6.0 ROUTES 1 AND 1A ENVIRONMENTAL EVALUATION

This chapter describes the existing conditions of the natural and built environments, the potential effects to these environments and recommended mitigation for the proposed Project. Section 6.1 discusses the existing environmental conditions within *Study Area 1*, as depicted on Map 6-1. Section 6.2 and following discuss *Route* specific issues (Map 6-2), including potential direct/indirect effects and mitigation. Detailed route maps are included in Appendix A.

6.1 Environmental Setting

Study Area 1 generally encompasses the area between Itasca CSAH 58 to the south and the existing 94 Line (230 kV) to the north. This Study Area is approximately five miles wide.

According to the DNR, Study Area 1 is situated within the Nashwauk Uplands Ecological Subregion (DNR, 2009a). This area is characterized by end moraines, rolling till plains and flat outwash plains that are associated with the Rainy Lobe glacier. Lakes, small bogs, and potholes are common features within the Nashwauk Uplands Ecological Subregion. This area typically receives 24 to 27 inches of annual precipitation.

DNR Protected Waters maps indicate that Study Area 1 includes two Public Water Inventory (PWI) lakes, three PWI wetlands and about seven reaches of PWI streams and tributaries. The most frequent National Water Inventory NWI wetland types in Study Area 1 are forested and scrub shrub.

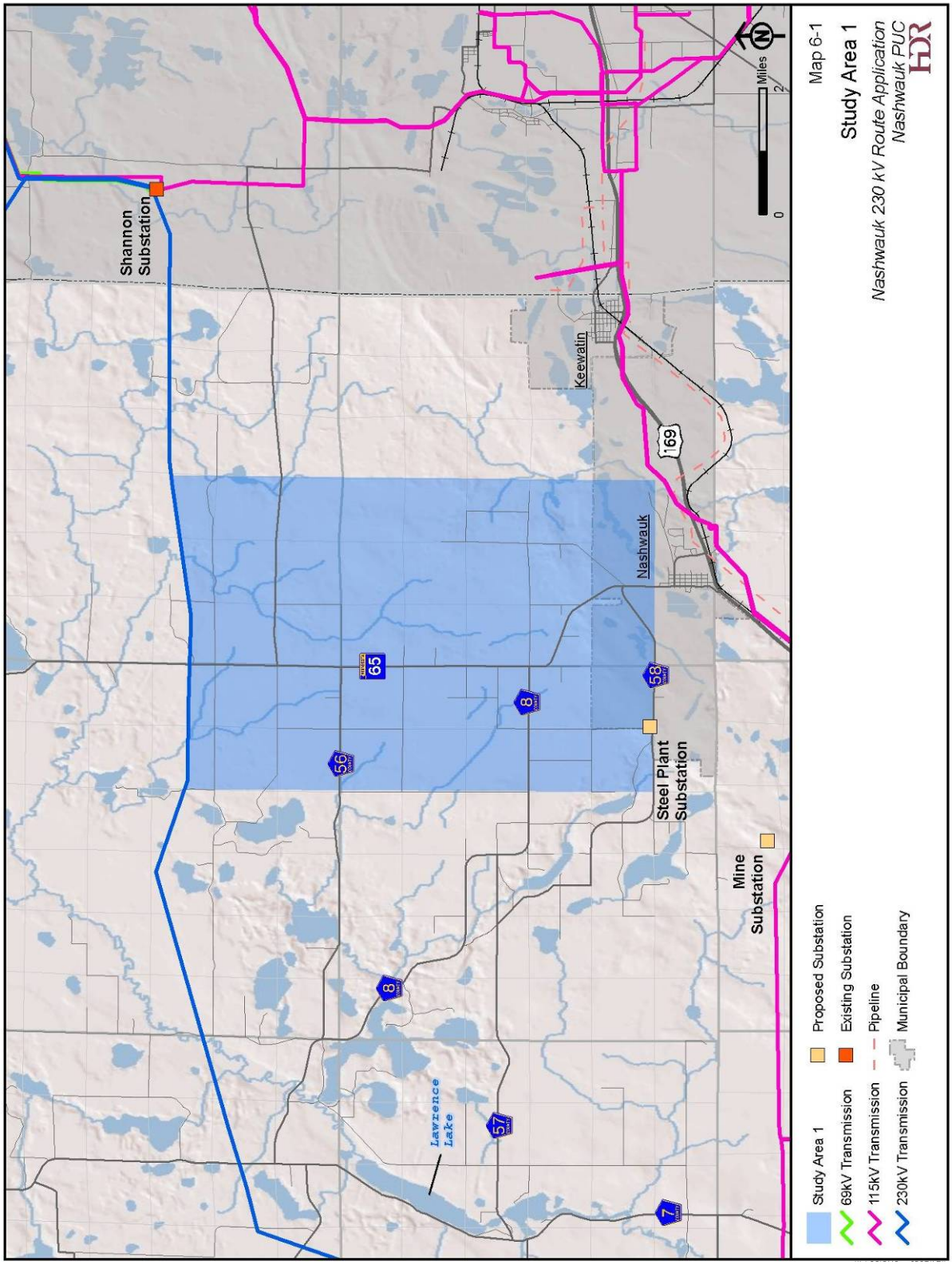
Study Area 1 is situated in the Mississippi – Grand Rapids watershed (Huc#7010103), which directs water into the Mississippi River (DNR, 2000). This watershed is part of a major continental divide, with the St. Louis Watershed (Huc#4010201) to the east directing water eastward into the Great Lakes Basin, and the Little Fork River (Huc#9030005) and Big Fork River (Huc#9030006) watersheds to the north directing water northward toward the Rainy River Basin.

Pre-settlement vegetation in Study Area 1 generally consisted of mixed hardwood and coniferous forests. Today, the dominant vegetation is quaking aspen (DNR, 2009a). According to Gap Analysis Program (GAP) data, approximately 44 percent of Study Area 1 is forested, with forestry being the most common land use in this region. About 42 percent is shrubland and about 11 percent is in agriculture use (crop/grasslands). The southeast corner of Study Area 1, near the city of Nashwauk, consists of Mesabi Iron Range minelands, which largely include stockpiles, ore pits, and tailing basins. Many of the areas that are not actively mined are associated with forest landcover.

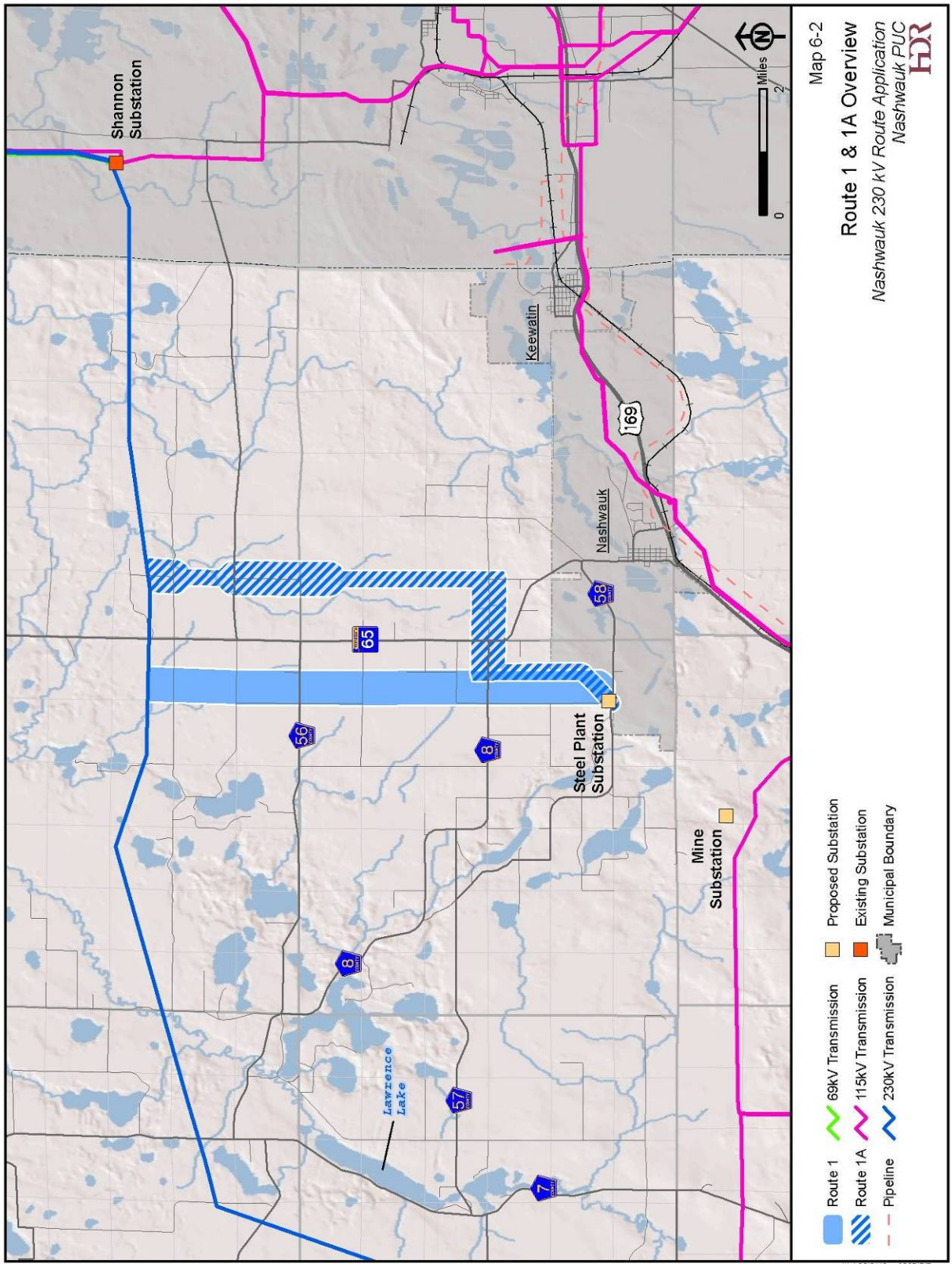
Human settlement in Study Area 1 is generally concentrated along roads and lakes, with the highest densities of housing being along TH 65 and around Shoal Lake. The scattered upland clearings within the Study Area are typically associated with residential developments.

Conservation efforts within the Nashwauk uplands are focused on habitat areas for bald eagles (*Haliaeetus leucocephalus*), Canada lynx (*Lynx canadensis*), spruce grouse (*Falcipennis canadensis*), bobolinks (*Dolichonyx oryzivorus)*, Connecticut warblers (*Oporornis agilis*), gray jays (*Perisoreus Canadensis*), northern goshawks (*Accipiter gentilis*), ospreys (*Pandion haliaetus*), trumpeter swans (*Cygnus buccinators)* and northern brook lampreys (*Ichthyomyzon fossor*). These areas would include mixed hardwood-pine forest, red-white pine forest, jack pine forest and lowland coniferous forest habitats. Large river headwaters are also considered prime habitat. (DNR ECS, 2008).

