

Chapter 11: Natural Resources

- Introduction
- Climate
- Watersheds and Surface Waters
- Soils
- Wildfire Hazards
- Birds and Pollinators
- Natural Resources Strengths
- Natural Resources Challenges
- Natural Resources Objectives and Strategies



Photo credit: John Andringa



Photo credit: True North Bemidji

VISION

Promote a high quality of life for the Greater Bemidji Area that highlights our environment and parks and recreational resources that develop a healthy mind and body.

Introduction

This section consists of inventory and analysis of the natural resources in and near the Greater Bemidji Area. Within the following narrative, various components of the community's natural resources base are examined at a broad level to provide the community with the necessary information to make informed decisions about future growth and development.

Climate

The Greater Bemidji Area's climate is characterized by four distinct seasons with wide variations in temperature and precipitation throughout the year. Temperatures range from an average low of -3°F in January to an average high of 79°F in July. Total annual average precipitation is 25.1 inches. The highest recorded temperature was 101°F in 1975, and the lowest recorded temperature was -50°F in 1950 (The Weather Channel, 2016). **Table 21** shows the average temperatures and precipitation amounts for each month.



Photo credit: John Andringa

Table 21: Greater Bemidji Area's Average Climate

Month	Average High	Average Low	Average Precipitation
January	16°F	-4°F	0.7 inches
February	24°F	3°F	0.6 inches
March	36°F	16°F	0.9 inches
April	53°F	30°F	1.5 inches
May	67°F	43°F	2.7 inches
June	75°F	52°F	4.1 inches
July	79°F	57°F	4.3 inches
August	77°F	55°F	3.5 inches
September	66°F	45°F	2.8 inches
October	54°F	35°F	2.3 inches
November	34°F	19°F	1.1 inches
December	21°F	3°F	0.6 inches

Source: The Weather Channel, 2016

Watersheds and Surface Waters

Watersheds are divided and sub-divided into subsequently smaller numeric units (i.e., Hydrologic Unit Code, or HUC). Each HUC is given an eight-digit number. The Greater Bemidji Area is located in the Mississippi River Headwaters Watershed (#07010101), which is in the Upper Mississippi River Basin.

Surface waters in the Greater Bemidji Area include the Mississippi River, Lake Bemidji, Lake Irving, Lake Marquette, Lake Movil, along with several other smaller lakes, ponds, and wetlands.

Lakes/Shoreland Areas

The City of Bemidji is known for being the first City on the Mississippi River. There are also roughly 400 lakes in a 25-mile radius of the City of Bemidji. In the Greater Bemidji Area alone, there is around 8,370 acres of bodies of water and 38.2 miles of shoreland that is regulated.

