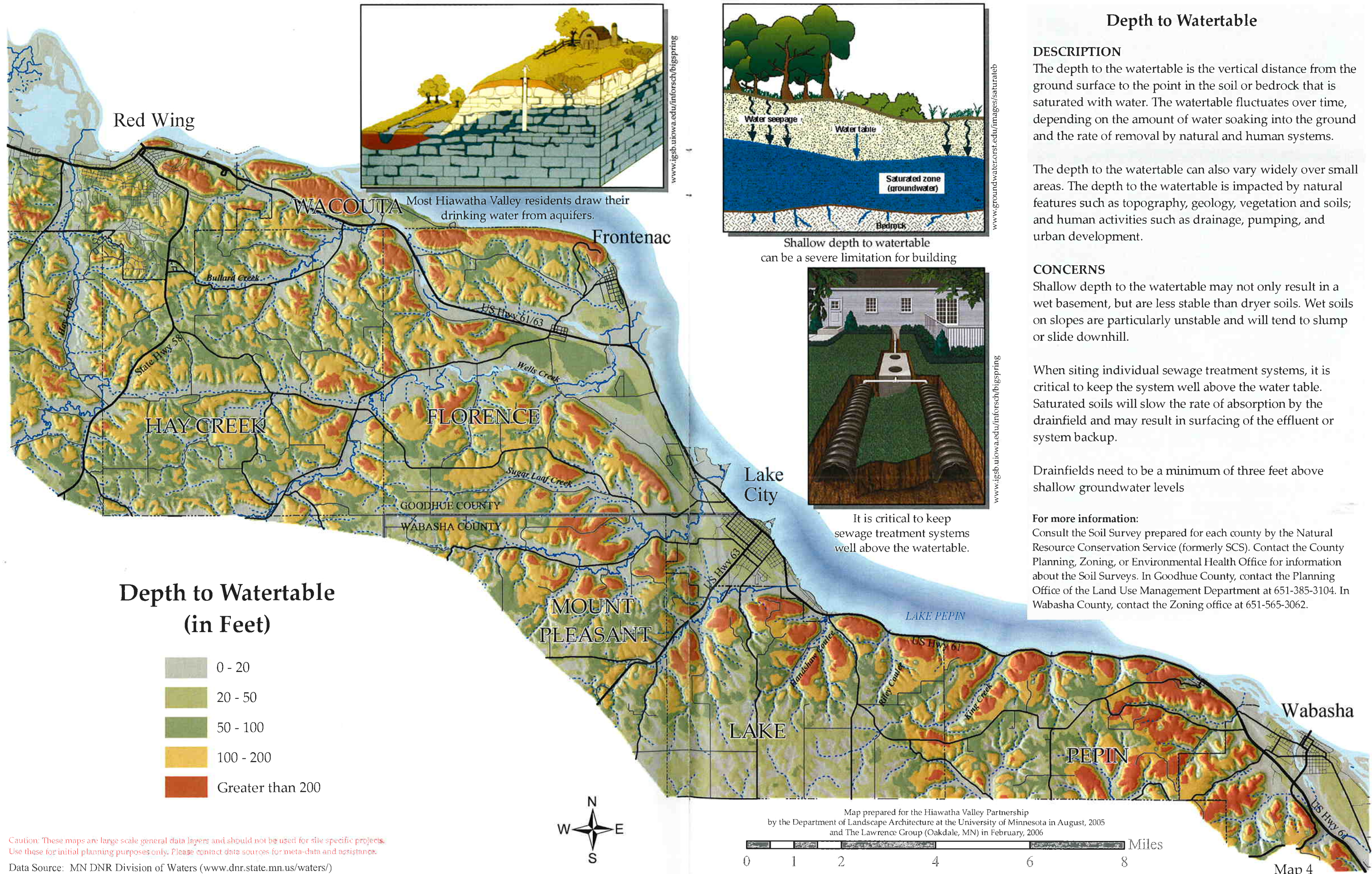
Consult the Geologic Atlases prepared for each county by the Minnesota Geological Survey and the Division of Waters in the Minnesota Department of Natural Resources. In Goodhue County: Planning Office of the Land Use Management Department at 651-385-3104. In Wabasha County, GIS Department at 651-565-5164.

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Data Source: Minnesota Geological Survey (<http://www.geo.umn.edu/mgs/>)
Soil Data Mart (<http://soildatamart.nrcs.usda.gov/>)



Map prepared for the Hiawatha Valley Partnership by the Department of Landscape Architecture at the University of Minnesota in August, 2005 and The Lawrence Group (Oakdale, MN) in February, 2006



Depth to Watertable

DESCRIPTION
 The depth to the watertable is the vertical distance from the ground surface to the point in the soil or bedrock that is saturated with water. The watertable fluctuates over time, depending on the amount of water soaking into the ground and the rate of removal by natural and human systems.

The depth to the watertable can also vary widely over small areas. The depth to the watertable is impacted by natural features such as topography, geology, vegetation and soils; and human activities such as drainage, pumping, and urban development.

CONCERNS
 Shallow depth to the watertable may not only result in a wet basement, but are less stable than dryer soils. Wet soils on slopes are particularly unstable and will tend to slump or slide downhill.

When siting individual sewage treatment systems, it is critical to keep the system well above the water table. Saturated soils will slow the rate of absorption by the drainfield and may result in surfacing of the effluent or system backup.

Drainfields need to be a minimum of three feet above shallow groundwater levels

For more information:
 Consult the Soil Survey prepared for each county by the Natural Resource Conservation Service (formerly SCS). Contact the County Planning, Zoning, or Environmental Health Office for information about the Soil Surveys. In Goodhue County, contact the Planning Office of the Land Use Management Department at 651-385-3104. In Wabasha County, contact the Zoning office at 651-565-3062.

Depth to Watertable (in Feet)

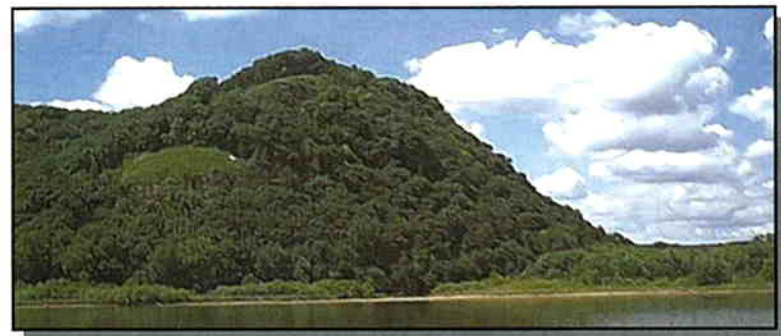
- 0 - 20
- 20 - 50
- 50 - 100
- 100 - 200
- Greater than 200



Map prepared for the Hiawatha Valley Partnership by the Department of Landscape Architecture at the University of Minnesota in August, 2005 and The Lawrence Group (Oakdale, MN) in February, 2006

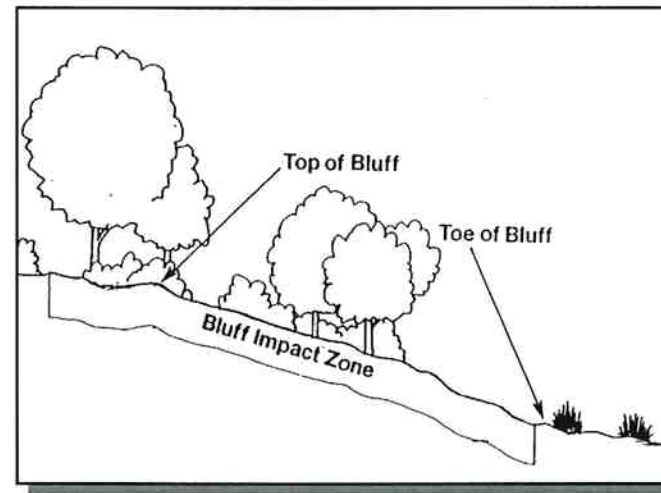
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Data Source: MN DNR Division of Waters (www.dnr.state.mn.us/waters/)



www.members.aol.com/mmcb3

The dramatic scenic character of the valley's bluffland is unique.



MN Department of Natural Resources

Bluff impact zones are protected areas.



Goodhue County Planning Department

Cleared blufftops affect character and stability of bluff and groundwater recharge.

Areas Containing Steep Slopes

DESCRIPTION

The dramatic scenic character of steep slopes, coulees, valleys and bluffs is what makes the Hiawatha Valley Bluffland unique in all of North America. There are three parts of the bluff: The top, the slope and the toe. Bluff slopes are 30% or more. Steep slopes are hillsides in excess of 12% grade over 100 lateral feet distance.

Bluffs, including upperfields and valley bottoms, play an important role in our ecosystem. The areas are important to numerous species of wildlife, migrating birds, fisheries, surface water quality and ground water protection and recharge. Forests on the top, slope or toe allow for gentle yet steady infiltration of large quantities of rain water and snow melt. This water recharges aquifers and provides water for our springs.