Map 6-1: Study Area 1



Map 6-2: Routes 1 & 1A Overview



6.2 Human Settlement

6.2.1 Public Health and Safety

Introduction

Public concerns with health and safety are focused on construction activities associated with the Project, as well as the long-term operation and maintenance of the transmission lines and substations. See Section 5.1 for a discussion of electric fields, magnetic fields, and stray voltage.

Direct/Indirect Effects

Routes 1 and 1A would have minimal direct or indirect effects to public health and safety.

Traffic may be obstructed during construction of the Project, but flaggers would be in-place to minimize the potential for accidents. Access for emergency vehicles would also be maintained.

The Project would be designed with local, State, and NESC standards regarding clearance to ground, clearance to crossing utilities, clearance to buildings, strength of materials and right-of-way widths. Construction crews and/or contract crews would comply with local, State and NESC standards regarding installation of facilities and standard construction practices. Established Applicants' and industry safety procedures would be followed during and after installation of the transmission line. This would include clear signage during all construction activities.

The proposed transmission line would be equipped with protective devices to safeguard the public if an accident occurs and a structure or conductor falls to the ground. The protective devices are breakers and relays located where the transmission line connects to the substation. The protective equipment would de-energize the transmission line should such an event occur. In addition, the substation facilities would be fenced and access limited to authorized personnel.

Mitigation

Proper safeguards for Routes 1 and 1A would be implemented for construction and operation of the Project. No additional mitigation is required.

6.2.2 Airports, Landing Strips, and Airplane Safety

Introduction

HVTLs can present an important safety concern to airports and aircraft. The placement of transmission line structures or the stringing of transmission lines between structures could impact the safe operation of an airport or hinder the maneuverability of aircraft.

It is important to note that the physical dimensions of airport runways determine the class size of aircraft capable of landing at an airport. Furthermore, the aircraft design and propulsion system are determinants in an aircraft's ability to land at a given facility. For example, jet aircraft are heavier, typically require a greater runway length for take-off and landing, and require more glide slope clearance distance compared to propeller-driven aircraft. Both of these factors are important in relation to tall structures such as transmission lines because they determine the take-off and landing glide slopes necessary for safe flight operation, which in turn determine the setback distance of tall structures such as transmission line structures.

One active private landing strip is located within one mile of both Route 1 and Route 1A. This airstrip is oriented in a northwest-southeast direction, and is located about 0.5 mile south of the junction of CSAH 8 and TH 65. Appendix A.4 displays this airstrip.

Topographic maps (100k resolution) of the area indicate that there is also a north-south oriented private landing strip within one mile of Route 1, near the junction of CR 539 and TH 65. This landing strip appears to be inactive.

There is a FAA facility located on TH 65 approximately one mile south of Route 1A.

Direct/Indirect Effects

Route 1

The takeoff point of the active northwest-southeast oriented unregistered private landing strip is within 0.8 mile of the proposed Route 1 transmission line centerline, assuming takeoff in a northwest direction. Navigation to this airstrip is not expected to be affected by the proposed transmission line.

The inactive north-south airstrip is located 0.5 mile to the east of the proposed transmission line centerline. Navigation to this inactive landing strip would not be affected by the proposed transmission line if constructed within Route 1, as the transmission line would not be within the direct flight path of this landing strip

Route 1A

The takeoff point of the active northwest-southeast oriented unregistered private landing strip is within 0.4 mile of the proposed transmission line centerline, assuming takeoff in a northwest direction. Applying a 20:1 glide slope obstruction free zone to the northwest approach would allow construction of up to an 80-foot-tall structure along the proposed right-of-way centerline.

There are no anticipated interferences expected to navigable airspace with respect to the FAA tower located on Highway 65

Mitigation

Route 1

The proposed Route 1 transmission line is not anticipated to impede navigation to and from the private landing strip. The Applicants would continue to work with the owner of the active northwest-southeast oriented landing strip (near CSAH 8 and TH 65) to ensure that appropriate measures are implemented for safe navigation.

Route 1A

The Applicants would continue to work with the landing strip owner and final engineering would investigate moving the transmission line further from the landing strip and/or reducing the height of transmission structures near the approach area.

The Applicants are required to file a Notice of Proposed Construction or Alteration with the FAA.

6.2.3 Land Use

Introduction

Existing land uses and zoning areas within Route 1 and Route 1A were identified using the Minnesota Gap Analysis Program (GAP) data provided by the DNR and the Itasca County Environmental Service Division's zoning map.

Landcover

The land cover for Route 1 and Route 1A consists primarily of forests and shrub lands, with lesser areas of agriculture and aquatic environment (Figure 2). The following table summarizes the GAP land uses that are within Route 1 and Route 1A.

Table 6-1: GAP Landcover Types and Subtypes for Route 1 and Route 1A

GAP Land Cover Type	Route 1		Route 1A	
	Area (Acres)	% of Route	Area (Acres)	% of Route
Aquatic Environment	**10**	**0.4**	**8**	**0.3**
- Aquatic	10	0.4	8	0.3
Agriculture	**565**	**21.1**	**532**	**22.4**
- Cropland	207	7.7	215	9.0
- Grassland	359	13.4	318	13.4
Forest	**1,002**	**37.4**	**840**	**35.3**
- Lowland Conifer	40	1.5	42	1.8
- Upland Conifer	35	1.3	121	5.1
- Lowland Deciduous	127	4.7	92	3.9
- Upland Deciduous	800	29.9	585	24.6
Shrubland	**1,103**	**41.2**	**999**	**42.0**
- Lowland Shrub	310	11.6	292	12.3
- Upland Shrub	793	29.6	707	29.7
Total	**2,680**	**100.0**	**2,379**	**100.0**

Zoning

Nearly all of Route 1 and Route 1A has been zoned farm residential by Itasca County, with the exception of the southern one mile of both Routes 1 and 1A being zoned municipal (ICESD, 2009). Public Water Streams (PWI) within Route 1 and Route 1A have a 300-foot shoreland zone.

Public Lands

State Lands

Itasca County parcel data indicates that there are no State of Minnesota lands crossed by Route 1. There are scattered parcels of state owned lands within Route 1A. All of these parcels are managed by MnDOT. State lands compose approximately 5 percent of Route 1A.

County Lands

There are no county owned lands crossed by Route 1 or Route 1A.

Direct/Indirect Effects

Land Cover

Based on GAP data, the primary permanent impact within the rights-of-way of Route 1 and Route 1A would be a conversion of forest lands to a non-forest use. Permanent impacts to agricultural lands, forests lands, and shrub lands would occur where transmission line structures fall within these cover types. Temporary impacts to agricultural lands may also occur within right-of-way areas during

transmission line construction. No impacts to aquatic environments (i.e. lakes) are anticipated for Route 1 and Route 1A.

See Section 6.3.1, 6.3.2 and 6.5.6 for a full discussion of agriculture, forestry, and flora, and Section 6.5.2–6.5.4 for a full discussion of water resources.

With the exception of the permanent land impacts resulting for transmission line structure placement, agricultural lands under or adjacent to the transmission line could still be used for agricultural practices following construction.

Zoning

Transmission lines are considered an "essential service" as defined in Section 24.2.100 of the 2009 Itasca County Zoning Ordinance. Essential services are typically not regulated under Itasca County zoning ordinances.

Public Lands

No state of Minnesota lands would be crossed by the potential Route 1 right-of-way. About 14.1 acres of MnDOT managed state of Minnesota lands would be crossed by the potential Route 1A right-of-way.

Mitigation

Through the initial routing process, the Applicants have sought to minimize potential impacts by avoiding urban/residential areas and by co-locating the proposed transmission line along existing rights-of-way and/or property lines.

The following mitigation measures would be applied as applicable:

- The exact location of the structures sites, right-of-way, and other disturbed areas would be determined with landowner and agency input
- The Applicants would work with the DNR to minimize and avoid impacts to sensitive state forest areas
- The minimum area necessary would be used for access roads needed for construction, operation and maintenance
- Construction and maintenance access roads would be located to avoid sensitive conditions
- Conductor spans would be adjusted such that power line structures, where practicable, would avoid sensitive land uses
- Construction activities would be limited to the right-of-way, unless access permission is obtained from adjacent landowners
- Fences, gates, and similar improvements that are removed or damaged would be promptly repaired or replaced.

6.2.4 Displacement

Introduction

Displacement results from right-of-way acquisitions that require the use of a property occupied by a residence or business. Displacements would only occur if the residence or business were located within the right-of-way of the approved route.

Residences were identified through field observation/confirmation, analysis of high resolution aerial photography, and discussions with the public. When potential for displacement was identified, the intended centerline for the route was adjusted to avoid displacement.

Property rights acquisition necessary for the Project would be regulated by Minnesota statutes. The Applicants would request an easement from the landowner to use a narrow strip of land (typically 130 feet wide) within a property, usually along the property border. However, Minnesota Statute Section 216E.12, subdivision 4 (sometimes referred to as "Buy the Farm") gives the property owner the option of having the Applicants purchase the entire property that the transmission line crosses at fair market value of the land. Generally, the statute applies to residential, recreational and agricultural property. A parcel's eligibility under the statute depends on its classification under Minnesota Statutes Section 273.13. Only those parcels falling within the enumerated classifications are covered; unlisted classifications are excluded. The statute extends to the following types of property: "agricultural or nonagricultural homestead, non-homestead agricultural land, rental residential property, and both commercial and noncommercial seasonal residential recreational property." (Minn. Stat. § 216E.12, Subd. 4).

Direct/Indirect Effects

Table 6-2 provides an estimate of the number of residences located within 500 feet of the proposed centerlines for Route 1 and Route 1A. Appendix sheets A.2 to A.11 contain detailed figures that include the location of homes in the vicinity of these routes. No displacement of residences or businesses is anticipated due to construction the Route 1 or Route 1A alignments.

Table 6-2: Number of Residences Proximate to Proposed Alignment

Route	Within ROW	ROW edge to 150 ft	150 to 300 ft	300 to 500 ft	Total Residences within 500 ft	Density (homes/mile)
Route 1	0	1	3	1	5	0.67
Route 1A	0	0	3	4	7	0.61

Mitigation

Final right-of-way alignment and structure location decisions would strive to maximize the distance from homes and commercial buildings.