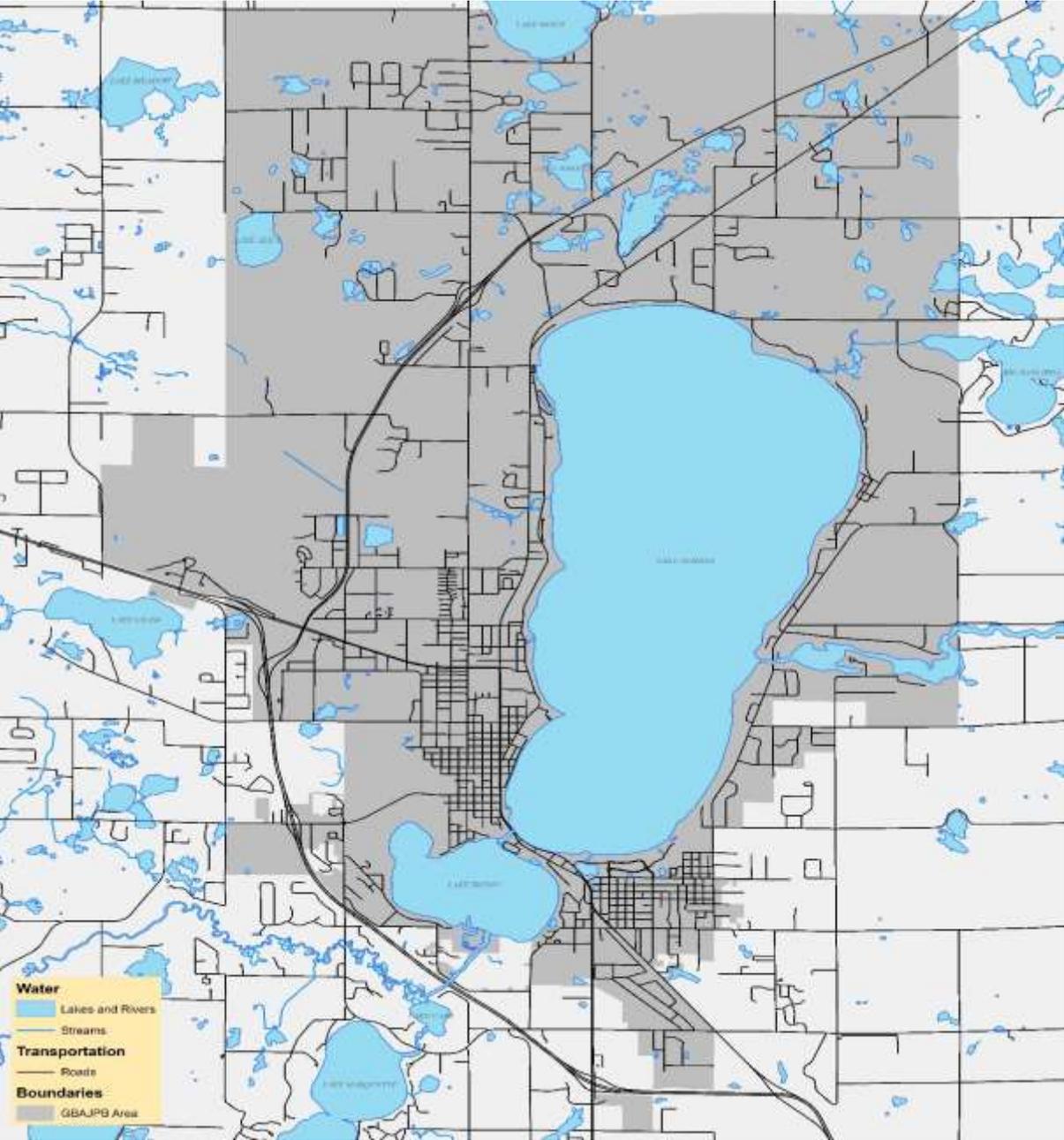
Predominately made up of Lake Bemidji and Lake Irving, in which are general development lakes and is part of the Mississippi Headwaters. Other public waters in the Greater Bemidji Area are classified according to criteria found in Minnesota Rules, Part 6120.3300, the MHB Plan and the

Protected Waters Inventory Map for Beltrami County, Minnesota. The other public waters are classified as either general development lakes, recreational development lakes, sensitive area lakes, special protection lakes, scenic and transition river segments, forested river segments, or tributary river segments. All properties in the shoreland areas are required to meet the requirements of the regulations for the zoning district in which the property is located in. Figure 10 shows all the bodies of water across the Greater Bemidji Area.