CONCERNS

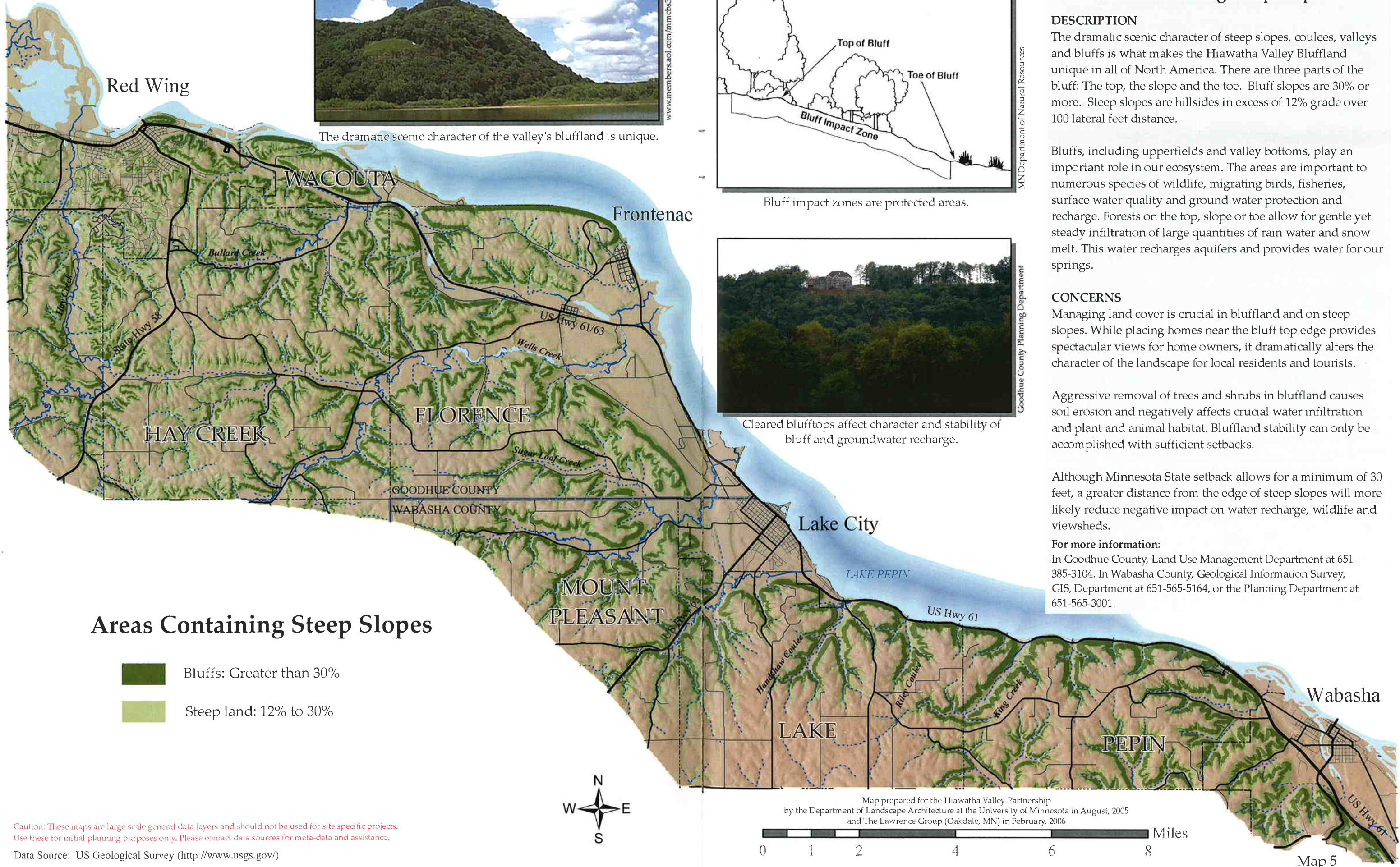
Managing land cover is crucial in bluffland and on steep slopes. While placing homes near the bluff top edge provides spectacular views for home owners, it dramatically alters the character of the landscape for local residents and tourists.

Aggressive removal of trees and shrubs in bluffland causes soil erosion and negatively affects crucial water infiltration and plant and animal habitat. Bluffland stability can only be accomplished with sufficient setbacks.

Although Minnesota State setback allows for a minimum of 30 feet, a greater distance from the edge of steep slopes will more likely reduce negative impact on water recharge, wildlife and viewsheds.

For more information:

In Goodhue County, Land Use Management Department at 651-385-3104. In Wabasha County, Geological Information Survey, GIS, Department at 651-565-5164, or the Planning Department at 651-565-3001.



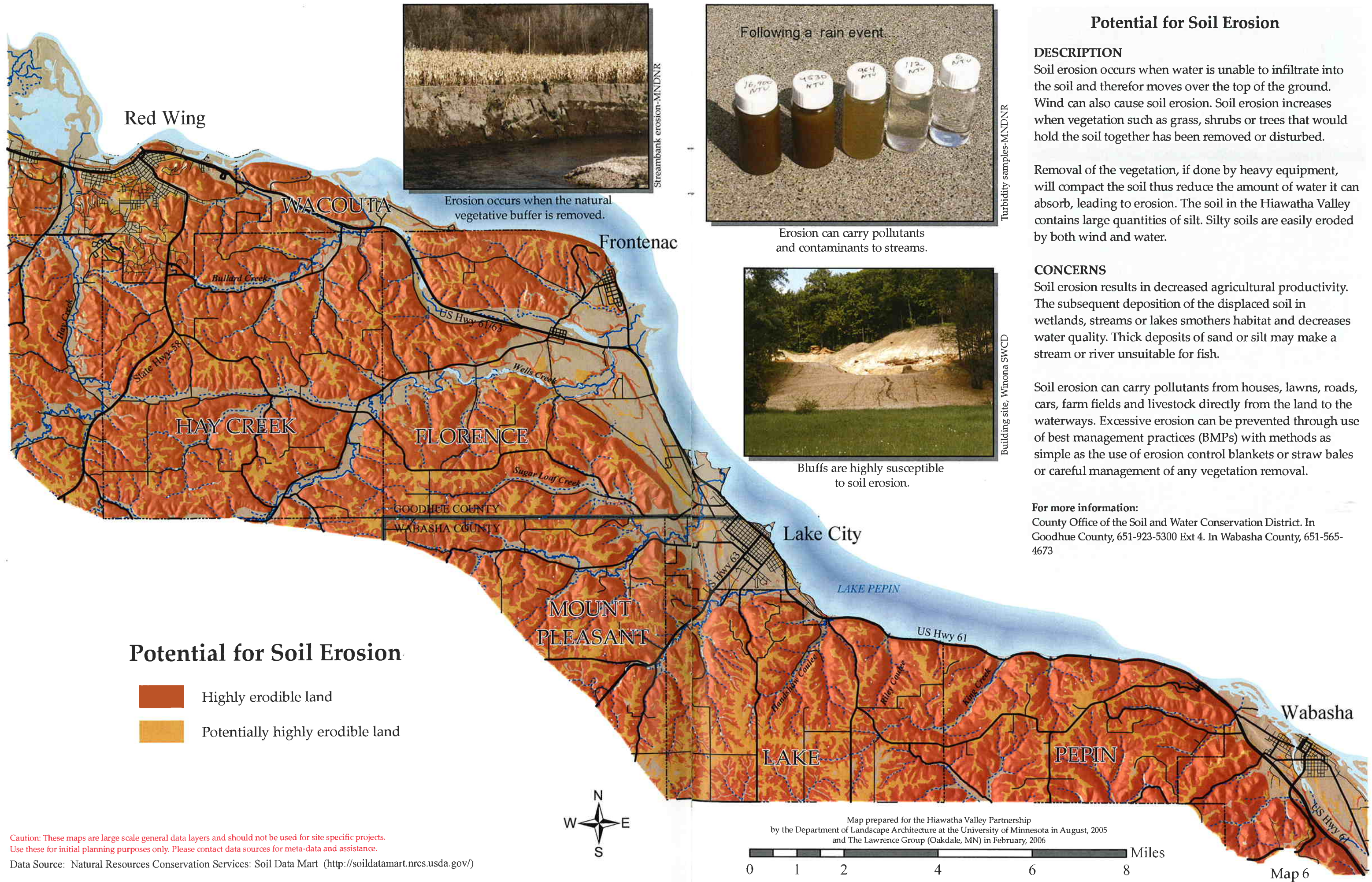
Areas Containing Steep Slopes

- Bluffs: Greater than 30%
- Steep land: 12% to 30%

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Data Source: US Geological Survey (<http://www.usgs.gov/>)

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Potential for Soil Erosion

- Highly erodible land
- Potentially highly erodible land



Erosion occurs when the natural vegetative buffer is removed.

Streambank erosion-MNDNR



Following a rain event...

Erosion can carry pollutants and contaminants to streams.

Turbidity samples-MNDNR



Bluffs are highly susceptible to soil erosion.

Building site, Winona SWCD

Potential for Soil Erosion

DESCRIPTION
Soil erosion occurs when water is unable to infiltrate into the soil and therefore moves over the top of the ground. Wind can also cause soil erosion. Soil erosion increases when vegetation such as grass, shrubs or trees that would hold the soil together has been removed or disturbed.

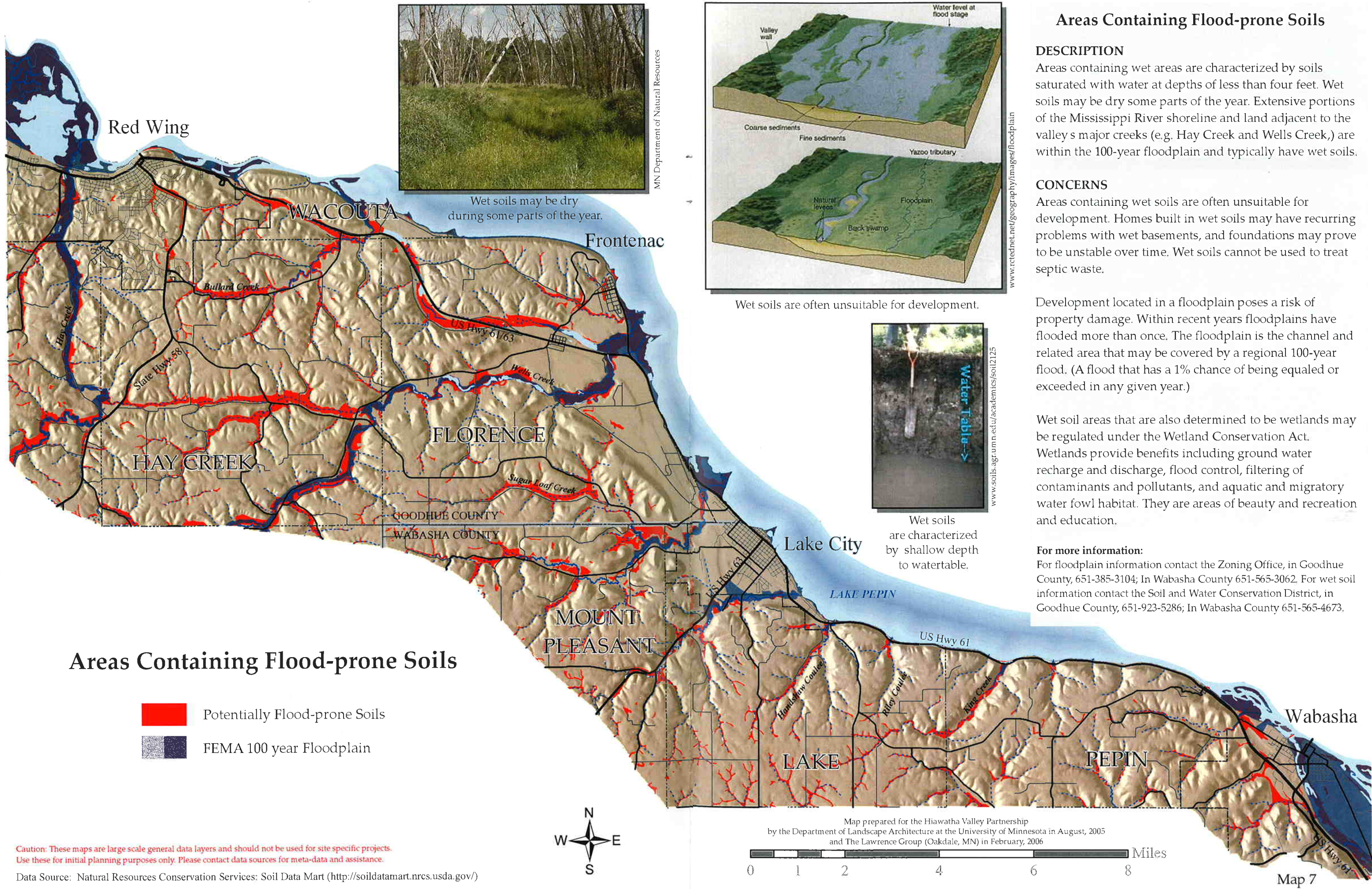
Removal of the vegetation, if done by heavy equipment, will compact the soil thus reduce the amount of water it can absorb, leading to erosion. The soil in the Hiawatha Valley contains large quantities of silt. Silty soils are easily eroded by both wind and water.

