

4. Affected Environment and Environmental Consequences

This chapter describes the existing social, economic and environmental conditions in the NLX study area, which serve as a baseline for comparing the potential impacts of the No Build Alternative and the Build Alternative. In general, the NLX study area is the construction limits of the proposed project. The construction limits consist of the existing rail line and the area impacted by additional infrastructure needs to implement the NLX Project as described in Section 2.3.1 and shown in **Appendix D**. The following improvements are included:

- Track infrastructure improvements (tracks, sidings, turnouts and crossovers)
- Bridge and culvert improvements (new bridge construction, modification of bridge superstructure from open deck to closed deck, culvert extensions)
- Signal system improvements (control points, CTC with a new PTC system overlay)
- Roadway and grade crossing improvements (grade modifications, warning devices)
- Station, and maintenance and layover facilities

However, because the impacts on some resources go beyond the construction limits, the NLX study area for each resource varies and is described in each section in this chapter.

The review and evaluation of the social, economic and environmental resources was completed in accordance with federal and state regulations and guidelines, including NEPA (42 USC 4321-4347), FRA's *Procedures for Considering Environmental Impacts* (64 FR 28545), regulations published by CEQ on implementing NEPA (40 CFR 1500), MEPA (Minn. Stat. 116D) and WEPA (Wisconsin Administrative Code Chapter Trans 400).

Each resource section includes the following:

- Regulatory Context and Methodology – Describes the applicable federal and state regulations, the methodology pertinent to the analysis and coordination regarding specific environmental resource areas
- Affected Environment – Describes existing conditions
- Impacts (Operations and Construction) – Describes the potential impacts during both operations and construction
- Avoidance, Minimization and Mitigation Measures – Summarizes potential avoidance, minimization and mitigation measures for the NLX Project, with specific measures identified by location where appropriate
- Summary – Presents the impacts for the NLX Tier 2 EA analysis

Operations include the daily operation of the NLX Service as well as routine maintenance activities for safe and reliable passenger rail service. Construction includes the building of NLX Project track and related infrastructure as described in **Table 2-1**, stations, the maintenance facility and the layover facility. Operations, maintenance and construction activities associated with the NLX Project are described in Chapter 2 Alternatives, Sections 2.3.2.1 and 2.3.2.11. These operations, maintenance and construction activities form the basis for impact analysis in the Tier 2 EA. In general, impacts associated with operation and maintenance of NLX passenger service are expected to be similar to operating and maintaining the existing BNSF freight rail system.

To better explain the resource impact analyses in this chapter, the following is provided regarding the assumptions used for developing the NLX Project construction limits, and limitations to the physical review of the NLX Project. There has been a notable change in the construction limits between the NLX Tier 1 EA and the Tier 2 EA. The Tier 1 EA indicates that the construction limits are approximately 420 acres. This Tier 2 EA identifies a construction limit area of approximately 878 acres, which reflects the addition of the existing BNSF track area and the addition of land for stations, maintenance and layover facilities to the NLX construction limits. While this represents a substantial increase in overall area, three factors outlined below provide clarity and context to the increase.

First, the NLX Tier 1 EA did not include rehabilitation of existing track in the construction limit calculation. At the time of the Tier 1 EA analysis, it was assumed that existing track rehabilitation would be accomplished by replacing rail ties and track without disturbing the ballast or subgrade. The Tier 2 EA analysis does include ballast replacement as part of the track rehabilitation; therefore, track rehabilitation has been included as part of the construction limits. This accounts for the majority of the construction limit increase. Second, at the time of the Tier 1 EA analysis, the NLX trains were assumed to lay over on existing tracks, and potential maintenance facility locations had not been identified. The inclusion of the proposed maintenance and/or layover facilities for the Tier 2 EA analysis accounts for approximately 50 acres of the increased Tier 2 EA construction limits. Third, approximately 120 of the 420 acres in the Tier 1 EA construction limits were outside of the existing BNSF right of way; this was necessary for the new sidings, track curve modifications, and other rail infrastructure required for a service level of eight round trips at up to 110 mph. The Tier 2 EA service level of four round trips at up to 90 mph requires less new infrastructure; therefore, only about 19 acres (rather than 120 acres) of the 878 acre construction limits are outside of BNSF right of way in the Tier 2 EA analysis. While overall acreage has increased due to the addition of the existing track in the construction limit calculation, the portion outside of the BNSF right of way has been reduced. The effect of this change, if any, is discussed in detail in each section of this chapter.

It is also important to note that the NLX Tier 2 EA analysis did not include any physical review of BNSF right of way. Limited field review was conducted from public right of way as noted throughout the chapter. MnDOT and FRA determined that the appropriate approach was to review that portion of the NLX Project within the BNSF right of way in the following manner:

- Geographic information systems (GIS) data review
- Other relevant resource database review
- Limited observation of the BNSF right of way from adjacent public property

As appropriate and necessary, this Tier 2 EA would be refined through future supplemental NEPA documentation as the final design advances and funding is secured for the NLX Project. Future supplemental environmental documentation is identified as appropriate throughout this Tier 2 EA.

Unless otherwise stated, locations described in this chapter are in Minnesota.

4.1 Land Use and Land Cover

The Tier 1 EA analysis indicates that the NLX Project would have no significant changes to land use. This section analyzes the NLX Project impacts based on proposed construction limits that have been updated since the Tier 1 EA. **Table 4-1** presents the NLX study area used for land use and land cover impact analysis; **Table 4-2** compares the results of the Tier 1 EA and the Tier 2 EA analyses. The revised impacts supersede the results presented in the Tier 1 EA and are summarized at the end of this section.

Table 4-1: NLX Study Area for Land Use and Land Cover

| NLX Study Area Definition | Basis for NLX Study Area |
|--|---|
| Construction limits plus 0.25-mile buffer. | Describes the context of the surrounding areas at sidings, stations and maintenance and layover facilities. |

Table 4-2: Land Use Comparison – NLX Tier 1 Service Level EA and NLX Tier 2 Project Level EA

| Identified Impacts in NLX Tier 1 Service Level EA | Identified Impacts in NLX Tier 2 Project Level EA |
|--|---|
| No significant change in land use type. | No substantial impacts or significant change in land use type. |
| Construction limits include approximately 420 acres of land cover type. Approximately 120 of the 420 acres would be outside the BNSF right of way (does not include rehabilitation of existing track). | Construction limits include approximately 878 acres of land cover type primarily within BNSF right of way (includes rehabilitation of existing track). Approximately 19 of the 878 acres would be outside of BNSF right of way. |
| Compatible with land use in the NLX study area. | Compatible with land use in the NLX study area. |
| Station locations compatible with local land use plans. | Station and maintenance and layover facility locations compatible with local land use plans. |

As appropriate and necessary, this Tier 2 EA would be refined through future supplemental NEPA documentation as the final design advances and funding is secured for the NLX Project. Future supplemental environmental documentation is identified as appropriate throughout this Tier 2 EA.

4.1.1 Regulatory Context and Methodology

4.1.1.1 Legal and Regulatory Context

Potential land use impacts of the NLX Project are assessed in accordance with FRA's *Procedures for Considering Environmental Impacts* (64 FR 28545). These procedures indicate that substantial changes to land use should be identified during the environmental review process.

No specific laws or executive orders regulate the consideration of land use impacts as part of preparing NEPA review documents. NEPA (41 USC 4321), MEPA (Minn. Stat. 116D), and WEPA (Wisconsin Administrative Code Chapter Trans 400) form the general basis of consideration for discussing land use issues. Local municipalities use comprehensive plans to guide land use zoning codes, which regulate land use and development.

4.1.1.2 Methodology

Land Use and Land Cover

The approach to reviewing land use and land cover focuses on understanding existing land cover types and potential changes to those cover types within the NLX study area. A combination of land cover calculations and qualitative land use discussion is used in describing potential impacts at station and maintenance and layover facility sites. This approach is used because of the size of the NLX Project study area (a 0.25-mile buffer of the construction limits), and the lack of traditional land use data for substantial rural and undeveloped portions of the study area.

The United States Geological Survey (USGS) Land Use and Land Cover (LULC) Classification System served as the basis for classifying the NLX study area defined in **Table 4-1**. This system uses satellite imagery to classify land use into 29 categories. For the NLX Project, these USGS LULC Classification System land use categories were combined into the following five general categories based on prevalent land use and vegetation cover types:

- Forested land consists of areas classified as deciduous forest, evergreen forest and mixed forest.
- Agricultural land consists of areas classified as cultivated crops and pasture.
- Developed land consists of areas classified as low intensity developed, medium intensity developed and high intensity developed.
- Open land consists of areas classified as barren land, developed open space, scrub/shrub and grasslands or herbaceous areas.
- Wetland/open water consists of areas classified as woody wetlands, emergent herbaceous wetlands and open water.

The land cover impacts presented in the following sections are based on USGS LULC Classification System digital data only. No field surveys, aerial desktop surveys or field reconnaissance was conducted. The land cover setting described in the affected environment discussion (see Section 4.1.2) represents the GIS-based land cover types for the NLX study area which includes the NLX Project construction limits as well as a 0.25-mile buffer. Potential land cover impacts were calculated by identifying the land cover types within the proposed construction limits. It is important to note that a majority of the proposed construction limits lie within existing BNSF right of way. Therefore, while the land cover types vary within that right of way, a majority of the NLX Project is already within a transportation use as part of the BNSF right of way.

The land cover impacts discussed below are conservative, and were developed by overlaying the construction limits on the land cover data set for the NLX study area. For the purposes of this document, impacts are presented as using the entire construction limits. However, as discussed later in this section, some of the impacts on land cover within the construction limits may be temporary and could be restored.

Compatibility with Regional, State and Local Plans and Regulations

The comprehensive plans adopted by the cities and counties in the NLX study area served as the basis for the assessment of compatibility of the NLX Project with existing and planned land uses. Summaries of the comprehensive plans are included in Section 4.1.2.

4.1.2 Affected Environment

4.1.2.1 Existing Land Cover

The NLX Project would have six stations along the proposed route, including Target Field; Coon Rapids; Cambridge; Hinckley; Superior, Wisconsin; and Duluth. There are two maintenance facility sites under consideration for the NLX Project: one in which all maintenance and layover activities would occur in Duluth at the northern terminus of the Project, and one in which a maintenance facility would be located in Sandstone and an overnight layover facility would be located at Duluth. Each facility is included in this analysis and discussed later in this section.

As noted in Section 4.1.1.2, the NLX study area encompasses the NLX Project construction limits plus a 0.25-mile buffer. This area covers more than 51,000 acres. The purpose of reviewing a land cover study area that includes a 0.25-mile buffer of the proposed NLX Project construction limits is to provide a general understanding of the land cover setting in which the NLX Project lies. The existing land covers in the NLX study area are forested land (25 percent), wetland/open water (20 percent), developed land (19 percent),

agricultural land (19 percent) and open land (17 percent). **Table 4-3** summarizes the land cover types within the NLX study area.

The proposed construction limits for the NLX Project, which cover an area of approximately 878 acres (this reflects the addition of the existing BNSF track area and the addition of land for maintenance and layover facilities to the NLX construction limits), are primarily contained within the existing BNSF right of way¹; the right way generally ranges from 50 to 150 feet wide. The land cover in the BNSF right of way varies; in rural areas generally only a relatively small portion of the right of way contains rail infrastructure (rail, ties, ballast and rail embankment). The land cover types on the portions of the right of way adjacent to the rail infrastructure vary, and include forested land, wetland/open water, developed land, agricultural land, and open land.

¹ As stated in the introduction to Chapter 4, only 19 acres of the 878-acre construction limits lie outside the BNSF right of way.

Table 4-3: Land Cover Type within the NLX Study Area

| County | Forested | | Agricultural | | Developed | | Open Land | | Wetland/Open Water | | Total ^b |
|---------------|---------------|----------------|--------------|----------------|--------------|----------------|--------------|----------------|--------------------|----------------|--------------------|
| | Acres | % ^a | Acres | % ^a | Acres | % ^a | Acres | % ^a | Acres | % ^a | Acres |
| Hennepin, MN | 1 | <0.1 | - | <0.1 | 1,637 | 95 | 53 | 3 | 37 | 2 | 1,728 |
| Anoka, MN | 1,122 | 13 | 1,622 | 18 | 3,197 | 36 | 1,996 | 22 | 977 | 11 | 8,914 |
| Isanti, MN | 875 | 12 | 2,666 | 36 | 1,365 | 19 | 1,223 | 17 | 1,242 | 17 | 7,371 |
| Kanabec, MN | 246 | 15 | 756 | 46 | 107 | 6 | 258 | 16 | 294 | 18 | 1,661 |
| Pine, MN | 5,287 | 29 | 3,488 | 19 | 629 | 3 | 3,117 | 17 | 5,491 | 30 | 18,012 |
| Carlton, MN | 2,042 | 56 | 165 | 5 | 5 | <0.1 | 753 | 21 | 685 | 19 | 3,650 |
| Douglas, WI | 3,127 | 40 | 903 | 12 | 1,248 | 16 | 1,283 | 16 | 1,278 | 16 | 7,839 |
| St. Louis, MN | 14 | 1 | - | <0.1 | 1,296 | 68 | 227 | 12 | 378 | 20 | 1,915 |
| Total | 12,714 | 25 | 9,600 | 19 | 9,484 | 19 | 8,910 | 17 | 10,382 | 20 | 51,090 |

Source: National Land Cover Database, 2011.

^a Percentages may not add up to 100 percent due to rounding.

^b Land cover includes the construction limits plus a 0.25-mile buffer.



4.1.2.2 Regional, State and Local Plans

The comprehensive plans for the cities and counties through which the proposed NLX Project would pass are summarized below, as are relevant transportation plans. For all plans identified below, the NLX Project would offer an alternative transportation option for travelers who reside in or travel through these locations in Minnesota and Wisconsin. All plans reflect cities or counties in Minnesota unless otherwise specified.

The *Minnesota Comprehensive Statewide Freight and Passenger Rail Plan* and addendum (MnDOT, 2010 and 2011b) and the update to that plan, titled *Minnesota State Rail Plan* (MnDOT, 2015b), call for Minnesota to develop a robust intrastate and interstate intercity passenger rail system that provides improved travel options, costs and speeds for travelers. The plan focuses on the development of intercity passenger rail service that links the Twin Cities with the Chicago Hub high speed rail network, the national Amtrak system and major regional trade centers in Minnesota and the Upper Midwest. The NLX Project is among the plan's Phase I priority corridors, or projects that are scheduled to be operational between 2010 and 2030.

The draft *Wisconsin State Freight Plan* (WisDOT, 2016) does not specifically mention passenger rail, but does include a vision statement indicating the desirability of a "multimodal freight transportation system that enhances the state's economic productivity, competitiveness and quality of life through the movement of goods safely, reliably, and efficiently, while minimizing impacts to the natural environment."

The *2030 Hennepin County Transportation Systems Plan* (Hennepin County, 2011²) sets forth the long-term vision of how transportation services should be provided for the future. The plan indicates that the economic vitality of the region is dependent on a transportation system that provides numerous travel options, including high speed rail service. The plan references *Transportation for Tomorrow: Report of the National Surface Transportation Policy and Revenue Study Commission* (2007), which recommends the Minneapolis-Duluth-Superior project (visualized as the NLX Project) as one of eight projects for new service.

The *Anoka County 2030 Transportation Plan* (Anoka County, 2008) includes a goal to preserve and enhance the potential for mobility by improving connectivity between communities within and adjacent to Anoka County. The plan recommends enhancing alternative travel modes and connections, including high speed rail service in existing and planned rail corridors. The plan lists the NLX Project in its short-term improvements, identifying potential new stations in Andover, Oak Grove and East Bethel.

² The 2011 version of the Hennepin County Transportation Systems Plan is an update of the plan originally prepared in 2000.

The *Isanti County Comprehensive Plan* (Isanti County, 2009) includes an implementation plan objective of maintaining a safe, cost-effective, efficient and environmentally sensitive transportation system in Isanti County. As related to railroads, this includes promoting fully utilized, safe and quiet freight and passenger rail services. The plan supports the investigation of future commuter rail transportation to and from the Twin Cities.

The *Kanabec County Comprehensive Plan* (Kanabec County, 2002) includes a discussion of highways within the county, as well as information about the Mora Airport in Mora, Minnesota. The plan predicts a 60 percent increase in average daily traffic volumes for all major highways in the county for the period between 1998 and 2018.

The *Pine County Comprehensive Plan* (Pine County, 1993³) predates discussion of passenger rail, but includes policies relevant to the NLX Project. The plan identifies the numerous natural resources of Pine County and their association with a wide variety of tourism and recreational opportunities. One of the goals of the plan is to protect and manage these resources, which are necessary to increasing the diversity of the commercial base in the area, including the recreation industry. The NLX Project would support the goal of promoting rural and residential development in areas convenient to facilities, services and activities for residents of Pine County. On August 4, 2015, the Pine County Board of Commissioners gave approval to begin the process to create a new comprehensive plan. Pine County provided preliminary goals for the new plan, including supporting additional transportation opportunities.

The *Carlton County Community-Based Comprehensive Plan* (Carlton County, 2001) includes a goal to provide a transportation network that facilitates the efficient flow of people and goods throughout Carlton County by promoting transportation services to a greater number of people. The plan notes that the County has transportation assets that can help maintain and strengthen the local economy, including I-35 and rail transportation facilities.

The *Douglas County Comprehensive Plan 2010–2030* (Douglas County, 2009) identifies the nearest available passenger rail service to Douglas County, Wisconsin, as the Amtrak route through Minneapolis-St. Paul. The plan further indicates that there has been recent discussion about reinstating the Amtrak line from Minneapolis-St. Paul to Duluth, Minnesota.

In *The Minneapolis Plan for Sustainable Growth* (City of Minneapolis, 2009), Chapter 2 states that the existing transportation system in Minneapolis must be balanced to strengthen non-automobile forms of transportation. According to the plan, Minneapolis will strengthen the transportation system and will continue to pursue improvements in corridors that serve major origins and destinations with the eventual goal of having

³ Most recent plan, still in effect.

a region-wide rail system. The plan encourages joint use of rail lines by freight and passenger rail and promotes accessibility to downtown by improving and balancing the existing transportation system.

The *Cambridge Comprehensive Plan* (City of Cambridge, 2001) describes methods for reducing traffic and assisting with transportation options. It presents long-range strategies for revitalizing the downtown area. The Cambridge Common Council passed a resolution supporting a downtown Cambridge NLX station in November 2014. The City further expressed support for passenger rail service through joining the Minneapolis-Duluth/Superior Passenger Rail Alliance in 2016.

The *City of Coon Rapids Comprehensive Plan* (City of Coon Rapids, 2009) includes a policy to promote the development of Duluth to the Twin Cities passenger rail service with a stop in Coon Rapids. The City of Coon Rapids has been working on the *Foley Boulevard Station Area Plan* to guide future infrastructure investments and redevelopment for the area that is bound by MN 610, Coon Rapids Boulevard and East River Road (City of Coon Rapids, 2015). The plan anticipates the area would transition to higher density employment uses over time and incorporates the proposed Coon Rapids station.

