3.0 AFFECTED ENVIRONMENT

This chapter describes the existing environment in the area of the proposed project.

3.1 PHYSICAL RESOURCES

3.1.1 Geology, Soils, and Climate

The proposed project is located in Itasca County, Minnesota. Itasca County's geology was greatly influenced by the multiple forces at work during continental glaciations. Itasca County is included primarily in the western lake section of the Central Lowland Province of the Interior Plains. Major landforms in this area include the Aitkin, Agassiz, and Upham lacustrine plains. The Marcell, Nashwauk-Warba, Northome, and Sugar Hill moraines are also found here. The Blackduck and Swatara till plains, Bemidji and Prairie River sand plains, and the Mesabi Range Formation complete the primary landforms associated with Itasca County (Nyberg 1987). Much of the topography in the Mesabi Range is bedrock-controlled. This area has been extensively mined dating back nearly 100 years. Consequently, the terrain is influenced greatly by previous mining activities.

Itasca County is comprised of several distinct soil types. Lacustrine soils are formed from material that has settled from glacial lakes, and are found in the northeastern and southeastern portions of the county. Much of the county's soil type is considered to be till, which is material deposited directly from glaciers. Some soils within the project area are identified as prime farmland soils (Nyberg 1987). Bedrock is also present near the surface in portions of northeastern Itasca County. Outwash material, left over from glacial melting, is present in the southwestern portion of the county (Anderson, Bell, Cooper, and Grigal 2001).

The lowest elevation in Itasca County is 1,230 feet above sea level, at the point where the Mississippi River exits the county. The highest point in the county is 1,752 feet above sea level on the Sugar Hills moraine (Nyberg 1987). Elevations fluctuate greatly depending on the type of landform associations in the area, with local differences in elevation ranging from 10 feet to 100 feet or more. Large overburden piles and mine pits

in previously-mined areas greatly affect local topography, resulting in large variances in elevation. Most of the land within the project area is owned by the State of Minnesota, Itasca County, or by several companies with mining interests. ICRRA has indicated no ownership issues anticipated with land acquisition for use as right-of-way. ICRRA or Minnesota Steel have agreements (some currently only in principle) for use of these lands for construction and operation of the taconite mine and steel mill as well as associated facilities, which include the rail line (McKenzie 2007).

The climate of Itasca County consists of long, cold winters and short, warm summers. Average annual precipitation is roughly 26 inches, and is distributed fairly evenly throughout the year. The average temperature is 11 degrees Fahrenheit in winter, and 65 degrees Fahrenheit in summer. The average total snowfall is 57 inches. The sun shines 55 percent of the possible time, averaged for all months. The growing season for Itasca County is generally from April to September (Nyberg 1987).

3.1.2 Surface and Ground Water

The Mississippi and Rainy Rivers and their tributaries provide drainage for Itasca County. The Mississippi River begins at Lake Itasca in Clearwater County, located to the west of Itasca County. The Mississippi River flows east and forms the southwest boundary of Itasca County as it continues to the southeast. The Prairie River and Deer River are other small rivers in Itasca County that drain into the Mississippi. The Rainy River originates at the west side of Rainy Lake, on the border of Minnesota and Canada, and flows generally west-northwest towards Lake of the Woods. The Big Fork River and Bear River are two smaller rivers that drain north out of Itasca County into the Rainy River. There are numerous other smaller streams in Itasca County that empty into the Mississippi and Rainy Rivers and their tributaries. In addition to rivers and streams, the project area is dotted with numerous glacial lakes, water-filled mine pits, and ponds (DeLorme 2000).

Many residents in the project area obtain their drinking water from underground aquifers and wells. Sandy and clayey glacial drift overlaying bedrock produce sand

aquifers throughout Itasca County. Fractured bedrock water sources are also used locally, as well as aquifers from the Biwabik Iron Formation (MNDNR 2001). Proposed railroad Alternatives 3 and 4 fall within the Wellhead Protection Area (WHPA) and Drinking Water Supply Management Area (DWSMA) for the City of Marble.