CONCERNS
Soil erosion results in decreased agricultural productivity. The subsequent deposition of the displaced soil in wetlands, streams or lakes smothers habitat and decreases water quality. Thick deposits of sand or silt may make a stream or river unsuitable for fish.

Soil erosion can carry pollutants from houses, lawns, roads, cars, farm fields and livestock directly from the land to the waterways. Excessive erosion can be prevented through use of best management practices (BMPs) with methods as simple as the use of erosion control blankets or straw bales or careful management of any vegetation removal.

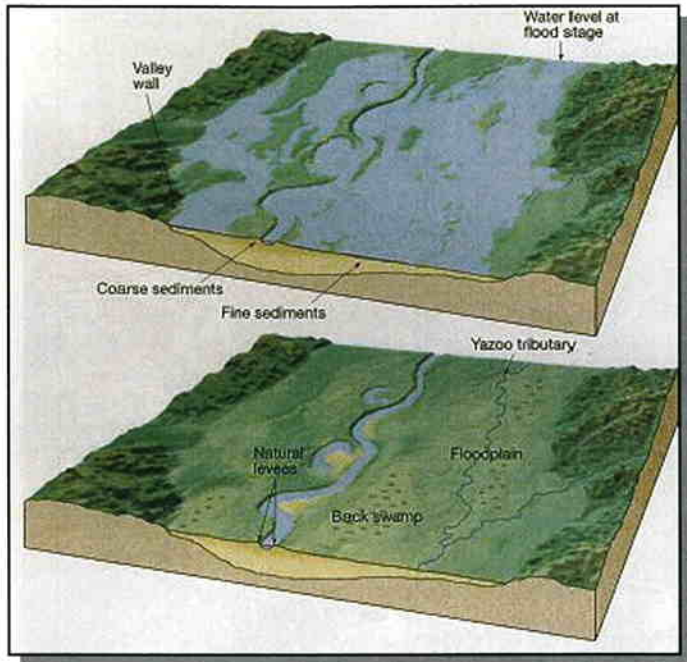
For more information:
County Office of the Soil and Water Conservation District. In Goodhue County, 651-923-5300 Ext 4. In Wabasha County, 651-565-4673

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Data Source: Natural Resources Conservation Services: Soil Data Mart (<http://soildatamart.nrcs.usda.gov/>)



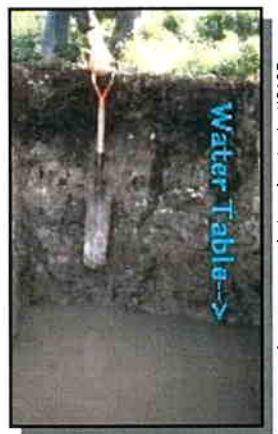
Wet soils may be dry during some parts of the year.

MN Department of Natural Resources



Wet soils are often unsuitable for development.

www.rctednet.net/geography/images/floodplain



Wet soils are characterized by shallow depth to watertable.

www.soils-agrumn.edu/academics/soil2125

Areas Containing Flood-prone Soils

DESCRIPTION

Areas containing wet areas are characterized by soils saturated with water at depths of less than four feet. Wet soils may be dry some parts of the year. Extensive portions of the Mississippi River shoreline and land adjacent to the valley's major creeks (e.g. Hay Creek and Wells Creek,) are within the 100-year floodplain and typically have wet soils.

CONCERNS

Areas containing wet soils are often unsuitable for development. Homes built in wet soils may have recurring problems with wet basements, and foundations may prove to be unstable over time. Wet soils cannot be used to treat septic waste.

Development located in a floodplain poses a risk of property damage. Within recent years floodplains have flooded more than once. The floodplain is the channel and related area that may be covered by a regional 100-year flood. (A flood that has a 1% chance of being equaled or exceeded in any given year.)

Wet soil areas that are also determined to be wetlands may be regulated under the Wetland Conservation Act. Wetlands provide benefits including ground water recharge and discharge, flood control, filtering of contaminants and pollutants, and aquatic and migratory water fowl habitat. They are areas of beauty and recreation and education.

For more information:

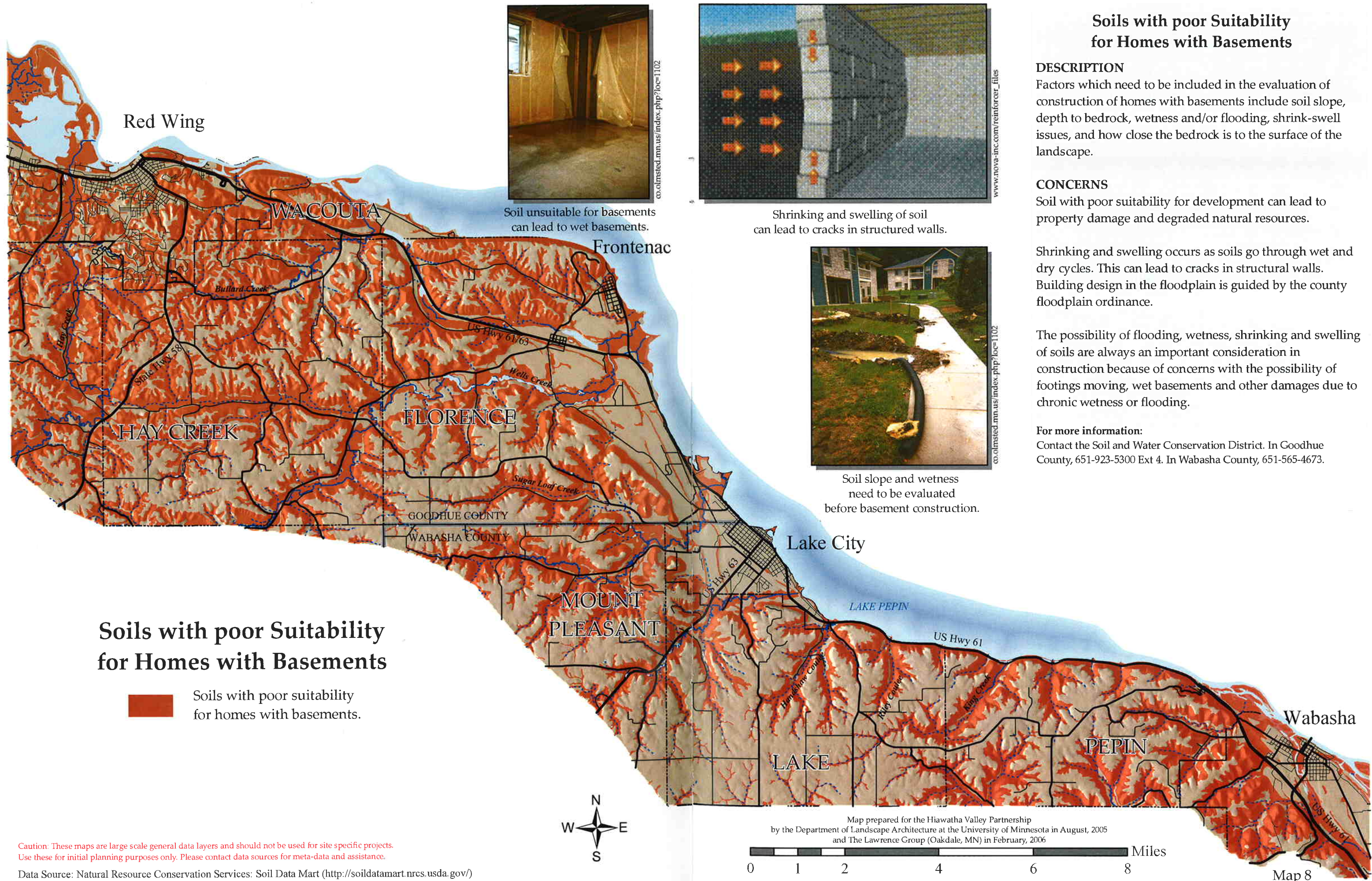
For floodplain information contact the Zoning Office, in Goodhue County, 651-385-3104; In Wabasha County 651-565-3062. For wet soil information contact the Soil and Water Conservation District, in Goodhue County, 651-923-5286; In Wabasha County 651-565-4673.

Areas Containing Flood-prone Soils

- Potentially Flood-prone Soils
- FEMA 100 year Floodplain

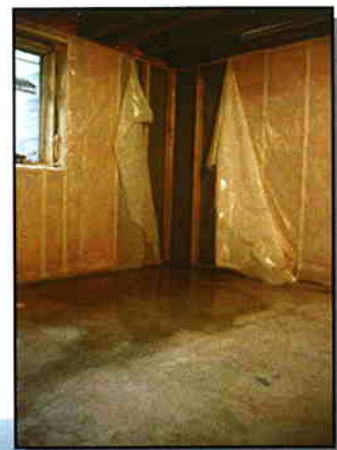
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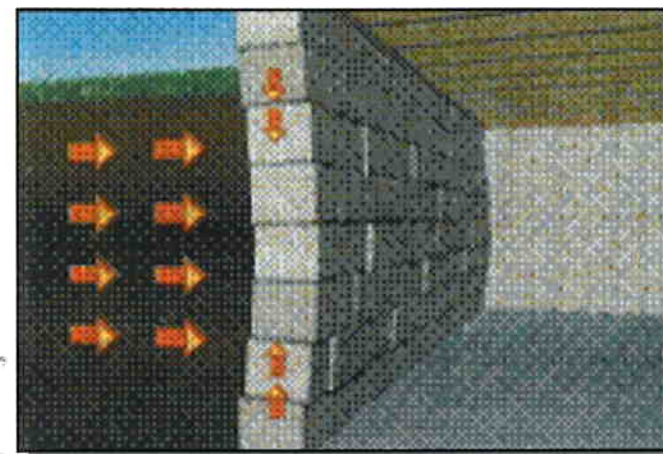


Soils with poor Suitability for Homes with Basements

 Soils with poor suitability for homes with basements.



Soil unsuitable for basements can lead to wet basements.



Shrinking and swelling of soil can lead to cracks in structured walls.