The Cities of Hinckley, Minnesota, and Superior, Wisconsin, have both completed comprehensive land use plans. These plans do not specifically mention passenger rail but both plans set forth goals and policies for future development and growth, which encourage maintaining and enhancing the central business districts located in their downtown areas. Proposed station sites in Hinckley and Superior, Wisconsin, are both downtown locations, which would support local growth and development goals (City of Hinckley, 2002; City of Superior, 2011).

The *City of Duluth Comprehensive Plan* (City of Duluth, 2006) does not specifically mention high speed passenger rail, but does acknowledge the expansion of regional transportation infrastructure. The plan states that the city's seaport, airport, rail connections and regional highways will evolve over time in response to changing markets, industrial expansion or contraction and a growing or shrinking tourism industry. The plan also states that consideration of the expansion, contraction or protection of transportation facilities is crucial to meeting the long-term land use goals set forth in the plan. The transportation chapter of the *City of Duluth Comprehensive Plan* discusses the importance of freight rail transportation to Duluth and the desire for industrial uses to remain in the city (City of Duluth, 2006).

Directions in Transportation 2035: Duluth-Superior Long Range Transportation Plan (Duluth-Superior Metropolitan Interstate Council, 2010) includes a goal to develop and maintain the Duluth-Superior (State) transportation system in ways that support economic productivity, efficiency and competitiveness. An associated goal is to increase the number of passenger trips to and from the Twin Ports Metropolitan Area. Strategies include advocating for passenger rail service to and from the Twin Cities and assisting jurisdictions in planning for rail connections.

The *Saint Louis County Union Depot Passenger Rail Terminal Study* (Saint Louis County, 2010) includes guiding principles that recognize the NLX Project and the NSSR as unique transportation features for Duluth while extending the multimodal nature of the Union Depot area to buses, boats, and bicycles. According to the study, the planned return of passenger rail service between Duluth and the Twin Cities provides an opportunity to evaluate new uses for the Union Depot that capitalize on the historic value of the building while strengthening the local economy. The Lake Superior Railroad Museum would remain at the Union Depot, thereby providing a unique opportunity to combine a well-known transportation history museum with an active multimodal transportation facility. Physical changes to the Union Depot or its tenant mix are encouraged to capitalize on transportation access and tourism activities, as well as acknowledging the historic status of the building.

4.1.3 Impacts

4.1.3.1 Land Use and Land Cover

The following sections discuss the impacts on land cover associated with the No Build Alternative and Build Alternative. Impact analysis considered all track, roadway, bridge, station and maintenance and layover facilities as identified in the beginning of this chapter. Where impacts are specific to a type of proposed improvement, they are described below. The Build Alternative impacts discussion analyzes long-term operations and maintenance impacts and short-term construction impacts as described in the beginning of this chapter. A discussion of potential impacts at station and maintenance and layover facility sites is also presented, as well as a general discussion of the potential impacts within the BNSF right of way. Avoidance, minimization and mitigation measures are described in Section 4.1.4.

No Build Alternative

Under the No Build Alternative, the NLX Project would not occur and would not alter current conditions. There would be no changes except planned and programmed actions that are independent of the NLX Project. Property adjacent to the NLX Project would continue to develop in accordance with land use plans. Broader land use goals related to the economic benefits of higher speed rail service associated with the NLX Project would not be supported.

Build Alternative – Operations

The majority of the NLX Project construction limits lie within BNSF right of way; this right of way corridor is currently used for transportation purposes. Introduction of the NLX Project in the BNSF right of way would not alter the transportation use. However, as noted in Section 4.1.2.1, the BNSF right of way (which is between

50 and 150 feet wide) has a relatively small area of existing freight rail infrastructure (such as track, ties, ballast, and railway embankment) especially in rural and undeveloped areas. The land cover types within the BNSF right of way would be altered through the addition of new rail infrastructure components. The land cover types that could be directly affected within the construction limits by the NLX Project include open land, forested land, developed land, agricultural land and wetland/open water. **Table 4-4** presents the potential land cover types within the proposed NLX Project construction limits.

Table 4-4: Land Cover Types within Construction Limits

| Land Cover Type | Construction Limit Acres |
|--------------------|--------------------------|
| Open Land | 260 |
| Forested | 193 |
| Developed | 188 |
| Agricultural | 119 |
| Wetland/Open Water | 118 |
| Total Acres | 878 |

The potential land cover impacts identified within the construction limits are a conservative estimate due to two primary factors:

- The land that lies within the construction limits may not be completely altered by construction activities; additional avoidance and minimization strategies would be implemented as the NLX Project advances through the design process.
- The construction limits are based on the most extensive infrastructure improvement scenario; further refinement of rail infrastructure improvements would continue as the NLX Project advances through the design process.

Stations

As identified in the Tier 1 EA, the NLX Project proposes six stations, located in Minneapolis; Coon Rapids; Cambridge; Hinckley; Superior, Wisconsin; and Duluth. Each station is discussed in the following sections, and **Table 4-5** identifies the land cover type at each proposed station and facility location that could be altered by NLX Project construction. Indirect impacts of induced development could occur around the proposed station locations in compliance with local land use plans. Detailed analysis of the selection process for stations and maintenance and layover facilities, and discussion of consistency with local land use plans, is documented in the *Facilities Site Evaluation and Design Technical Memorandum* in **Appendix B**.

Target Field Station

NLX would expand multimodal transportation options at Target Field Station, which is consistent with local and regional land use and transportation goals. The southern terminus of the proposed NLX Project would be located at the existing Target Field Station, which already serves commuter rail, light rail and buses. The station is located in a downtown mixed-use area containing historic warehouse buildings converted to new commercial and residential uses. It is adjacent to the Target Field ballpark and is convenient to other downtown activities and services. The NLX Project would extend the existing Northstar platform by 490 feet; the construction limits for this platform extension cover approximately 0.7 acre of developed land. This platform extension would take place on existing Target Field Station and BNSF property that is consistent with transportation land use at the station. Given the current transportation use at the existing station property, no land use changes are anticipated as a result of the NLX Project.

Coon Rapids Station

The proposed station in Coon Rapids would be generally consistent with the mixed land use in the area, which is dominated by highway infrastructure and includes commercial, low density and light industrial uses, as well as parcels acquired by the Anoka County Regional Railroad Authority (ACRRA) to accommodate future transportation uses. The station site is adjacent to the existing Metro Transit Foley Boulevard park and ride facility that provides 466 parking spaces. Currently, the land cover at the Coon Rapids Station is primarily open land (3.3 acres) with a small wetland area (0.2 acre). The proposed Coon Rapids Station site would convert these 3.5 acres of open land and wetland to developed land for transportation use, including 160 parking spaces, a 500-foot platform, two warming shelters, a station building and a new roadway entrance.

Cambridge Station

The Cambridge Station would be located in the City Center Mall in downtown Cambridge near the intersection of MN 65 and MN 95 and would provide an additional activity generator that supports local plans to revitalize downtown. A portion of the City Center Mall houses the City Hall and public safety services for the city, and is adjacent to the BNSF right of way. The City of Cambridge would provide space for station facilities within the mall, with a covered walkway and ramp leading to the platform at the Cambridge Station located on the east side of the mall building. The proposed Cambridge Station and associated parking facilities would cover approximately 6.1 acres. This includes 5.1 acres of developed land (the mall, including the City Hall and public safety facilities) and 1.0 acre of open land (a portion of which is located between the BNSF right of way and the northern portion of the mall, and an undeveloped lot west of the parking lot adjacent to the western mall access road). The station site plan proposes to acquire the undeveloped lot and convert it to parking, and the City-owned parking lot associated with the mall would be reconfigured to optimize parking.

Hinckley Station

The Hinckley Station is located near Main Street and Hinckley-Finlayson High School. The station would provide an activity generator that may support downtown businesses consistent with land use plans to maintain and enhance the central business district located in downtown. Currently, land cover types at the Hinckley Station are open land (approximately 0.6 acre) and developed land (approximately 0.9 acre). The NLX Project would convert the open land and developed land (which include a portion of a church yard and a City maintenance facility site at 1st Street Northeast and Power Avenue North) to 1.5 acres of developed land for transportation use. Because of grade changes on the site, a retaining wall and landscape screen would be constructed to provide a buffer between the station and the nearby church building.

Superior, Wisconsin Station

The proposed Superior, Wisconsin Station would be located adjacent to U.S. 2 near the intersection of Oakes Avenue and North 14th Street, approximately two blocks northwest of the intersection of U.S. 2 and Tower Avenue in downtown Superior. The station would support the City's comprehensive plan to revitalize downtown. A majority of the station site is on BNSF right of way, but two privately owned parcels would also be affected by station development. One parcel is vacant and the other is a former Waste Management site. The proposed Superior, Wisconsin Station would convert approximately 8.3 acres of open land (5.9 acres) and developed land (2.4 acres) to developed land for transportation use. The site plan calls for approximately 240 parking spaces for both short- and long-term parking.

Duluth Station

Reestablishing passenger rail service at the Duluth Station is consistent with local goals to provide multimodal transportation options. The northern terminus of the proposed NLX Project would be the Duluth Station in downtown Duluth, located adjacent to the Union Depot, which is listed on the National Register of Historic Places (NRHP). The station would replace the former Amtrak Station located at Union Depot on the platform level and below the Fifth Avenue Bridge. An existing platform services the NSSR. The NLX Project would construct a new platform to meet safety and accessibility requirements. The proposed improvements at the Duluth Station would cover approximately 1.7 acres of developed land; there would be no change in land use because the property is currently used for transportation purposes.

Maintenance and Layover Facilities

There are two sites under consideration: one in which all maintenance and layover activities would occur at Duluth, and one in which a maintenance facility would be located in Sandstone and an overnight layover facility would be located at Duluth. The Duluth site is approximately 13 acres and would be located on existing

BNSF right of way. The Sandstone site is nearly 15 acres, also located primarily on existing BNSF right of way. The maintenance facility would handle inspection, servicing, maintenance and repair activities required to keep NLX trains in service. Between trips, trains would park at the layover facility, where limited servicing, inspection and minor repair functions could occur. Because both sites lie within existing transportation right of way, there would be no change in land use with the implementation of maintenance and/or layover facilities at either site.

Table 4-5: Land Cover Types^a Potentially Affected by the NLX Project Proposed Stations and Facilities

| County | Station/Layover Facility | Developed (Acres) | Open Land (Acres) | Wetland/Open Water (Acres) |
|---------------|--|-------------------|-------------------|----------------------------|
| Hennepin, MN | Target Field Station | 0.7 | - | - |
| Anoka, MN | Coon Rapids Station | - | 3.3 | 0.2 |
| Isanti, MN | Cambridge Station | 5.1 | 1.0 | - |
| Pine, MN | Hinckley Station | 0.9 | 0.6 | - |
| | Potential Sandstone Maintenance Facility | 14.8 | - | - |
| Douglas, WI | Superior, Wisconsin Station | 2.4 | 5.9 | - |
| St. Louis, MN | Duluth Station | 1.7 | - | - |
| | Potential Duluth Maintenance and/or Layover Facility | 13.0 | - | - |

Source: National Land Cover Database, 2011.

^a Forested and agricultural land cover types were not present at station and maintenance and layover sites.

Build Alternative – Construction

Land cover and land use impacts associated with construction include those areas that would be temporarily altered by construction activities. The NLX Project construction limits cover approximately 878 acres and lie primarily within the existing BNSF right of way and adjacent roadway right of way. In certain locations, construction limits may extend outside of the BNSF right of way to facilitate new sidings or construction of other rail infrastructure such as stations, maintenance and layover facility locations and roadway crossing improvement locations. Construction outside the existing BNSF or public road crossing right of way is anticipated to be temporary and limited to grading activities at the edge of new or modified transportation infrastructure components.

Where grading would occur entirely within existing transportation right of way, there could be changes in land cover type (for example, a forested area within the BNSF right of way could have trees removed to accommodate grading, with replacement trees planted after construction). In those locations where temporary easements on adjacent property would be required to facilitate construction, the land cover could also be altered (for example, removal of trees or temporary fill in wetlands), but would be restored after construction where practicable. Similarly, the land use on those adjacent properties would temporarily be changed for NLX Project construction activities; in effect becoming a temporary transportation construction use. Following construction, it is anticipated that these properties would revert to the original land use.

4.1.3.2 Compatibility with Regional, State and Local Plans and Regulations

No Build Alternative

Under the No Build Alternative, the NLX Project would not occur and land uses would not be altered. Any changes in land use would be governed by local land use plans and policies. The No Build Alternative would not be compatible with those plans that call for the implementation of passenger rail service and/or stations and related facilities, including the following:

- *Minnesota Comprehensive Statewide Freight and Passenger Rail Plan*
- *2030 Hennepin County Transportation Systems Plan*
- *Anoka County 2030 Transportation Plan*
- *Duluth-Superior Long Range Transportation Plan – Directions 2035*
- Comprehensive plans for:
 - Isanti County
 - City of Minneapolis
 - City of Coon Rapids

In addition, the guiding principles and recommendations of the *Saint Louis County Union Depot Passenger Rail Terminal Study* would not be realized under the No Build Alternative.

Build Alternative – Operations

The Build Alternative is consistent with all land use plans and applicable regulations in the communities that lie along the NLX study area. Furthermore, the plans previously listed for the No Build Alternative either identify the proposed NLX Project specifically or passenger rail service in general; implementation of the Build Alternative would meet the goals of these plans. Detailed discussion of the selection process for locations of

stations and maintenance and layover facilities, and discussion of consistency with local land use plans is documented in the *Facilities Site Evaluation and Design Technical Memorandum* in **Appendix B**.

Build Alternative – Construction

Construction activities associated with the implementation of the Build Alternative would be consistent with land use plans and applicable regulations. Contractors would be required to comply with applicable local construction-related ordinances for allowable hours of construction, building and safety.

4.1.4 Avoidance, Minimization and Mitigation Measures

The NLX Project would continue efforts to avoid, minimize and mitigate impacts as the project advances through the design process. No substantial impacts or significant changes in land use types have been identified. Changes in land cover type primarily within existing transportation right of way would occur, but would not require mitigation because the land is already designated for transportation purposes.⁴ Limited land use changes would occur at certain station locations; however, these land use changes are compatible with local land use plans and regulations.

The assumed NLX Project construction limits are conservative, meaning that adequate land has been included in evaluation to anticipate the greatest area of potential environmental impact. It is anticipated, however, that the effect of changes in land cover would be minimized as NLX Project development proceeds, infrastructure improvements are optimized and construction limits are reduced.

4.1.5 Summary

The Tier 1 EA indicates that the NLX Project construction limits encompassed approximately 420 acres. Additional engineering work conducted during the Tier 2 EA analysis have resulted in larger construction limits of approximately 878 acres, including track alignment, stations, and maintenance and layover facilities. The difference in the total acreage within the construction limits is primarily because the Tier 2 EA analysis construction limits include the rehabilitation of existing track, while the Tier 1 EA construction limits did not.

The results of the analysis in this Tier 2 EA indicate that conservatively, the 878-acre NLX Project construction limits could be subject to a conversion in land cover type because of the introduction of NLX Project elements.

⁴ Mitigation would not be required solely for the conversion of land cover within the BNSF right of way. However, mitigation for potential impacts on wildlife and wildlife habitat, threatened and endangered species habitat, wetlands, and surface waters could be required. See Sections 4.3 through 4.6 for a discussion of potential impacts on and mitigation for these resources.

However, it is anticipated that the actual acres of land cover type conversion could be reduced by efforts to minimize impacts as the NLX Project advances through the design process. Limited changes in land use are anticipated at station locations but would be in accordance with land use plans. Overall, the NLX Project is consistent with regional, state and local land use plans.

The Tier 2 EA results are generally consistent with the results of the earlier Tier 1 EA. No significant changes in land use were identified in either the Tier 1 EA or Tier 2 EA analyses. Both the Tier 1 EA and Tier 2 EA analyses determined that the proposed NLX Project is compatible with regional, state and local land use plans. The Tier 1 EA included 120 acres of impact outside of existing BNSF right of way, but the Tier 2 EA analysis would affect about 19 acres outside of existing BNSF right of way. This means a majority of the Tier 2 EA impact would occur on land that is already dedicated to transportation use as part of the BNSF right of way. However, land cover types within the BNSF right of way would be impacted by the introduction of NLX Project elements. See Section 4.2 for additional discussion of impacts outside of the BNSF right of way.

4.2 Right of Way

The Tier 1 EA analysis indicates that the NLX Project would need to acquire nearly 120 acres outside of BNSF right of way. This section analyzes the NLX Project impacts based on proposed construction limits that have been updated since the Tier 1 EA. **Table 4-6** presents the NLX study area used for right of way impact analysis; **Table 4-7** compares the results of the Tier 1 EA and the Tier 2 EA analyses. The revised impacts supersede the results presented in the Tier 1 EA and are summarized at the end of this section.

Table 4-6: NLX Study Area for Right of Way

| NLX Study Area Definition | Basis for NLX Study Area |
|--|---|
| Construction limits from track preliminary engineering and station and facilities site plan; parcels adjacent to existing BNSF right of way. | Captures the potential additional property that may be needed for sidings, stations and maintenance and layover facilities. |

Table 4-7: Right of Way Comparison – NLX Tier 1 Service Level EA and Tier 2 Project Level EA

| Identified Impacts in NLX Tier 1 Service Level EA | Identified Impacts in NLX Tier 2 Project Level EA |
|---|---|
| Approximately 120 acres outside of BNSF right of way needed, primarily on undeveloped land. | Approximately 13 acres from 27 parcels in the form of temporary and permanent easements needed, primarily on undeveloped land. |
| The Tier 1 EA assumed that the entire extent of the construction limits outside of BNSF property would be new right of way. | No residential acquisitions anticipated. |
| | One relocation of City of Hinckley maintenance building. |
| | The Tier 2 EA includes a more detailed analysis of right of way needs outside of BNSF property limits. While Section 4.1 notes that the construction limits include 19 acres outside of BNSF property limits, the analysis indicates that only about 13 acres would be subject to temporary or permanent right of way acquisition. NLX Project construction activities on the remaining 6 acres would take place through other agreements, and are not considered right of way acquisition. |

As appropriate and necessary, this Tier 2 EA would be refined through future supplemental NEPA documentation as the final design advances and funding is secured for the NLX Project. Future supplemental environmental documentation is identified as appropriate throughout this Tier 2 EA.

4.2.1 Regulatory Context and Methodology

With respect to the acquisition of right of way, specific regulations govern the displacement and relocation of residents and businesses resulting from publicly funded transportation projects. Public agencies are required by law to compensate landowners for property acquired for public use. Any acquisition of property required for the NLX Project would be in accordance with the Uniform Relocation and Real Property Acquisitions Policies Act of 1970 (Uniform Act) (Public Law 91–646 and 49 CFR 24, the implementing regulations), Minn. Stat. 117 and Wis. Stat. Chapter 32. The objective of the Uniform Act is to provide fair and equitable treatment of people whose real property is acquired or who are displaced in connection with federally funded projects, to ensure that relocation assistance is provided and to ensure that decent, safe and sanitary housing is available within the financial means of the displaced person. Section 4.15 addresses potential displacements.