6.2.5 Aesthetics

Introduction

In general, aesthetic impacts are dependent on the response of the viewer. Viewer response is based on the sensitivity and exposure of the viewer to a particular view shed. Sensitivity relates to the magnitude of the viewer's concern for the viewshed, while exposure is a function of the type, distance, perspective and duration of the view. Sensitivity can be described in terms of "levels of sensitivity." Three levels of sensitivity can be used to identify potential impact areas:

- Low Visual Sensitivity – motorists viewing transmission lines from the perspective of the roads they traverse

- Moderate Visual Sensitivity – recreational users, such as bird watchers, hikers, hunters and other individuals whose activity is specific to and who are sensitive to a finite geographic location, and who are sensitive to man-made structures and their impact on the natural environment
- High Visual Sensitivity – residential viewers who own property within 500 feet of the proposed route alignments and are concerned about the structures and how they impact the view of the natural environment

Homes within 500 feet of the route alignment would be the most likely to have their viewshed affected by the construction of a transmission line, particularly residences that are situated within forest openings. The proposed transmission line may also be visible from other surrounding residences that maintain viewsheds through forest openings.

Direct/Indirect Effects

Route 1

Five homes are located within 500 feet of the proposed Route 1 transmission line centerline. Additionally, there are eight homes located 500 to 1,000 feet from the proposed Route 1 transmission line centerline that could view the transmission line through a forest opening. Route 1 may introduce a new visual impact to these residences.

The Nashwauk City boundary extends to the Route 1 endpoint at the Essar Steel Plant Substation. However, two miles of distance (mostly consisting of mine lands and forestlands) would visually screen the City of Nashwauk's urban center from the proposed Route 1 transmission line.

Route 1A

Seven homes are located within 500 feet of the proposed Route 1A transmission line centerline. Additionally, there are two homes located 500 to 1,000 feet from the proposed Route 1A transmission line centerline that could view the transmission line through a forest opening. Route 1A may introduce a new visual impact to these residences.

Similar to Route 1, the proposed Route 1A transmission line would be visually screened from the City of Nashwauk by two miles of distance and local topography.

Mitigation

The transmission line would be a new feature within the surrounding landscape; the Applicants would continue to work with landowners and public agencies to identify concerns related to the transmission line and aesthetics. In general, mitigation includes enhancing positive effects as well as minimizing or eliminating negative effects. Potential mitigation measures include the following:

- Where feasible, the location of pole structures, right-of-way, and other disturbed areas would be determined by considering input from landowners or land management agencies to minimize visual impacts.
- Structure types (designs) would be uniform to the extent practical. The Project proposes to use wood H-frame structure, which are shorter than single circuit, steel pole structures, but are wider and utilize two poles. The H-frame structures are between 60 and 90 feet in height. The wood poles are usually considered less intrusive in a rural forested environment.
- Care would be used to preserve the natural landscape; construction and operation would be conducted to prevent any unnecessary destruction, scarring or defacing of the natural surroundings.

- To the greatest extent possible, waterways would be crossed in the same location as existing linear structures, such as utility lines or transportation rights-of-way.
- New transmission lines would parallel existing rights-of-way to the extent practicable to minimize visual impacts to open spaces.
- Existing vegetation would be used to screen the transmission line from areas of high visual sensitivity, whenever feasible.

6.2.6 Socioeconomic Factors

Introduction

Route 1 and Route 1A are located in Itasca County, Minnesota. Itasca County experienced a population growth rate of 1.7 percent between 2000 and 2006, which is less than the state average of 5.0 percent for this period (US Census 2007).

According to the Minnesota Department of Trade and Economic Development, the top employing industries in Itasca County are trade/transportation/utilities, followed by government and education/health services (Table 6-3). The unemployment rate for Itasca County in March of 2009 was 13.5 percent, which is higher than the state average of 8.9 percent for the same period. These rates are not seasonally adjusted (MN/DEED, 2009).

Table 6-3: Top three industries in Itasca County

Industry	Percent of Workforce
Trade, Transportation, and Utilities	16
Government	16
Education and Health Services	12

Direct/Indirect Effects

Short-term effects

Short-term positive economic effects would result from the activities associated with construction of the transmission line. In the short-term, revenue would likely increase for some local businesses, such as hotels, restaurants, gas stations, and grocery stores, due to increased spending from workers associated with construction of the Project. It is not anticipated that the Project would directly create new permanent jobs, but it would create temporary construction jobs that provide a one-time influx of income to the area.

The proposed Project would require up to 75 employees during transmission line construction. Opportunities for part-time personnel may also be available during the construction of this Project.

If local contractors are used for portions of the construction, total wages and salaries paid to contractors and workers in surrounding counties would contribute to the total personal income of the region. Additional personal income would be generated for residents in the region and the State by circulation and recirculation of dollars paid out by the Applicants as business expenditures, as well as State and local taxes.

Long-term effects

The proposed transmission line is planned and designed primarily to provide electric service to the new ESM taconite plant and steel mill facility. ESM's new mining facilities are expected to directly contribute approximately 500 jobs to the local economy as well as stimulating an additional 2,000 jobs during construction and in indirect support (Essar, 2008).

The construction and operation of the transmission line would also likely increase Itasca County's tax base as a result of the incremental increase in revenue from utility property taxes.

Forest land that is located within the right-of-way would be permanently removed from production, as discussed in the Section 6.3.2. Landowner compensation would be established by individual easements. Project construction would not cause additional impacts to leading industries within the area.

Mitigation

Because impacts to socioeconomic factors generally would be short-term and beneficial, no mitigation is necessary or proposed.

6.2.7 Cultural Values

Introduction

Cultural values include those perceived community beliefs or attitudes in a given area that provide a framework for that community's unity. The communities located near the proposed Project are closely spaced small towns with populations below 1,000. Public lands near the proposed transmission line offer residents and visitors opportunities for recreational activities that include snowmobiling, biking, hiking, canoeing, boating, fishing, swimming, and hunting. Mining and logging dominate the landscape; family-owned businesses are common. In Itasca County, resorts, parks and campgrounds near lakes encourage a growing tourism industry that focuses on the enjoyment of the natural environment. Other opportunities are offered by the Hill Annex Mine State Park. Cultural values, related to these resources and setting, include an enjoyment of outdoor activities and an independent/self reliant mind-set.

The communities near the proposed Project also appear to value their Norwegian, German— and in the City of Nashwauk, Italian heritage—and pioneer roots as settlers of the area. These groups originally settled in northern Minnesota to take advantage of employment opportunities in the logging and mining industries. It appears that community and county historical societies have recently embraced heritage tourism as an industry. The National Register of Historic Places (NRHP) recognized structures, districts and museums provide excellent opportunities for recreation related to interests in heritage.

Direct/Indirect Effects

The construction of the Route 1 or Route 1A proposed transmission line would serve the region with a stable power supply for years to come without compromising the area's cultural values. As northern Minnesota continues to grow and the diverse economic base continues to expand, the available power supplied by upgraded and additional facilities would encourage this development and afford the residents a stable economic environment in which to live and work. In addition, these opportunities presented by the diverse economy continue to encourage civic pride and encourage increased tourism.

Mitigation

No mitigation is required.

6.2.8 Recreation

Introduction

There are a variety of outdoor recreational opportunities in the vicinity of both Route 1 and Route 1A, including, but not limited to, snowmobiling, biking, hiking, canoeing, boating, fishing, swimming, hunting and nature observation. Much of the land within Route 1 and Route 1A is currently managed by Blandin Paper for forestry resources.

No Wildlife Management Areas (WMAs), Scientific and Natural Areas (SNAs), State Parks, Wilderness Areas, or Wild and Scenic Rivers are located within Route 1 or Route 1A

Figure 3 shows the locations of recreational facilities within the vicinity of the routes.

Direct/Indirect Effects

A section of the Lawron Snowmobile Trail is crossed by the Route 1 and Route 1A proposed transmission line centerlines. The transmission line would introduce a new viewshed element at the trail crossing. Perpendicular trail crossings by the transmission line would provide a very brief change in the trail user's experience, but would not be expected to cause a change in the use of the trail.

Mitigation

Since no adverse effects to recreational resources are expected, no mitigation is required.

6.2.9 Public Services

Introduction

Public Services generally include services provided by government entities to its citizens.

Public services are often those services that are used to benefit public health and safety, such as education, emergency services (fire, ambulance, and police), potable water, waste management (sanitary sewer), and utilities. Most of the public services are located near the urban areas within Itasca County. Outside of urban areas, landowners are typically serviced with privately-owned septic systems and wells. Most of the emergency services are located in or near the cities of Nashwauk, Grand Rapids, and Hibbing.

A fire station located off CSAH 8, is located within both Route 1 and Route 1A. Clover City Hall is also located within Route 1. These facilities are called out in Appendix A.3. The City of Nashwauk provides potable water and sanitary sewer for its residents. The Applicants would utilize the Gopher One-Call system to identify existing utilities.

Direct/Indirect Effects

Route 1

Potential impacts to public services, mainly emergency services, would be related to construction activities that may disrupt roadways and access. Generally, construction activities would be staged such that public roads would not be closed for any substantial period. The construction contractor would coordinate activities with local emergency service providers, and would maintain/provide access for emergency vehicles.

The Project would not affect local water and sanitary sewer service as provided by the City of Nashwauk. Existing utilities that would be affected during Project construction would be restored in a timely manner.

Route 1A

As mentioned above, construction activities may temporarily disrupt roadways and access. The proposed Route 1A transmission line centerline runs about 500 feet north of the fire station building and then turns south and runs about 250 feet west of the fire station. The fire station would not be permanently impacted by the proposed transmission line. The construction contractor would coordinate activities with local emergency service providers, and would maintain/provide access for emergency vehicles.

The Project would not affect local water and sanitary sewer service as provided by the City of Nashwauk. Existing utilities that would be affected during Project construction would be restored in a timely manner.

Mitigation

Emergency access for local residents, should they need emergency services, would be provided by halting construction and relocating equipment so emergency vehicles could access the residence. The Applicants would coordinate with the fire station, as needed, to ensure that there is no interruption in emergency services.

Once construction is complete, the transmission line would span all roads and therefore would not impede emergency services.

6.2.10 Environmental Justice

Introduction

Regional Definition

Potential impacts to minority or low-income populations are identified by comparing the characteristics of the Project area with the larger region. The larger regional area, which includes the Project area, is called the Region of Comparison (ROC). For the purpose of this analysis, the ROC is Itasca County. U.S. Census Bureau data compiled for year 2000 was used for this analysis (USCB, 2000).

The Project Area, for this analysis, contains the census block groups within the ROC that would be impacted by the Project. The Project Area includes all census block groups intersected by a route.

Demographic Overview

The demographic analysis provides information on the approximate locations of low-income and minority populations in the Project Area. In order to determine whether an individual block group contains a disproportionately high minority or low-income population, data for each tract were compared to data for the ROC.

Direct/Indirect Effects

Minority Concentrations

Block groups for Routes 1 and 1A overlap, and are considered one Project Area. Less than three percent of the Project Area residents are members of a racial minority, which is less than the ROC and the state of Minnesota (Table 6-4).