Soil slope and wetness need to be evaluated before basement construction.

Soils with poor Suitability for Homes with Basements

DESCRIPTION

Factors which need to be included in the evaluation of construction of homes with basements include soil slope, depth to bedrock, wetness and/or flooding, shrink-swell issues, and how close the bedrock is to the surface of the landscape.

CONCERNS

Soil with poor suitability for development can lead to property damage and degraded natural resources.

Shrinking and swelling occurs as soils go through wet and dry cycles. This can lead to cracks in structural walls. Building design in the floodplain is guided by the county floodplain ordinance.

The possibility of flooding, wetness, shrinking and swelling of soils are always an important consideration in construction because of concerns with the possibility of footings moving, wet basements and other damages due to chronic wetness or flooding.

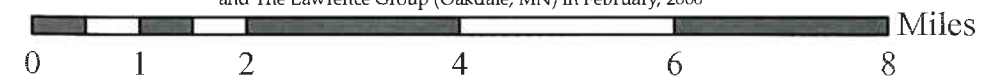
For more information:

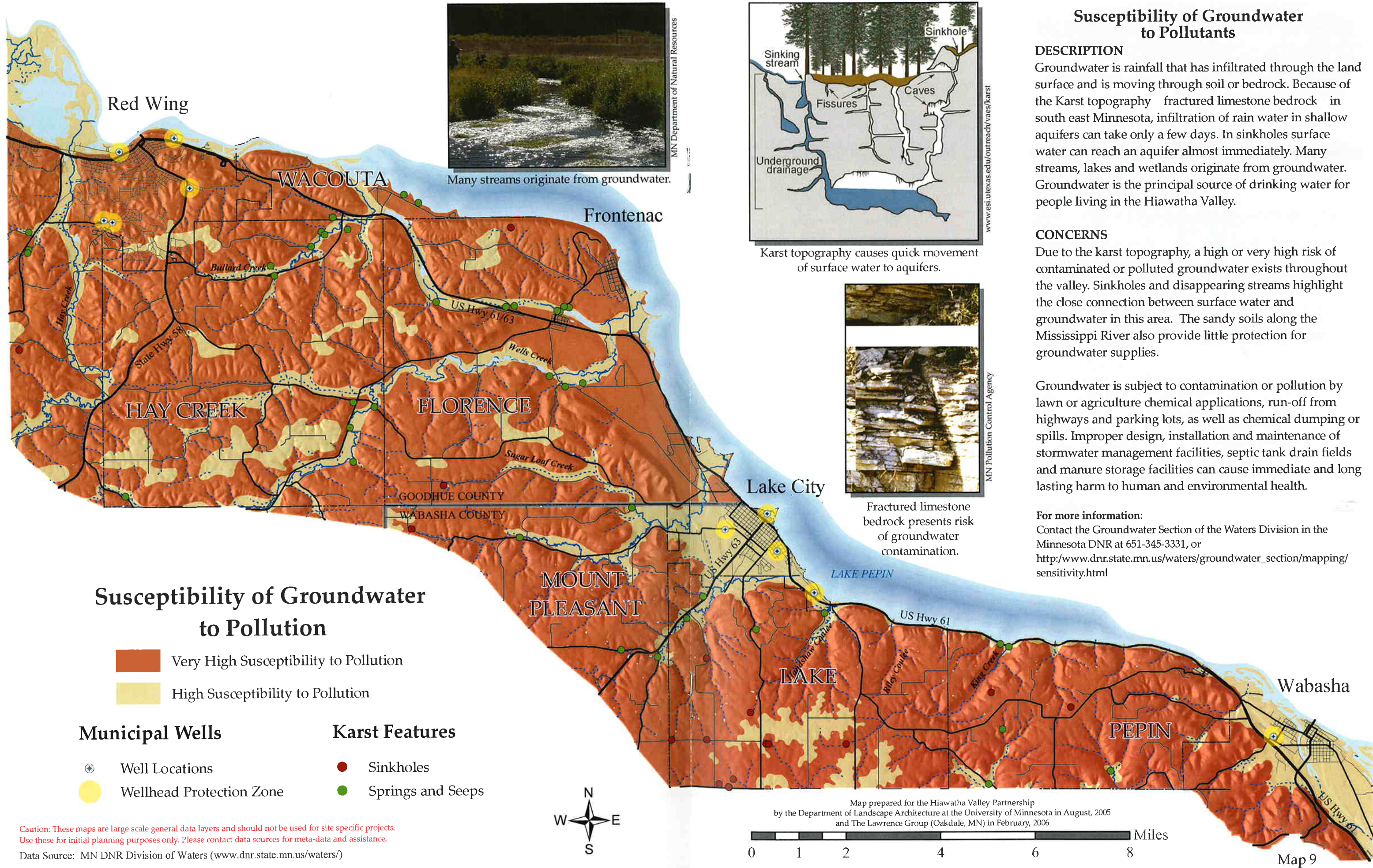
Contact the Soil and Water Conservation District. In Goodhue County, 651-923-5300 Ext 4. In Wabasha County, 651-565-4673.

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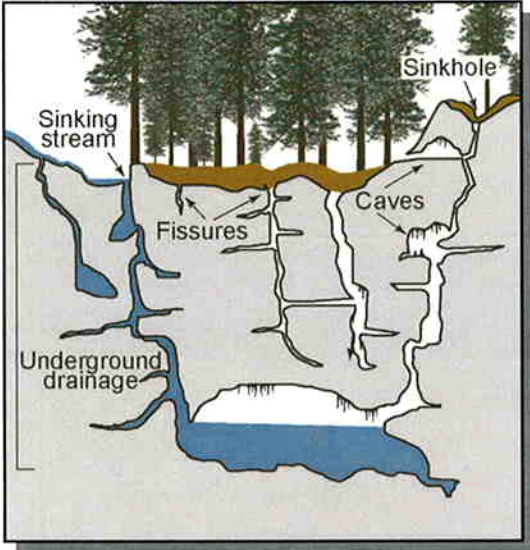
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Many streams originate from groundwater.

MN Department of Natural Resources



Karst topography causes quick movement of surface water to aquifers.

www.esi.utexas.edu/outreach/vaes/karst



Fractured limestone bedrock presents risk of groundwater contamination.

MN Pollution Control Agency

Susceptibility of Groundwater to Pollutants

DESCRIPTION
 Groundwater is rainfall that has infiltrated through the land surface and is moving through soil or bedrock. Because of the Karst topography fractured limestone bedrock in south east Minnesota, infiltration of rain water in shallow aquifers can take only a few days. In sinkholes surface water can reach an aquifer almost immediately. Many streams, lakes and wetlands originate from groundwater. Groundwater is the principal source of drinking water for people living in the Hiawatha Valley.

CONCERNS
 Due to the karst topography, a high or very high risk of contaminated or polluted groundwater exists throughout the valley. Sinkholes and disappearing streams highlight the close connection between surface water and groundwater in this area. The sandy soils along the Mississippi River also provide little protection for groundwater supplies.

Groundwater is subject to contamination or pollution by lawn or agriculture chemical applications, run-off from highways and parking lots, as well as chemical dumping or spills. Improper design, installation and maintenance of stormwater management facilities, septic tank drain fields and manure storage facilities can cause immediate and long lasting harm to human and environmental health.

For more information:
 Contact the Groundwater Section of the Waters Division in the Minnesota DNR at 651-345-3331, or http://www.dnr.state.mn.us/waters/groundwater_section/mapping/sensitivity.html

Susceptibility of Groundwater to Pollution

- Very High Susceptibility to Pollution
- High Susceptibility to Pollution

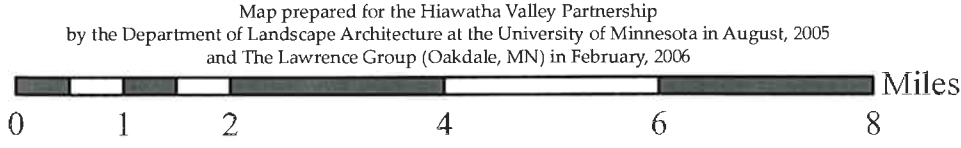
Municipal Wells

- Well Locations
- Wellhead Protection Zone

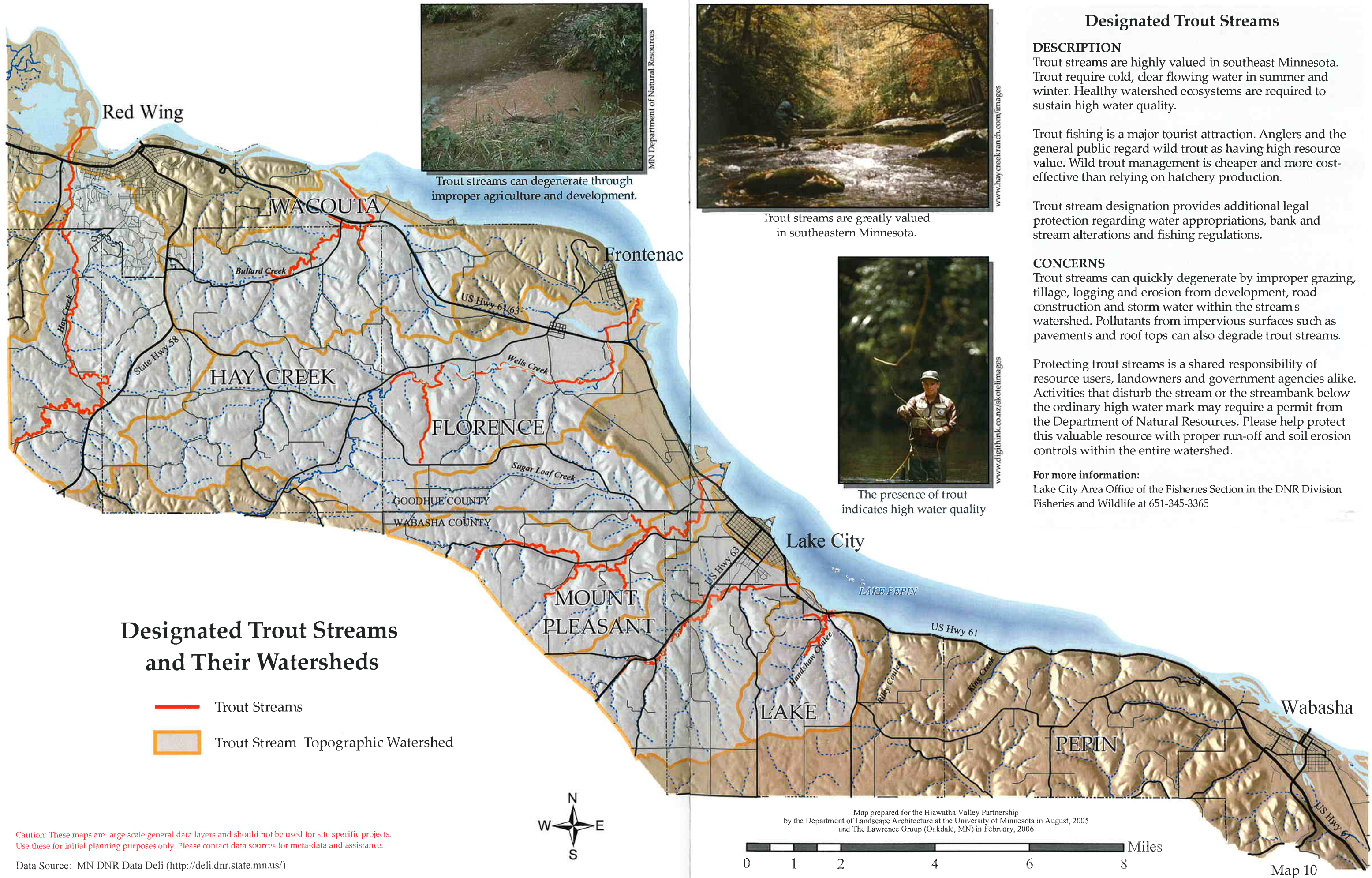
Karst Features

- Sinkholes
- Springs and Seeps

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 Data Source: MN DNR Division of Waters (www.dnr.state.mn.us/waters/)



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Trout streams can degenerate through improper agriculture and development.