Potential right of way impacts were estimated by overlaying the proposed NLX Project construction limits onto GIS parcel data from the counties through which the NLX Project would extend. The NLX Project construction limits establish the area required to build the elements of the NLX Project, including existing rail improvements, rail sidings, roadway crossing improvements, stations, maintenance facilities and layover facilities.

4.2.2 Affected Environment

A majority of the proposed NLX Project lies within BNSF right of way and is surrounded by urban and suburban land uses in the cities through which the NLX Project would pass, including residential, commercial, industrial and public facilities. Between the cities, there is a mix of open land and agricultural property. Much of the property is in private ownership, although many of the station areas include public property, especially Target Field Station and Duluth Station.

4.2.3 Impacts

The following sections summarize right of way impacts for the No Build Alternative and the Build Alternative. Impact analysis considered all track, roadway, bridge, station and maintenance and layover facilities as identified in the beginning of this chapter. Where impacts are specific to a type of proposed improvement, they are described below. The Build Alternative impacts discussion analyzes long-term operations and maintenance impacts and short-term construction impacts as described in the beginning of this chapter. Avoidance, minimization and mitigation measures are described in Section 4.2.4. Detailed analysis of the selection process for locations of stations and maintenance and layover facilities, and discussion of consistency with local land use plans is documented in the *Facilities Site Evaluation and Design Technical Memorandum* in **Appendix B**.

4.2.3.1 No Build Alternative

Under the No Build Alternative, the NLX Project would not occur and would not alter current conditions. There would be no changes except planned and programmed actions that are independent of the NLX Project.

4.2.3.2 Build Alternative – Operations

The primary difference between operations and construction with respect to right of way is the duration of the impact. Property needed for the NLX Project would be permanent acquisition. Property needed for construction purposes only would likely be obtained through a temporary easement.⁵

Right of way acquisition would be minimal from the construction of new tracks because all improvements would be located within or adjacent to existing BNSF right of way. Parallel to the existing BNSF track, new track dedicated for passenger train use would be approximately 5 miles of the total 152-mile-long corridor. New or extended freight rail sidings needed for operational efficiency would be approximately 27 miles of the 152-mile-long corridor. The edge of the proposed NLX Project construction limits is between 22 and 46 feet from the centerline of the existing track. Overall, the new passenger track, new or extended freight rail sidings, roadway crossing improvements, stations, maintenance facilities and layover facilities may require about 13 acres from approximately 27 parcels. A breakdown of the number of parcels and associated acreage is presented in **Table 4-8. Appendix D** shows approximate locations of construction limits outside the BNSF right of way where permanent easements, temporary easements, or both could be required.

At this time, NLX Project design has not been advanced sufficiently to differentiate between temporary and permanent easement acquisitions. However, a majority of the acquisitions are anticipated to be small strips of temporary easement along the NLX Project to allow for staging during construction, grading of track embankment and placement of upgraded rail and roadway crossing equipment. Permanent acquisition would likely be at station locations, along with a parcel required for the proposed Sandstone Maintenance Facility. Details regarding temporary and permanent easement acquisition would be determined as the NLX Project advances through the design process.

⁵ An easement is a right to use a portion of property for a given purpose, while the underlying ownership of the property does not change. The holder of the easement has a legal right to use the property described by the easement for a designated purpose. In the case of the NLX Project, a temporary construction easement would allow the project to occupy a portion of a property to allow the construction of the project to be completed. The property would remain with the property owner, and once construction is complete, the easement would expire.

Table 4-8: Summary of Potential Right of Way Acquisitions (Permanent, Temporary, or Both) in the NLX Study Area

| County | Potential Easements (Permanent, Temporary, or Both) | Estimated Acres | Parcels |
|---------------|--|-----------------|-----------|
| Hennepin, MN | No easements anticipated | - | - |
| Anoka, MN | Easements for Coon Rapids Station | 3.5 | 2 |
| Isanti, MN | Easements for Cambridge Station | 0.4 | 1 |
| Kanabec, MN | Various temporary and/or permanent easements | 0.5 | 7 |
| Pine, MN | Easements for Hinckley Station | 1.5 | 2 |
| | Easements for Sandstone Maintenance Facility | 1.2 | 1 |
| Carlton, MN | Various temporary and/or permanent easements | 3.6 | 12 |
| Douglas, MN | Easements for Superior, Wisconsin Station | 2.1 | 2 |
| St. Louis, MN | No easements anticipated | - | - |
| Total | | 12.8 | 27 |

Note that the acreages of potential right of way acquisitions in this section may not match the station land areas in Section 4.1, Land Use and Land Cover. The acreages reported in this section represent potential temporary or permanent changes in ownership; the land areas presented in Section 4.1 represent the estimated construction limits of the proposed station.

Proposed NLX Project right of way needs identified in **Table 4-8** are discussed by station and facility below.

Stations

Target Field

No additional right of way is required for the proposed NLX station. The proposed NLX platform at Target Field Station is located within an existing rail corridor that is owned by BNSF. The existing Northstar platforms are controlled by Metro Transit, which operates the service. The proposed NLX station would extend the existing Northstar platform approximately 490 feet. To secure the platform area for the NLX station, MnDOT would negotiate agreements with BNSF and Metro Transit.

Coon Rapids

The proposed NLX station encompasses a portion of approximately 3.5 acres on two parcels owned by the ACRRA. The platform would be located in BNSF right of way. To secure the station site, MnDOT would negotiate agreements with Anoka County and BNSF for use of their land.

Cambridge

The proposed NLX station would be integrated with the publicly owned portions of the existing City Center Mall. The City has indicated a willingness to work with MnDOT to make the necessary site and building modifications to accommodate the required program elements for an NLX station. The southern portion of the City Center Mall is privately owned and contains mostly commercial retail uses. The planned site improvements for the station would not directly affect the privately owned portions of the mall. The only parcel that would be acquired for the Cambridge station site is a privately owned vacant parcel of approximately 0.4 acre, to the west of City hall on the south side of Third Avenue Northeast. This parcel would be needed for station parking. The station site would also incorporate land owned by BNSF along the railroad tracks. MnDOT would negotiate an agreement with BNSF for use of their land.

Hinckley

The proposed NLX station site is located partially on public land owned by the City of Hinckley and on private land owned by the Episcopal Church of Minnesota. Approximately 1.5 acres from portions of these two properties would be needed for the station. The City of Hinckley has stated that its maintenance building could be moved to allow space for station parking. The platform would be located in BNSF right of way. MnDOT would negotiate an agreement with BNSF for use of railroad property.

Superior, Wisconsin

A majority of the proposed NLX station site would be located on BNSF property. MnDOT would need to negotiate an agreement with BNSF for use of their land. Two privately owned parcels, totaling approximately 2.1 acres, would also be affected by station development. One parcel is vacant and the other affected private parcel contains a former Waste Management recycling facility. MnDOT would purchase a small portion of the Waste Management property along the northern edge for a station access road.

Duluth

No additional right of way would be required for the proposed NLX station. The station site is located adjacent to Union Depot, which is owned by St. Louis County and managed by Oneida Realty. Some of the property

needed for station access and/or passenger circulation is owned by the City of Duluth. The City of Duluth also has jurisdiction over the streets that access the proposed Duluth Station. All three entities have indicated their willingness to coordinate with MnDOT to bring passenger rail service to Union Depot. Ultimately, an agreement between MnDOT and St. Louis County, as well as the City of Duluth, would be required to build a new station and initiate NLX Service.

Maintenance and/or Layover Facilities

Sandstone

The proposed maintenance facility site is located primarily on BNSF property. Approximately 1.2 acres of a private property on the southwest end of the site would be acquired for driveway access to MN 23 and parking. To secure the site, MnDOT would negotiate an agreement with BNSF and the private property owner to use the land for a maintenance facility.

Duluth

The proposed maintenance and/or layover facility in Duluth is owned by BNSF. MnDOT would negotiate a lease agreement during subsequent stages of the NLX Project to secure the site.

4.2.4 Avoidance, Minimization and Mitigation Measures

Mitigation measures considered all efforts to avoid, minimize and mitigate impacts on all track, roadway, bridge, station and maintenance and layover facilities as identified in the beginning of this chapter. Where mitigation measures are specific to a type of proposed improvement, they are described below. The NLX Project would continue efforts to avoid, minimize and mitigate impacts as the project advances through construction.

No residential acquisitions have been identified for the NLX Project. Should any residential properties be identified for acquisition as the NLX Project advances through the design process, acquisition of private residential property would be mitigated by payment of fair market compensation and provision of relocation assistance in accordance with the Uniform Act, Minn. Stat. 117 and Wis. Stat. Chapter 32.

Acquisition of approximately 1.5 acres from portions of two non-residential properties would be needed for the Hinckley Station. Compensation for acquisition of non-residential property would be provided in accordance with the Uniform Act (49 CFR 24), Minn. Stat. 117 and Wis. Stat. Chapter 32. If displacements of non-residential property owners are identified as the NLX Project advances through the design process, relocation assistance would be provided in accordance with the same regulations.

MnDOT would coordinate with BNSF and other property owners noted above to negotiate long-term easements for stations and maintenance and layover facilities. MnDOT would develop agreements with property owners for temporary easements during construction.

4.2.5 Summary

Because the number of daily round trips for the NLX Project was reduced from eight round trips at up to 110 mph in the Tier 1 EA to four round trips at up to 90 mph in the Tier 2 EA, the required new rail improvements to accommodate NLX have been reduced. This change results in construction limits that are largely contained within the existing BNSF right of way.

Tier 2 EA analyses indicate that approximately 13 acres of right of way spread over 27 parcels on the 152-mile-long NLX Project corridor between Minneapolis and Duluth would be required for the NLX Project. Right of way acquired for stations or maintenance and layover facilities would likely be a permanent acquisition. Right of way acquired for other rail corridor improvements is anticipated to be temporary easement for construction purposes.

Potential right of way impacts have been substantially reduced in the Tier 2 EA analysis compared to the Tier 1 EA analysis. During the Tier 1 EA analysis, approximately 120 acres of right of way were identified; as noted, the Tier 2 EA analysis indicates that about 13 acres of right of way would be required.

4.3 Vegetation and Wildlife

The Tier 1 EA analysis indicates that the NLX Project would impact vegetation and wildlife. This section analyzes the NLX Project impacts based on proposed construction limits that have been updated since the Tier 1 EA. **Table 4-9** presents the NLX study area used for vegetation and wildlife impact analysis; **Table 4-10** compares the results of the Tier 1 EA and the Tier 2 EA analyses. The revised impacts supersede the results presented in the Tier 1 EA and are summarized at the end of this section.

Table 4-9: NLX Study Area for Vegetation and Wildlife

| NLX Study Area Definition | Basis for NLX Study Area |
|---|---|
| Construction limits plus a 1-mile buffer. | Impacts on vegetation and wildlife were evaluated within the construction limits and a 1-mile buffer, with the exception of aquatic habitats, which were evaluated within the construction limits with a 200-foot buffer. |

Table 4-10: Vegetation and Wildlife Comparison – NLX Tier 1 Service Level EA and NLX Tier 2 Project Level EA

| Identified Impacts in NLX Tier 1 Service Level EA | Identified Impacts in NLX Tier 2 Project Level EA |
|---|---|
| Vegetation converted to trackbed and slopes: 61 acres wooded, 94 acres brush and grass, 94 acres wetlands and 47 acres cropland (remaining 124 acres are developed, such as lawn and impervious surface). | Further minimization of NLX Project impacts through refinements in preliminary engineering. See Section 4.1, Table 4-4 and Table 4-5 . |
| Construction potential to spread invasive species. | No change. |
| Minimal impact on terrestrial wildlife habitat (that is, strip uses of small portions of edge habitat). | No change. |
| Where NLX Project not fenced, increased risk of animal mortality (that is, animal-train collision); where NLX Project fenced, animal movement restricted. | No change. |
| Potential impact on migratory bird nesting (bridges). | No change. |
| Potential for erosion and sedimentation, other construction impact on aquatic habitat – 27 crossings of trout streams (18 streams total, 12 in Minnesota and 6 in Wisconsin). | Potential for erosion and sedimentation, including 11 trout streams directly crossed by the NLX Project construction limits (6 in Minnesota and 5 in Wisconsin). |
| Seventeen prairie areas were identified within the proposed NLX study area. | Minnesota Biological Survey (MBS) data indicate 9 of the 17 prairie areas identified during the Tier 1 review lie within the refined construction limits. Of the 9 prairies, 7 are located in Anoka County and 2 are located in Isanti County. Minnesota Land Cover Classification System (MLCCS) data indicate only two prairie remnants are crossed in Anoka County and no prairie remnants are crossed in Isanti County. |
| The proposed NLX Project directly crosses 99 water courses (65 in Minnesota and 34 in Wisconsin). | The proposed NLX Project crosses 59 streams (37 in Minnesota and 22 in Wisconsin). |

As appropriate and necessary, this Tier 2 EA would be refined through future supplemental NEPA documentation as the final design advances and funding is secured for the NLX Project. Future supplemental environmental documentation is identified as appropriate throughout this Tier 2 EA.

4.3.1 Regulatory Context and Methodology

4.3.1.1 Legal and Regulatory Context

The Minnesota Board of Water and Soil Resources (BWSR) provides seed mixes for native vegetation establishment and enhancement guidelines to assist in meeting state vegetation policies and standards (BWSR, 2016). State agency guidelines would be followed for vegetation restoration near streams, wetlands and waterbodies. Stormwater revegetation regulatory requirements are discussed in the water resources sections of this document (see Sections 4.6 and 4.7).

4.3.1.2 Methodology

Methodologies for characterization and assessment of impacts on vegetation and wildlife focused on identifying their presence within the NLX study area and determining the impacts that would occur within the construction limits. For wildlife, consideration was also given for the mobility of wildlife within, into and out of the NLX study area.

The Tier 2 EA updates the information from the Tier 1 EA using GIS data and updated construction limits, as well as reviewing databases and agency websites.

The Ecological Classification System was developed by Minnesota Department of Natural Resources (MnDNR) and the U.S. Fish and Wildlife Service (USFWS) following the National Hierarchical Framework of Ecological Units (Cleland et al., 1997). The system identifies and describes uniform ecological features in the landscape from very large continental units to localized settings. Provinces are units of land defined using major climate zones, native vegetation and biomes. Ecological Classification System sections are units within provinces defined by origin of glacial deposits, regional elevation, distribution of plants and regional climate. Within sections, Ecological Classification System subsection descriptions provide further detailed information on landform, soils, climate, geology, hydrology and vegetation (MnDNR, 2016a). Descriptions of vegetation and wildlife using the Ecological Classification System are provided below.

Native Prairies

In 1997 and 1998, the Minnesota Biological Survey (MBS) conducted a survey of existing railroad rights of way throughout Minnesota to assess the presence and quality of remnant prairies along rail lines. The results of this survey are presented as linear features within rail corridors. Because the data are linear, impacts cannot be determined in area, but are presented as a length of potential impact.

The Minnesota Land Cover Classification System (MLCCS), previously discussed in Section 4.1.1 of this chapter, was also reviewed for native prairie land cover types.

USFWS National Wildlife Refuges, Wildlife Management Areas, Outstanding Biodiversity Significance Sites and Scientific and Natural Areas

MnDNR GIS databases were reviewed to identify USFWS National Wildlife Refuges, Wildlife Management Areas (WMAs), Outstanding Biodiversity Significance Sites, and Scientific and Natural Areas.

Invasive Species

NLX Project activities were reviewed for their potential to introduce or spread invasive species in the NLX study area.

Wildlife Habitat

MnDOT reviewed the MnDNR and U.S. Forest Service Ecological Classification System to identify which Ecological Subsections are located within the NLX study area. These Ecological Subsections identify primary habitat types and common species.

Animal Mortality and Movement

NLX Project activities were reviewed for their potential impact animal mortality and movement in the NLX study area.

Aquatic Habitat

MnDOT identified water course crossings and documented trout streams the NLX study area. NLX Project activities were reviewed for their potential impact on the identified aquatic habitats.

4.3.2 Affected Environment

4.3.2.1 Existing Environment

The proposed NLX Project crosses urban, forested, agricultural, woodland and prairie habitats. Within these landscape types are rivers, streams, lakes and wetlands; all of these areas provide habitat for a variety of wildlife and plant life. Lands in the northern portions of the NLX Project tend to be more forested in conifers,

whereas the southern portions have more urban and agricultural lands with forested areas that tend to be dominated by deciduous trees. Vegetation and wildlife include large and small terrestrial mammals, common songbirds, raptors, waterbirds, terrestrial and semi-aquatic reptiles, amphibians, insects and freshwater mussels. Species common to the ecological subsections crossing the NLX study area are listed below in Section 4.3.2.5.

The southern terminus of the NLX Project begins in Minneapolis in the Anoka Sand Plain Ecological Subsection within the Eastern Broadleaf Forest Province. The Anoka Sand Plain is characterized by deposits of glaciofluvial sand and gravel extending along valleys adjacent to the Mississippi River and a flat, sandy lake plain northward. Within the generally flat lake plain, small dunes, kettle lakes and tunnel valleys are present. Small ground moraine and end moraine features are also present, though not a dominant feature of the landscape. Along the Mississippi River and its major tributaries, sandy terraces are the result of riverine deposition resulting from changing historic river levels over time. Soils are dominated by fine, well drained sand in uplands and organic soils in ice block depressions and tunnel valleys and poorly drained prairie soils along the large rivers. The pre-European settlement vegetation was predominantly oak barrens and openings with bur oak (*Quercus macrocarpa*) and northern pin oak (*Quercus ellipsoidalis*) being the dominant tree species. Floodplain forest and prairie were found in a narrow band along the Mississippi River. Fire and drought were important factors in maintaining the oak and pine barrens in the Anoka Sand Plain (MnDNR, 2016a).

The central portion of the NLX Project traverses the Mille Lacs Uplands Subsection within the Laurentian Mixed Forest Province. The underlying surficial geology is dominated by non-calcareous till of the Superior Basin. The dominant landform consists of Superior lobe ground moraine, end moraine and drumlin fields. Soils described as acid, stony, loam, silt loam and loamy sands predominate. Underlying dense glacial till acts as a confining layer, impeding the flow of water through the soil profile. Pre-settlement forests were dominated by northern red oak (*Quercus rubra*), sugar maple (*Acer saccharum*), basswood (*Tilia americana*) and aspen-birch (*Populus tremuloides* – *Betula papyrifera*). In the southern portions of the ecological subsection, agricultural land use is typical, whereas the northern portions retain large, more mature and managed forested areas. Fire and windthrow were important factors in the determining pre-settlement vegetation patterns. Windthrow refers to the uprooting or overthrowing of trees by the wind (MnDNR, 2016a).

Moving north, the NLX Project crosses the Glacial Lake Superior Plain (Southern Superior Uplands within the Laurentian Mixed Forest Province) in Minnesota and the Lake Superior Clay Plain in Wisconsin (Northern lakes and Forests region) south of Duluth. These subsections consist of lacustrine clays along the south and west shores of Lake Superior. Deep river valleys are common in the subsections, but generally topography is gently rolling over clay and sandy clay. Bedrock is only present at the surface where exposed by river valleys. Prior to European settlement, the subsection was dominated by conifer forests of pine (*Pinus* sp.), spruce (*Picea* sp.), fir (*Abies* sp.), cedar (*Thuja* sp.) and hemlock (*Tsuga* sp.) with yellow birch (*Betula alleghaniensis*) common. Quaking aspen (*Populus tremuloides*) is common today as much of the subsection was logged in the past.