Photo credit: GBAJPB

Figure 10: Greater Bemidji Area Bodies of Water



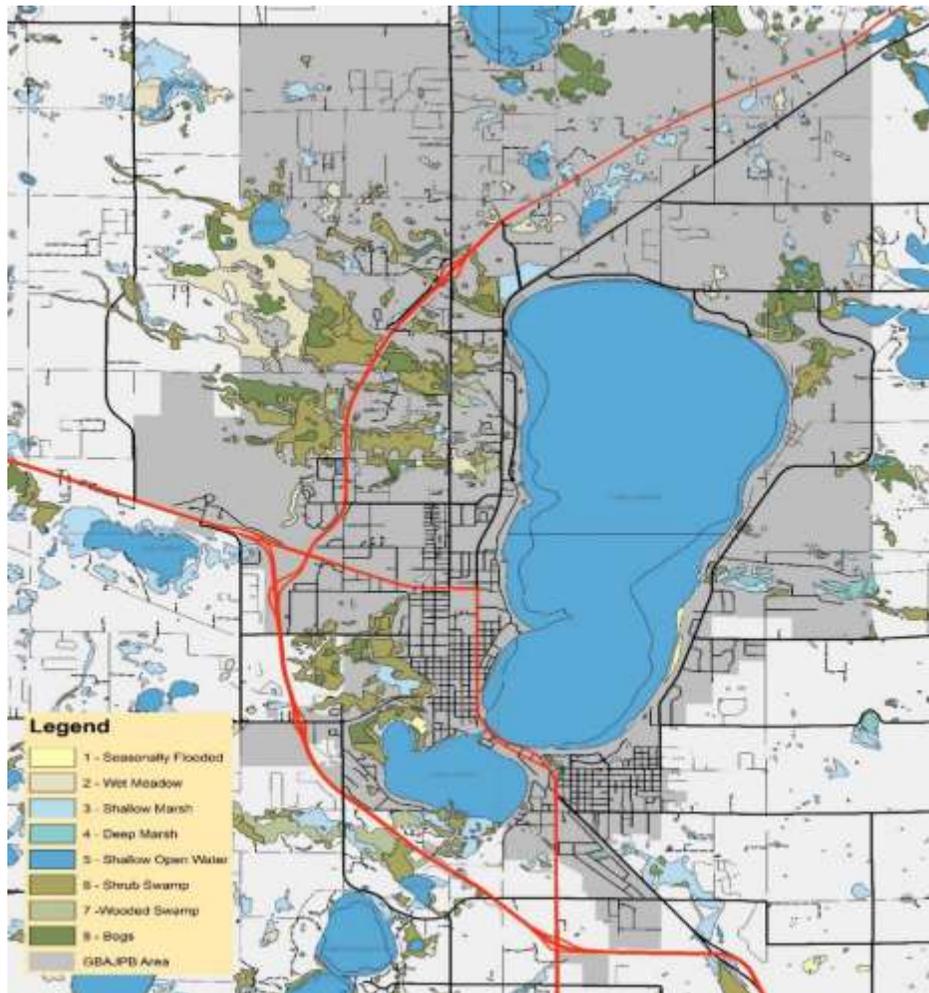
Source: GBAJPB, 2012-2017

Wetlands

Wetlands are defined as lands that have: a predominance of wet soils; are inundated or saturated by surface or ground water at a frequency and duration sufficient to support the frequency of hydrophytic vegetation (e.g., cattails) typically adapted for life in saturated soil conditions; and under normal circumstances, support a prevalence of hydrophytic vegetation.

Not counting open water or lakes, there are approximately 5,740 acres of wetlands in the Greater Bemidji Area. These wetlands account for 14.8% of the land area. Open water/lakes occupy 17.6% of the total area. **Figure 11** shows the distribution of wetlands across the Greater Bemidji Area.