MN Department of Natural Resources



Trout streams are greatly valued in southeastern Minnesota.

www.haycreekranch.com/images



The presence of trout indicates high water quality

www.digthink.co.nz/skotelimages

Designated Trout Streams

DESCRIPTION

Trout streams are highly valued in southeast Minnesota. Trout require cold, clear flowing water in summer and winter. Healthy watershed ecosystems are required to sustain high water quality.

Trout fishing is a major tourist attraction. Anglers and the general public regard wild trout as having high resource value. Wild trout management is cheaper and more cost-effective than relying on hatchery production.

Trout stream designation provides additional legal protection regarding water appropriations, bank and stream alterations and fishing regulations.

CONCERNS

Trout streams can quickly degenerate by improper grazing, tillage, logging and erosion from development, road construction and storm water within the streams watershed. Pollutants from impervious surfaces such as pavements and roof tops can also degrade trout streams.

Protecting trout streams is a shared responsibility of resource users, landowners and government agencies alike. Activities that disturb the stream or the streambank below the ordinary high water mark may require a permit from the Department of Natural Resources. Please help protect this valuable resource with proper run-off and soil erosion controls within the entire watershed.

For more information:

Lake City Area Office of the Fisheries Section in the DNR Division Fisheries and Wildlife at 651-345-3365

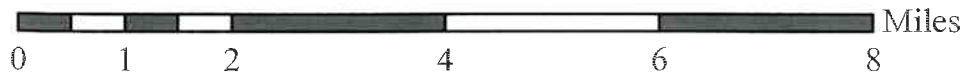
Designated Trout Streams and Their Watersheds

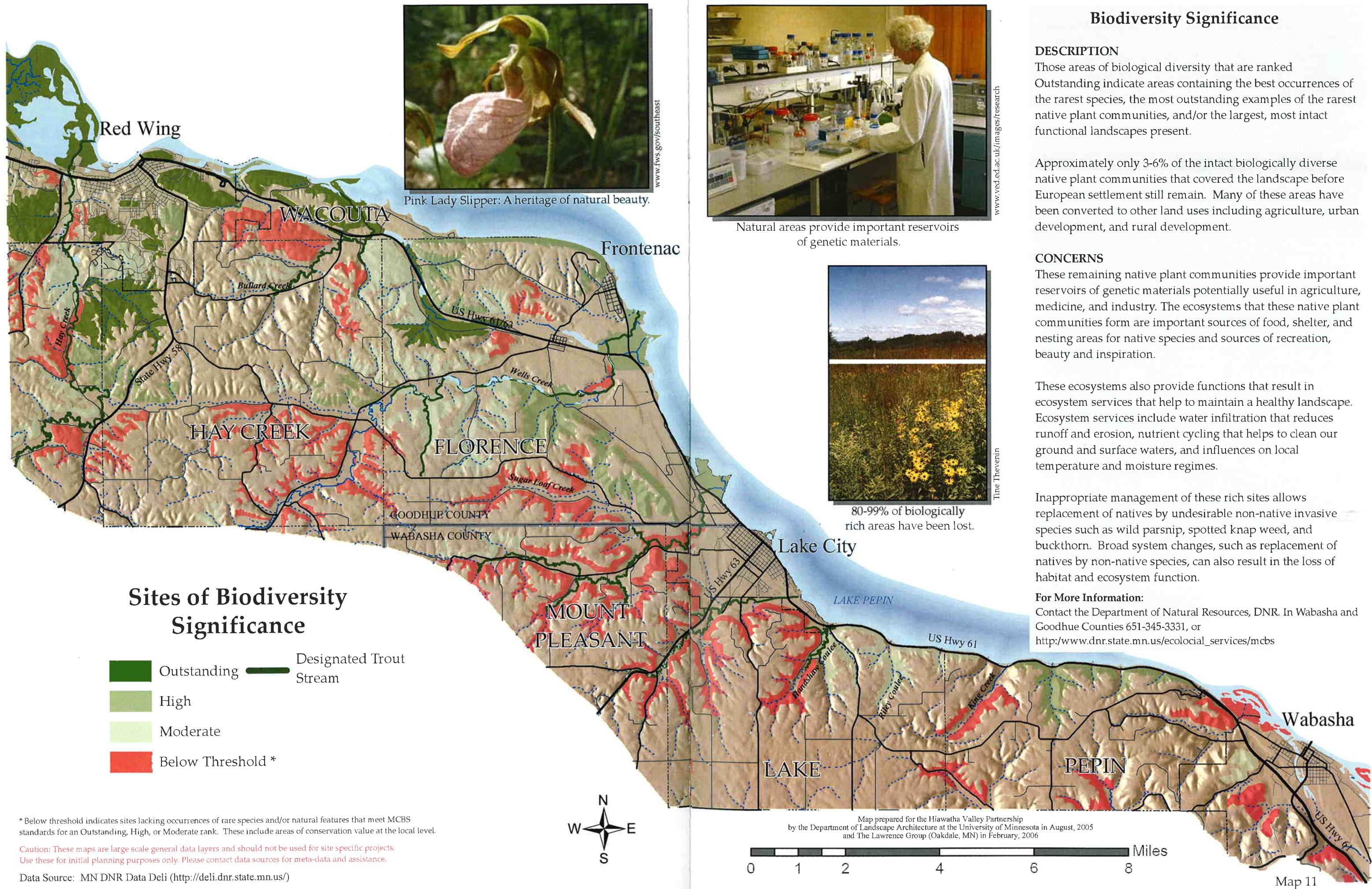
- Trout Streams
- Trout Stream Topographic Watershed

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Pink Lady Slipper: A heritage of natural beauty.



Natural areas provide important reservoirs of genetic materials.



80-99% of biologically rich areas have been lost.

Biodiversity Significance

DESCRIPTION

Those areas of biological diversity that are ranked Outstanding indicate areas containing the best occurrences of the rarest species, the most outstanding examples of the rarest native plant communities, and/or the largest, most intact functional landscapes present.

Approximately only 3-6% of the intact biologically diverse native plant communities that covered the landscape before European settlement still remain. Many of these areas have been converted to other land uses including agriculture, urban development, and rural development.

CONCERNS

These remaining native plant communities provide important reservoirs of genetic materials potentially useful in agriculture, medicine, and industry. The ecosystems that these native plant communities form are important sources of food, shelter, and nesting areas for native species and sources of recreation, beauty and inspiration.

These ecosystems also provide functions that result in ecosystem services that help to maintain a healthy landscape. Ecosystem services include water infiltration that reduces runoff and erosion, nutrient cycling that helps to clean our ground and surface waters, and influences on local temperature and moisture regimes.

Inappropriate management of these rich sites allows replacement of natives by undesirable non-native invasive species such as wild parsnip, spotted knap weed, and buckthorn. Broad system changes, such as replacement of natives by non-native species, can also result in the loss of habitat and ecosystem function.

For More Information:

Contact the Department of Natural Resources, DNR. In Wabasha and Goodhue Counties 651-345-3331, or http://www.dnr.state.mn.us/ecological_services/mcbs

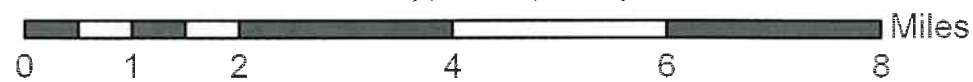
Sites of Biodiversity Significance

- Outstanding
- High
- Moderate
- Below Threshold *
- Designated Trout Stream

* Below threshold indicates sites lacking occurrences of rare species and/or natural features that meet MCBS standards for an Outstanding, High, or Moderate rank. These include areas of conservation value at the local level.

Caution: These maps are large scale general data layers and should not be used for site specific projects. Use these for initial planning purposes only. Please contact data sources for meta-data and assistance.

Data Source: MN DNR Data Deli (<http://deli.dnr.state.mn.us/>)



Map prepared for the Hiawatha Valley Partnership by the Department of Landscape Architecture at the University of Minnesota in August, 2005 and The Lawrence Group (Oakdale, MN) in February, 2006



Prime Farmland

DESCRIPTION
 Prime agricultural land has relatively low slopes (< 6%) and deep, well-drained highly productive soils. Except for soils on steeply sloped, stony or wet areas, soils in the Hiawatha Valley are productive for agricultural crops. Prime Farmland is of major importance in meeting the Nation's short and long range needs for food and fiber.

Prime farmland also includes areas considered to be of state-wide importance. Generally, this land includes areas of soils that nearly meet the requirement for prime farmland. Agriculture is a very important industry in southeastern Minnesota.

Farmland provides jobs and locally grown produce. Increasing number of farms in SE Minnesota are organic. Agricultural landscapes also enhance the scenic character and attractiveness of the Valley.

CONCERNS
 Once productive farmland is converted to urban uses or degraded by poor farming practices it is almost impossible to recover the agricultural productivity, scenic character or open space value of the land. Development pressure which is driving up land prices and taxes to support the needed infrastructure makes it more difficult for farmers to purchase more acreage or remain on their land.

Because preservation of prime agricultural land benefits the local economy and local as well as regional and national food production, retention of land for agricultural uses must be given high priority.

For more information:
 County Office of the Soil and Water Conservation District. In Goodhue County, 651-923-5300 Ext 4. In Wabasha County, 651-565-4673



Southeastern Minnesota is famous for its orchards.



Farmland provides jobs and locally produced food.