Table 6-4: Racial Characteristics within Project Area, ROC, and Minnesota

		White	Native American	Asian	Other Races	Total
Project Area	Total	3,897	34	4	63	3,998
	Percent	97.5	0.9	0.1	1.6	100
ROC	Total	41,632	1,497	120	743	43,992
	Percent	94.6	3.4	0.3	1.7	100
State of Minnesota	Total	4,400,282	54,967	141,968	322,262	4,919,479
	Percent	89.4	1.1	2.9	6.6	100

Source: USCB, 2000.

In addition to the races listed above, Hispanic is classified as an ethnicity rather than a distinct race, and accounts for less than one percent of the total population in the affected area, 0.8 percent in the ROC, and 2.9 percent in the state. Based on this analysis, the Project would not have disproportionate effect on minority populations.

Poverty and Low-Income Concentrations

Low-income individuals comprise 10.4 percent of the Project Area (Table 6-5). This is similar to the ROC and higher than the State of Minnesota poverty level (USCB, 2000). Median household income in the Project Area is slightly lower than the ROC and much lower than the State of Minnesota. Based on this analysis, the Project would not have disproportionate effect on low-income populations.

Table 6-5: Poverty Level and Income in 2000

Characteristic	Project Area	ROC	State of Minnesota
Individuals			
Number of Persons Below Poverty Level (1999)	414	4,576	380,476
Percent of Persons Below Poverty Level (1999)	10.4	10.4	7.9
Households			
Median Household Income (1999)	$38,061*	$36,234	$47,111

Source: USCB, 2000.

** Average of 4 census block group median household income. Values ranged from $31,979 to $41,342.*

Mitigation

Since disproportional impacts are not expected to occur, no mitigation is required.

6.2.11 Transportation

Introduction

Roadways, railways and pipelines are discussed in this section.

Figure 1 depicts infrastructure along each route.

Route 1

Roadways

The proposed Route 1 transmission line centerline crosses three county state aid highways (CSAH), two county roads (CR), and two local streets. The proposed transmission line does not parallel any existing roads.

MnDOT has recorded the annual average daily traffic (AADT) for county and trunk highways in Itasca County (MnDOT, 2006). The AADTs that have been recorded within Route 1 are listed in Table 6-6. Road crossings are sorted as they are crossed by the Route 1 transmission line centerline from north to south.

Table 6-6: AADTs at the Route 1 Transmission Line Centerline Crossings

Location	AADT	Parallel Length (Miles)	Year Surveyed
CR 539	55	0	2005
CR 532	140	0	2005
CSAH 56	385	0	2005
CSAH 8	950	0	2005
CSAH 58	90	0	2005

Source: MNDOT, http://www.dot.state.mn.us/traffic/data/html/volumes.html, accessed March 24, 2009

Railways

Route 1 does not cross any railways.

Crude Oil and Natural Gas Pipelines

Route 1 does not cross any pipelines.

Route 1A

Roadways

Route 1A crosses one Trunk Highway (TH), three CSAHs, and three CRs.

The AADTs that have been recorded within Route 1A are listed in Table 6-7. Road crossings are sorted as they are crossed by Route 1A from north to south.

Table 6-7: AADTs at the Route 1A Transmission Line Centerline Crossings

Location	AADT	Parallel Length (Miles)	Year Surveyed
CR 536	35	0.4	2005
CR 539	90	0	2005
CSAH 54	315	0	2005
CR 564	45	0	2005
TH 65	1150	0	2006
CSAH 8 and Little Sweeden Road	950	0.45	2005
CSAH 58	90	0	2005

Source: MNDOT, http://www.dot.state.mn.us/traffic/data/html/volumes.html , accessed March 24, 2009

Railways

Route 1A does not cross any railways.

Crude Oil and Natural Gas Pipelines

Route 1A does not cross any pipelines.

Direct/Indirect Effects

Roadways

County highways and county roads are the typical form of transportation infrastructure affected by proposed Route 1 and Route 1A transmission line centerlines. The centerlines differ in that the Route 1A crosses TH 65 and parallels about 0.85 mile of roadways.

During construction, it is anticipated that several types of light, medium, and heavy-duty construction vehicles would travel to and from the site, as well as private vehicles used by construction personnel. That volume would occur during the peak construction time when the majority of the foundation and pole assembly would take place. This equipment would be removed at the completion of each construction phase. Transmission line structures located along sections of roads are not expected to permanently impact the operation of either transportation facility or right-of-way. Short-term construction impacts to these facilities may include temporary re-routing of traffic through marked delineators and orange roadway cones or drums. The transmission line would be designed in accordance with NESC standards to minimize impacts to transportation facilities.

Railways

Since no railways are crossed, no impacts are expected.

Crude Oil and Natural Gas Pipelines

Since no pipelines are crossed, no impacts are expected.

Mitigation

Roadways

The Applicants would work with State and local officials to minimize any impacts to traffic during construction and operation of the proposed transmission line. The Applicants would obtain all appropriate MnDOT and county permits as applicable for transmission line crossings over regulated roadways.

Construction activities may require access from the road right-of-way to the transmission line right-of-way at existing or additional turnout or approach locations. Construction of temporary turnouts or approaches may require installation of culverts and fill materials. Installation of additional or temporary access points would be subject to review and approval from local or State roadway officials. Construction crews would implement traffic control measures in accordance with the State Manual on Uniform Traffic Control Devices. Removal of existing conductors and stringing of new overhead conductors over highways requires installation of temporary wood pole guard structures and other measures to safeguard the public and construction crews. Temporary guard structures are designed to provide vertical clearance of the conductors above the road surface to avoid affecting normal vehicular traffic on the roadway.

After installation of the new conductors is complete, the temporary guard structures would be removed. At some locations, additional measures such as boom trucks equipped with bat wings may be employed to ensure that adequate vertical clearance is maintained at the highway crossing during stringing

operations. Restriction of traffic may be required for short periods of time during pole deliveries or during critical wire stringing activities. Construction crews would work closely with law enforcement to ensure implementation of appropriate measures to safeguard the public and construction crews.

Railways

Since no railways are crossed, no mitigation is required

Crude Oil and Natural Gas Pipelines

Since no pipelines are crossed, no mitigation is required

6.3 Land-Based Economics

6.3.1 Agriculture

Introduction

Table 6-8 summarizes farmland, cropland, and agricultural production for Itasca County based on the 2002 and 1997 United States Department of Agriculture (USDA) agricultural census data and USDA agricultural statistics for 2006 (USDA, 2007).

Table 6-8: Agricultural Census Data and Market Data for Itasca County

Census of Agriculture	1997	2002	2006
Number of Farms[1]	476	494	NA
Average Size of Farms (acres)	242	243	NA
Land in Farms (acres)	115,380	120,176	NA
Percentage of County in Cropland[2]	NA	3.4	NA
2006 Market Value of Crops Sold (state county rank)	NA	NA	$2,051,000 (84 of 87)
2006 Market Value of Livestock and Other Uses Sold (state county rank)	NA	NA	$3,744,000 (82 of 87)

[1]The census definition of a farm is any place from which $1,000 or more of agricultural products were produced and sold, or normally would have been sold during the census year.

[2]Cropland is defined as row or small grain crop and hay.

Source: USDA, NASS, MN 2008 Agricultural Statistics

The majority of agriculture and cropland in Itasca County occurs in relatively small, scattered parcels. According to the 2008 Minnesota Agricultural Statistics, the primary crop in Itasca County is hay, with 27,200 acres harvested in 2007, with lesser areas of oats (1,300 acres) (USDA, 2008). This data also records about $2.1 million in crop production and $3.7 million in livestock production for 2006 (USDA, 2008). These cash receipts rank 84th and 82nd, respectively, out of all Minnesota counties. Farm number and farm size in Itasca County shows a slight increase from 1997 to 2002.

Federal regulations define prime farmland as "land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses." (7 CFR, 657.5 (a) (1)). The Natural Resource Conservation Service (NRCS) identifies three classes of farmland; each county NRCS department is responsible for assigning farmland designations to each of the soil series found in its county. The most important class is Prime farmland, which produces high yields of crops. The second class, Prime farmland when drained, includes soils that have the potential to be prime farmland but require drainage or hydrologic alteration to achieve high productivity.

Farmland of Statewide Importance includes soils that are nearly prime but are not as productive due to permeability, slope, erosion potential, or some other soil property.

There are 1,347 acres of prime farmland soils mapped within the Route 1 and 1,266 acres within Route 1A. The majority of these mapped prime farmland areas are currently forested. Figure 4 displays agricultural resources in the Project vicinity.

Direct/Indirect Effects

In areas where cropland is crossed, temporary impacts such as soil compaction and crop damages with the rights-of-way may occur during construction, depending on the time of construction. Permanent impacts would occur where transmission line structures are place on agricultural land.

Route 1

Route 1 would temporarily affect about 17 acres of agricultural land (GAP crop/grassland) within the right-of-way. About seven structures would be placed on agricultural land. About 24 structures would be placed in areas mapped as prime farmland. The impacts to prime farmland area would be small relative to the 1,347 acres of prime farmland within Route 1.

Route 1A

Route 1A would temporarily affect about 29 acres of agricultural land (GAP crop/grassland) within the right-of-way. About 13 structures would be placed on agricultural land. About 25 structures would be placed in areas mapped as prime farmland. The impacts to prime farmland area would be small relative to the 1,266 acres of prime farmland within Route 1A.

Mitigation

The Applicants would work with landowners to minimize impacts to farming operations along the route. Impacts can be minimized by aligning the transmission line along existing transmission, and roadway right-of-way, and property lines. The easements would not restrict farming operations once construction is completed, so the easement area between structures would be available for crop production.

The Applicants' preferred methodology for setting up staging areas and stringing set-up areas is to use previously disturbed sites; temporary impacts to agricultural lands from staging or setup areas would only occur with landowner's permission. Once construction is complete, the staging area would be restored to preconstruction condition, to the extent practicable. The Applicants would compensate landowners for any crop damage or soil compaction that may occur during construction.

The Applicant would work with the Department of Agriculture if a agricultural mitigation plan is required.

6.3.2 Forestry

Introduction

According to GAP data (Table 6-1) about 37 percent of Route 1 is forested and 35 percent of Route 1A is forested. Although quantitative information on private forest harvest trends within Route 1 and Route 1A are not readily available, Blandin Paper, which is known to manage much of its land for forestry resources, owns over 40 percent of the land within Route 1 and over 25 percent of the land within Route 1A. Figure 4 displays the forest resources near Route 1 and Route 1A.

Direct/Indirect Effects

Route 1

It is estimated that the proposed Route 1 right-of-way would convert approximately 47 acres of forestland into a non-forest use. It is possible that some of this forest clearing would permanently impact land that is currently being managed for forestry resources. This impact is small in relation to the forest resources available, and is not expected to affect the local forestry economy.