Windthrow and soil slumping and sliding were major disturbance factors in pre-settlement forests (MnDNR, 2016a).

In Duluth, the NLX Project crosses the North Shore Highlands Subsection. This area is characterized by steep cliffs and rolling hills along the shoreline of Lake Superior. The NLX Project is contained entirely within the urbanized Duluth Harbor in this subsection. Characteristic vegetation communities are a mosaic of aspen-birch with white and red pine (*Pinus resinosa*), mixed hardwood-pine and conifer bogs and swamps (MnDNR, 2016a).

4.3.2.2 Native Prairies

The MBS data were reviewed during the Tier 1 EA, and 17 distinct dry and mesic prairie areas were identified within the proposed NLX study area. Of the 17 locations in Minnesota, 14 are in Anoka County, and three are in Isanti County. All of the locations were identified as being fair to good quality. No remnant prairies were identified within the Wisconsin portion of the proposed NLX Project.

The MBS data were reviewed during the Tier 2 EA analysis; this review focused on the proposed construction limits that have been developed since the completion of the Tier 1 EA. Of the 17 prairie areas, nine lie within the revised construction limits. Of the nine prairies, seven are located in Anoka County, and two are located in Isanti County.

As part of the Tier 2 EA analysis, the Minnesota Land Cover Classification System (MLCCS) database was also reviewed. Of the nine prairie areas identified in the NLX study area, a total of 10.74 acres of prairie was identified within and adjacent to the proposed construction limits in two areas within Anoka County. The two areas include a 3.84-acre prairie remnant and a 6.90-acre prairie remnant. No prairie remnants were identified in the proposed construction limits in Isanti County using the MLCCS database.

4.3.2.3 USFWS National Wildlife Refuges, Wildlife Management Areas, Outstanding Biodiversity Significance Sites and Scientific and Natural Areas

USFWS National Wildlife Refuges

The USFWS system are lands administered for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans. No USFWS National Wildlife Refuges (NWRs) are found in or adjacent to the NLX study area.

Wildlife Management Areas

In Minnesota, WMAs are MnDNR administered lands protected primarily for the purpose of protecting wildlife production, public hunting, trapping, fishing and other compatible recreation uses. The Robert and Marilyn Burman WMA is located immediately west of the construction limits along the existing BNSF track in Anoka County. This 204-acre WMA includes open field, oak savanna, lowland shrub swamp and upland hardwood forests. No similarly designated area is found in or adjacent to the NLX study area in Wisconsin.

Outstanding Biodiversity Significant Sites

An MBS designation of “outstanding biodiversity significance” means that the site contains the best occurrences of the rarest species, the most outstanding example of the rarest native plant communities and/or the largest, most ecologically intact or functional landscapes. This designation is not applicable to Wisconsin. Two designated “outstanding biodiversity significance” sites are located adjacent to the construction limits in southern Anoka County; one immediately north and the other immediately south of Bunker Lake Boulevard Northwest. The southern site has an area of 1,061 acres and the northern site encompasses 655 acres. The southern site is contained in the Bunker Hills Regional Park and much of the northern site has undergone residential development since the designation.

Scientific and Natural Areas

In Minnesota, Scientific and Natural Areas are MnDNR administered lands protected for the purpose of preserving natural features and rare resources of exceptional scientific and educational value. The NLX Project does not cross any Scientific and Natural Areas. In Wisconsin, State Natural Areas are Wisconsin Department of Natural Resources (WDNR) administered lands protected for the purpose of protecting natural communities, significant geological formations, archaeological sites, areas valuable for research and educational use and preserving genetic and biological diversity and rare resources. No Wisconsin State Natural Areas are found in or adjacent to the NLX study area.

4.3.2.4 Invasive Species

Invasive Species are nonnative species that can cause economic or environmental harm and could threaten natural resources. These species often spread rapidly in open corridors and can form large dense single species stands that reduce plant diversity. Invasive forbs, herbs, shrubs and aquatic plants have been observed within the central and northern portions of the NLX Project. Invasive species are present in all types of habitat within the NLX study area.

4.3.2.5 Wildlife Habitat

The NLX Project can be divided into three general areas: south portion, central portion and northern portion. Details regarding the habitats within the Ecological Subsections in each area can be found in Section 4.3.2.1.

The south portion of the NLX study area lies within the Anoka Sandplain Ecological Subsection from the Target Field Station and through the Twin Cities Metropolitan Area. This area supports wildlife commonly found in developed areas such as mice, squirrels and common songbirds, as well as species such as sandhill cranes (*Grus canadensis*), trumpeter swans (*Cygnus buccinator*), bald eagles (*Haliaeetus leucocephalus*), lark sparrows (*Chondestes grammacus*), Blanding's turtles (*Emydoidea blandingii*) and gopher snakes (*Pituophis catenifer*) (MnDNR, 2006).

The central portion of the NLX study area lies within the Mille Lacs Uplands Ecological Subsection and is more rural, with farmland and forest lands interspersed, and supports wildlife such as deer, common songbirds and small mammals, as well as more sensitive species such as bald eagles, common terns (*Sterna hirundo*), ospreys (*Pandion haliaetus*), wood turtles (*Glyptemys insculpta*), trumpeter swans, yellow rails (*Coturnicops noveboracensis*), Nelson's sparrows (*Ammodramus nelsoni*), four-toed salamanders (*Hemidactylium scutatum*), spotted salamanders (*Ambystoma maculatum*), winged mapleleaf (*Quadrula fragosa*), spike (*Elliptio dilatata*) and round pigtoe (*Pleurobema sintoxia*) (MnDNR, 2006).

The northern portion of the NLX study area lies within the Glacial Lake Superior Plain, Lake Superior Clay Plain and Northshore Highlands Ecological Subsections, and is more wooded and rocky. This area supports common wildlife such as deer, rabbits, squirrels, waterfowl and bears, as well as more sensitive species such as bald eagles, peregrine falcons (*Falco peregrinus*), Franklin's ground squirrels (*Poliocitellus franklinii*), gray wolves (*Canis lupus*), Connecticut warblers (*Oporornis agilis*), boreal owls (*Aegolius funereus*), merlins (*Falco columbarius*), common ravens (*Corvus corax*), common terns, piping plovers (*Charadrius melodus*), trumpeter swans, northern long-eared bat (*Myotis septentrionalis*), wood turtles, deepwater sculpin (*Myoxocephalus thompsonii*), northern brook lampreys (*Ichthyomyzon fossor*) and whitefish (*Coregonus kiyi*) (MnDNR, 2006).

Occurrences of the Minnesota state-threatened Blanding's turtle have been recorded in concentrations in Anoka, Isanti, Kanabec and Pine Counties. Occurrences of the Minnesota state-threatened seaside three-awn (*Aristida tuberculosa*) have been recorded in concentrations in Anoka and St. Louis Counties. An occurrence of the Wisconsin state-threatened wood turtle was recorded in Douglas County. The Wisconsin state-threatened seaside crowfoot is also known to occur in Douglas County. State-threatened species are further discussed in Section 4.4.3.

4.3.2.6 Animal Mortality and Movement

Animal mortality can occur when crossing railroad corridors. Additionally, railroad corridors can create a barrier to an animal's movement, which can limit its ability to disperse, migrate, breed, or meet other survival needs. The existing track infrastructure varies from multiple tracks in urban areas to a single track with areas of sidings in rural areas. The number of trains varies from 10 in rural areas to 90 trains per day in more urban areas in Hennepin and Anoka Counties.

4.3.2.7 Aquatic Habitat

The Tier 1 EA analysis determined that the proposed NLX Project directly crosses 99 water courses (65 in Minnesota and 34 in Wisconsin). The Tier 2 EA analyzed the revised construction limits, focusing on water courses directly crossing the NLX study area. Under this Tier 2 EA, approximately 59 streams are within the NLX study area, 37 in Minnesota and 22 in Wisconsin. Of the 59 streams, 25 are trout streams. See **Appendix D** for water courses.

The Tier 2 EA analysis showed that of the 25 trout streams in the NLX study area, 11 trout streams are located within the construction limits. **Table 4-11** below lists the trout streams and the county in which the trout streams are located.

Table 4-11: Trout Stream Locations Directly Crossing the NLX Construction Limits

| County | Stream Name |
|------------------|---------------------------------------|
| Minnesota | |
| Carlton | Unnamed Tributary to Net River |
| | Unnamed Tributary to Section 36 Creek |
| St. Louis | Buckingham Creek |
| | Merritt Creek |
| | Miller Creek |
| | Coffee Creek |
| Wisconsin | |
| Douglas | Balsam Creek (Big Balsam) |
| | Little Balsam Creek |
| | Unnamed Tributary to Balsam Creek |
| | Rock Creek |
| | Black River |

Wild rice (*Zizania palustris*) grows above the water surface in calm, clear waters and is rooted in the soft, mucky sediment of lake or stream bottoms (MnDNR, 2016b). Wild rice is high-protein food source for both wildlife and humans, attracts many wild birds and provides nesting cover for waterfowl (MnDNR, 2016b). The Tier 1 EA identified no wild rice populations in surface waters in the NLX study area according to the Great Lakes Indian Fish and Wildlife Commission; no new wild rice populations are likely to have developed since the completion of the Tier 1 EA analysis because wild rice requires water 0.55 to 3 feet deep and seeds are unlikely to survive dry conditions (MnDNR, 2008). Wetlands and surface waters are further discussed in Sections 4.5 and 4.6 of this Tier 2 EA, respectively.

4.3.3 Impacts

The following sections discuss the impacts on vegetation and wildlife associated with the No Build Alternative and the Build Alternative. Impact analysis considered all track, roadway, bridge, station and maintenance and layover facilities as identified in the beginning of this chapter. Where impacts are specific to a type of proposed improvement, they are described below. The Build Alternative impacts discussion analyzes long-term operations and maintenance impacts and short-term construction impacts as described in the beginning of this chapter. A discussion of potential impacts at station and maintenance and layover facility sites is also presented, as well as a general discussion of the potential impacts within the BNSF right of way. Avoidance, minimization and mitigation measures are described in Section 4.3.4.

4.3.3.1 No Build Alternative

Under the No Build Alternative, the NLX Project would not occur and would not alter current conditions. There would be no changes except planned and programmed actions that are independent of the NLX Project.

4.3.3.2 Build Alternative – Operations

Operations impacts are defined as permanently converted areas. The proposed construction limits lie primarily within the existing BNSF right of way; therefore, permanently converted areas would exist within the existing BNSF right of way. In general, impacts associated with operation and maintenance of NLX passenger service are expected to be similar to operating and maintaining the existing BNSF freight rail system.

Native Prairies

The proposed NLX Project crosses nine MBS railroad prairie remnants within the existing BNSF right of way. Operations would affect native prairies periodically when maintenance or repairs to existing tracks or bed are needed. The impacts on native prairie may vary depending upon the types of maintenance or repair needed. If

unforeseen repairs or maintenance that would affect native prairie is required, coordination with MnDNR would be initiated to discuss potential impacts and identify potential ways to reduce or mitigate impacts from the NLX Project.

Operations impacts are not expected to impact the two prairie remnants in Anoka County identified during review of the MLCCS. The amount of impacts on native prairie may vary depending upon the types of maintenance or repair needed. If unforeseen repairs or maintenance that would affect native prairie is required, coordination with MnDNR would be initiated to reduce impacts.

USFWS National Wildlife Refuges, Wildlife Management Areas, Outstanding Biodiversity Significance Sites and Scientific and Natural Areas

Because the WMA and the two sites of outstanding biodiversity significance are outside of the construction limits of proposed new dedicated track and sidings, no impacts are anticipated on these resources. The Robert and Marilyn Burman WMA is located 726 feet west of the construction limits. The site of outstanding biodiversity significance in Bunker Hills Regional Park is located 2,047 feet south of the construction limits. The designated site of outstanding biodiversity significance that was north of the NLX Project is now a residential area.

Invasive Species

Invasive species could be inadvertently introduced during operation, maintenance or rehabilitation. Generally, means for transporting invasive species include attachment to worker clothing, equipment and unwashed vehicles; or in materials imported to the site for maintenance activities. Typical materials with the potential to contain invasive species include mulch, seed mixes, soils, sod, gravel or ballast. Additionally, there is the potential to transport invasive aquatic species (plants and animals) from one site to another if construction equipment is not inspected and cleaned prior to leaving a site, particularly during bridge construction and maintenance. Invasive species of concern are located in all habitat types in the NLX Project, including aquatic habits that cross the NLX study area.

Utility and rail corridors are long-term pathways that may allow for the spread invasive plants, seed, pathogens and animal species. Because the NLX Project would occur on existing rail lines used by maintenance equipment and freight trains and because new passenger trains associated with the NLX Project would not be an expansion of the existing rail network, the NLX Project would not increase pathways used by invasive species to colonize new areas.

Wildlife Habitat

Wildlife that use the bed and ballast of the existing tracks would continue to use these areas with the implementation of the NLX Project. New sidings and tracks would provide additional bed and ballast used by these species. Existing wildlife habitat adjacent to the majority of the NLX Project would remain in their current state and would be unaffected by the operation of the NLX Project. The NLX Project would operate within the BNSF right of way. Operation activities may affect wildlife habitat during maintenance or repairs if repairs are required outside of the existing rail corridor. Maintenance impacts would occur adjacent to existing facilities and, in most cases, immediately parallel to the rail corridor. While loss of habitat in these locations would occur, it represents relatively small areas. Because the NLX Project is proposed along an existing rail corridor, and stations and maintenance and layover facilities are proposed in developed areas, effects of habitat alteration would be minimal and increases in fragmentation would not occur.

Animal Mortality and Movement

The NLX Project would be located on an active freight rail line. Railroad tracks do create a barrier to movement of small animals, including turtles. The addition of NLX passenger trains along the existing rail line would reduce the amount of time available for animals to cross the tracks safely. NLX traffic may increase the likelihood of mortality due to affected animals not being able to avoid faster and more frequent trains.

During Tier 1 EA discussions with resource agencies, no known avian or terrestrial wildlife migratory routes were identified crossing the NLX study area. It is unlikely that animal migratory routes have changed since the Tier 1 EA analysis. Fencing is planned only for safety and security purposes in developed areas where likely human and train interactions could occur, such as at grade crossings and in developed areas with residential development on both sides of the tracks. Specific locations for fencing would be determined as the NLX Project advances through the design process.

Aquatic Habitat

Operations impacts would include the addition of piers where the new bridge would be constructed over Rice Creek in Anoka County and the extension of existing culverts over other streams in construction areas (seven in Anoka County, four in Isanti County and one in Pine County). See Section 4.6.3 for list of permanent impacts on streams. Impacts on aquatic life as a result of these improvements would be minimal because they are adjacent to existing crossings and would not interfere with feeding, movement or reproduction of aquatic species to an extent threatening survival of local wildlife populations.

Operations impacts could occur during maintenance- or repair-related activities beyond the scope of BNSF's routine maintenance activities that would happen with or without the NLX Project. Needed deck work would typically be completed from on top of the bridge. With the majority of work beginning completed from the rail or on top of structures, the potential impact on aquatic habitat would be minor.

4.3.3.3 Build Alternative – Construction

Construction impacts include those areas that would be temporarily altered by construction activities.

Native Prairie

The proposed NLX Project construction activities would impact the nine MBS railroad prairie remnants due to grading, track work and other rail infrastructure improvements at these locations. Field surveys of these areas would be required to quantify the area of impact relative to the total area of the prairie remnant because the MBS provides only the linear extent of native prairie along the railroad corridor. The field surveys would take place when the NLX Project advances through the design process.

The proposed NLX Project construction activities would impact the two Anoka County prairie remnants identified during review of the MLCCS. Approximately 0.47 acre of the 3.84-acre native prairie site would be impacted, and approximately 1.02 acre of the 6.9-acre native prairie site would be impacted inside the BNSF right of way.

USFWS National Wildlife Refuges, Wildlife Management Areas, Outstanding Biodiversity Significance Sites and Scientific and Natural Areas

Because the WMA and the two sites of outstanding biodiversity significance are outside of the construction limits of proposed new dedicated track and sidings, no impacts are anticipated on these resources.

Invasive Species

Invasive species could be inadvertently introduced during construction via attachment to worker clothing, equipment and unwashed vehicles or in materials imported for construction. Materials with the potential to contain invasive species include mulch, seed mixes, soils, sod, gravel, ballast or aquatic species transported to bridge construction sites on construction equipment. Invasive species of concern are located in all habitat types crossing the NLX study area, and are considered potential impacts.

Wildlife Habitat

While some vegetation clearing would occur throughout the NLX study area where necessary, new clearing for the construction of new facilities would be limited to developed areas where limited wildlife habitat exists. Construction impacts would occur adjacent to existing facilities and, in most cases, immediately parallel to the rail corridor or within the construction limits not occupied by rail infrastructure. Construction impacts would be limited to increased construction traffic and machinery, an increase in noise associated with construction equipment and possible dust or sedimentation associated with earth moving activities at limited locations. Temporary increases in noise, traffic, dust or sedimentation at these locations would occur but would be limited in duration and are not anticipated to have a long-term impact on wildlife habitat. Because the NLX Project is proposed along existing corridors and stations, maintenance and layover facilities are proposed in developed areas, effects of fragmentation are expected to be minimal.

Animal Mortality and Movement

During Tier 1 EA discussions with resource agencies, no known migratory routes were identified crossing the NLX study area that might be affected by construction. Mortality associated with construction of the NLX Project is not expected to be significant or widespread due to the limited areas disturbed by widening of rail facilities. The existing operation of railroads would not change from its current state during construction. Habitat disturbance in areas where corridor widening occurs would be the only impacts resulting from construction.

Aquatic Habitat

Impacts on aquatic habitats would most likely occur where new track, siding extensions, bridge deck modification and new bridges would be constructed. Potential stream and river impacts would most likely occur where construction activities would be near stream crossings and could include suspended or deposited silt and sediment that could interfere with the feeding, movement and reproductive activities of aquatic species. While impacts on water quality are a concern to all aquatic species, trout streams, are particularly sensitive to environmental change due to potential stormwater discharges during construction and inputs of warm waters that affect the coldwater habitat required to support trout populations. **Table 4-12** identifies NLX construction activities that would occur within 200 feet of trout streams crossing the construction limits.