Once prime farmland is paved over, it is nearly impossible to restore.

Prime Farmland and Farmland of Statewide Significance

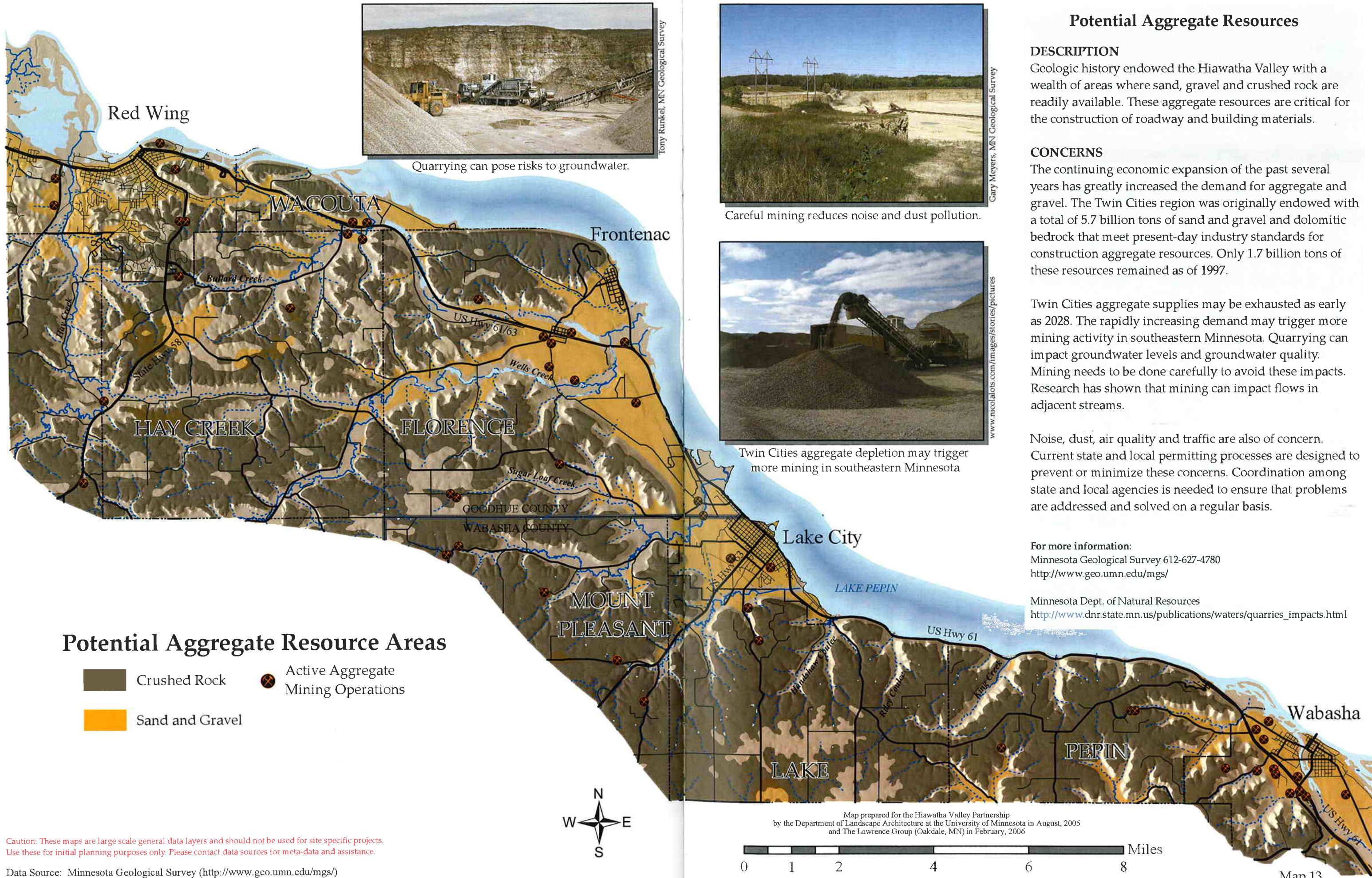
- All areas are prime farmland
- Farmland of statewide importance

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Data Source: Natural Resources Conservation Service: Soil Data Mart (<http://soildatamart.nrcs.usda.gov/>)

Map prepared for the Hiawatha Valley Partnership by the Department of Landscape Architecture at the University of Minnesota in August, 2005 and The Lawrence Group (Oakdale, MN) in February, 2006





Potential Aggregate Resources

DESCRIPTION
 Geologic history endowed the Hiawatha Valley with a wealth of areas where sand, gravel and crushed rock are readily available. These aggregate resources are critical for the construction of roadway and building materials.

CONCERNS
 The continuing economic expansion of the past several years has greatly increased the demand for aggregate and gravel. The Twin Cities region was originally endowed with a total of 5.7 billion tons of sand and gravel and dolomitic bedrock that meet present-day industry standards for construction aggregate resources. Only 1.7 billion tons of these resources remained as of 1997.

Twin Cities aggregate supplies may be exhausted as early as 2028. The rapidly increasing demand may trigger more mining activity in southeastern Minnesota. Quarrying can impact groundwater levels and groundwater quality. Mining needs to be done carefully to avoid these impacts. Research has shown that mining can impact flows in adjacent streams.

Noise, dust, air quality and traffic are also of concern. Current state and local permitting processes are designed to prevent or minimize these concerns. Coordination among state and local agencies is needed to ensure that problems are addressed and solved on a regular basis.

For more information:
 Minnesota Geological Survey 612-627-4780
<http://www.geo.umn.edu/mgs/>
 Minnesota Dept. of Natural Resources
http://www.dnr.state.mn.us/publications/waters/quarries_impacts.html



Quarrying can pose risks to groundwater.

Tony Runkel, MN Geological Survey



Careful mining reduces noise and dust pollution.

Gary Meyers, MN Geological Survey

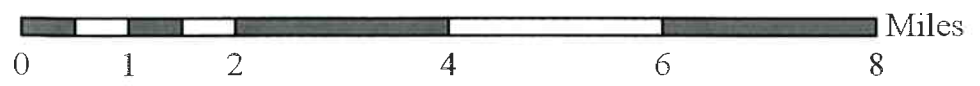


Twin Cities aggregate depletion may trigger more mining in southeastern Minnesota

www.nicolalots.com/images/stories/pictures

Potential Aggregate Resource Areas

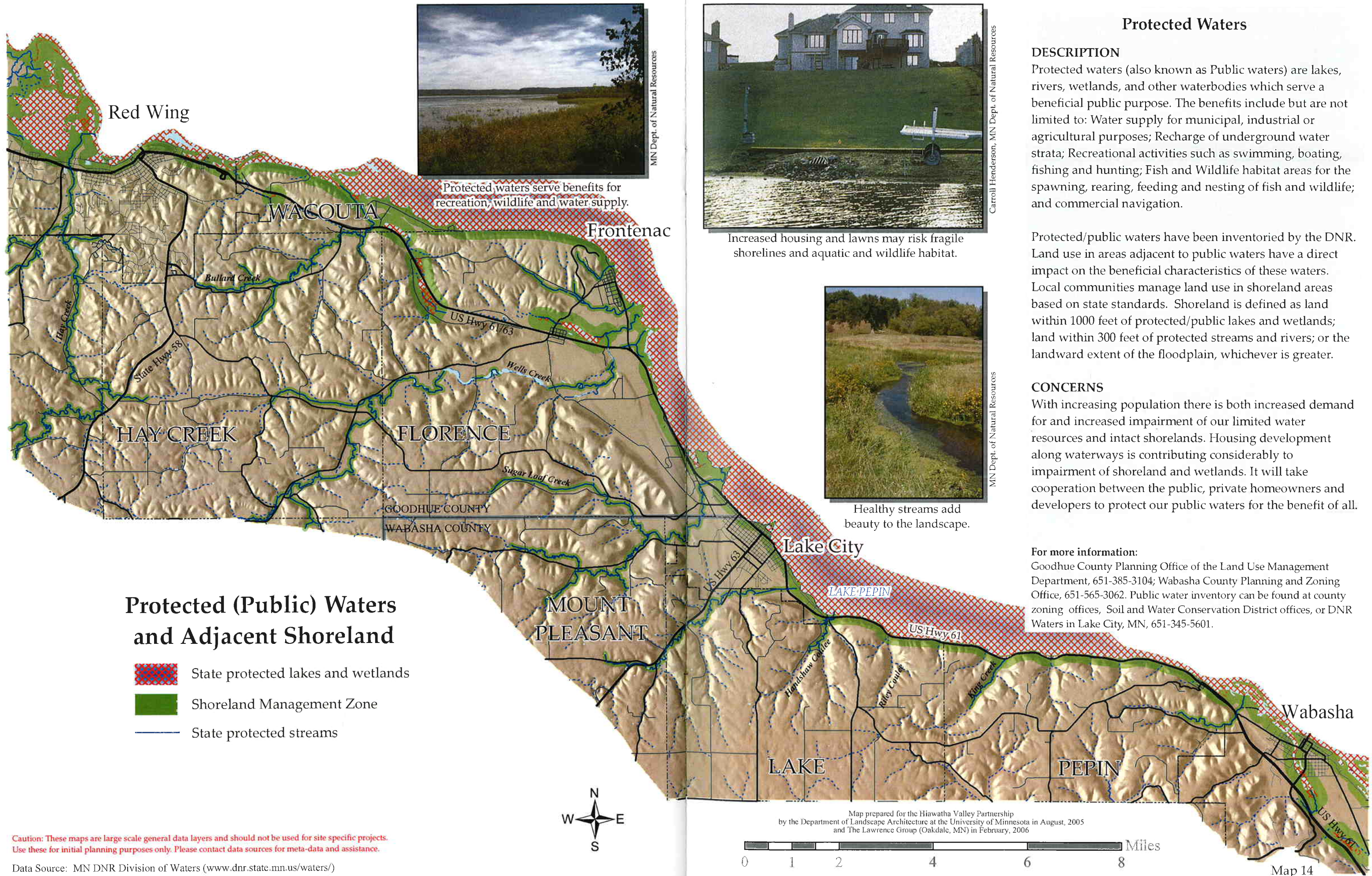
- Crushed Rock
- Sand and Gravel
- X Active Aggregate Mining Operations



Caution: These maps are large scale general data layers and should not be used for site specific projects. Use these for initial planning purposes only. Please contact data sources for meta-data and assistance.

Data Source: Minnesota Geological Survey (<http://www.geo.umn.edu/mgs/>)

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MN Dept. of Natural Resources

Protected waters serve benefits for recreation, wildlife and water supply.



Carroll Henderson, MN Dept. of Natural Resources

Increased housing and lawns may risk fragile shorelines and aquatic and wildlife habitat.



MN Dept. of Natural Resources

Healthy streams add beauty to the landscape.