Route 1A

It is estimated that the proposed Route 1A right-of-way would convert approximately 53 acres of forestland into a non-forest use. It is possible that some of this forest clearing would permanently impact land that is currently being managed for forestry resources. This impact is small in relation to the forest resources available, and is not expected to affect the local forestry economy.

Mitigation

Timber harvested for the Project would be made available to the landowner for use as firewood, saw logs, etc. Once construction is complete, the right-of-way would be allowed to regenerate with local, low growing species. Long-term management would promote the establishment of forbs and grasses. Shrubs would be allowed to regenerate within the right-of-way as long as they do not interfere with maintenance, access, and the safe operation of the line.

Construction staging areas would be located and arranged in a manner to preserve trees and vegetation to the maximum practicable extent. The preferred locations are previously disturbed areas. Unless otherwise agreed upon by the landowner, all storage and construction buildings, including concrete footings and slabs, and all construction materials and debris would be removed from the site once construction is complete. To the extent practicable, staging areas would be restored to preconstruction conditions.

Temporary access roads outside of the right-of-way may be required. The Applicants would work with local property owners to identify suitable access locations. Temporary impacts would be restored once construction is competed.

The Applicants would coordinate with regulatory agencies to identify appropriate avoidance and minimization measure for state-owned properties.

6.3.3 Tourism

Introduction

The Applicants identified tourism activities that are located within Route 1 and Route 1A along with resources in the vicinity that may be indirectly impacted by the Project because of view shed or alteration of the landscape. Tourism in the vicinity of Route 1 and Route 1A is generally associated with recreational activities and cultural values discussed in Section 6.2.7.

Direct/Indirect Effects

Most of the lands near the proposed Route 1 and Route 1A rights-of-way are privately held and are not readily accessible to the public from roadways or waterways. The recreational resources that generate tourism in the area are not expected to be affected by the construction of the proposed Route 1 or Route 1A transmission line.

Mitigation

No impacts to area tourism are anticipated due to the presence of the transmission line, therefore no mitigation is necessary.

6.3.4 Mining

Introduction

The Mesabi Iron Range, which stretches for about 100 miles between Grand Rapids and Babbitt, is an area that has been mined for iron ore resources since 1892. In the general vicinity of Route 1 and Route 1A, the Mesabi Iron Range runs in a northeast-southwest direction between the cities of Taconite and Nashwauk. The section of the Mesabi Iron Range between Taconite and Nashwauk has been extensively mined and is characterized by pits, stockpiles, and tailings. Many of the iron ore pits are currently filled with water.

ESM, which would be the primary direct benefactor of the proposed transmission line, is in the process of developing plans to expand mining operations between the cities of Calumet and Nashwauk. This includes the proposed construction of a new steel slab facility

See Figure 4 for the locations of mining resources near Route 1 and Route 1A.

Direct/Indirect Effects

Essar Steel owns mining rights within the southern one mile of Route 1 and Route 1A. Construction of the Project is required for the mining operation to move forward. The route locations have been designed so that they would not negatively affect the ability of ESM to mine the available ore resources.

Mitigation

The Applicants are working, and would continue to work, with mine operators to site the transmission line in a location that limits local impacts to current and planned mining operations. The Applicants would work with mine operators to develop appropriate mitigation measures, if necessary.

6.4 Archaeological and Historic Resources

Introduction

Archaeological and historic resources are those places that represent the visible or otherwise tangible record of human occupation. These resources vary in size, shape, condition, and importance, among other considerations; some are evident on the landscape, while others are buried or only visible to knowledgeable people.

For the route application, the Applicants reviewed available records of identified resources in order to avoid them to the greatest extent possible and in consideration with other natural resources and existing conditions. The Applicants recognize that the list of known resources is limited to those identified through surveys in specific locations, often tied to urban and rural development and infrastructure. Resources are typically categorized by type with an indication of relative importance, more exactly whether or not these resources are significant. The standard of significance is one applied by Federal agencies for compliance with Federal regulations, typically Section 106 of the National Historic Preservation Act of 1966 (as amended) (NRHP), and is useful when determining sites to avoid. Where sites have not been evaluated for significance (and therefore for determination of eligibility for listing on the NRHP) and may be physically impacted by the Project, the Applicants would coordinate with the Minnesota State Historic Preservation Office (SHPO) to develop a work plan to address the impact.

In April 2009, the Applicants reviewed the records of SHPO in St. Paul in order to identify known archaeological resources within one mile of the proposed transmission line routes. The literature review also searched for reports of previously surveyed areas relevant to the Project area. Results were requested for areas within Itasca County. The Project area falls within Minnesota Archaeological Region 5 – Central Coniferous Lakes.

Route 1

Table 6-9 presents the results of a search of available background information for Route 1. Four architectural resources were previously recorded within one mile of the proposed Route 1 centerline. None of the four sites have been evaluated for listing on the NRHP.

Table 6-9: Architectural sites within one mile of Route 1

County	Site Number	Site Name	Location			NRHP Status
			T	R	S	
Itasca	IC-NWT-001	Property No. 2	57	23	2	Not evaluated
Itasca	IC-NWT-002	Waimo and Saimi Karimo Farm	57	23	1	Not evaluated
Itasca	IC-UOG-040	The Labor Temple/ "Finn Hall"	58	23	36	Not evaluated
Itasca	IC-UOG-037	Hietala Log Barns	58	22	19	Not evaluated

Additionally, there is an unconfirmed report of burial mounds near Little Sucker Lake that are within one mile of Route 1. A landowner reported two Native American burial sites to the Deputy County Surveyor that were shown to him years ago in the Little Sucker Lake area along CSAH 58. The exact location has not been verified.

Route 1A

Table 6-10 presents the results of a search of available background information for Route 1A. Two architectural sites were previously recorded within one mile of the proposed Route 1A centerline. Neither site has been evaluated for listing on the NRHP.

Table 6-10: Architectural sites within one mile of Route 1A

County	Site Number	Site Name	Location			NRHP Status
			T	R	S	
Itasca	IC-UOG-037	Hietala Log Barns	58	22	19	Not evaluated
Itasca	IC-UOG-040	The Labor Temple/ "Finn Hall"	58	23	36	Not Evaluated

Additionally, there is an unconfirmed report of burial mounds in the vicinity of Little Sucker Lake that are within one-mile of Route 1A A landowner reported two Native American burial sites to the Deputy County Surveyor that were shown to him years ago in the Little Sucker Lake area along CSAH 58. The exact location has not been verified.

Direct/Indirect Effects

Routes 1 and 1A

No previously recorded cultural resources within one mile of the proposed Route 1 and Route 1A centerlines would be impacted by construction or operation of the Project. The potential existence of the burial mounds in the vicinity of Little Sucker Lake needs to be further investigated prior to construction to ensure there would not be any disturbance in accordance with Minnesota Statue 307.08.

Mitigation

The Applicants would integrate into construction bid documents a training, monitoring, and discovery plan should previously unknown cultural resources or human remains be inadvertently encountered during construction. The plan would outline the framework for handling such discoveries in an efficient and legally compliant manner. The plan may include the following topics: construction contractor training, procedures for identification and protection of resources in the field, contact information for parties to address a discovery, and procedures for avoidance and associated tasks in the event of work stoppage in a construction area. With regard to human remains, Project-specific procedures would be outlined to ensure that the appropriate authorities could be activated in accordance with state statues.

6.5 Natural Resources

6.5.1 Air

Introduction

The area in and around Routes 1 and 1A is currently in attainment with National and Minnesota Ambient Air Quality Standards (NAAQS and MAAQS), which are shown in Table 6-11, for all criteria pollutants.

The primary air quality concerns related to transmission lines are ozone and nitrogen oxide emissions surrounding the conductor due to corona. Corona consists of the breakdown or ionization of air within a few centimeters or less of the conductors. It occurs when the electric field intensity, or surface gradient, on the conductor exceeds breakdown strength of air. Usually some imperfection, such as a scratch on the conductor or a water droplet, is necessary to cause corona. Monitored concentrations of ozone due to corona show no significant incremental ozone concentrations at ground level, and minimal (0.8 parts per billion (ppb)) concentrations at an elevation nearer to the transmission line. These concentrations were only detected during heavy corona in foul weather. Additional testing showed that production of nitrogen oxides due to corona is approximately one-fourth of the production of ozone due to corona.

Ozone is a very reactive form of oxygen and combines readily with other elements and compounds in the atmosphere. Ozone forms naturally in the lower atmosphere from lightning discharges and from reactions between solar ultraviolet radiation and air pollutants, such as hydrocarbons, from auto emissions. The natural production rate of ozone is directly proportional to temperature and sunlight and inversely proportional to humidity. Humidity (or moisture), the same factor that increases corona discharges from transmission lines, inhibits the production of ozone.

The Environmental Protection Agency (EPA) has promulgated regulations on the permissible concentrations of ozone and oxides of nitrogen (62 Federal Register 38856). The national standard is 0.08 parts per million (ppm) on an eight-hour averaging period (40 CFR Part 50). The Minnesota State Ambient Standard is 0.08 ppm based upon the fourth highest eight-hour daily maximum average in one year (Minn. R. 7009.0080). As discussed above, incremental concentrations of ozone due to corona would be expected to be on the order of one-tenth of the standard near the transmission line, and insignificant at ground level.

Table 6-11: National and Minnesota Ambient Air Quality Standards

Averaging		NAAQS	
Emission Type	Period	Primary micrograms/m3 (ppm)	Secondary micrograms/m3 (ppm)
Carbon Monoxide (CO)	8-hour [a]	10,000 (9)	10,000
	1-hour [a]	40,000 (35)	40,000
Sulfur Dioxide (SO_2)	Annual	80 (0.03)	--
	24-hour [a]	365 (0.14)	--
	3-hour [a]	--	1,300 (0.5)
	1-hour [a,e]	1,300 (0.5)	
Nitrogen Dioxide (NO_2)	Annual	100 (0.05)	100
Ozone (O_3)	8-hour [b]	-- (0.08)	-- (0.08)
PM_{10}	Annual [e]	50	50
	24-hour [a]	150	150
$PM_{2.5}$[d]	Annual [d]	15	15
	24-hour [c]	35 65 [e]	35 65 [e]
Lead (Pb)	Three-month (Calendar quarter)	1.5	--

Source: EPA, National Primary and Secondary Ambient Air Quality Standards (40 CFR 50).

a Not to exceed more than once per year, per monitor location, averaged over a three-year period.

b The 8-hour ozone standard is met if the fourth highest 8-hour ozone concentration, averaged over 3 years, is not greater than 0.08 ppm.

c In September 2006 EPA revised the 24-hour PM2.5 standard from 65 μg/m3 to 35 μg/m3, but the previous standard is currently applicable until EPA completes the attainment designation and implementation process. During any 12 consecutive months, 98 percent of the values shall not exceed 35 μg/m3 under the new standard, and 65 μg/m3 under the currently applicable standard. Minnesota has retained the 65 μg/m3 standard.

d Spatial average standard, applied by EPA over a neighborhood scale.

e Standard is only a Minnesota standard.