Table 4-12: Construction Activities within 200 feet of Trout Streams Crossing the Construction Limits

| County | Stream Name | NLX Construction Activities |
|------------------|---------------------------------------|---|
| Minnesota | | |
| Carlton | Unnamed Tributary to Net River | Reestablishment of embankment slopes and track shift |
| | Unnamed Tributary to Section 36 Creek | Rebuild of roadway approaches at Clark Road |
| St. Louis | Buckingham Creek | Construction of the Duluth Maintenance and/or Layover Facility |
| | Merritt Creek | Construction of new turnouts |
| | Miller Creek | Rail grade crossing work at South 37th Avenue West, construction of a new control point and construction of a new crossover |
| | Coffee Creek | Construction of new turnouts |
| Wisconsin | | |
| Douglas | Balsam Creek (Big Balsam) | Balsam Creek bridge rehabilitation and track undercutting |
| | Little Balsam Creek | Track shifts |
| | Unnamed Tributary to Balsam Creek | Track undercutting |
| | Rock Creek | Track undercutting |
| | Black River | Black River bridge rehabilitation |

4.3.4 Avoidance, Minimization and Mitigation Measures

The NLX Project would continue efforts to avoid, minimize and mitigate impacts during further study as the NLX Project advances through the design process. MnDOT will continue to coordinate with the MnDNR and WDNR regarding needed surveys, impacts, minimization and mitigation strategies as the NLX Project advances through the design process. MnDOT would continue to coordinate with MnDNR and WDNR on the need for surveys for native prairie, stream and river crossings, and threatened and endangered species; survey protocols for threatened and endangered species; and implementation of mitigation strategies to minimize impacts on turtles and other wildlife.

4.3.4.1 Native Prairie

Field surveys would be required to fully quantify the impact on native prairie remnants. The 152-mile-long NLX Project would affect about 1.49 acres of native prairie outside of existing BNSF right of way. This means a majority of the Tier 2 EA impact would occur on land that is already dedicated to transportation use as part of the BNSF right of way. Impacts could be minimized through design modifications to reduce the construction limits required for the proposed rail improvements. If design modifications are not feasible or prudent, areas of prairie impact could be mitigated through planting native prairie species on drainage slopes and other suitable areas within the NLX Project limits. Restoration of low or fair quality prairie remnants near the proposed NLX Project could also be considered. MnDOT will determine during further MnDNR consultation if a vegetation assessment and vegetation management plan would be required if impacts on native prairies are anticipated. USFWS National Wildlife Refuges, Wildlife Management Areas, Outstanding Biodiversity Significance Sites and Scientific and Natural Areas

No impacts are anticipated on these resources, and therefore, no mitigation measures were identified because the WMA and the two sites of outstanding biodiversity significance are outside of the construction limits of proposed new dedicated track and sidings.

4.3.4.2 Invasive Species

The potential spread of invasive species would be avoided or minimized through construction practices focused on good housekeeping, such as decontamination of equipment on site, use of weed-free mulch and other best management practices (BMPs) explained in *Best Practices for Meeting DNR General Public Waters Work Permit GP2007-0001* at

http://files.dnr.state.mn.us/waters/watermgmt_section/pwpermits/gp_2004_0001_introduction.pdf

(MnDNR and MnDOT, 2014).

Construction practices would adhere to BMPs in Minnesota and Wisconsin to limit the spread of invasive species during construction. BMPs would be developed and disseminated to contractors through MPCA and WDNR National Pollutant Discharge Elimination System (NPDES) permit requirements, MnDNR Public Waters Work Permit requirements, education, monitoring and construction specifications.

4.3.4.3 Wildlife Habitat

Impacts on wildlife and vegetation as a result of habitat conversion to rail use would be mitigated through revegetation within the construction limits. Measures to minimize impacts would be further developed as the NLX Project advances through the design process. Use of construction BMPs could minimize impacts on wildlife and vegetation, such as timing construction activities to minimize light and noise impacts, implementing

stormwater and erosion control measures and restoring temporarily disturbed areas. To the extent practical, native pollinator-friendly species would be planted in areas disturbed by construction.

Bridges provide potential bird nesting habitat. In compliance with 50 CFR 21.41 and the federal Migratory Bird Treaty Act, bridges to be rehabilitated would be kept clear of nests prior to nesting season. After inactive nests have been removed, tarps or nets would be secured to the bridges to restrict birds from gaining access below the bridge to discourage nesting and keep the structure clear of nests until nesting season is over. Bridges may provide roosting habitat for bats. As a means of mitigating impacts on bats, measures that exclude bat use, such as sealing and filling holes and crevices, winter construction, erecting exclusion measures and planning for coordination with USFWS, MnDNR and WDNR, may be considered as the NLX Project advances through the design process. Where bridge structures provide crevices or seams that could be used by bats, these measures would be implemented between October and April when bats are hibernating and/or before seasonal bats return to the NLX Project to summer roosts.

4.3.4.4 Animal Mortality and Movement

Project features to minimize effects on animal movement and reduce mortality may be incorporated as the NLX Project advances through the design process. Project features such as fencing, ballast level alteration, bio-netting and wildlife crossings, including escape routes for turtles and other wildlife, would be coordinated with MnDNR and WDNR. To minimize barriers to animal movement, fencing would be limited to areas along the NLX Project where it is necessary for the safety of pedestrians. Where fencing is installed, it would not be extended into waterways that provide the opportunity for wildlife crossing. Continuing coordination with MnDNR and WDNR would occur as the NLX Project advances through the design process. Fencing, where required, would be designed in such a way to minimize impacts on wildlife, if needed. Fencing design could include fence height restrictions and ground clearance adjustments to allow wildlife to cross. Investigation of fencing for required mitigation would occur during further study as the NLX Project advances through the design process.

MnDOT would continue to consult with MnDNR and WDNR regarding fencing and related wildlife crossing considerations for the NLX Project, as well as design measures to help prevent an increase in animal mortality during operations. Measures that limit animal mortality that may be considered include installation of bio-netting, ballast level alteration, between rail escape sites, surveys, and coordination with USFWS, MnDNR and WDNR.

4.3.4.5 Aquatic Habitat

Potential measures to avoid, minimize or mitigate impacts on aquatic habitat include timing of new bridge construction (Rice Creek in Anoka County and Isanti Brook in Isanti County) and bridge deck conversions to

avoid spawning periods. Construction would occur during periods of low flow, and BMPs would be employed to protect stream banks and to prevent silt from entering streams. See “Work Exclusion Dates to Allow for Fish Spawning and Migration” in

http://files.dnr.state.mn.us/waters/watermgmt_section/pwpermits/gp_2004_0001_full_document.pdf for seasonal restriction dates for trout streams, non-trout streams and lakes (MnDNR and MnDOT, 2014).

State agencies and local government units would be notified of the potential construction activities to help ensure that regulatory requirements are followed and appropriate measures to mitigate trout stream impacts are implemented (“Work Exclusion Dates to Allow for Fish Spawning and Migration” in

http://files.dnr.state.mn.us/waters/watermgmt_section/pwpermits/gp_2004_0001_full_document.pdf; MnDNR and MnDOT, 2014).

Construction permits such as NPDES and Public Waters Work permits would be obtained during design prior to initiating construction work. Design documents would be reviewed for compliance with regulations and minimum design standards. Construction BMPs would be employed during construction to minimize potential impacts. See Sections 4.5 and 4.6 for additional information about potential impacts and mitigation measures for work near wetlands and trout streams, respectively.

4.3.5 Summary

There has been a reduction in the proposed maximum speed and number of round trips per day since the completion of the Tier 1 EA analysis. Potential impacts on vegetation and wildlife have been evaluated for the Tier 2 EA analysis using the construction limits for the NLX Project that were updated since the Tier 1 EA analysis. The reduction in speed may allow some animals to escape entrapment on the rails; the reduction in the number of round trips would result in fewer wildlife and train interactions. In addition, the updated construction limits reduce the native prairie impacts on two native prairies crossed in Anoka County. Therefore, there would be a reduction in potential operations impacts in the Tier 2 EA analysis as compared to the Tier 1 EA analysis. Potential construction impacts would be similar to those evaluated in the Tier 1 EA analysis. Impacts on the spread of invasive species, wildlife and migratory birds would remain the same as the Tier 1 EA analysis. The updated construction limits result in a reduction of impacts on aquatic habitat from erosion and sedimentation compared to impacts identified in the Tier 1 EA analysis.

4.4 Threatened and Endangered Species

The Tier 1 EA analysis indicates that the NLX Project would have potential impacts on threatened and endangered species. This section analyzes the NLX Project impacts based on proposed construction limits that have been updated since the Tier 1 EA. **Table 4-13** presents the NLX study area used for threatened and endangered species impact analysis; **Table 4-14** compares the results of the Tier 1 EA and the Tier 2 EA analyses. The revised impacts supersede the results presented in the Tier 1 EA and are summarized at the end of this section. The analysis for threatened and endangered species focuses on areas that are rural and undeveloped. As such, station, maintenance and layover facilities are not specifically discussed.

Table 4-13: NLX Study Area for Threatened and Endangered Species

| NLX Study Area Definition | Basis for NLX Study Area |
|---|--|
| Construction limits plus a 1-mile buffer. | Impacts on threatened and endangered species were evaluated within the construction limits plus a 1-mile buffer. |

Table 4-14: Threatened and Endangered Species Comparison – NLX Tier 1 Service Level EA and NLX Tier 2 Project Level EA

| Identified Impacts in NLX Tier 1 Service Level EA | Identified Impacts in NLX Tier 2 Project Level EA |
|--|--|
| <p>Federally listed species: May affect, but not likely to adversely affect, the Canada lynx (<i>Lynx canadensis</i>). No effect on other federally listed species known to occur in study area counties.^a</p> | <p>Federally listed species: FRA has requested concurrence from the USFWS on a “may affect, but not likely to adversely affect” determination for the Canada lynx (<i>Lynx canadensis</i>) and gray wolf (<i>Canis lupus</i>).</p> <p>No adverse modification of designated critical habitat determinations for:</p> <ul style="list-style-type: none"> • Canada lynx – Critical Habitat • Gray wolf – Critical Habitat <p>No effect determinations for:</p> <ul style="list-style-type: none"> • Kirtland’s warbler (<i>Setophaga kirtlandii</i>) • Piping plover (<i>Charadrius melodus</i>) and Critical Habitat • Rufa red knot (<i>Calidris canutus rufa</i>) • Higgins eye pearlymussel (<i>Lampsilis higginsii</i>) • Snuffbox (<i>Epioblasma triquetra</i>) • Spectaclecase (<i>Cumberlandia monodonta</i>) • Fassett’s locoweed (<i>Oxytropis campestris chartacea</i>) <p>Continuing coordination with USFWS for No Jeopardy Determination on rusty patched bumble bee (<i>Bombus affinis</i>).</p> <p>May affect, but will not cause prohibited incidental take: northern long-eared bat (<i>Myotis septentrionalis</i>).</p> |
| <p>State-listed species: Construction potential for effect on state plant species (MN and WI), Blanding’s turtle (<i>Emydoidea blandingii</i>) (MN) and mussel species (MN).</p> | <p>State-listed species: Potential operations and construction effects on Blanding’s turtle (MN), wood turtle (MN and WI), slender spike-rush (WI) and seaside crowfoot (WI).</p> |

^a The Tier 1 USFWS coordination occurred before the northern long-eared bat was listed as endangered.

As appropriate and necessary, this Tier 2 EA would be refined through future supplemental NEPA documentation as the final design advances and funding is secured for the NLX Project. Future supplemental environmental documentation is identified as appropriate throughout this Tier 2 EA.

4.4.1 Regulatory Context and Methodology

4.4.1.1 Legal and Regulatory Context

Section 7 of the Endangered Species Act (16 USC 1531-1544) requires that all federal agencies consider and avoid, if possible, adverse impacts on federally listed threatened or endangered species or their critical habitats, which could result from direct, regulatory, or funding actions. USFWS is responsible for compiling and maintaining the federal list of threatened and endangered species.

MnDNR and WDNR regulate and administer state rare, threatened and endangered species. According to 2016 Minnesota Statutes, Protection of Threatened and Endangered Species (Minn. Stat. 84.0895) includes the following language: “Notwithstanding any other law, a person may not take, import, transport, or sell any portion of an endangered species of wild animal or plant, or sell or possess with intent to sell an article made with any part of the skin, hide, or parts of an endangered species of wild animal or plant, except as provided in subdivisions 2 and 7.” The Statute directs the Commissioner of MnDNR to develop lists of endangered species, threatened species and species of concern. Similarly, Wisconsin developed the first list of Wisconsin threatened and endangered species in 1972 following enactment of Wisconsin’s endangered species law (Wis. Stat. 29.604 and Wisconsin Administrative Code Chapter NR 27). The list was created to restrict the taking, possession or marketing of species threatened with extinction from the state.

4.4.1.2 Methodology

The methodology for characterizing threatened and endangered species was to identify the species within and passing through the NLX study area and evaluate the potential for impact on the species or their habitat. The Tier 2 EA updates the information in the Tier 1 EA using GIS data sources to confirm threatened and endangered species occurrences in the NLX study area. Potential impacts were updated using Natural Heritage Information System (NHIS) GIS point data, track and roadway crossing preliminary construction limits and station and facilities conceptual engineering. MnDOT coordinated with state and federal agencies, including MnDNR, WDNR and USFWS during the Tier 2 EA to update information regarding species (see **Appendix I**). See Section 4.4.4 for more information about coordination efforts.

4.4.2 Affected Environment

4.4.2.1 Federally Listed Species

The Tier 1 EA, published in February 2013, addressed USFWS threatened and endangered species, as well as critical habitat designated within the NLX study area. MnDOT, MnDNR, FRA and USFWS coordinated to

determine the potential for the NLX Project to affect these species during the Tier 1 EA analysis. FRA determined that the NLX Project “may affect, but is not likely to adversely affect,” the Canada lynx (*Lynx canadensis*), federally listed as threatened.

The Tier 2 EA analysis has been conducted in accordance with Section 7 of the Endangered Species Act for listed species identified as potentially adversely affected. Since the completion of the Tier 1 EA and the FONSI, three species have been added to the USFWS threatened and endangered list. These species are being addressed through direct coordination with USFWS and MnDNR. Newly listed threatened and endangered species include the northern long-eared bat, snuffbox mussel, rufa red knot and the rusty patched bumble bee:

- On February 14, 2012, USFWS published notice in the Federal Register of the final rule to list the snuffbox mussel (*Epioblasma triquetra*) as an endangered species (77 Federal Register 8632).
- On December 11, 2014, USFWS published notice in the Federal Register of the final rule to list the rufa red knot (*Calidris canutus rufa*) as threatened (79 Federal Register 73706).
- On April 2, 2015, USFWS published notice in the Federal Register of its final decision to list the northern long-eared bat (*Myotis septentrionalis*) as a threatened species and issued an interim special 4(d) rule exempting certain activities from the Endangered Species Act’s take prohibition (80 Federal Register 17974).
- On January 14, 2016, USFWS published the final 4(d) rule with revised criteria under which incidental take of northern long-eared bats would be prohibited (81 Federal Register 1900).
- On January 11, 2017, USFWS published notice in the Federal Register of the final rule to list the rusty patched bumble bee (*Bombus affinis*) as an endangered species (82 Federal Register 3186).

Threatened and endangered species information for Minnesota and Wisconsin was obtained from the USFWS website (USFWS, 2016a and 2016b). Federally listed threatened and endangered species that occur in the counties that the NLX Project traverses were identified using the USFWS Wildlife County Distribution of Minnesota’s endangered species (USFWS, 2016c). Additionally, the MnDNR and USFWS document townships that contain documented northern long-eared bat maternity roost trees and/or hibernacula entrances in Minnesota. One known northern long-eared bat hibernaculum lies within a township in the NLX study area in Pine County, Minnesota. Wisconsin makes available township level known occurrences of northern long-eared bats published online through their Natural Heritage Inventory program (WDNR, 2016a). There are no known occurrences of any northern long-eared bat hibernaculum in Wisconsin townships within the NLX study area. A list of species protected by USFWS is identified by county in **Table 4-15** Coordination regarding potential impacts on federally listed species is conducted directly between FRA and USFWS. On January 9, 2017, FRA submitted a letter to USFWS initiating the Tier 2 EA coordination and was updated again on January 19, 2017 (see **Appendix I**).

Table 4-15: Federally Listed Species and Habitat within NLX Project Counties

| Species | County | Listing Status | Habitat |
|---|---|--|--|
| Northern long-eared bat (<i>Myotis septentrionalis</i>) | Minnesota Anoka Carlton Hennepin Isanti Kanabec Pine St. Louis Wisconsin Douglas | Threatened | Hibernates in caves and mines, swarming in surrounding wooded areas in autumn. Roosts and forages in upland forests during spring and summer. |
| Canada lynx (<i>Lynx canadensis</i>) ^a | Minnesota Carlton Pine St. Louis | Threatened in MN and WI; Critical Habitat in Minnesota no Critical Habitat in WI | Northern forest Map of critical habitat in Minnesota https://www.fws.gov/Midwest/endangered/mammals/lynx/lynxMNmapCh.html |
| Gray wolf (<i>Canis lupus</i>) ^a | Minnesota Carlton Kanabec Pine St. Louis Wisconsin Douglas | Threatened in Minnesota, Endangered in Wisconsin; Critical Habitat (only St. Louis County) | Northern forest Map of critical habitat in Minnesota http://ecos.fws.gov/docs/frdocs/1978/78-6192.pdf |
| Kirtland's warbler (<i>Setophaga kirtlandii</i>) | Wisconsin Douglas | Endangered | Young jack pine forest stands (5 to 25 years old) |
| Piping plover (<i>Charadrius melodus</i>) | Minnesota St. Louis Wisconsin Douglas | Endangered; Critical Habitat | Interstate Island in St Louis County; Lake Superior shoreline between mouth of Dutchman Creek and the breakwall at Lake Superior Front Channel in Douglas County |
| Rufa red knot (<i>Calidris canutus rufa</i>) | Minnesota St. Louis Wisconsin Douglas | Threatened | Coastal areas along Lake Superior |
| Higgins eye (pearlymussel) (<i>Lampsilis higginsii</i>) | Minnesota Hennepin | Endangered | Mississippi River |

| Species | County | Listing Status | Habitat |
|---|-----------------------|----------------|--|
| Rusty patched bumble bee (<i>Bombus affinis</i>) | Minnesota Hennepin | Endangered | Grasslands with flowering plants from April through October, underground and abandoned rodent cavities of clumps of grasses above ground as nesting sites, and undisturbed soil for hibernating queens to overwinter |
| Snuffbox mussel (<i>Epioblasma triquetra</i>) | Minnesota Hennepin | Endangered | Mississippi River |
| Spectaclecase (mussel) (<i>Cumberlandia monodonta</i>) | Minnesota Pine | Endangered | St. Croix River |
| Fassett's locoweed (<i>Oxytropis campestris</i> var. <i>chartacea</i>) | Wisconsin Douglas | Threatened | Open sandy lakeshores |

Sources: USFWS, 2016a and 2016b.

^a There is critical habitat for the Canada lynx and gray wolf located in counties that the NLX Project would cross. However, the NLX Project construction limits would not cross any of the critical habitat boundaries.

4.4.2.2 State-Listed Species

Minnesota

In the previously published Tier 1 EA, a 1-mile buffer surrounding the proposed NLX Project was evaluated for the presence of state-listed rare plants and animals by using the NHIS point data. Since the publication of the Tier 1 EA, the state of Minnesota has updated its list of threatened and endangered species with additional species known to occur within the 1-mile study area (defined as a buffer of the NLX Project centerline) and including the construction limits. NHIS data were provided by MnDNR's Division of Ecological Resources under license agreement number LA-832 and was current as of July 2016. On October 11, 2016, preliminary MnDNR comments on the Tier 2 EA were received. The correspondence is located in **Appendix I**.