3.1.3 Air Quality

The project area is not within an Environmental Protection Agency (EPA) designated Air Quality Control Region. Air quality in the project area is categorized as "attainment" for all criteria pollutants (40 CFR 8). "Attainment" means that the concentration of each criteria pollutant is below the concentration designated by EPA for the protection of air quality (EPA 2007). Criteria pollutants include sulfur dioxide, carbon monoxide, ozone, oxides of nitrogen, lead, and particulate matter. The project area is located approximately 80 miles (128 km) from the Boundary Waters Canoe Area, a Class 1 region. Emissions associated with the project are not expected to impact visibility within this Class 1 region. Air emissions in the project area currently include emissions from vehicle traffic on roadways and railroad locomotive engines (Minnesota Pollution Control Agency 2006). Construction of the Minnesota Steel taconite mine and steel mill would also produce air emissions in the project area (MNDNR and USACE 2007, Chapter 5, Section 5.1, page 5-2). Air emissions from wood burning fireplaces, chainsaws, and snowmobiles commonly occur during the colder months. During warmer weather, air emissions from outboard engines occur from fishing and pleasure boats on the numerous lakes in the area. Limited industrial operations within the project area, such as paper mills and manufacturing plants, produce air emissions as well.

3.2 BIOLOGICAL RESOURCES

3.2.1 Vegetation and Wetlands

The predominant natural vegetative communities within the project area consist of coniferous/deciduous forest species, with small open areas consisting of various grasses and shrubs. These natural areas are interspersed with areas of open mine pits and overburden piles. Emergent, scrub shrub, and forested wetland plant species are found in low-lying areas and near bodies of water (MNDNR and USACE 2007). Coniferous

species found in the area include white pine (*Pinus strobus*), jack pine (*Pinus banksiana*), red pine (*Pinus resinosa*), and white cedar (*Thuja occidentalis*). Deciduous species include white birch (*Betula pubescens*), black ash (*Fraxinus nigra*), and red maple (*Acer rubrum*). In swampy areas, black spruce (*Picea mariana*) and tamarack (*Larix laricina*) are common. Shrubs known to occur in the area include white-flowered thimbleberry (*Rubus parviflorus*), mountain maple (*Acer spicatum*), dwarf birch (*Betula nana),* and several varieties of honeysuckle (American Guide Series 1996). The above list of species is not all-inclusive. Other plant species occur in the project area, but were not listed in this section.

3.2.2 Wildlife

Much of the project area lies within areas of former mining activity, and therefore the original landscape has been extensively altered. In addition, a large portion of the project area has been previously logged. Much of the current vegetation in the project area is estimated to be less than 30 years old. In spite of the previous extensive mining and logging activity, there are still diverse habitats available for wildlife use in the project area, and many species of wildlife inhabit these areas. Some animal species occurring within the project area include raccoon (*Procyon lotor*), bobcat (*Lynx rufus*), beaver (*Castor canadensis*), black bear (*Ursus americanus*), porcupine (*Erethizon dorsatum*), whitetail deer (*Odocoileus virginianus*), mink (*Musela vison*), red squirrel (*Sciurus vulgaris*), badger (*Taxidea taxus*), and snowshoe hare (*Lepus americanus*). Some bird species occurring within the project area include the common raven (*Corvus corax*), ruffed grouse (*Bonasa umbellus*), bald eagle (*Haliaeetus leucocephalus*), great horned owl (*Bubo virginianus*), wood duck (*Aix sponsa*), common loon (*Gavia immer*), belted kingfisher (*Megaceryle alcyon*), downy woodpecker (*Picoides pubescens*), and black-capped chickadee (*Poecile atricapillus*). Some common game fish species found in Itasca County include northern pike (*Esox lucius*), muskellunge (*Esox masquinongy*), walleye (*Sander vitreus vitreus*), smallmouth bass (*Micropterus dolomieu*), and various species of sunfish, perch, and crappie. The above list of species is not all-inclusive. Other wildlife species occur in the project area, but were not listed in this section (MNDNR 2007a).

3.2.3 Endangered, Threatened and Rare Species

SEA contacted the U.S. Fish and Wildlife Service (USFWS) and the Minnesota DNR regarding threatened and endangered species in the project area. According to the USFWS (2007) and MNDNR (2007b) websites, the Canada lynx (*Lynx canadensis*) is the only animal species occurring in Itasca County requiring Federal or state protection. The Canada lynx is Federally-listed as threatened under the Endangered Species Act. The project area is located within a USFWS-designated core area used by Canada lynx. Voyageur National Park, located approximately 75 miles north of the area, is designated as critical habitat for Canada lynx. The Canada lynx is known to occur in Itasca County, but the majority of sightings occur within the Chippewa National Forest, which is located approximately seven miles west of the project area. There is also a population of lynx located in the Superior National Forest, located east of the project area (MNDNR and USACE 2007, Appendix D, Chapter 3, Figures 5, 6). The Canada lynx prefers mature northern coniferous and mixed forest habitat. Due to previous extensive mining and logging activity, there is only marginally suitable habitat within the project area. Additionally, habitat fragmentation caused by roads and snowmobile trails makes any habitat within the project area somewhat undesirable for the Canada lynx. These habitat areas would not be large enough to be suitable for reproduction or extended use, although they may be used by transient Canada lynx for short periods of time. No Canada lynx were observed during field investigations of the study area.