Direct/Indirect Effects

The proposed routes are not expected to have any long-term direct or indirect effects on air quality.

Mitigation

Temporary and localized impacts to air quality may occur during construction due to the disturbance of topsoil, which raises fugitive dust particles. Temporary impacts from fugitive dust would be minimized or avoided by using BMPs. Oil and other petroleum derivatives would not be used for dust control. Equipment and vehicles that show excessive emissions of exhaust gases due to poor engine adjustments, or other inefficient operating conditions, would not be operated until repairs or adjustments have been made.

6.5.2 Rivers and Streams

Introduction

Route 1 and Route 1A are situated in the Mississippi – Grand Rapids watershed (Huc#7010103). Surface waters in this watershed generally flow in a southerly direction to join the Mississippi River, which provides the watershed outlet west of McGregor. This watershed is part of a major continental divide with the St. Louis Watershed (Huc#4010201) to the east directing water eastward into the Great Lakes Basin, and the Little Fork River (Huc#9030005) and Big Fork River (Huc#9030006) watersheds to the north directing water northward toward the Rainy River Basin.

Figure 5 illustrates the locations of water resources identified within the vicinity of Route 1 and Route1A.

Direct/Indirect Effects

Route 1

Four perennial streams may be crossed by the Route 1 transmission line centerline. Three of these streams are classified as PWI watercourses. Public Waters are water basins and watercourses in Minnesota with significant recreational or natural resource value as defined in Minnesota Statutes § 103G.005. The Minnesota Department of Natural Resources (DNR) has regulatory jurisdiction over these waters. A list of these watercourses and crossing locations are provided in Table 6-12.

Table 6-12: Streams and Rivers Crossed by Proposed Route 1

Stream/River Name	Type	Designated Trout Stream	Proposed Transmission Line Crossing
Unnamed tributary to East River	Perennial	No	Sec 24, T58N, R23W
Unnamed tributary to East River	Perennial	No	Sec 25, T58N, R23W
Unnamed tributary to Prairie River	Perennial	No	Sec 13, T57N, R23W
Unnamed tributary to Prairie River	Perennial	No	Sec 13, T57N, R23W

Route 1A

Four perennial streams may be crossed by the proposed Route 1A transmission line centerline. Three of these streams are classified as PWI watercourses. A list of these watercourses and crossing locations are provided in Table 6-13.

Table 6-13: Streams and Rivers Crossed by Proposed Route 1A

Stream/River Name	Type	Designated Trout Stream	Proposed Transmission Line Crossing
Unnamed tributary to East River	Perennial	No	Sec 30, T58N, R22W
Unnamed tributary to East River	Perennial	No	Sec 6, T57N, R22W
Unnamed tributary to East River	Perennial	No	Sec 18, T57N, R22W
Unnamed tributary to Prairie River	Perennial	No	Sec 13, T57N, R23W

Since all rivers, streams, and ditches would be spanned by transmission structures, no structures would be located within these features and no direct impacts are anticipated. Indirect impacts could include sedimentation reaching surface waters during construction due to ground disturbance by excavation, grading, construction traffic, and dewatering of holes drilled for transmission structures. This could temporarily degrade water quality due to turbidity.

Mitigation

Best management practices would be installed and maintained to prevent soil erosion from entering surface water. The Project would develop a Stormwater Pollution Prevention Plan (SWPPP) as part of the Nonpoint Discharge Elimination System (NPDES) permit required by the Minnesota Pollution Control Agency.

6.5.3 Lakes and Wetlands

Introduction

Lakes and wetlands were identified using National Wetland Inventory (NWI) mapping (USFWS, 2007) and PWI mapping (DNR, 2008). Figure 5 illustrates the locations of NWI and PWI wetlands near Route 1 and Route 1A.

Route 1

There are about 505 acres of NWI wetlands within Route 1, which represents about 19 percent of the Route 1. Table 6-14 lists the type and acreage of NWI mapped wetlands within the route.

Table 6-14: NWI Wetlands within Route 1

NWI Type	Acres	Percent of Route
Freshwater Emergent	59	2.2
Freshwater Forested	235	8.8
Scrub Shrub	211	7.9
Total	**505**	**18.9**

Route 1A

There are about 480 acres of NWI wetlands within Route 1A, which represents about 20 percent of Route 1A. Table 6-15 lists the type and acreage of NWI mapped wetlands within the route.

Table 6-15: NWI Wetlands within Route 1A

NWI Type	Acres	Percent of Route
Freshwater Emergent	114	4.8
Freshwater Forested	196	8.2
Scrub Shrub	167	7.0
Freshwater Lake or Pond	3	0.1
Total	**480**	**20.1**

Direct/Indirect Effects

Three types of impacts to wetland areas would result from the Project: permanent impacts, forest conversion impacts, and temporary impacts.

Permanent wetland impacts would occur where dredging or filling is required for transmission line installation. The area of permanent impact is anticipated to equal 20 square feet per H-frame structure. Permanent impacts would generally be limited to wetlands that are wider than the typical 800-foot transmission line span.

Forest conversion wetland impacts would occur where the clearing for forested wetlands areas would occur within the transmission line right-of-way. Removal of woody forest vegetation within a wetland area would not require dredging or filling, but would convert the forested wetland to a different vegetative class and thus a different wetland type.

Temporary wetland impacts due to construction activities may occur to wetland areas that are not permanently impacted or permanently converted to another wetland type. Temporary wetland impacts may include temporary soil compaction or temporary vegetation removal.

Route 1

Two proposed NWI wetland crossing would be wider than the typical 800-foot transmission line span, with the longer crossing being about 1,300 feet. Based on an 800-foot transmission line span, the Applicants calculate that two H-Frame transmission line structures would be located within an NWI wetland area, representing 40 square feet of permanent wetland impacts. See Table 6-16 for wetland forest conversion and temporary wetland impacts for the 130-foot-wide intended right-or-way for Route 1.

Table 6-16: NWI Wetland Forest Conversion and Temporary Impacts Within Route 1

NWI Wetland Impact Type	Acres
Forest conversion	6
Temporary	7

There are no PWI lakes or wetlands crossed by the proposed Route 1 transmission line centerline.

Route 1A

Approximately four proposed NWI wetland crossings would be wider than the typical 800-foot transmission line span, with the longest crossing being about 1,400 feet. Based on an 800-foot transmission line span, the Applicants calculate that seven H-Frame transmission line structures would be located within an NWI wetland area, representing 140 square feet of permanent wetland impacts. See Table 6-17 for wetland forest conversion and temporary wetland impacts for the 130-foot-wide intended right-or-way for Route 1A.

Table 6-17: NWI Wetland Forest Conversion and Temporary Impacts Within Route 1A

NWI Wetland Impact Type	Acres
Forest conversion	7
Temporary	22

There are no PWI lakes or wetlands crossed by the proposed Route 1A transmission line centerline.

Mitigation

State and federal regulations require that impacts to wetlands be avoided, minimized, and replaced. Should avoidance not be possible, then the Project would require a permit from the U.S. Army Corps of Engineers (USACE), the Itasca Soil and Water Conservation District and the City of Nashwauk. The USACE may require wetland mitigation for conversion of forested wetlands to non-forested wetlands. The required mitigation would be determined based on consultation with the USACE and other permitting agencies.

Indirect impacts to lakes and wetlands would be avoided and minimized by using appropriate sediment control practices and construction practices. These practices would be detailed in the NPDES permit and SWPPP that would be completed prior to the start of construction. Once the Project is completed, there would be no significant impact on surface water quality because wetland impacts would be minimized and mitigated, disturbed soil would be restored to previous conditions or better, and the amount of land area converted to an impervious surface would be small. As required, the Applicants would seek Section 401 certification from the MPCA.

The Applicants would maintain sound water and soil conservation practices during construction and operation of the Project to protect topsoil and adjacent water resources and minimize soil erosion. Construction would be completed according to NPDES permit requirements. Practices may include:

- Containment of stockpiled material away from stream banks and lake shorelines.
- Reseeding and re-vegetating disturbed areas as required by the NPDES permit.
- Implementing erosion and sediment controls as required by the NPDES permit.
- Structures and disturbed areas would be located 300 feet from rivers and lakes, where possible.
- Wastewater from concrete batching or other construction operations would not enter streams or other surface waters without using turbidity control methods. Wastewaters discharged would be free of settleable material.

Temporary impacts to wetlands may occur if they need to be crossed during construction of the transmission line. No staging or stringing setup areas would be placed within or adjacent to water resources, as possible. The Applicants would avoid major disturbance of individual wetlands and drainage systems during construction. This would be done by spanning wetlands and drainage systems, where possible. When it is not possible to span the wetland, the Applicants would draw on several options during construction to minimize impacts:

- When possible, construction would be scheduled during frozen ground conditions.
- Crews would attempt to access the wetland with the least amount of physical impact to the wetland (*i.e.,* shortest route).
- The structures would be assembled on upland areas before they are brought to the site for installation, when possible.
- When construction during winter is not possible, construction mats would be used where wetlands would be impacted. Additionally, the Applicants have access to all-terrain construction vehicles that are designed to minimize soil impact in wet areas. Wetlands impacted would be restored as required by the USACE regulations and Minnesota Wetland Conservation Act (WCA) rules.

6.5.4 Water Quality

Introduction

In Minnesota, the MPCA publishes and updates a list of waters that are not meeting one or more water-quality standards listed in Section 303(d) of the Clean Water Act. These impaired waters are managed to meet Total Daily Maximum Load (TMDL) goals.

There are no impaired lakes, wetlands, or watercourses within one mile of Route 1 or Route 1A.

Direct/Indirect Effects

No impacts to impaired waters are anticipated.

Mitigation

Best management practices would be installed and maintained to prevent soil erosion from entering surface water. The Project would develop a SWPPP as part of the NPDES permit required by the MPCA.

6.5.5 Floodplains

Introduction

The Federal Emergency Management Agency (FEMA) designates areas that are likely to experience flooding in a 100-year rainfall event. While transmission structures can withstand some inundation, function and maintenance of the transmission structures could be affected within the floodplain during a flood event.

There are no FEMA floodplains that have been mapped within Route 1 or Route 1A. However, FEMA floodplain data has not been fully developed for Itasca County and other floodplain areas may be present within Route 1 and Route 1A. These areas include riparian areas adjacent to the watercourses identified in Section 6.5.2 Rivers and Streams.

Direct/Indirect Effects

No transmission structures are anticipated to be placed within 100-year floodplain areas.

Mitigation

No mitigation is required.