Figure 11: Greater Bemidji Area Wetlands

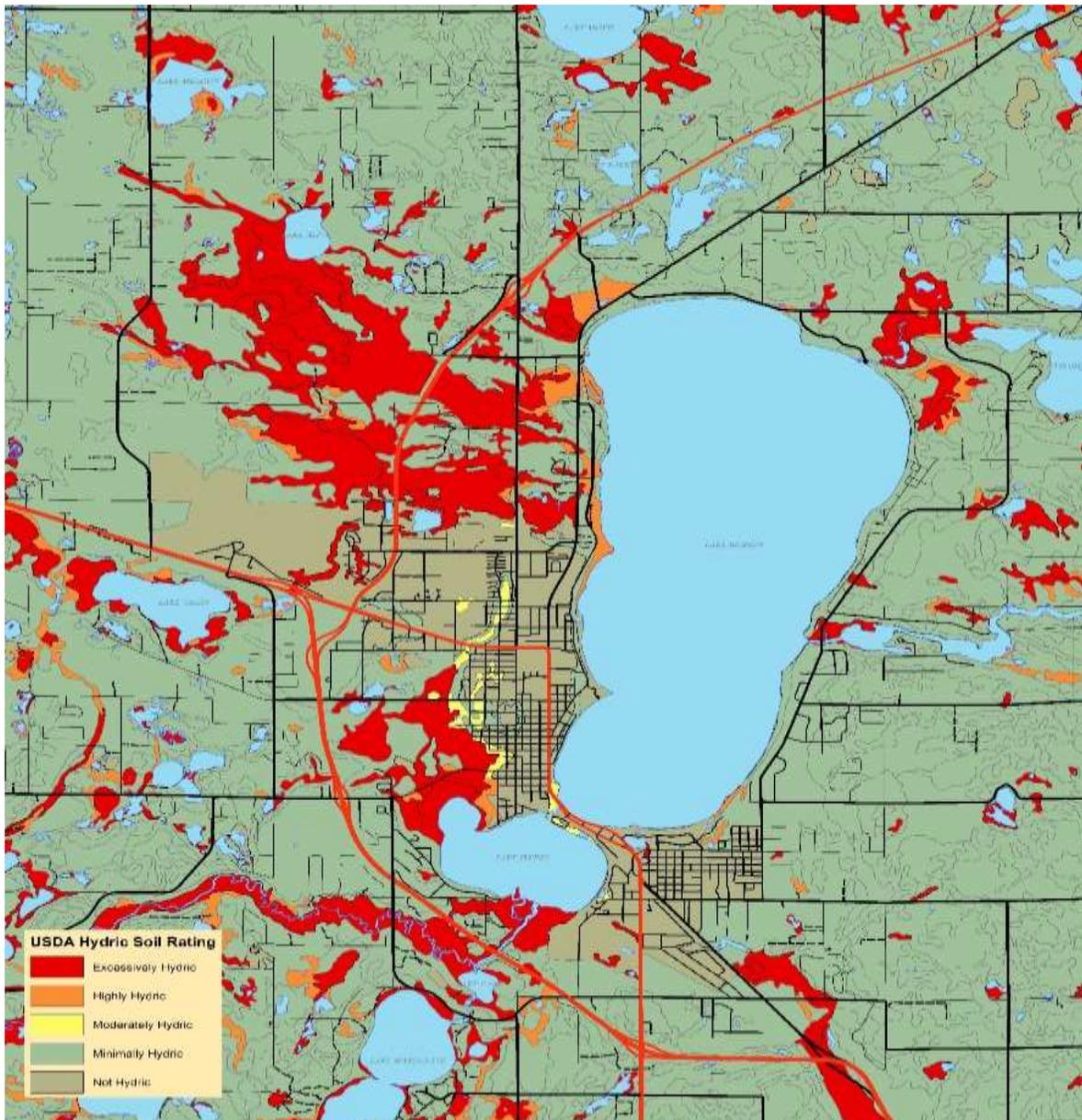


Source: GBAJPB, 2012-2017

Soils

In 1986, the Natural Resource Conservation Service (NRCS) completed a detailed soil survey in Beltrami County that identified approximately 107 soil types in the southern part of Beltrami County, including the Greater Bemidji Area.

Figure 12: Greater Bemidji Soil Types



Source: GBAJPB, 2012-2017

Wildfire Hazards

In 2017, the City of Bemidji worked with the Community Planning Assistance for Wildfire (CPAW) program to receive technical planning assistance to address the growing threat of wildfire to the Greater Bemidji Area. As part of this process, the CPAW team met with local stakeholders to discuss local wildfire challenges and opportunities.