Threatened and endangered plant and animal species known to occur within 1 mile of NLX Project centerline are shown in **Table 4-16**.

Table 4-16: Minnesota State-Listed Threatened and Endangered Species within Project Study Area and Construction Limits

| Scientific Name | Common Name | Category | Status | Occurrences within 1 mile of Centerline | Occurrences within 0.25 mile of Centerline | Occurrences within 50-foot Construction Limits and Right of Way |
|---|-----------------------|----------------|------------|---|--|---|
| <i>Actinonaias ligamentina</i> | Mucket | Mussel | Threatened | 7 | 1 | 0 |
| <i>Alasmidonta marginata</i> | Elktoe | Mussel | Threatened | 4 | 1 | 0 |
| <i>Aristida tuberculosa</i> | Seaside three-awn | Vascular Plant | Threatened | 22 | 18 | 3 |
| <i>Botrychium oneidense</i> | Blunt-lobed grapefern | Vascular Plant | Threatened | 2 | 0 | 0 |
| <i>Cicindela lepida</i> | Ghost tiger beetle | Insect | Threatened | 1 | 0 | 0 |
| <i>Cyclonaias tuberculata</i> | Purple wartyback | Mussel | Endangered | 1 | 0 | 0 |
| <i>Cypripedium arietinum</i> | Ram’s head orchid | Vascular Plant | Threatened | 1 | 0 | 0 |
| <i>Eliptio dilatata</i> | Spike | Mussel | Threatened | 4 | 0 | 0 |
| <i>Emydoidea blandingii</i> | Blanding’s turtle | Reptile | Threatened | 33 | 13 | 3 |
| <i>Gaylussacia baccata</i> | Black huckleberry | Vascular Plant | Threatened | 1 | 0 | 0 |
| <i>Glyptemys insculpta</i> | Wood turtle | Reptile | Threatened | 1 | 0 | 0 |
| <i>Hudsonia tomentosa</i> | Beach heather | Vascular Plant | Threatened | 8 | 4 | 0 |
| <i>Lanius ludovicianus</i> | Loggerhead shrike | Bird | Endangered | 1 | 0 | 0 |
| <i>Lasmigona costata</i> | Fluted-shell | Mussel | Threatened | 7 | 1 | 0 |
| <i>Poa paludigena</i> | Bog bluegrass | Vascular Plant | Threatened | 3 | 1 | 0 |
| <i>Potamogeton bicupulatus</i> | Snailseed pondweed | Vascular Plant | Endangered | 1 | 0 | 0 |
| <i>Rotala ramosior</i> | Toothcup | Vascular Plant | Threatened | 1 | 0 | 0 |
| <i>Scleria triglomerata</i> | Tall nutrush | Vascular Plant | Endangered | 1 | 1 | 0 |
| <i>Sterna hirundo</i> | Common tern | Bird | Threatened | 4 | 3 | 0 |
| <i>Truncilla donaciformis</i> | Fawnsfoot | Mussel | Threatened | 1 | 0 | 0 |
| <i>Viola lanceolata var. lanceolata</i> | Lance-leaf violet | Vascular Plant | Threatened | 1 | 0 | 0 |
| Total Records | | | | 107 | 43 | 6 |

Source: NHIS data were provided by MnDNR’s Division of Ecological Resources under HDR license agreement number LA 832 and were current as of July 2016.



The areas listed in **Table 4-16** are defined below:

- The NLX Project construction limits are defined as 50-foot BNSF right of way (that is, 50 feet of right of way from the centerline, which is 100 feet total) plus construction limits.
- The 0.25-mile adjacent area is a 0.25-mile buffer from NLX Project centerline.
- The 1-mile study area is a buffer from NLX Project centerline.

The reasoning for their selection is as follows:

- Construction limits capture direct impacts due to construction activities, increases in trains and speed specifically on the track, fill, etc.
- The 0.25-mile adjacent area captures edge effects. This is valuable for plant species in particular allowing the consideration of edge effects on those species (increases in light and desiccation with loss of forest cover, potential sedimentation, etc.)
- The 1-mile study area captures adjacency, especially with regard to mobile animal species, which, in most cases, if they occur in this area, have a strong likelihood that they could come into contact with NLX Project construction activities or rail operations.

Three occurrences of seaside three-awn (*Aristida tuberculosa*), a state-listed threatened plant species, were identified within the proposed construction limits. Seaside three-awn is a small, annual grass that occurs exclusively in sand savanna, sand prairie and dune habitats. Shifting, bare, sandy soils moved by winds provide habitat for this species.

Other plant species located within 0.25 mile of the NLX Project include state threatened beach heather (*Hudsonia tomentosa*), a small shrub and tall nutrush (*Scleria triglomerata*) a state endangered species of the sedge family, both inhabiting dry sand dunes. Bog bluegrass (*Poa paludigena*) is a state threatened wetland species of wooded or open seepage areas that is also known to be within 0.25 mile of the construction limits.

According to MnDNR's NHIS data, there are three known occurrences of state threatened Blanding's turtles (*Emydoidea blandingii*) and one record of wood turtle (*Glyptemys insculpta*) within the construction limits and 33 occurrences within 1 mile of the NLX Project. Blanding's turtles require both wetland and upland habitats. In Minnesota, Blanding's turtles are primarily marsh and pond inhabitants that use small, temporary wetlands in spring and early summer. Wood turtles prefer small- to medium-sized, fast-moving rivers and streams with adjacent deciduous and coniferous forests.

The NHIS search identified several mussel species within 1 mile of the proposed NLX Project. Occurrences of the state-listed threatened mucket (*Actinonaias ligamentina*) and state-listed threatened elktoe (*Alasmidonta marginata*) were identified in the Snake River, Grindstone River and Kettle River. Purple wartyback (*Cyclonaias tuberculata*), state-listed endangered mussel, has been identified in the Kettle River. Spike (*Elliptio dilatata*), a

state-listed threatened mussel, is known from the Kettle and Snake Rivers. Fluted-shell (*Lasmigona costata*) a state-listed threatened mussel has been found in the Snake River. Fawnsfoot (*Truncilla donaciformis*) a state-listed threatened mussel, is known to be found in the Mississippi River in the Twin Cities. MnDNR has indicated the presence of mussel populations in the Snake, Kettle, Nemadji and St. Louis Rivers. Three of the mussel species have been identified within 0.25 mile of the construction limits: mucket, elktoe and fluted-shell.

The NHIS data indicate the presence of a state endangered loggerhead shrike (*Lanius ludovicianus*) nest within 1 mile of the construction limits of the proposed Andover siding extension.

There are four records for the state threatened common tern (*Sterna hirundo*) within 1 mile of the NLX Project for threatened and endangered species and three of those records within 0.25 mile. All records lie within the developed and industrial Duluth Harbor. This species is not considered further in this document because the sites used by this species would not be impacted by the NLX Project.

There is an NHIS record for the ghost tiger beetle (*Cicindela lepida*), a state endangered tiger beetle, in a suburban Twin Cities location last recorded in 1932. The area has long since been developed and habitat has been lost to residential development. This species is not considered further in this document because it is thought to be extirpated from the county where it was recorded.

Wisconsin

WDNR provided a list of rare plants and animals found in Public Land Survey sections adjacent to the proposed NLX Project. **Table 4-17** provides a list of the threatened and endangered species known to occur in these Public Land Survey sections.

One reptile, the wood turtle, was identified in one Public Land Survey section in Superior, Wisconsin, where new dedicated track is proposed. The wood turtle prefers clean rivers and streams with moderate to fast flows, adjacent riparian wetlands and upland deciduous forests.

One bird species, the peregrine falcon (*Falco peregrinus*), is known to inhabit a location in downtown Superior, Wisconsin. This species occupies natural habitats on rocky cliffs but also uses tall buildings to nest.

Table 4-17: Wisconsin State-Listed Threatened and Endangered Species within 1-mile of the NLX Project

| Species Type | Scientific Name | Common Name | Wisconsin Status | Habitat Notes |
|-----------------------|---|------------------------------|------------------|--|
| Douglas County | | | | |
| Plant | <i>Caltha natans</i> | Floating marsh-marigold | Endangered | Shallow water in creeks, pools, ditches and lake margins |
| | <i>Ranunculus cymbalaria</i> | Seaside crowfoot | Threatened | Shores of marshes, ditches and harbors |
| | <i>Salix planifolia ssp. Planifolia</i> | Tea-leaved willow | Threatened | Bedrock shorelines |
| | <i>Sparganium glomeratum</i> | Clustered bur-reed | Threatened | Cold ditches and pools, thickets and tamarack stands |
| | <i>Ranunculus gmelinii</i> | Small yellow water crowfoot | Endangered | Cold brooks and springs, ditches, streams and lakes |
| | <i>Petasites sagittatus</i> | Arrow-leaved sweet coltsfoot | Threatened | Cold marshes and swamp openings |
| | <i>Eleocharis nitida</i> | Slender spike-rush | Endangered | Exposed clay in ditches and openings |
| Bird | <i>Falco peregrinus</i> | Peregrine falcon | Endangered | Rock ledges on steep bluffs and high-rise buildings |
| Reptile | <i>Glyptemys insculpta</i> | Wood turtle | Threatened | Clean waters of rivers and streams and adjacent wetland and upland forests |

Source: WDNR, 2016a.

4.4.3 Impacts

The following sections discuss the impacts on threatened and endangered species associated with the No Build Alternative and the Build Alternative. Impact analysis considered all track, roadway, bridge, station and maintenance and layover facilities as identified in the beginning of this chapter. Where impacts are specific to a type of proposed improvement, they are described below. The Build Alternative impacts discussion analyzes long-term operations and maintenance impacts and short-term construction impacts as described in the beginning of this chapter. A discussion of potential impacts at station and maintenance and layover facility sites is also presented, as well as a general discussion of the potential impacts within the BNSF right of way. Avoidance, minimization and mitigation measures are described in Section 4.4.4.

4.4.3.1 Federally Listed Species

No Build Alternative

Under the No Build Alternative, the NLX Project would not occur and would not alter current conditions. There would be no changes except planned and programmed actions that are independent of the NLX Project.

Build Alternative – Operations

In general, impacts associated with operation and maintenance of NLX passenger service are expected to be similar to operating and maintaining the existing BNSF freight rail system. MnDOT contacted USFWS to assist in determining the appropriate consultation path in accordance with Section 7 of the Endangered Species Act. During the development of the Tier 1 EA, staff from USFWS, MnDOT, MnDNR and WDNR conducted a field evaluation of various locations along the NLX study area with the intent of determining the potential for effect. On April 12, 2012, FRA requested USFWS concurrence on a “may affect, not likely to adversely affect” determination for the Canada lynx. Additionally, a “no effect” determination was requested for the Higgins eye pearlymussel, spectaclecase, piping plover and Kirtland’s warbler. A no effect determination was received by FRA from USFWS on September 26, 2012 (see **Appendix I**).

For the Tier 2 EA, continued coordination occurred among MnDOT, WisDOT, FRA and USFWS. On January 9, 2017, and revised on January 19, 2017, FRA requested USFWS concurrence on the determination of effect, and no jeopardy determinations made for several listed species based on adjustments made to the NLX Project. Concurrence was requested on “may affect, not likely to adversely affect” determinations for the Canada lynx and gray wolf. Additionally, a request was made for a no effect determination that the NLX Project would not result in the adverse modification of critical habitat designated for the Canada lynx, gray wolf and piping plover; and a no effect determination for the Kirtland’s warbler, piping plover, rufa red knot, Higgins eye pearlymussel, snuffbox mussel, spectaclecase and Fassett’s locoweed species themselves. A no jeopardy determination was made for the rusty patched bumble bee.

Impacts on northern long-eared bats include any disturbance to hibernacula⁶ and roost trees, and destruction or degradation of habitat. Some removal of vegetation would be expected throughout the NLX study area to accommodate NLX infrastructure. There are an estimated 193 acres of forested land within the NLX Project construction limits, most of which is within the existing BNSF right of way. The trees within the construction limits would be removed to accommodate the NLX infrastructure. MnDOT would conduct surveys during further study as the NLX Project advances through the design process once access to BNSF right of way is

⁶ *Hibernacula are locations where northern-long eared bats shelter and remain dormant during the winter months.*

attained to confirm whether northern long-eared bat habitat, including hibernacula and roost trees, is present. Impacts on trees, vegetation and critical habitat would be refined as appropriate using the survey results and would be addressed through consultation with USFWS.

Build Alternative – Construction

Construction period impacts on federally listed threatened and endangered species could occur along the existing rail line. Where bridge deck conversion would occur, avian and aquatic species, potentially including those listed in **Table 4-15** through **Table 4-17**, that inhabit these structures or are located in adjacent waterbodies may be affected. Construction impacts are anticipated to be temporary and within the existing railroad corridor. Some impacted areas within the construction limits would be expected to revegetate over time and would be maintained consistent with railroad vegetation maintenance practices. No additional fragmentation or permanent habitat alteration from construction activities would be expected.

4.4.3.2 State-Listed Species

No Build Alternative

Under the No Build Alternative, the NLX Project would not occur and would not alter current conditions. There would be no changes except planned and programmed actions that are independent of the NLX Project.

Build Alternative – Operations

There are no state-listed threatened or endangered mammal species identified in areas where new track, stations or maintenance and/or layover facilities are proposed. As discussed in Section 4.3, the NLX Project is expected to pose minimal impacts from operations and new NLX infrastructure on wildlife habitat and minimal potential for significant additional impacts on most wildlife due to train and animal collisions. Fencing would be restricted to urbanized areas and as needed for human safety in rural areas. Therefore, impacts on state-listed mammals are expected to be minor. Railroad tracks can act as a barrier to turtle movement and cause mortality when these animals are trapped between rails.

In Minnesota, a loggerhead shrike nest was observed in 1978 and was not near the construction limits. Impacts on this species are not anticipated. In addition, interference with bird movement or reproduction due to the additional train frequencies and higher speeds is not anticipated. The Wisconsin state-listed peregrine falcon has acclimated to urban settings and would not be affected by the increase of four round trip higher speed rail trains per day.

The proposed NLX Project operations would not impact populations of listed plant species (seaside three-awn, beach heather, tall nutrush and bog bluegrass) in Minnesota. No other known populations of listed plant species are expected to be affected by NLX Project.

Rare plant records for state-listed plants in Wisconsin included arrow-leaved sweet-coltsfoot, small yellow water crowfoot, floating marsh marigold, slender spike-rush, clustered bur-reed and seaside crowfoot as potentially occurring within the NLX study area. The records provided by WDNR did not include site specific location points. Habitat for any of these species could be located in a railroad ditch or in wetlands within the 1-mile study area. Tea-leaved willow has the potential to exist along rocky embankment in the construction limits near Superior, Wisconsin. If these species occur within the construction limits, they would be adversely affected by excavation and fill.

Construction and modification of bridges for maintenance purposes could affect mussel populations if there is an opportunity for debris or sediment to enter a river or stream. Bridge modification work would be completed from the track and would include mitigation to keep debris from getting into the water. Depending on the scope of maintenance or repairs, future agency consultation could be required to investigate measures to avoid, minimize or mitigate impacts on mussels.

The landscape near the proposed dedicated track in Superior, Wisconsin, is dominated by residential and commercial development to the east and an existing railroad yard to the west, areas in which wood turtles are not likely to be found. The existing freight track presents a barrier to movement and presents risk of entrapment and desiccation when turtles become trapped between rails. There is potential that Blanding's turtles (Minnesota) or wood turtles (Minnesota and Wisconsin) may be affected during the operation of the NLX Project by increased train frequencies and higher speeds along the existing tracks. Design modifications that would allow for turtles to escape from between the rails could be implemented to further reduce impacts on turtles.

WDNR advised during review of the Tier 1 EA that slender spike-rush (endangered), arrow-leaved sweet-coltsfoot (threatened) and seaside crowfoot (threatened) are likely to be present in the NLX study area. Biological surveys have not been conducted and would be necessary to better assess potential impacts on rare plants in high potential areas. Because biological surveys are valid for a limited time, survey work would be completed during final design when current and accurate information is available to assess final impacts for permitting.

Build Alternative – Construction

Construction of the two new railroad bridges (Rice Creek in Anoka County and Isanti Brook in Isanti County) over water could affect mussel populations. BMPs that limit sedimentation or debris from entering streams

would be implemented as the NLX Project advances through the design process. Biological surveys would be done prior to construction to determine the presence of mussels in or near the construction limits. Because biological surveys are valid for a limited time, survey work would be completed during final design when current and accurate information is available to assess final impacts for permitting.

As discussed under Build Alternative – Operations, the landscape near the proposed dedicated track in Superior, Wisconsin, is not likely to have wood turtles. However, there is still a potential that Blanding's and wood turtles may be affected during construction by increased activity along the existing tracks.

4.4.4 Avoidance, Minimization and Mitigation Measures

The NLX Project would continue efforts to avoid, minimize and mitigate impacts as the project advances through construction.

If sensitive plant or animal species are found in locations that would be affected by construction activities, MnDNR, WDNR and/or USFWS would be notified of species occurrence and consulted regarding methods to first avoid and then to minimize adverse impacts. Where impacts would be unavoidable, agencies would be consulted for viable procedures to transplant plant or animal species or other mitigation measures.

Where appropriate, wildlife friendly erosion mesh would be used in construction areas to prevent risk of injury or death to amphibious, terrestrial and avian species in these areas (MnDNR and MnDOT, 2014).

To minimize impacts on wildlife, including the Canada lynx and gray wolf, a Passage Bench design feature could be incorporated into riprap design at large, wet culverts or bridges that are being replaced to allow for animal movement. Design modifications that allow for turtles to escape from between the rails could be implemented to further reduce impacts on turtles.

Coordination with MnDNR, WDNR, and USFWS would be conducted as the NLX Project advances through the design process to determine what biological surveys would be necessary to determine the presence of threatened and endangered plant species where suitable habitat exists within the construction limits. Biological surveys of mussels would be conducted at locations determined by MnDNR. Depending on the survey outcomes, future agency consultation could be required to investigate measures to avoid, minimize or mitigate mussel impacts.

Federal Coordination

As the NLX Project advances through the design process, MnDOT and FRA will coordinate with USFWS, MnDNR and WDNR regarding any need for avoidance, minimization and/or mitigation measures if any threatened and endangered species are listed after publication of this EA.

State Coordination

MnDOT and FRA would coordinate with MnDNR and WDNR regarding the need for surveys for state threatened and endangered species as the NLX Project advances through the design process, including survey locations and methodologies. MnDOT would also continue to coordinate with MnDNR and WDNR regarding the need for avoidance, minimization and/or mitigation measures, such as the ones listed above.

MnDOT would work with MnDNR to develop a plan of action to protect habitat and individuals (if present) of seaside three-awn, which is known to occur within the construction limits. Because seaside three-awn is an annual grass, protection of habitat is of greatest importance because overwintering of individual plants does not occur.