6.5.6 Flora

Introduction

Route 1 and Route 1A are situated within the Nashwauk Uplands DNR Ecological Subregion. Uplands within this region are typically forested, and are commonly punctuated by lakes, small bogs, wetland potholes, and forested/shrub scrub wetlands. Prior to European settlement, upland forests were dominated by a mixture of white pine, red pine, and aspen-birch. Historic lowland forest areas likely trended toward coniferous species such as balsam fir, black spruce, white spruce, tamarack, and white cedar, although black ash likely occurred in lowland riparian areas.

Upland Forests

While coniferous species are still present, historic and present activities such as forestry, mining, and residential uses in the area now favor a predominance of quaking aspen. Maple, basswood, and elm also maintain a presence within upland forests.

Lowland Forests

Many of the lowland forests continue to support coniferous forests and black ash forests, but some of these areas have likely experienced human caused disturbance. Lowland black spruce and black ash are the most frequent lowland forest types within Route 1 and Route 1A. Tamarack and lowland white cedar are also present in infrequent numbers.

Shrub-layer

Within upland areas, the shrub-layer may include hazelnut, chokecherry, juneberries, ironwood, honeysuckle, and mountain maple. Shrub-scrub wetland areas are frequently dominated by speckled alder.

Ground-layer

In upland areas, woodland herbaceous species include large-leaved aster, sarsaparilla, bluebead lily, Canada mayflower, bracken fern, and Pennsylvania sedge. Sedge species are frequent in emergent wetlands, and sphagnum is common in bog areas. Disturbed grassland areas tend to harbor species such as goldenrod, smooth brome, and bracken fern.

Noxious Weeds

Noxious weeds are regulated under Minnesota Statutes, Chapter 18. Noxious weeds can rapidly overtake native vegetation and severely degrade habitat quality. Cropland suffers losses in productivity following noxious weed infestations. Noxious weeds can be introduced to new areas through propagating material like roots or seeds transported by contaminated construction equipment. Disturbed soil surfaces allow noxious weeds to establish and out-compete existing vegetation.

Eleven species of primary noxious weeds are recognized by Minnesota Rules 1505.0730. The Minnesota Noxious Weed Law also defines and lists 49 secondary noxious weeds. A county may select a weed or weeds from this secondary list to be placed on its noxious weeds list. If a secondary noxious weed is placed on a county noxious weed list, that weed must be controlled in that county. State and county noxious weeds that are controlled in Itasca County are listed in Table 6-18.

Table 6-18: Minnesota Prohibited Noxious Weeds

Common Name	Scientific Name
Primary Noxious Weeds	
mustard, garlic	*Alliaria petiolata (Bieb.)* (formerly *alliaria officinalis*)
hemp	*Cannabis sativa*
thistle, plumeless	*Carduus acanthoides (L.)*
thistle, musk	*Carduus nutans (L.)*
thistle, Canada	*Cirsium arvense (L.) Scop.*
thistle, bull	*Cirsium vulgare (Savi) Tenore*
Bindweed, field	*Convolvulus arvensis*
spurge, leafy	*Euphorbia esula (L.)*
loosestrife, purple	*Lythrum salicaria, virgatum*, or any combination
sow thistle, perennial	*Sonchus arvensis (L.)*
ivy, poison	*Toxicodendron radicans (Ktze.)* (formerly *rhus radicans*)
Secondary Noxious Weeds in Itasca County	
daisy, oxeye	*Chrysanthemum leucanthemum*
hawkweed, orange	*Hieracium aurantiacum*
buttercup, tall	*Ranunculus acris*
tansy	*Tanacetum vulgare*

The Minnesota Department of Agriculture Weed Integrated Pest Management Project documented Canada thistle, bull thistle, leafy spurge, purple loosestrife, sow thistle, and tansy in the vicinity of Route 1 and Route 1A, primarily near CR 539 between Lawrence Lake and Shoal Lake, and near the city of Calumet.

Direct/Indirect Effects

Route 1

Approximately 47 acres of forest clearing would take place within the 130-foot-wide right-of-way of Route 1. About two acres of this forest clearing may include lowland black ash. Flora within the cleared right-of-way area would be converted from forest habitat with an understory and forb layer adapted to lower light conditions, to an open habitat that would be dominated by species adapted to higher light conditions, which often includes a predominance of native shrubs and grasses.

Construction equipment has the potential to spread noxious weed-propagating material to new locations. The Applicants would comply with Minnesota noxious weed laws as described in Minnesota Rules Chapter 1505 and would observe county weed lists where they occur.

Route 1A

Approximately 53 acres of forest clearing would take place within the right-of-way of Route 1A. About four acres of this forest clearing may include lowland black ash. Approximately three acres of lowland coniferous forest, which may include tamarack, black spruce, and white cedar, would also be cleared within the right-of-way.

Construction equipment has the potential to spread noxious weed-propagating material to new locations. The Applicants would comply with Minnesota noxious weed laws as described in Minnesota Rules Chapter 1505 and would observe county weed lists where they occur.

Mitigation

The Applicants would continue to work with the DNR to avoid impacts to sensitive flora along the route alignment.

The Applicants' environmental inspector would conduct a field review of the right-of-way and construction staging sites prior to construction to identify areas that currently contain noxious weeds. The inspector would also consult with local officials to determine if there are records of contaminated areas.

6.5.7 Fauna

Introduction

Habitat for small mammals such as voles, shrews, mice, and rabbits; larger mammals, such as beaver, bobcat, coyote, gray wolf, river otter, fox, white tailed deer, and black bear; as well as waterfowl and songbirds (forest, wetland, and grassland species) is present within the Study Areas. Fish, reptiles, and amphibians, such as snakes, turtles, toads, and frogs inhabit wetlands and open water areas.

This wildlife, which includes both resident and migratory species, uses the habitat within the area for forage, shelter, breeding habitat, and/or stopover during migration. Many of the species present are closely associated with riparian, wetland, and forest habitats.

As part of its Minnesota's Comprehensive Wildlife Conservation Strategy, the DNR has developed a list of species in Minnesota that are considered to be Species of Greatest Conservation Need (SGCN). The list is customized to each DNR ecological subsection. The DNR defines SGCN as "animal species whose populations are rare, declining, or vulnerable in Minnesota." (DNR 2006). These species may or may not be listed on state and/or federal endangered species lists.

As part of the Route Permit analysis, favorable habitat associated with SGCN that are listed within the Nashwauk Uplands and the St. Louis Moraines was screened using GAP analysis data. GAP data was filtered according to the SGCN habitats listed by the DNR in the supporting documents in Minnesota's Comprehensive Wildlife Conservation Strategy (http://www.dnr.state.mn.us/cwcs/strategy.html). Since GAP data does not always indicate habitat quality (e.g. GAP data does not differentiate between high quality aspen forests, and degraded aspen forests) the resulting potential SGCN habitats that were identified should be considered a conservative measure.

Direct/Indirect Effects

Route 1 and Route 1A are located within the Nashwauk Uplands. According to GAP data these routes could contain suitable habitat for 48 SGCN. The full list of Nashwauk Uplands and St. Louis Moraines listed SGCN that have potential habitat within the routes is included in Appendix G.

Potential impacts to wildlife species include the loss or alteration of breeding and foraging habitats, and increased habitat fragmentation. Because the Project would convert woodland habitat to grasslands or shrub lands, species that favor forest habitat would tend to be displaced while species that favor grassland or shrub land habitats would likely increase.

According to the Minnesota DNR's subsection profiles for the Nashwauk Uplands and the

St. Louis Moraines, the greatest threats to DNR SGCN are habitat loss and habitat degradation (DNR, 2006).

Habitat fragmentation can cause habitat loss and degradation for species that require large tracts of contiguous land. Habitat fragmentation occurs when a large intact habitat is broken into separate parts because of development. The Project would convert an approximately 130-foot-wide strip of forest to predominantly grassland and shrubland habitat. In many areas, this would not substantially increase fragmentation because the Project would be adjacent to existing utility/road/rail rights-of-way. However, construction of the transmission line on new cross-country routes within forested habitats does have the potential for fragmentation. Creation of edge tends to benefit common species at the expense of those species that have either very large home ranges or very specific habitat requirements, such as deep woods raptors and songbirds. In addition to the immediate habitat change within the right-of-way, vegetation changes adjacent to the right-of-way may also occur.

Wildlife could be impacted in the short-term within the immediate area of construction. Mortality could also occur during construction to less mobile or burrowing species. Regarding bird species, abandonment of a nest site and the loss of eggs and/or young may occur because of construction.

Avian collisions, especially of raptor and waterfowl species, are a possibility after the completion of the transmission line. Of these species, waterfowl are the most susceptible to transmission line collision, particularly if the transmission line is placed between agricultural fields that serve as feeding areas, or between wetlands and open water.

Electrocution of large birds, such as raptors, is a concern typically related to distribution lines. Electrocution occurs when birds with large wingspans come in contact with either two conductors or a conductor and a grounding device. The Applicants' transmission line design standards would provide adequate spacing to eliminate the risk of raptor electrocution. Electrocution, therefore, is not a concern related to the transmission line.

Additional avian impacts may occur if raptor species or other bird species build nests on the transmission line structures.

Mitigation

Habitat conversion and fragmentation would be minimized to the extent practicable by routing the line next to existing rights-of-way. Right-of-way clearing in forested areas would be minimized to the extent practicable, while maintaining adequate clearance for safety and security of the transmission line in accord with federal regulations and industry standards.

The Applicants would address avian issues by working with the DNR and the USFWS to identify any areas that may require marking transmission line shield wires and/or using alternative structures to reduce the likelihood of avian collisions.

6.6 Rare and Unique Natural Resources

Introduction

Federal

The Project area is within the overall range of the Canada lynx (listed as a federal Threatened species in March 2000) and the gray wolf (listed as a federal Threatened species in the mid-1970s and as state Special Concern). On May 4, 2009, the gray wolf was de-listed by the USFWS in the western Great Lakes states, including Minnesota. The USFWS determined that gray wolves in the Western Great Lakes had recovered and no longer require the protection of the Endangered Species Act. The USFWS will

continue to work with states and tribes to monitor wolf populations for at least five years to ensure ongoing survival.

According to the DNR's NHIS data, there are no records of bald eagle nests within two miles of the routes. Bald eagles, however, are known to reside near waterbodies in the surrounding area.

State

There are no Scientific and Natural Areas (SNAs) within one mile of Route 1 or Route 1A. DNR 2008 Natural Heritage Inventory System (NHIS) data does not record any state special concern, threatened, or endangered species within one mile of the edge of Route 1 or Route 1A.

Direct/Indirect Effects

As part of the *2007 Canada Lynx Assessment*, published by Minnesota Steel Industries, over 600 miles of transacts were surveyed for the Canada lynx within a study area that also encompasses the area surrounding Routes 1 and 1A (MSI, 2007). This survey documented no direct evidence of lynx in the area. The study determined that there is only marginally suitable habitat for lynx within the area. Additional, the marginal habitat is probably too fragmented and isolated to support lynx reproduction and lynx use for extended periods. The study concluded that lynx likely do not reside in the area, but that lynx could travel through the area.