One of CPAW's findings was that previous land use planning documents did not include any reference to wildfire hazard. However, the Beltrami County Hazard Mitigation Plan (2013) listed wildfire as one of its top five priority hazards in the county. As a result, CPAW provided recommendations to the Greater Bemidji Area to address wildfire hazard through land use planning opportunities—many of which have been incorporated into appropriate chapters of this Comprehensive Plan.

Birds and Pollinators

Birds, bees, and butterflies have several things in common – they all depend on native plants; they play an important role in pollination; and all face increasing pressures from intensified land-use, diseases, and non-native invasive

competitors. Both birds and pollinators encounter the nighttime dangers of illuminated structures and street lighting. Mortality from increased use of glass in buildings poses a distinct threat to birdlife. City parks, streetscape vegetation, waterfront business districts, and other urban green patches are important resources for birds and pollinators. Bird-safe building strategies can reduce collision hazards, enhance and restore habitat and conserve energy.

Natural Resources Strengths

- High-quality, clean air and water
- Surrounded by natural areas for recreation and tourism as well as economic benefit.
- Large amount of lakes, 400 considered fishable within a 25-mile radius.
- Many opportunities for wildlife viewing.
- Great access to public lands., including city, state, and county lands.
- Lake Bemidji State Park, City of Bemidji parks, and Beltrami County parks.
- Strong relationships with state agencies, such as the Minnesota Department of Natural Resources, to

assist in wildfire mitigation, prevention, and response.

Natural Resources Challenges

- Increasing light pollution.
- Conflicting regulations between GBAJPB zoning and wildfire mitigation best practices.
- Unknown impacts of climate change.
- Human-caused hazards.
- Educating the public about the risks associated with natural hazards.
- Emergency routes in response to a natural hazard event, such as wildfire.
- Protecting our resources.



Photo credit: John Andringa

Natural Resources Objectives and Strategies

Objective 11.1 Preserve and Enhance Our Air Quality

A strong connection to the environment is important to Northern Minnesotans, and it is increasingly important that the natural resource environments thrive on this connection.

- 1. Support the flexibility for green building construction or increased landscaping and vegetation with new or redevelopment projects.** Support projects that increase landscaped area, use green building techniques, reduce impervious surfaces, increases energy efficiencies, and have an overall lower impact on the environment than what is existing or allowed will have a positive impact on air quality.
- 2. Promote awareness of ecosystem-based fire management.** Ecosystem-based fire management can reduce the negative effects of wildfire, which can result in significant ecological and environmental challenges to the public and visitors.

Objective 11.2 Preserve and Enhance Water Quality

The protection of water quality is becoming increasingly important in all-natural resource environments. In an area that thrives on a strong connection to water and Mississippi River, water quality protection is key to preserving and improving a high quality of life standard that is so attractive to residents and visitors.

- 1. Encourage educational opportunities and inspections for aquatic invasive species.** Aquatic invasive species are continuing to threaten the water quality of northern Minnesota. Encouraging efforts that support the safety of our lakes, rivers, and streams.
- 2. Use shoreland restoration incentives and demonstrate success on public and private property to increase natural shoreland.** Encourage shoreland restoration projects through incentives or flexibility could potentially reduce shoreland variances. Displaying the benefits of shoreland restoration can increase awareness and understanding of the process that could result in a positive impact on shorelands.

3. **Maintain partnerships and enhance protection efforts of the Upper Mississippi River corridor.** It is important to work with other organizations such as the Mississippi Headwaters Board on initiatives to protect the fragile headwaters, which is a vital part of being the First City on the Mississippi.
4. **Promote awareness of natural hazards, which can affect water quality.** Natural hazards, such as overland flooding or wildfires, can cause erosion concerns by negatively changing the soil and vegetation structure and/or negatively altering sediment, flow and temperature regimes of lakes, rivers, and streams. Increasing the overall awareness of potential natural hazards and their effects on the ecosystem can help mitigate potential damage.