4.4.5 Summary

Potential impacts on threatened and endangered species were evaluated for the Tier 2 EA analysis using the construction limits for the NLX Project that were refined since the Tier 1 EA analysis. FRA has requested concurrence from the USFWS on the listed species identified and the critical habitat if present for those species. The request was made by FRA on January 9, 2017, and revised to include the listing of the rusty patched bumble bee on January 19, 2017; concurrence is pending. One hundred and seven state-listed threatened and endangered species were identified within the NLX study area in Minnesota and Wisconsin. State-listed threatened and endangered species within NLX study area were analyzed. Construction limits were used to determine NLX Project impact, and six species occurrences were identified within the construction limits in Minnesota and two species occurrences were identified within the construction limits in Wisconsin. Biological surveys would be conducted for species within the construction limits before the NLX Project would be built. The Tier 1 EA evaluation resulted in the “may affect, not likely to adversely affect” determination on the Canada lynx and the “no effect” determination on other federal species. Tier 2 evaluation resulted in “may affect, not likely to adversely affect” determinations for the Canada lynx and gray wolf; no adverse modification of designated critical habitat for the Canada lynx, gray wolf and piping plover; no effect determination for other federal species and no jeopardy determination pending for the rusty patched bumble bee. Impacts on state-listed mammals are expected to be minor. There is potential that Blanding’s turtles (Minnesota) or wood turtles (Minnesota and Wisconsin) may be affected during the operation of the NLX

Project by increased train frequencies and higher speeds along the existing tracks. WDNR advised during review of the Tier 1 EA that slender spike-rush (endangered), arrow-leaved sweet-coltsfoot (threatened) and seaside crowfoot (threatened) are likely to be present in the NLX study area.

4.5 Wetlands

The Tier 1 EA analysis indicates that the NLX Project would have impacts on wetlands. This section analyzes the NLX Project impacts based on proposed construction limits that have been updated since the Tier 1 EA. This analysis looks at impacts on wetlands that may be caused by track infrastructure improvements, bridge and culvert improvements, signal system improvements, roadway and grading improvements, and station, maintenance and layover facilities that would occur within the construction limits. **Table 4-18** presents the NLX study area used for wetland impact analysis; **Table 4-19** compares the results of the Tier 1 EA and the Tier 2 EA analyses. The revised impacts supersede the results presented in the Tier 1 EA and are summarized at the end of this section.

Table 4-18: NLX Study Area for Wetlands

| NLX Study Area Definition | Basis for NLX Study Area |
|--|---|
| Construction limits plus 0.25-mile buffer around the project centerline. | The study area was defined by the current alignment of the existing track, proposed speed of passenger cars, stations, maintenance and layover facility locations as identified by MnDOT. |

Table 4-19: Wetlands Comparison – NLX Tier 1 Service Level EA and NLX Tier 2 Project Level EA

| Identified Impacts in NLX Tier 1 Service Level EA | Identified Impacts in NLX Tier 2 Project Level EA |
|---|---|
| Impacts on up to 97 acres. | Impacts on up to 92 acres of wetlands, type of impact (temporary or permanent) will be determined as the NLX Project advances through the design process. |
| Impacts on three Minnesota public waters. | Impacts on two public waters and three public water wetlands. |

As appropriate and necessary, this Tier 2 EA would be refined through future supplemental NEPA documentation as the final design advances and funding is secured for the NLX Project. Future supplemental environmental documentation is identified as appropriate throughout this Tier 2 EA.

4.5.1 Regulatory Context and Methodology

4.5.1.1 Legal and Regulatory Context

At the state government level in Minnesota, wetlands are protected by the Minnesota Wetland Conservation Act (WCA) and the Public Waters Program. The WCA is administered by BWSR and the Public Waters Program

is administered by MnDNR. Wetlands in Wisconsin are protected by the Wetland Regulatory Program, which is administered by WDNR.

At the federal government level wetlands are protected by Section 404 of the Clean Water Act (CWA), which is administered by the United States Army Corps of Engineers (USACE).

State Regulations

Minnesota Wetland Conservation Act

The WCA establishes a state policy of no-net-loss of wetlands and requires during project development the avoidance of wetlands, minimization of impacts on wetlands and mitigation for unavoidable impacts on wetlands.

Minnesota Public Waters Work Permit Program

Those wetlands, waters and streams that are included on Public Waters and Wetlands Inventory maps are under the jurisdiction of MnDNR. MnDNR has jurisdiction over that portion of the public water basin that is below the established Ordinary High Water Level, or below the top of bank for public watercourses. Areas above the Ordinary High Water Level are regulated by the Minnesota Wetland Conservation Act.

Wisconsin Wetland Regulatory Program Rules

Wisconsin Administrative Code Chapters NR 103, NR 299, NR 300 and NR 350–353 establish the state authority for granting wetland permits in Wisconsin. Any project that involves impacts on wetlands requires a permit from WDNR. General permits are granted for wetland restoration activities and wetland discharges up to 10,000 square feet resulting from industrial, commercial or residential development. Individual permits are granted for projects where no exemption or general permit is available. Individual permits require a more detailed application that involves a discussion of the purpose and scope of the project, an alternatives analysis and compensatory wetland mitigation.

Federal Regulations

Clean Water Act (Section 404)

Section 404 of the CWA regulates the discharge of dredged or fill material into Waters of the United States, including wetlands. USACE administers the Section 404 permit program, while the United States Environmental Protection Agency oversees the overall implementation of the CWA.

United States Department of Transportation Order 5660.1A

United States Department of Transportation (U.S. DOT) 5660.1A is titled “Preservation of the Nation’s Wetlands.” This policy requires that transportation facilities and projects are planned, constructed and operated to ensure the protection, preservation and enhancement of the nation’s wetlands.

Executive Order 11990–Protection of Wetlands

Executive Order 11990 requires federal agencies to minimize detrimental actions affecting wetlands while preserving and enhancing the natural and beneficial values of wetlands. This protection is extended to road and rail improvements that receive federal funding.

4.5.1.2 Methodology

This evaluation used a GIS analysis supplemented with a limited field review to evaluate wetland resources within the NLX study area, which included the construction limits plus a 0.25-mile buffer around the Project centerline. USGS soil, National Wetland Inventory, land cover, topography, and Wisconsin Wetland Inventory layers were used for this GIS analysis. See **Appendix J** for a more detailed methodology on the GIS analysis. Sixty-four sites were visited in the field between June 27 and June 29, 2016, to validate the wetland areas identified in the GIS analysis. Wetland impacts were identified where the wetland boundaries intersected the construction limits. Wetland impacts were then categorized by type based on Circular 39 Wetland Classification System, which was published by the USFWS in 1956 and categorizes wetlands into eight types based on the water depth and vegetation type within a wetland, as shown in **Table 4-20**.

Table 4-20: Description of Circular 39 Wetland Types

| Wetland Type | Description |
|--------------|---|
| Type 1/2 | Type 1 wetlands are seasonally flooded basins or flats in which soil is covered with water or is waterlogged during variable seasonal periods but usually is well drained during much of the growing season. Type 2 wetlands are inland fresh meadows in which soil is usually without standing water during most of the growing season but is waterlogged within at least a few inches of the surface. Vegetation can include grasses, sedges, rushes and various broad-leaved plants. |
| Type 3/4 | Type 3 wetlands are shallow fresh marshes in which soil is usually waterlogged early during a growing season and often covered with as much as 6 inches or more of water. Vegetation includes grasses, bulrushes, spike rushes and various other marsh plants. Type 4 wetlands are deep fresh water marshes in which the soil is usually covered with 6 inches to 3 feet or more of water during the growing season. Vegetation includes cattails, reeds, bulrushes, spike rushes and wild rice. |
| Type 5 | Type 5 wetlands are open fresh water, shallow ponds and reservoirs in which water is usually less than 10 feet deep and is fringed by a border of emergent vegetation. |
| Type 6/7/8 | Type 6 wetlands are shrub swamps in which soil is usually water logged during the growing season and often covered with as much as 6 inches of water. Vegetation includes alders, willows, buttonbush and dogwoods. Type 7 wetlands are wooded swamps in which soil is waterlogged at least within a few inches of the surface during the growing season and is often covered with as much as 1 foot of water. Trees include tamarack, white cedar, black spruce, balsam, red maple and black ash. Type 8 wetlands are bogs in which soil is usually waterlogged and supports a spongy covering of mosses. Vegetation is woody and herbaceous and often includes heath shrubs, sphagnum moss, sedges, black spruce, tamarack and cranberries. |
| Riverine | Riverine wetlands include all wetlands and deepwater habitats contained within a channel that periodically or continuously contains moving water. |

4.5.2 Affected Environment

This section presents the wetland areas and Minnesota public waters identified within the NLX study area.

4.5.2.1 Wetlands

The GIS analysis identified approximately 9,424 acres of wetlands within the NLX study area. The identified wetlands provide a range of functions including, but not limited to, wildlife habitat, carbon sequestration, floodwater retention and recreation area (see **Appendix D**).

4.5.2.2 MnDNR Public Water Inventory

MnDNR public waters includes lakes, wetlands and watercourses, which were identified and inventoried by the MnDNR in the late 1970s. Public Water wetlands include Type 3, 4 or 5 wetlands that are 10 acres or greater located in an unincorporated area and 2.5 acres or greater located in an incorporated area. A review of the MnDNR Public Waters Inventory identified 89 public waters within the NLX study area. **Table 4-21** provides a summary of these MnDNR public waters, public water wetlands and public watercourses.

Table 4-21: MnDNR Public Water Wetlands within the NLX Study Area

| Name | Public Water Inventory Number | County |
|---|-------------------------------|--------|
| Locke Lake | 77P | Anoka |
| Unnamed Wetland south of 85th Avenue Northwest | 688P | Anoka |
| Unnamed Wetland North of Northdale Boulevard Northwest | 636W | Anoka |
| Mc Kay Lake | 83P | Anoka |
| Unnamed Wetland east of Vale Street Northwest | 432W | Anoka |
| Unnamed Wetland (southeast portion) south of 161st Avenue Northwest | 433W | Anoka |
| Unnamed Wetland (center portion) south of 161st Avenue Northwest | 433W | Anoka |
| Unnamed Wetland (northwest portion) south of 161st Avenue Northwest | 433W | Anoka |
| Unnamed Wetland south of Ward Lake | 416W | Anoka |
| Ward Lake | 85P | Anoka |
| Swan Lake | 98P | Anoka |
| Unnamed Wetland north of 221st Avenue Northwest | 352W | Anoka |
| Unnamed Wetland north of 229th Avenue Northwest | 225W | Anoka |
| Unnamed Wetland west of University Avenue Extension Northwest | 215W | Anoka |
| Sandshore Lake | 102P | Anoka |
| Unnamed Wetland north of 237th Avenue Northeast | 231W | Anoka |
| Unnamed Wetland south of 241st Lane Northeast | 190W | Anoka |
| Unnamed Wetland west of University Avenue Extension Northwest | 188W | Anoka |

| Name | Public Water Inventory Number | County |
|---|-------------------------------|-----------|
| Unnamed Wetland south of Anoka-Isanti County Border | 176W | Anoka |
| Tellman Marsh | 230W | Isanti |
| Stratton Lake | 21P | Isanti |
| Cajima Marsh | 216W | Isanti |
| Unnamed Wetland south of 281st Avenue Northeast | 241W | Isanti |
| Unnamed Wetland north of 281st Avenue Northeast | 63W | Isanti |
| Unnamed Wetland west of Polk Street Northeast | 239W | Isanti |
| Unnamed Wetland south of 301st Avenue Northeast | 40W | Isanti |
| Unnamed Wetland north of 305th Avenue Northeast | 39W | Isanti |
| Magnuson Wetland | 38W | Isanti |
| Florence Lake | 35P | Isanti |
| Unnamed Wetland south of 349th Avenue Northeast | 49W | Isanti |
| Unnamed Wetland north of 133rd Avenue | 12W | Kanabec |
| Hinckley Pond 1 | 122P | Pine |
| Hinckley Pond 2 | 122P | Pine |
| Hinckley Pond 3 | 122P | Pine |
| Unnamed Wetland south of Partridge Drive | 155W | Pine |
| Hicks Lake | 52P | Pine |
| Lake Margaret | 51P | Pine |
| Unnamed Wetland south of Mulling Road | 156P | Pine |
| Maheu Lake | 33W | Pine |
| St. Louis River Estuary | N/A | St. Louis |
| Public Watercourses | | |
| Bassett Creek | N/A | Hennepin |
| Mississippi River | N/A | Hennepin |

| Name | Public Water Inventory Number | County |
|--|-------------------------------|---------|
| Rice Creek | N/A | Anoka |
| County Ditch 17 | N/A | Anoka |
| Unnamed Ditch (south of Minnesota State Highway 610) | N/A | Anoka |
| Coon Creek | N/A | Anoka |
| Cedar Creek | N/A | Anoka |
| Rum River | N/A | Isanti |
| Isanti Brook | N/A | Isanti |
| Unnamed Stream (south of 379th Avenue Northeast) | N/A | Isanti |
| Lower Stanchfield Branch | N/A | Isanti |
| Snake River | N/A | Kanabec |
| Mud Creek (County Ditch 10) | N/A | Pine |
| Pokegama Creek | N/A | Pine |
| East Pokegama Creek | N/A | Pine |
| Mission Creek | N/A | Pine |
| Grindstone River | N/A | Pine |
| Spring Creek | N/A | Pine |
| Skunk Creek | N/A | Pine |
| Kettle River | N/A | Pine |
| Bear Creek | N/A | Pine |
| Murphy Creek | N/A | Pine |
| Little Willow River | N/A | Pine |
| Willow River | N/A | Pine |
| Nemadji River | N/A | Pine |
| Unnamed Stream (Tributary to Nemadji River) | N/A | Carlton |
| Anderson Creek | N/A | Carlton |

| Name | Public Water Inventory Number | County |
|---|-------------------------------|-----------|
| Unnamed Stream (Tributary to Anderson Creek) | N/A | Carlton |
| Unnamed Stream (Tributary to Silver Creek) | N/A | Carlton |
| Nemadji River, South Fork (Silver Creek) | N/A | Carlton |
| Net River | N/A | Carlton |
| Unnamed Stream (Multiple Tributaries to Net river) | N/A | Carlton |
| Little Net River | N/A | Carlton |
| Unnamed Stream (Tributary to Net River, northeast of T-365) | N/A | Carlton |
| Unnamed Stream (Tributary to Section 36 Creek, west of T-367) | N/A | Carlton |
| Section 36 Creek | N/A | Carlton |
| Unnamed Stream (Multiple Tributaries to Section 36 Creek) | N/A | Carlton |
| State Line Creek | N/A | Carlton |
| Unnamed Stream (Multiple Tributaries to State Line Creek) | N/A | Carlton |
| St. Louis River | N/A | St. Louis |

4.5.3 Impacts

The following sections discuss the impacts on wetlands associated with the No Build Alternative and the Build Alternative. Impact analysis considered all track, roadway, bridge, station and maintenance and layover facilities as identified in the beginning of this chapter. Where impacts are specific to a type of proposed improvement, they are described below. The Build Alternative impacts discussion analyzes long-term operations and maintenance impacts and short-term construction impacts as described in the beginning of this chapter. A discussion of potential impacts at station and maintenance and layover facility sites is also presented, as well as a general discussion of the potential impacts within the BNSF right of way. Avoidance, minimization and mitigation measures are described in Section 4.5.4.

4.5.3.1 Wetlands

No Build Alternative

Under the No Build Alternative, the NLX Project would not occur and would not alter current conditions. There would be no changes except planned and programmed actions that are independent of the NLX Project.

Build Alternative – Operations

For purposes of this analysis, wetland impacts within the construction limits would occur during operations. The NLX Project would add infrastructure to the existing corridor and would impact wetlands located within the construction limits along the existing BNSF rail line. No wetlands would be bisected. The GIS analysis identified approximately 92 acres (56 acres in Minnesota and 36 acres in Wisconsin) of potential wetland impacts within the construction limits that would be directly impacted, as shown in **Table 4-22**. These impacts are due to proposed track infrastructure improvements, bridge and culvert improvements, signal system improvements, roadway and grade crossing improvements, and station, maintenance and layover facilities.

Table 4-22: Summary of Potential Wetland Impacts

| Wetland Type | Estimated Impacts (acres) | | | | | | | | |
|--------------|---------------------------|-------------|--------------|-------------|--------------|-------------|-------------|--------------|--------------|
| | Minnesota | | | | | | Wisconsin | | |
| | Hennepin | Anoka | Isanti | Kanabec | Pine | Carlton | St. Louis | Douglas | Total |
| Type 1/2 | 0 | 4.90 | 2.64 | 0.35 | 17.04 | 0.09 | 0.40 | 2.56 | 27.98 |
| Type 3/4 | 0 | 3.23 | 5.13 | 0.03 | 6.14 | 0.03 | 0 | 3.75 | 18.31 |
| Type 5 | 0 | 0 | 0.14 | 0 | 0 | 0 | 0 | 0 | 0.14 |
| Type 6/7/8 | 0 | 0.42 | 3.72 | 0.09 | 10.61 | 0.91 | 0 | 29.39 | 45.14 |
| Riverine | 0 | 0.13 | 0 | 0 | 0.13 | 0 | 0 | 0.04 | 0.30 |
| Total | 0 | 8.68 | 11.63 | 0.47 | 33.92 | 1.03 | 0.40 | 35.74 | 91.87 |

Approximately 9,424 acres of wetland were identified within the NLX study area, which includes the construction limits plus a 0.25-mile buffer around the track centerline. Approximately 92 acres of wetland within the study area would intersect the construction limits and could be impacted by the NLX Project. The 92 acres of wetland impact consists of 321 separate wetlands, with the average impact of 0.3 acre. These potential wetland impacts are identified in **Appendix J**, Table 6, and the approximate location of these impacts

are illustrated in **Appendix D**. Approximately 75 percent of the wetland impacts would be due to track infrastructure improvements, especially where the addition of a new track is required in rural Pine County and Douglas County, Wisconsin. Approximately 20 percent of the wetland impacts would be caused by roadway and grade crossing improvements. The remaining 5 percent of wetland impacts would be due to bridge and culvert improvements, signal system improvements, and station, maintenance and layover facilities. These potential wetland impacts represent a worst-case scenario; it is anticipated that some of the impacts would be temporary in nature and would be able to be restored following construction. Because wetland surveys are valid for a limited time, detailed wetland delineations⁷ to differentiate permanent impacts from temporary construction impacts would be completed during final design when current and accurate information is available to assess final impacts for permitting. After the detailed wetland delineations are complete, coordination would occur for potential permits, including Section 404 permits for impacts on waters of the United States, Minnesota WCA permits, MnDNR public waters permits and WDNR wetland permits. At this time, there is neither sufficient engineering data nor detailed wetland delineation to make a determination on the relative areas of permanent and temporary impacts.

Stations

Target Field Station

No wetlands were identified within the construction limits of the Target Field Station in Minneapolis. The field review of this site showed that the site is urban and covered predominantly by impervious surface.

Coon Rapids Station

One potential wetland impact was identified within the Coon Rapids Station construction limits. This 0.70-acre impact area occurs in the northeast corner of the construction limits and is a palustrine (P-) type wetland exhibiting forested vegetation (-FO-) and a temporarily flooded (-A) moisture regime, also referred to as a Type 1 (PFOA) wetland.