Protected Waters

DESCRIPTION

Protected waters (also known as Public waters) are lakes, rivers, wetlands, and other waterbodies which serve a beneficial public purpose. The benefits include but are not limited to: Water supply for municipal, industrial or agricultural purposes; Recharge of underground water strata; Recreational activities such as swimming, boating, fishing and hunting; Fish and Wildlife habitat areas for the spawning, rearing, feeding and nesting of fish and wildlife; and commercial navigation.

Protected/public waters have been inventoried by the DNR. Land use in areas adjacent to public waters have a direct impact on the beneficial characteristics of these waters. Local communities manage land use in shoreland areas based on state standards. Shoreland is defined as land within 1000 feet of protected/public lakes and wetlands; land within 300 feet of protected streams and rivers; or the landward extent of the floodplain, whichever is greater.

CONCERNS

With increasing population there is both increased demand for and increased impairment of our limited water resources and intact shorelands. Housing development along waterways is contributing considerably to impairment of shoreland and wetlands. It will take cooperation between the public, private homeowners and developers to protect our public waters for the benefit of all.

For more information:

Goodhue County Planning Office of the Land Use Management Department, 651-385-3104; Wabasha County Planning and Zoning Office, 651-565-3062. Public water inventory can be found at county zoning offices, Soil and Water Conservation District offices, or DNR Waters in Lake City, MN, 651-345-5601.

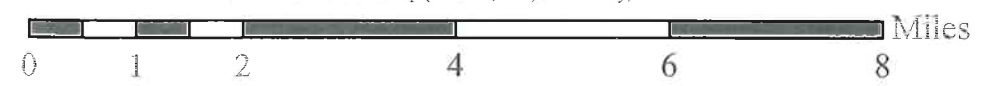
Protected (Public) Waters and Adjacent Shoreland

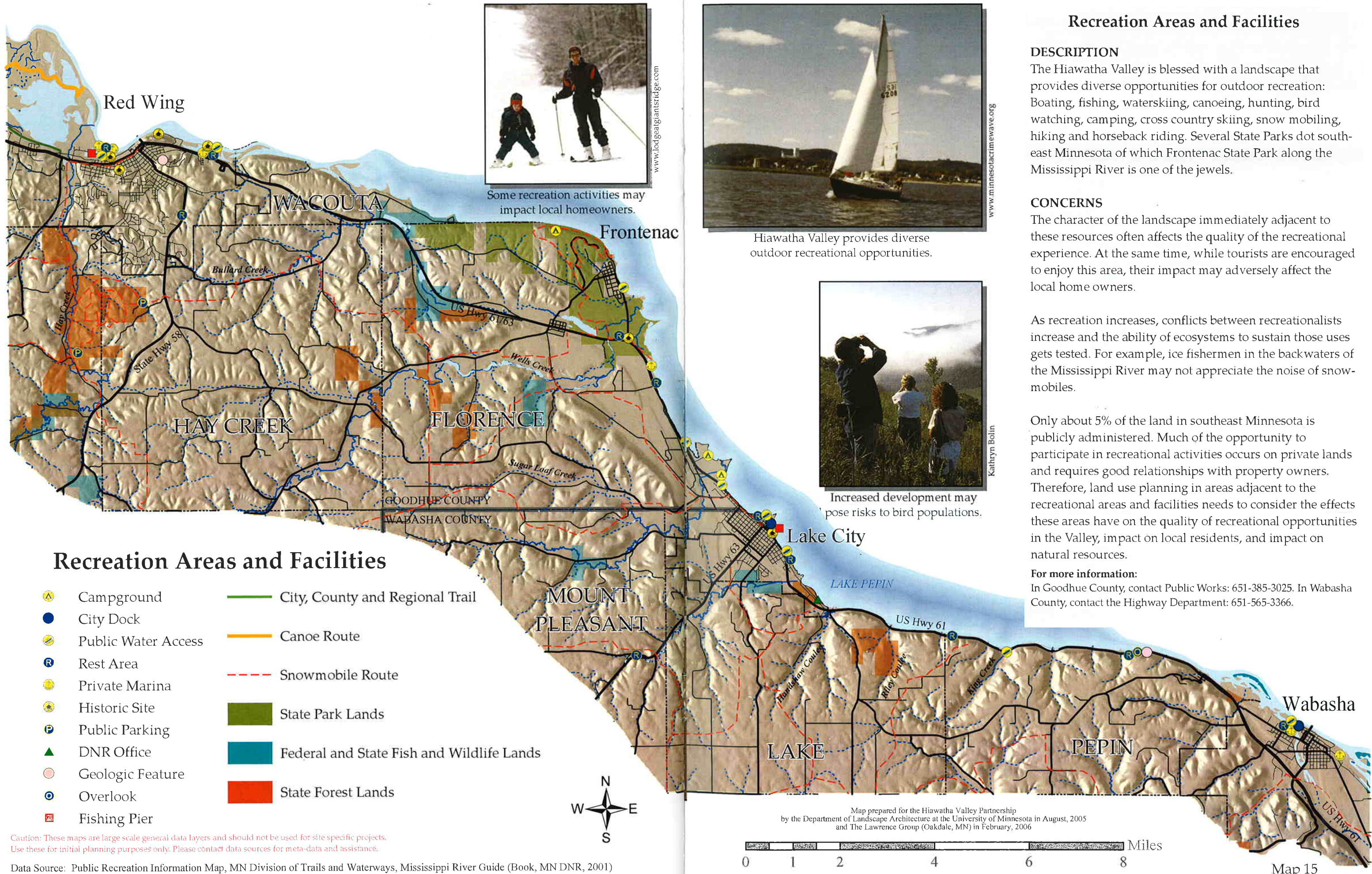
- State protected lakes and wetlands
- Shoreland Management Zone
- State protected streams

Caution: These maps are large scale general data layers and should not be used for site specific projects. Use these for initial planning purposes only. Please contact data sources for meta-data and assistance.

Data Source: MN DNR Division of Waters (www.dnr.state.mn.us/waters/)

Map prepared for the Hiawatha Valley Partnership by the Department of Landscape Architecture at the University of Minnesota in August, 2005 and The Lawrence Group (Oakdale, MN) in February, 2006





Recreation Areas and Facilities

DESCRIPTION

The Hiawatha Valley is blessed with a landscape that provides diverse opportunities for outdoor recreation: Boating, fishing, waterskiing, canoeing, hunting, bird watching, camping, cross country skiing, snowmobiling, hiking and horseback riding. Several State Parks dot southeast Minnesota of which Frontenac State Park along the Mississippi River is one of the jewels.

CONCERNS

The character of the landscape immediately adjacent to these resources often affects the quality of the recreational experience. At the same time, while tourists are encouraged to enjoy this area, their impact may adversely affect the local home owners.

As recreation increases, conflicts between recreationalists increase and the ability of ecosystems to sustain those uses gets tested. For example, ice fishermen in the backwaters of the Mississippi River may not appreciate the noise of snowmobiles.

Only about 5% of the land in southeast Minnesota is publicly administered. Much of the opportunity to participate in recreational activities occurs on private lands and requires good relationships with property owners. Therefore, land use planning in areas adjacent to the recreational areas and facilities needs to consider the effects these areas have on the quality of recreational opportunities in the Valley, impact on local residents, and impact on natural resources.

For more information:

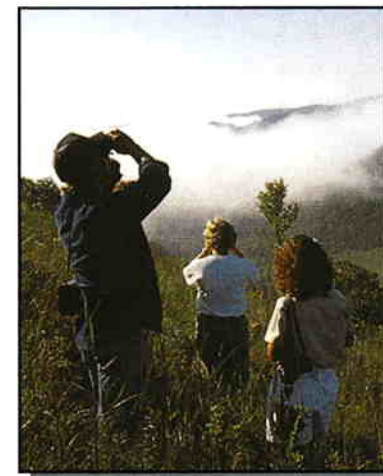
In Goodhue County, contact Public Works: 651-385-3025. In Wabasha County, contact the Highway Department: 651-565-3366.



Some recreation activities may impact local homeowners.



Hiawatha Valley provides diverse outdoor recreational opportunities.



Increased development may pose risks to bird populations.

Recreation Areas and Facilities

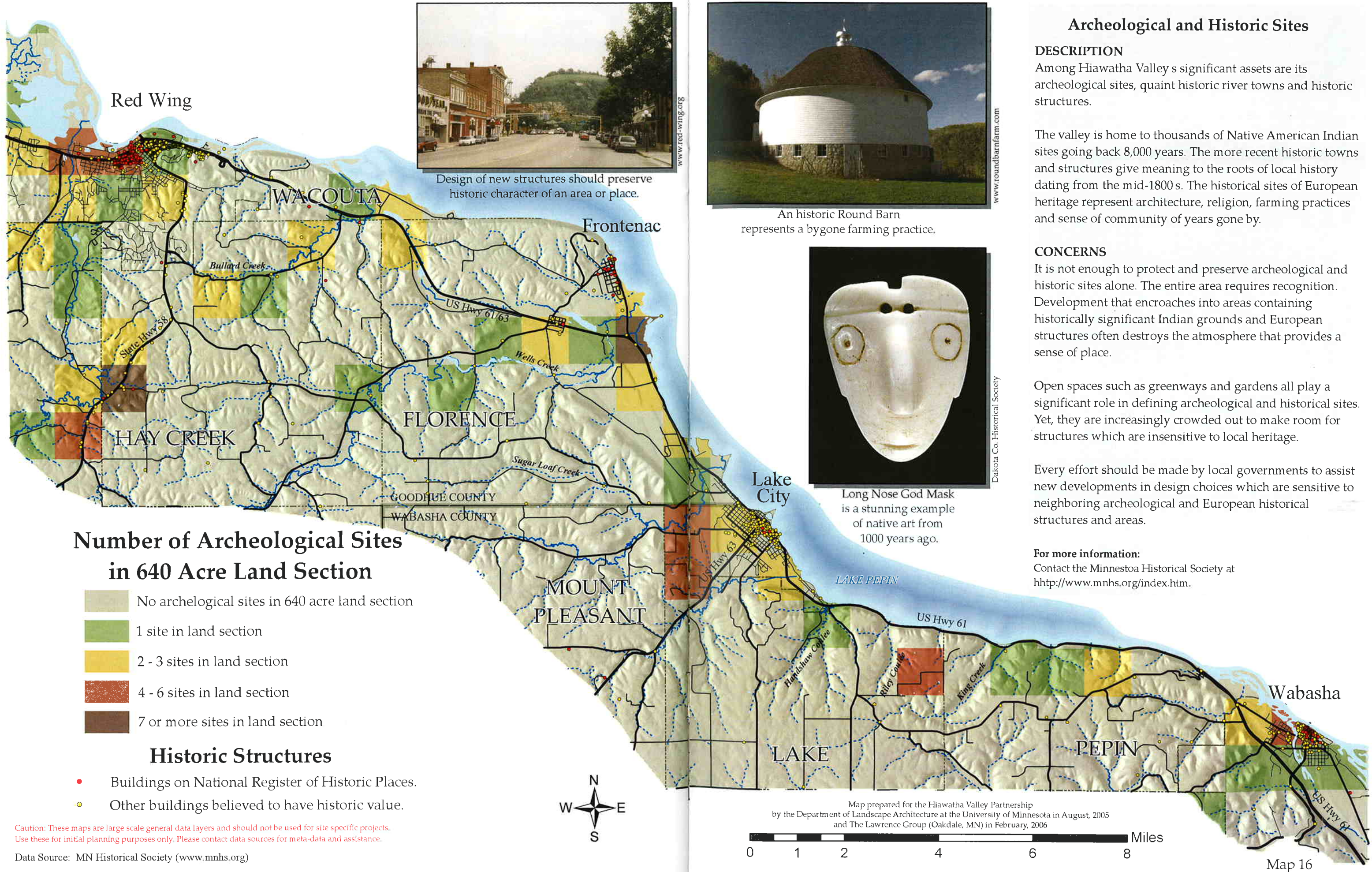
- | | | | |
|--|---------------------|--|---|
| | Campground | | City, County and Regional Trail |
| | City Dock | | Canoe Route |
| | Public Water Access | | Snowmobile Route |
| | Rest Area | | State Park Lands |
| | Private Marina | | Federal and State Fish and Wildlife Lands |
| | Historic Site | | State Forest Lands |
| | Public Parking | | |
| | DNR Office | | |
| | Geologic Feature | | |
| | Overlook | | |
| | Fishing Pier | | |