In addition to the Canada lynx, a review of the Minnesota Natural Heritage and Nongame Research database (MNDNR 2007c) found three state-protected threatened or endangered vascular plant species that are known to occur within the project area in Itasca County. The three species were not specifically identified in any of the rail line alternative corridors. Table 3-1 lists all Federal or state-listed threatened or endangered species known to occur in or near the project area. None of these species were observed during field investigations of the study area.

Table 3-1 Threatened and Endangered Species in Itasca County

Common Name	Scientific Name	Federal Status	State Status
Canada Lynx	*Lynx canadensis*	Threatened	
Blunt-Lobed Grape Fern	*Botrychium oneidense*		Endangered
Pale Moonwort	*Botrychium pallidum*		Endangered
St. Lawrence Grapefern	*Botrychium rugulosum*		Threatened

Source: MNDNR Minnesota Natural Heritage Database 2007

3.3 NOISE

Primary sources of noise in the project area include rail traffic and train locomotive horn noise along the existing CN and BNSF rail line, and vehicle traffic along State Highway 65 and U.S. Highway 169. The proposed rail line would generally be located within two miles of U.S. Highway 169 and three miles of State Highway 65. Average Daily Traffic (ADT) volumes are measured by segment for area highways. ADT volumes for U.S. Highway 169 range from 5,700 to 7,400 cars/day and 400 to 760 trucks/day between Taconite and Nashwauk. ADT volumes for State Highway 65 are 2,500 cars/day and 220 trucks/day between Nashwauk and the intersection of County Highway 8 (MNDOT 2007a). ADT volumes for other major routes in the project area are given in Section 3.8 (Transportation) and are listed in Table 3-6. Other sources of noise include engine noise from snowmobiles and from outboard motorboats (MNDNR and USACE 2007). These noise sources are seasonal, with snowmobile noise occurring in the winter months, and boat noise occurring during the summer months.

3.4 CULTURAL RESOURCES

SEA contacted the Minnesota State Historic Preservation Office (SHPO) and the Office of the State Archaeologist. Based on a records search of the Minnesota Archaeological Inventory and Historic Structures Inventory, no archeological sites were identified within the project area. Three historic sites were identified within the project area as being listed or eligible for listing on the National Register of Historic Places: Hill Annex Mine, Oliver Mining Company Boarding House, and Marble Village Hall (NRHP 2007). Forty-five additional properties appear within the current SHPO databases.

According to SHPO staff, these properties have not been officially evaluated by the state, and are therefore considered unevaluated. A majority of these sites are located in the towns of Marble, Taconite, Calumet, and Holman. None of these sites would be expected to be impacted by the proposed project.

3.5 HAZARDOUS MATERIALS/WASTE SITES

Much of the project area consists of former mining land, with many abandoned iron-ore pits, overburden piles, and tailings basins. Because of the mostly rural nature of the project area, only one site was discovered that would qualify as a waste site. Environmental Data Resources, Inc. (2007) conducted a search of Federal, state, local, and Native American tribal records to determine if any hazardous materials/waste sites occurred in the project area. The only record found was that of the Taconite Municipal Dump, located south of U.S. Highway 169 in the town of Taconite and approximately 0.10 mile south of the proposed rail line alignment. This site is labeled under the Minnesota Voluntary Investigation and Cleanup Program (MN VIC), a program developed by the Minnesota Pollution Control Agency (MPCA) to allow volunteers to monitor and clean up potential waste sites.

3.6 SOCIOECONOMIC SETTING

Itasca County encompasses approximately 3,000 square miles in north-central Minnesota. Itasca County is the third largest county in the state. Itasca County is served by three U.S. Highways and six Minnesota State Highways. The town of Grand Rapids is the county seat. Much of Itasca County is rural in nature, with small communities surrounded by large unincorporated areas. Itasca County's population growth has been small compared with that of the State of Minnesota (U.S. Census Bureau 2000a,b). Itasca County's population characteristics and projected growth in comparison to the state are shown in Tables 3-2 and 3-3.