Bald eagles in the area likely use habitat adjacent to their nesting sites, especially near lakes and wetlands. It is possible that construction of the transmission line may temporarily displace bald eagles that are roosting in the area. It is also possible that bald eagles may encounter the transmission in areas where they may fly between nesting/roosting area and feeding habitat. No major flyways have been identified within the proposed routes.

Mitigation

The Applicants would continue to consult with the DNR and the USFWS regarding threatened and endangered species and their potential presence within Route 1 and Route 1A. As discussed in Section 6.5.7 Fauna, the Applicants would construct the transmission line according to APLIC recommended safety design standards regarding avian electrocution and avian collisions with high voltage transmission lines.

Impacts to threatened, endangered, and sensitive species and communities would be avoided to the extent practicable. In the event that avoiding impacts to threatened or endangered species is not feasible, the Applicants would work closely with the regulatory agencies to identify appropriate measures to minimize impacts, as well as compensatory mitigation for impacts that cannot be avoided.

6.7 Summary of Impacts

Table 6-19 below provides a comparison summary of impacts for Routes 1 and 1A. Route 1 was selected as the Preferred Route because there would be less environmental impact, in general, there are two fewer homes within 500 feet of Route 1, fewer acres of forest impact, lower construction costs, and less direct impacts to land because of its shorter length. There are no existing transmission lines, pipelines, or railroads in the study area; however, Route 1A would follow a road right-of-way for under a mile.

Table 6-19: Routes 1 and 1A Summary of Impacts and Factors Considered

Factor	Route 1 (Preferred Route) and Associated Facilities	Route 1A (Alternate Route) and Associated Facilities	Summary
Effects on Human Settlement			
Public Health and Safety	The Applicants would ensure that all safety requirements are met during the construction and operation of the proposed transmission line and associated facilities.		
Land Use	Approximately 47 acres of forest would be converted to a non-forest use.	Approximately 53 acres of forest would be converted to a non-forest use. About 14.1 acres of county owned lands would be crossed by the right-of-way.	Route 1 is expected to permanently impact approximately six fewer acres of forest area than Route 1A. Route 1A would also affect about 14.1 acres of county owned lands.
Displacement	No displacement is anticipated.		
Noise	Transmission line and substation noise levels are calculated to not exceed MPCA noise limits.		
Aesthetics	Would likely affect visual quality within open landscapes in proximity of the transmission line and would introduce a new land use. There are five homes within 500 feet of the proposed route centerline.	Would likely affect visual quality within open landscapes in proximity of the transmission line and would introduce a new land use. There are seven homes within 500 feet of the proposed route centerline.	Both routes would have similar impacts on area aesthetics. Route 1 has two fewer homes within 500 feet of the proposed route's centerline.
Socioeconomic Factors	Effects would generally be short-term or beneficial. Small amount of forest resources would be removed from production.		
Cultural Values	No impacts to cultural values are anticipated.		
Recreation	Route 1 crosses the Lawron Snowmobile Trail.	Route 1A crosses the Lawron Snowmobile Trail.	No impacts to recreational resources are expected.
Public Services	No impacts to Public Services are anticipated.	The route's proposed transmission line centerline would be within 300 feet of an existing fire station. Route 1A construction is not expected to disrupt short-term or long-term fire service.	The Route 1A transmission line would be within 300 feet of an existing fire station, but is not expected to disrupt fire station service.
Environmental Justice	No disproportional impacts to minority or low income populations would occur.		

Factor	Route 1 (Preferred Route) and Associated Facilities	Route 1A (Alternate Route) and Associated Facilities	Summary
Transportation	Three CSAHs, two CRs, and two local streets would be crossed.	One TH, three CSAHs, three CRs, and one local street would be crossed. Approximately one mile of roadways would be paralleled.	Route 1A would cross and parallel more roadways that Route 1.
Radio, Television, and Cellular Phone	No impacts to radio, television, or cellular phone are anticipated.		
Effects on Land-based Economies			
Agriculture	Approximately 17 acres of temporary impacts to agriculture are anticipated for construction of the Route 1 transmission line. About seven permanent transmission structures would be placed on agricultural land (GAP crop/grassland). About 24 structures would be placed on soils mapped as prime farmland, most of which is currently forested.	Approximately 29 acres of temporary impacts to agriculture are anticipated for construction of the Route 1A transmission line. About 13 permanent transmission structures would be placed on agricultural land (GAP crop/grassland). About 25 structures would be placed on soils mapped as prime farmland, most of which is currently forested.	Route 1 would cause approximately 12 fewer acres of temporary agricultural impacts and would require the placement of about six fewer transmission structures on agricultural land. Route 1 and 1A would impact a similar amount of soils mapped as prime farmland, much of which is currently forested.
Forestry	Route 1 would impact 47 acres of forest resources.	Route 1A would impact 53 acres of forest resources.	Route 1 is expected to permanently impact approximately six fewer acres of forest area than Route 1A.
Tourism	No impacts to tourism are anticipated.		
Mining	Essar Steel owns mining rights within the southern one mile of Route 1. The Applicants are working closely with ESM to ensure that the proposed line does not inhibit existing or proposed mining activities.	Essar Steel owns mining rights within the southern one mile of Route 1A. The Applicants are working closely with ESM to ensure that the proposed line does not inhibit existing or proposed mining activities.	Both Route 1 and 1A would have similar impacts to existing and proposed mining activities.
Effects on Archaeological and Historic Resources			
Archaeological Resources	The potential existence of Native American burial mounds in the vicinity of Little Sucker Lake needs to be further investigated prior to construction.	The potential existence of Native American burial mounds in the vicinity of Little Sucker Lake needs to be further investigated prior to construction.	The potential existence of Native American burial mounds in the vicinity of Little Sucker Lake needs to be further investigated prior to construction.

Factor	Route 1 (Preferred Route) and Associated Facilities	Route 1A (Alternate Route) and Associated Facilities	Summary
Historic Resources	No previously recorded historic resources within one mile of the proposed Route 1 centerline would be impacted by the proposed transmission line.	No previously recorded historic resources within one mile of the proposed Route 1A centerline would be impacted by the proposed transmission line.	No previously recorded historic resources within one mile of the proposed Route 1 or Route 1A centerline would be impacted by the proposed transmission line.
Effects on the Natural Environment			
Air Quality	The maximum one-hour concentration of ozone during worst-case weather is estimated at 0.0007 ppm. This is well below both federal and state standards. No air quality impacts due to the operation of the transmission line are anticipated. Temporary air quality impacts caused by construction vehicle emissions and fugitive dust from right-of-way clearing are expected to occur.		
Water Resources	Approximately two transmission line structures would be placed within wetlands, representing 40 sq-ft of permanent impacts. About six acres of wetland forest conversion and seven acres of temporary wetland impacts would occur. The proposed route centerline crosses three PWI streams and one perennial non-PWI stream.	Approximately seven transmission line structures would be placed within wetlands, representing 140 sq-ft of permanent impacts. About seven acres of wetland forest conversion and 22 acres of temporary wetland impacts would occur. The proposed route centerline crosses three PWI streams and one perennial non-PWI stream.	Route 1 would have five fewer transmission structures placed within wetlands. Route 1 would have one less acre of wetland forest conversion and 15 less acres of temporary wetland impacts Both Routes would have the same number of stream crossings.
Flora	Approximately 47 acres of impacts would occur to forests, primarily quaking aspen. Lesser impacts to lowland deciduous forest may also occur adjacent to tributary to the East River.	Approximately 53 acres of impacts would occur to forests, primarily quaking aspen. It is estimated that four acres of lowland deciduous forest and three acres of lowland coniferous forest may also be impacted within the right-of-way.	Due to its shorter distance and smaller acreage of right-of-way, Route 1 would have less potential to impact local flora, which includes the clearing of forested areas. Route 1 would also require less clearing of lowland deciduous and lowland coniferous forests.
Fauna	No impacts to fauna are anticipated		
Effects on Rare and Unique Natural Resources			

Factor	Route 1 (Preferred Route) and Associated Facilities	Route 1A (Alternate Route) and Associated Facilities	Summary
Rare and Unique Natural Resources	No NHIS records are located within Route 1 or within one mile of the edge of Route 1. Additionally, there are no documented bald eagle nests within two miles of the edge of Route 1.	No NHIS records are located within Route 1A or within one mile of the edge of Route 1A. Additionally, there are no documented bald eagle nests within two miles of the edge of Route 1A.	Neither Route is expected to impact any species recorded in the 2008 NHIS database. Areas that have not been surveyed within the proposed rights-of-way, particularly in the vicinity of forested wetlands, may have the potential to harbor sensitive plant species. There is the potential for bald eagles to pass through the route areas.
Application of Design Options that maximize energy efficiencies, mitigate adverse environmental effects, and could accommodate expansion of transmission or generating capacity			
General	The design options of the facilities along both the Preferred Route and Alternate Route maximize energy efficiencies and mitigate adverse environmental effects.		
Use of Existing Transportation, Pipeline and Electrical Transmission Systems or ROWs			
Existing Transportation, Pipeline, and Electrical Transmission rights-of-way.	None of the route follows the rights-of-way of existing transportation, pipeline, and electrical transmission systems.	Approximately 9% of the route follows existing road right-of-way.	The Alternate Route follows a small percentage of existing transportation right-of-way.
Electrical System Reliability			
Electrical System Reliability	Both routes would support the reliable operation of the transmission system.		
Costs of Constructing, Operating, and Maintaining the Facility, which are Dependent on Design and Route			
Costs	The distance of the Preferred Route is 7.5 miles and has an estimated cost of $6.2 million.	The distance of the Alternate Route is 9.25 miles and has an estimated cost of $7.7 million.	The shorter distance of the Route 1 results in a lower overall cost of the Project.
Irreversible and Irretrievable Commitments of Resources			

Factor	Route 1 (Preferred Route) and Associated Facilities	Route 1A (Alternate Route) and Associated Facilities	Summary
General	Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the use of these resources have on future generations. Irreversible effects result primarily from use or destruction of a specific resource that cannot be replaced within a reasonable period. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored because of the action. There are few commitments of resources associated with this Project that are irreversible and irretrievable, but those few are resources primarily related to construction. Construction resources that would be used to construct the Project include aggregate resources, concrete, steel, and hydrocarbon fuel. During construction, vehicles would be traveling to and from the site, utilizing hydrocarbon fuels. These commitments of resources are similar for both routes proposed.		The Preferred Route would require approximately 11 fewer structures and a shorter length, resulting in fewer commitments of resources.
Route specific	The overall length of the Preferred Route is 7.5 miles, which would require approximately 50 structures.	The overall length of the Alternate Route is 9.25 miles, which would require approximately 61 structures.	

Note: Impact areas were calculated using a 130-foot wide right-of-way.