Photo credit: John Andringa

Objective 11.3 Promote the Preservation of the Night Sky throughout the Greater Bemidji Area

The Greater Bemidji Area will continue to support efforts to decrease light pollution, following the International Dark-Sky Association best management practices.

1. **Reduce nonconforming lighting.** Replacing nonconforming lighting can offset the potential increase in light pollution as growth continues.
2. **Develop stricter sign illumination standards.** The increase in LED lighting has great potential for energy savings, but the brighter sign lights are causing an increase in light pollution, which will require management.
3. **Promote regulation that decreases light pollution but maintains overall safety.** When managing light pollution with the growth it is important to protect our dark sky, but it is also critical to ensure that areas requiring lighting are effectively lit to provide safety for pedestrians and property.

Objective 11.4 Encourage a Resilient Urban Forestry System with High-Quality Wildlife Habitat

Retain Northwood's character and high-quality wildlife habitat through urban forestry planning and management to increase landscaping tree cover, preserve significant wooded areas, and preserve existing significant trees.

- 1. Encourage private forestry management planning.** When developing wooded areas, encouraging developers to work with private forestry management professionals in lieu of clear cutting for development will help maintain a healthy urban forest.
- 2. Preserve and enhance high-quality wildlife habitat where appropriate.** The presence of undeveloped land that is poorly suited for future development presents an opportunity for a connected network of high-quality wildlife habitat. High-quality wildlife habitat presents an opportunity for a connected network of management area.
- 3. Promote cooperation between local, county, state, and federal agencies who manage conservation land, as well as private landowners with interest in conservation.** Partnerships

between conservation management professionals could result in high level management planning specialized for ecosystems and habitat.

- 4. Promote resilient natural forest through public and private partnerships for tree planting initiatives.** Continuous tree planting efforts through partnerships will be supported to improve urban forest and habitat.
- 5. Promote and expand capacity to educate, prevent, and implement wildfire mitigation activities.** Collaborate with partners to develop outreach materials to educate residents and the development community on wildfire prevention and mitigation best practices.

Objective 11.5 Encourage Awareness of Sustainable Natural Resource Management

The use of natural resources will need to be managed sustainably and increasing awareness throughout the community is critical to resilient natural resources.

- 1. Encourage cooperation among interest groups dedicated to environmental stewardship and sustainable best management practices for**

natural resources. Support ongoing and new community efforts to increase awareness of sustainable natural resource planning practices.

Objective 11.6 Encourage Bird and Pollinator Friendly Practices for New and Existing Buildings and Landscapes

The Greater Bemidji Area will continue to support birds, bees, & butterflies by creating habitat, reducing threats, and engaging citizens in the conversation as well as the outdoor recreation.

- 1. Promote the use of Minnesota Department of Administration Buildings, Benchmarks & Beyond (B3) Bird-Safe Building Guidelines to limit the risk of built environments to birds.** B3 is similar to other energy-efficient building standards, such as the Leadership in Energy and Environmental Design (LEED) certification, but it has been tailored to the specific needs of Minnesota buildings.
- 2. Support Bemidji's participation in the 'Bird City Minnesota' program.** Bemidji earned this prestigious designation for being a great place for birds, and people, because of the many Bemidji

organizations, agencies, and residents involved in conservation and stewardship projects that benefit birds and other wild creatures.

3. Promote planting of native wild flowers, shrubs and trees to benefit birds and pollinators.

Encourage collaborative, community-wide initiatives such as "Birds, Bees, & Butterflies – Bemidji" and to establish

demonstration gardens, develop educational materials, conduct workshops, and partnering with local nurseries and greenhouses to increase awareness and use of native plants in local landscapes and gardens.



Photo credit: GBAJPB