Caution: These maps are large scale general data layers and should not be used for site specific projects. Use these for initial planning purposes only. Please contact data sources for meta-data and assistance.

Data Source: Public Recreation Information Map, MN Division of Trails and Waterways, Mississippi River Guide (Book, MN DNR, 2001)

Map prepared for the Hiawatha Valley Partnership by the Department of Landscape Architecture at the University of Minnesota in August, 2005 and The Lawrence Group (Oakdale, MN) in February, 2006

0 1 2 4 6 8 Miles



Archeological and Historic Sites

DESCRIPTION

Among Hiawatha Valley's significant assets are its archeological sites, quaint historic river towns and historic structures.

The valley is home to thousands of Native American Indian sites going back 8,000 years. The more recent historic towns and structures give meaning to the roots of local history dating from the mid-1800s. The historical sites of European heritage represent architecture, religion, farming practices and sense of community of years gone by.

CONCERNS

It is not enough to protect and preserve archeological and historic sites alone. The entire area requires recognition. Development that encroaches into areas containing historically significant Indian grounds and European structures often destroys the atmosphere that provides a sense of place.

Open spaces such as greenways and gardens all play a significant role in defining archeological and historical sites. Yet, they are increasingly crowded out to make room for structures which are insensitive to local heritage.

Every effort should be made by local governments to assist new developments in design choices which are sensitive to neighboring archeological and European historical structures and areas.

For more information:
Contact the Minnesota Historical Society at <http://www.mnhs.org/index.htm>.



Design of new structures should preserve historic character of an area or place.



An historic Round Barn represents a bygone farming practice.



Long Nose God Mask is a stunning example of native art from 1000 years ago.

Number of Archeological Sites in 640 Acre Land Section

- No archeological sites in 640 acre land section
- 1 site in land section
- 2 - 3 sites in land section
- 4 - 6 sites in land section
- 7 or more sites in land section

Historic Structures

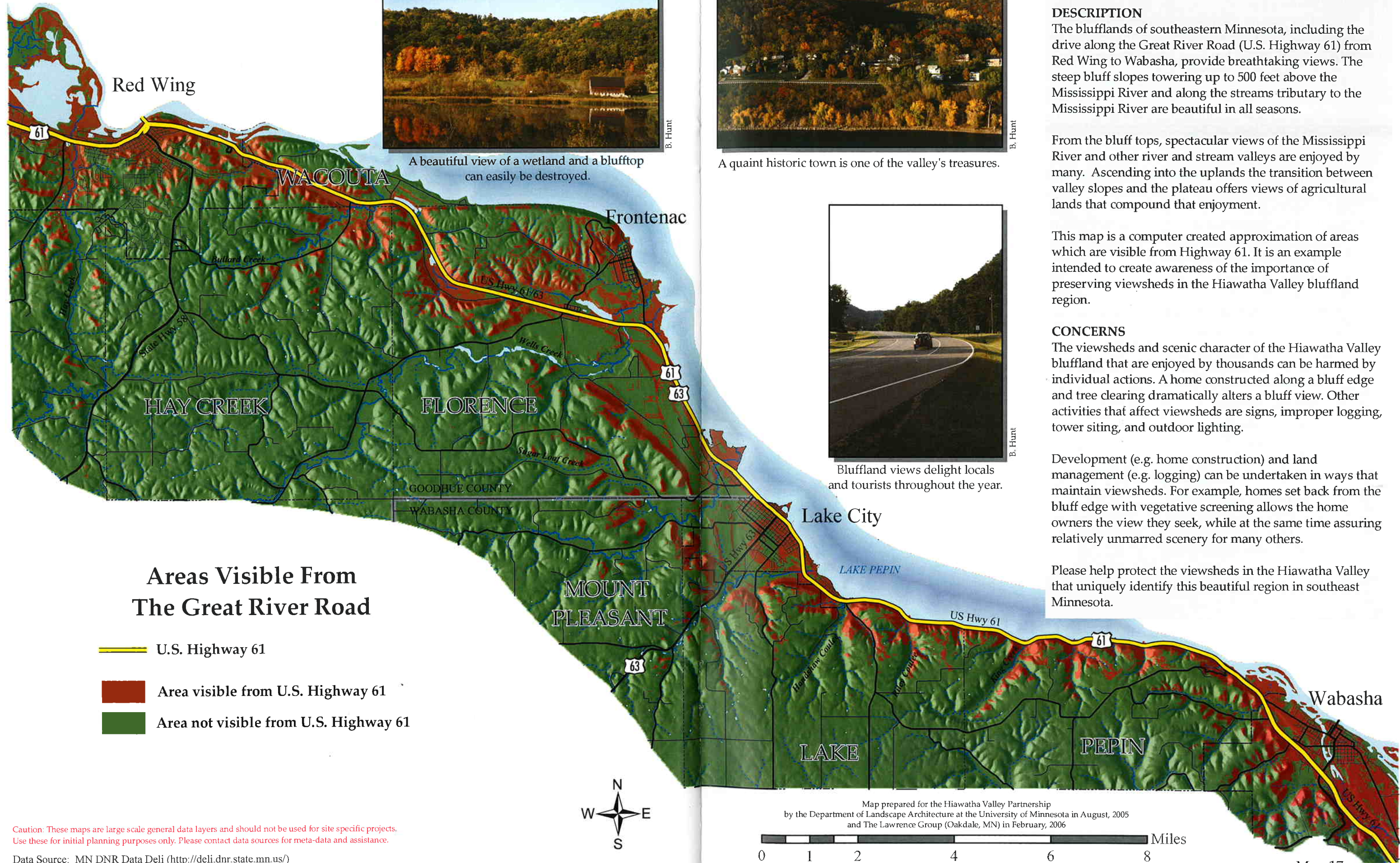
- Buildings on National Register of Historic Places.
- Other buildings believed to have historic value.

Caution: These maps are large scale general data layers and should not be used for site specific projects. Use these for initial planning purposes only. Please contact data sources for meta-data and assistance.

Data Source: MN Historical Society (www.mnhs.org)

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0 1 2 4 6 8 Miles



Areas Visible From The Great River Road

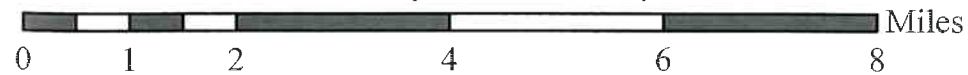
- U.S. Highway 61
- Area visible from U.S. Highway 61
- Area not visible from U.S. Highway 61

Caution: These maps are large scale general data layers and should not be used for site specific projects. Use these for initial planning purposes only. Please contact data sources for meta-data and assistance.

Data Source: MN DNR Data Deli (<http://deli.dnr.state.mn.us/>)



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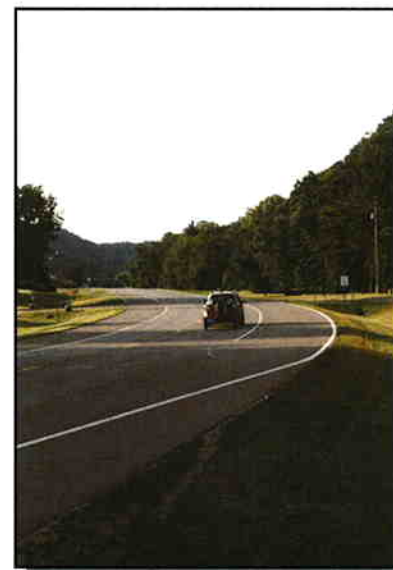
A beautiful view of a wetland and a blufftop can easily be destroyed.

B. Hunt



A quaint historic town is one of the valley's treasures.

B. Hunt



Bluffland views delight locals and tourists throughout the year.

B. Hunt

Areas Visible from the Great River Road

DESCRIPTION

The blufflands of southeastern Minnesota, including the drive along the Great River Road (U.S. Highway 61) from Red Wing to Wabasha, provide breathtaking views. The steep bluff slopes towering up to 500 feet above the Mississippi River and along the streams tributary to the Mississippi River are beautiful in all seasons.

From the bluff tops, spectacular views of the Mississippi River and other river and stream valleys are enjoyed by many. Ascending into the uplands the transition between valley slopes and the plateau offers views of agricultural lands that compound that enjoyment.

This map is a computer created approximation of areas which are visible from Highway 61. It is an example intended to create awareness of the importance of preserving viewsheds in the Hiawatha Valley bluffland region.

CONCERNS

The viewsheds and scenic character of the Hiawatha Valley bluffland that are enjoyed by thousands can be harmed by individual actions. A home constructed along a bluff edge and tree clearing dramatically alters a bluff view. Other activities that affect viewsheds are signs, improper logging, tower siting, and outdoor lighting.

Development (e.g. home construction) and land management (e.g. logging) can be undertaken in ways that maintain viewsheds. For example, homes set back from the bluff edge with vegetative screening allows the home owners the view they seek, while at the same time assuring relatively unmarred scenery for many others.

Please help protect the viewsheds in the Hiawatha Valley that uniquely identify this beautiful region in southeast Minnesota.