Table 3-2 Population Characteristics

	1980	1990	2000	% Change 1980-2000
Itasca County, MN	43,069	40,863	43,992	2.1
State of Minnesota	4,075,970	4,375,099	4,919,479	20.7

Source: U.S. Census Bureau 2000a,b

Table 3-3 Projected Population Growth

	2005	2010	2020	2030	% Change 2005-2030
Itasca County, MN	44,817	45,610	47,630	48,470	8.2
State of Minnesota	5,192,122	5,446,530	5,943,240	6,297,950	21.3

Source: Minnesota State Demographic Center 2007

According to the U.S. Census Bureau (2000c), per capita income in Itasca County for 1999 was $17,717 and the median family income was $44,025. Itasca County's economy has historically been driven by mining, tourism, and timber harvesting. Mine closures in the 1980's contributed to high unemployment in the county. Although the unemployment rate for Itasca County has been declining, it is still above the state (4.3 percent) and national (4.9 percent) averages (Table 3-4).

Table 3-4 Itasca County Unemployment Rates, 1970-2000

	1970	1980	1990	2000
Persons Employed	10,399	14,845	17,230	18,457
Percent Unemployed	12.4	14.6	11.8	7.4

Source: U.S. Census Bureau, County and City Data Book 2000

Manufacturing, mining, education, health care, social services, and retail trade make up substantial parts of the county's economy today. In addition, construction and

recreational employment contribute to the county's economic development. Year 2000 statistics for employment by industry for Itasca County are shown in Table 3-5.

Table 3-5 Employment by Industry for Itasca County, 2000

Industry	Itasca County	Percent of Workforce	State of Minnesota	Percent of Workforce
Agriculture, forestry, fishing and hunting, and mining	876	4.6	67,883	2.6
Construction	1,491	7.8	153,267	5.9
Manufacturing	2,608	13.6	419,271	16.3
Wholesale trade	509	2.6	92,854	3.6
Retail trade	2,412	12.5	307,714	11.9
Transportation and warehousing, and utilities	1,251	6.5	131,683	5.1
Information	278	1.4	65,460	2.5
Finance, insurance, real estate, and rental and leasing	743	3.9	184,874	7.2
Professional, scientific, management, administrative, and waste management services	1,215	6.3	227,064	8.8
Educational, health, and social services	4,265	22.2	539,111	21.0
Arts, entertainment, recreation, accommodation and food services	1,731	9.0	186,001	7.2
Other services	986	5.1	118,322	4.6
Public administration	857	4.5	86,542	3.3
Total	**19,222**	**100**	**2,580,046**	**100**

Source: U.S. Census Bureau 2000c

3.7 RECREATION

The project area is mostly rural, with large expanses of forests, mining land, mine-pits, and natural lakes. Most of the land within the project area is owned by the State of Minnesota, Itasca County, or by companies with mining interests. Outdoor recreational activities are popular in the area, including bird watching, hiking, and camping. Hunting is common in the forests and upland areas. Fishing and boating are popular in the numerous natural lakes. Trails located throughout the area provide recreational opportunities for snowmobile and ATV enthusiasts (MNDNR and USACE 2007).

3.8 TRANSPORTATION

U.S. Highway 169, State Highway 65, Itasca County Highway 58, and Itasca County Highway 7 are the major routes in the project vicinity. U.S. Highway 169 is a four-lane divided highway and runs generally from the southwest to northeast along the southern edge of the project area. State Highway 65 is a two-lane undivided highway that runs north-south to the east and outside of the project area. Itasca County Highway 58 is a two-lane undivided highway that runs east-west along the northern edge of the project area. Itasca County Highway 7 is a two-lane, undivided highway that runs north-south to the west of the project area. Because the project area is rural, the amount of traffic on these highways is generally low. Average Daily Traffic (ADT) volumes for major routes in the project vicinity are shown in Table 3-6.

Table 3-6 Average Daily Traffic Volumes for Major Routes in Project Vicinity

Highway	Cars/Day	Trucks/Day
U.S. Highway 169	5,700-7,400	400 – 760
State Highway 65	2,500	220
Itasca County Highway 58	90	N/A
Itasca County Highway 7	1300	N/A

As discussed earlier, a mainline railroad track, co-owned by BNSF and CN, extends between Grand Rapids and Forbes, Minnesota, and runs along the southern portion of the project area. This line, extending from the southwest to northeast, handles approximately

nine trains per day along the section of track between Taconite and Nashwauk (MNDOT 2007b).