Cambridge Station

One potential wetland impact was identified within the Cambridge Station construction limits. This is a linear wetland that extends along the base of the railroad. The 0.05-acre wetland is a palustrine (P-) type wetland

⁷ A wetland delineation is an onsite inspection of the wetland that examines the vegetation, soil and hydrology to accurately delineate the wetland boundary.

exhibiting emergent vegetation (-EM-) and a temporarily flooded (-A) moisture regime, also referred to as a Type 1 (PEM1A) wetland.

Hinckley Station

No wetlands were identified within the construction limits of the Hinckley Station. Field observations showed that this site generally slopes northeast to a gravel lot without wetland indicators.

Superior, Wisconsin Station

No wetlands were identified within Superior, Wisconsin Station construction limits. No field visit was done at this site due to limited access.

Duluth Station

No wetlands were identified within the Duluth Station construction limits. This area is urban and covered by impervious surfaces. The field visit confirmed the absence of wetlands at this location.

Maintenance and Layover Facilities

Sandstone

No wetlands were identified within the construction limits of the potential maintenance facility location in Sandstone. A field visit was completed at this site and confirmed the absence of wetlands at this location.

Duluth

No wetlands were mapped within the construction limits of the Duluth Maintenance and/or Layover Facility location. No field visit was done at this site due to limited access.

Build Alternative – Construction

As noted previously, there is neither sufficient engineering data nor detailed wetland delineations to make a determination on the relative areas of permanent and temporary impacts. It is anticipated that as design and wetland information is refined, the 92 acres of wetland impact identified in Section 4.5.3.1 would be reduced and consist of both temporary and permanent impacts.

Restoration of Construction Impacts

The NLX Project would likely result in construction wetland impacts that could be restored upon completion of the NLX Project, commonly referred to as temporary wetland impacts. Temporary wetland impacts could include placement of fill material into a wetland, drainage of surface water from a wetland, excavation within a wetland or removal of vegetation from a wetland. Each area of temporary wetland impact would be assessed for its opportunity to be restored, which depends on the degree of impact and the availability of wetland hydrology to support wetland conditions. Restoration of a temporary wetland impact may include the removal of fill to the pre-existing grade of the area, restoration of drainage ditch to restore wetland hydrology, replacing removed soil from wetland or regrading the disturbed area of a wetland. The temporary wetland impact area should also be graded to ensure that the original source of hydrology is reconnected to the temporary wetland impact area. Upon completion of grading the temporary wetland impact area, the area would be seeded with a native seed mix appropriate for the type of wetland that pre-existed.

4.5.3.2 MnDNR Public Waters

No Build Alternative

Under the No Build Alternative, the NLX Project would not occur and would not alter current conditions. There would be no changes except planned and programmed actions that are independent of the NLX Project. No public waters would be impacted under the No Build Alternative.

Build Alternative – Operations

Two MnDNR public waters and three MnDNR public water wetlands were identified within the construction limits, and would be impacted as shown in **Table 4-23**.

Table 4-23: Estimated Impacts on MnDNR Public Water Wetlands

| Name | Public Water Inventory Number | County | Estimated Impacts (ac) |
|-----------------|-------------------------------|--------|------------------------|
| Locke Lake | 77P | Anoka | 0.03 |
| Ward Lake | 85P | Anoka | 0.43 |
| Unnamed Wetland | 433W | Anoka | 0.22 |
| Unnamed Wetland | 416W | Anoka | 0.06 |
| Unnamed Wetland | 39W | Isanti | 1.53 |

Build Alternative – Construction

Refinement of the NLX Project design and formal delineation of wetland and public water boundaries would provide the necessary information to assess these impacts. As design proceeds, the NLX Project would seek to minimize impacts on wetlands where practicable and would mitigate when minimization is not possible.

4.5.4 Avoidance, Minimization and Mitigation Measures

The NLX Project would require federal, state and local wetlands and water permits for construction activities. The permitting requirements for the NLX Project would depend on the amount of wetland impact as it relates to the threshold amounts under regulatory jurisdiction involved. Potential permits include Section 404 permits for impacts on waters of the United States, Section 401 water quality certification, Minnesota WCA permits, MnDNR public waters permits and WDNR wetland permits. As part of the Section 404 permitting process, an impact analysis would be conducted in compliance with Section 404 (b) (1) and included in the permit application. MnDOT would continue to coordinate with BWSR, MnDNR, WDNR and USACE to determine the most effective mitigation options during future design activities. Any agreements relative to wetland mitigation on BNSF right of way would be addressed during negotiations between BNSF and MnDOT.

The state and federal wetland regulation processes require that applicants, in this case MnDOT, attempt to avoid wetland impacts and if avoidance cannot be accomplished, then impacts on wetlands should be minimized to a practicable extent. Wetland mitigation should be the last measure taken by an applicant when wetlands cannot be avoided by the proposed project. The NLX Project would continue efforts to avoid, minimize and mitigate impacts as the project advances through construction.

Avoidance of all wetlands is not possible because the original railway alignment was constructed through wetlands during a period when wetlands were not regulated as they are today. While the proposed NLX Project would use the existing railway, there are segments of the railway that would need to be modified to safely negotiate the curves at the proposed speed of the passenger train. In addition, a number of grade crossing improvements would be needed to create a suitable approach and crossing of the railway. Avoidance of all wetlands would result in an unsafe situation along segments of the railway and at the rail grade crossings. The stations, maintenance and layover facilities have been located in areas that best serve the users of the passenger rail while avoiding wetland impacts to the greatest extent possible.

Mitigation for unavoidable wetland impacts must be provided in accordance with the applicable regulatory rules. Replacement ratios would range from 1:1 to 2:1. Based on the estimated wetland impacts and mitigation ratios, up to 184 acres of wetland mitigation would be needed. Mitigation of all unavoidable impacts would be accomplished through a combination of on-site and off-site permittee-responsible mitigation and the purchase of wetland bank credits.

In Minnesota, where approximately 56 acres of wetland impact are expected to occur, mitigation would primarily be through the state's wetland banking system. Mitigation for impacts on public waters would be required in accordance with applicable regulatory rules, including the MnDNR option to waive the public waters work permit requirement for projects regulated by the Wetland Conservation Act. Note that due to the expansive nature of the NLX Project, there may be multiple WCA regulatory jurisdictions.

For impacts occurring in Wisconsin, the starting mitigation ratio when using wetland bank credits is 1.7:1. This ratio may be reduced to as much as 1.2:1 if the wetland credits are purchased from an established wetland bank within the same Bank Service Area and the area of the same wetland type as the impacted wetland. If onsite mitigation occurs within Wisconsin, the starting ratio is 1.7:1 for herbaceous and shrub/scrub wetland communities, and is 1.95:1 for forested wetland communities. These ratios may be reduced if the onsite mitigation occurs in advance of the wetland impact and is the same wetland type as the impacted wetland.

Prior to the completion of final design, a wetland delineation of all wetlands located within the construction limits would be required in accordance with the methodology set forth by USACE.⁸ Upon completion of the wetland delineation, MnDOT would take the appropriate actions to avoid and minimize wetland impacts where practicable. Where track improvements are proposed in Pine County and Douglas County, Wisconsin, design modifications would be examined during the design process to minimize wetland impacts. Additionally, the use of construction BMPs would be considered to minimize wetland impacts, including the placement of silt fencing along the upland side of wetland boundaries to eliminate the potential of sediment entering the wetlands, implementing stormwater and erosion control measures and restoring temporarily disturbed wetland areas. Design modifications to the Coon Rapids and Cambridge Stations would also be considered during future design activities to minimize wetland impacts.

4.5.5 Summary

The Tier 1 EA evaluated wetland impacts of the NLX Project operations and proposed infrastructure improvements for eight daily round trips (16 trains per day) at speeds up to 110 mph. The Tier 2 EA addresses changes to the NLX Project as described in Chapter 2 Alternatives. That is, this Tier 2 EA evaluates wetland impacts of operation and proposed infrastructure for four daily round trips (eight trains per day) at speeds up to 90 mph. The Tier 1 EA identified approximately 97 acres of potential wetland impact, with 96 acres of wetland impact occurring in Minnesota and 1 acre of wetland impact occurring in Wisconsin. Approximately 92 acres of potential wetland impact were identified within the proposed construction limits of the Tier 2 EA. In Minnesota, 56 acres of potential wetland impact were identified, while 36 acres were identified in

⁸ USACE's methodology is presented in its 1987 Corps of Engineers Wetlands Delineation Manual and its Regional Supplements to the Corps of Engineers Wetland Delineation Manual.

Wisconsin. The reduction in wetland impact in Minnesota is due to a refinement of the construction limits through preliminary engineering and a refinement of the methodology used to identify potential wetlands. The increase in wetland impacts in Wisconsin is largely due to an updated and more accurate Wisconsin Wetland Inventory GIS layer since the Tier 1 EA.

4.6 Surface Water

The Tier 1 EA analysis indicates that the NLX Project would have potential impacts on surface water and related water resources. This section analyzes the NLX Project impacts based on proposed construction limits that have been updated since the Tier 1 EA. **Table 4-24** presents the NLX study area used for surface water impact analysis; **Table 4-25** compares the results of the Tier 1 EA and the Tier 2 EA analyses. The revised impacts supersede the results presented in the Tier 1 EA and are summarized at the end of this section.

Table 4-24: NLX Study Area for Surface Water

| NLX Study Area Definition | Basis for NLX Study Area |
|---|---|
| Construction limits from preliminary engineering plus 0.25- to 1-mile buffer. | Describes the context of the surrounding areas where construction activities have been identified, typically limited to areas within 0.25 mile of the construction limits. Water quality regulations extend to areas within 1 mile from construction limits for the protection of special or impaired waters. |

Table 4-25: Surface Water Comparison - NLX Tier 1 Service Level EA and NLX Tier 2 Project Level EA

| Identified Impacts in NLX Tier 1 Service Level EA | Identified Impacts in NLX Tier 2 Project Level EA |
|---|--|
| Surface Water Quality: potential for water quality, erosion and sedimentation impacts during construction. | Surface Water Quality: Similar impacts. |
| Water Quality: increased impervious surface. NLX Project would add water quality treatment where none currently exists. | Water Quality: increased impervious surface, including station and maintenance and/or layover facility sites. |
| Floodplain and Other Water-Related Issues: 415 linear feet of floodplain fill. | Floodplain and Other Water-Related Issues: 26,130 linear feet of floodplain identified within the construction limits that may be temporarily or permanently filled; further evaluation required for project-level definition. |
| Floodplain and Other Water-Related Issues: 11 floodplain crossings in areas of new construction. No substantial floodplain encroachment. | Floodplain and Other Water-Related Issues: 32 Zone A floodplain crossings in areas of new construction. Further study of floodplain encroachment will be completed as the design process advances. |
| Floodplain and Other Water-Related Issues: No special issues related to shoreland districts, coastal zone management areas, navigable waters, or state Wild and Scenic Rivers not otherwise addressed through other impact areas. | Floodplain and Other Water-Related Issues: No change. |

As appropriate and necessary, this Tier 2 EA would be refined through future supplemental NEPA documentation as the final design advances and funding is secured for the NLX Project. Future supplemental environmental documentation is identified as appropriate throughout this Tier 2 EA.

4.6.1 Regulatory Context and Methodology

4.6.1.1 Legal and Regulatory Context

At the federal government level, surface waters are protected by Sections 401 and 404 of the CWA, which is administered by USACE. Local jurisdictions assign water resource regulations with the objective of preserving and enhancing water quality and water management practices. Transportation projects can have direct impacts on surface waters by transporting pollutants during construction and operation, and by modifying water drainage and storage features.

Section 404 of the CWA regulates the discharge of dredged or fill material into Waters of the United States, including wetlands. Section 401 regulates discharges into navigable waters. USACE administers the Section 404 permit program, and Minnesota Pollution Control Agency (MPCA) and WDNR administer the Section 401 programs in Minnesota and Wisconsin, respectively. EPA oversees the overall implementation of the CWA. Executive Order 11988 requires federal agencies to avoid to the extent practicable long- and short-term impacts on floodplains.

The following agencies have regulations, policies, design criteria or other specific jurisdiction in surface water management in the NLX study area:

- **MPCA** – MPCA administers the NPDES program (Minn. Stat. 115 and 116 and Minnesota Administrative Rules Chapters 7001, 7050, 7060 and 7090), which authorizes stormwater discharge such that water quality is preserved, and performs water quality assessments to determine if surface waters meet water quality standards in accordance with Section 303(d) of the CWA.
- **MnDNR** – MnDNR promulgates minimum standards for floodplain management (Minnesota Administrative Rules parts 6120.5000 to 6120.6200) and shoreland development (Minnesota Administrative Rules parts 6120.2500 to 6120.3900), requiring local units of government to comply with state regulations for construction in floodplain areas and development in shoreland areas, respectively. MnDNR does not function as a permitting authority for development in floodplains or shoreland areas. In addition, under the Work Affecting Public Waters laws (Minn. Stat. 103G), MnDNR promulgates minimum requirements for activities that could have a significant adverse effect on a special or locally significant fish and wildlife resources.
- **WDNR** – WDNR administers the Wisconsin Pollutant Discharge Elimination System (WPDES) program (Wis. Stat. 283 and Wisconsin Administrative Code Chapter NR 151 and 216), which authorizes stormwater discharge such that water quality is preserved, and performs water quality assessments to determine if

surface waters meet water quality standards in accordance with Section 303(d) of the CWA. WDNR also administers the state's rules for development in, and management of, floodplain areas (Wisconsin Administrative Code Chapter NR 116) and the state's shoreland protection program (Wisconsin Administrative Code Chapter NR 115). WDNR requires all communities to adopt reasonable and effective floodplain ordinances within their jurisdictions and also requires all counties to adopt shoreland protection ordinances in their jurisdictions that meet or exceed the standards in Wisconsin Administrative Code Chapter NR 115. WDNR does not function as a permitting authority for development in shoreland areas.

- **Counties** – Isanti, Kanabec, Pine, Carlton, Douglas (Wisconsin) and St. Louis Counties function as local administrators for floodplain and shoreland management regulations where a municipality or civil township has not implemented such regulations. Hennepin and Anoka Counties do not have such roles because in these counties, the NLX Project is located entirely within municipalities that manage floodplains and shoreland areas.
- **Cities** – The Cities of Minneapolis, Fridley, Coon Rapids, Andover, Oak Grove, St. Francis, East Bethel, Isanti, Cambridge, Braham, Hinckley, Sandstone, Superior (Wisconsin) and Duluth function as local administrators for floodplain and shoreland management regulations and have a role in water quality and stormwater runoff.
- **Townships** – Athens Township, Cambridge Township and Pokegama Township, Minnesota have a role in floodplain and shoreland management.
- **Watershed Management Organizations (WMOs)** – The Metropolitan Area Surface Water Management Act (Minn. Stat. 103B.201 to 103B.255) requires that local units of government in the Twin Cities Metropolitan Area prepare and implement surface water management plans through a WMO. The comprehensive surface water management plans are designed to comply with water resource protection requirements under Minn. Stat. 103A through 103G, in accordance with Minnesota Administrative Rules Chapters 8410 and 8420. The WMOs and Watershed Districts are organized throughout the Twin Cities Metropolitan Area and in some rural areas throughout Minnesota. The role of WMOs and Watershed Districts is to manage water resources within their boundaries. Bassett Creek Watershed Management Commission, Mississippi WMO, Rice Creek Watershed District, Coon Creek Watershed District, Lower Rum River WMO and Upper Rum River WMO have a role in water quality, stormwater runoff, floodplain development and shoreland management at the WMO and Watershed District level.

Regulatory jurisdiction for surface water management is jointly held by MPCA, WDNR and the various counties, cities, townships and WMOs along the NLX Project. The WMOs are governed through Joint Powers Agreements, which are executed by each WMO and the communities that are located within its jurisdictional boundaries. In some cases, the ordinances, rules and permit processes overlap or are redundant between state and local agencies and must be followed as required for each jurisdiction. Such regulatory processes are subject to change, and the NLX Project would be subject to the regulatory criteria delegated by each agency at the time that the NLX Project design is submitted for approval. Because the regulations are subject to change, further coordination would be necessary as design progresses and permits are pursued.

4.6.1.2 Methodology

The methodology for characterization and assessment of impacts on surface water focused on identifying the presence of water resources within the NLX study area and determining the impacts that would occur within or near the construction limits. Impacts were assessed based on the proximity of the surface water to NLX improvements and the nature of the specific improvements near each surface water.

Surface waters present in the NLX study area were identified using the following databases:

- National Hydrography Dataset (United States Department of Agriculture, 2015) for streams within 0.25 mile of NLX Project construction
- MnDNR's Public Waters Inventory (MnDNR, 2015a) for streams and lakes within 0.25 mile of NLX Project construction
- MnDNR (2015b) and WDNR (2016b) databases for trout streams within 1 mile of NLX Project construction
- MPCA (2016) and WDNR 303(d) (WDNR, 2016c) lists for impaired waters within 1 mile of NLX Project construction
- WDNR (2016d) for outstanding resource waters (ORWs) and exceptional resource waters (ERWs) within 1 mile of NLX Project construction

WDNR provided input on potentially affected waters in Wisconsin during the Tier 1 EA.

4.6.2 Affected Environment

Approximately 245 surface waters are located within the NLX study area. **Appendix D** contains figures that include the names and locations of surface waters located NLX study area. The NLX Project extends through several surface waters, floodplains, shorelands and coastal zone management areas. Surface water is classified in this EA as a river, stream, pond or lake. Impacts on surface waters would go beyond the immediate locations of operation and construction, as pollutant depositions or changes to hydrologic function of a surface water can travel downstream to other connected surface waters.

Resources directly related to surface waters include floodplains, shorelands, and coastal zone management areas. These resources are located adjacent to surface waters and are within the NLX study area. A floodplain is an area of land that is susceptible to being inundated by floodwaters, storing and conveying flood flow between the banks of a surface water and a topographical feature that constrains floodwaters. Shoreland areas are typically located adjacent to surface waters, defined by MnDNR and WDNR as lands that are located within 1,000 feet of the ordinary high water level of a lake, pond or flowage; and 300 feet from a river or stream, or the landward extent of a designated floodplain.

The following sections provide a description of the affected environment associated with the NLX study area.

4.6.2.1 Land Cover (Erosion and Sedimentation)

Land cover is affected by activities within NLX Project construction limits and is described in Sections 4.1.2 and 4.3.2; as such, the NLX Project has the potential to impact surface waters.

4.6.2.2 Surface Waters

Data reviewed show nearly 130 streams or rivers and 115 lakes or ponds within the study area that could receive stormwater discharge during construction and operation of the NLX Project (U.S. Department of Agriculture, 2015; MnDNR, 2015a and 2015b; WDNR, 2016b, 2016c and 2016d; MPCA, 2016). There were no ORWs identified within 1 mile of NLX Project construction limits. ORWs are characterized by WDNR as lakes or streams that have excellent water quality, high recreational and aesthetic value and high quality fishing and are free from point source and nonpoint source pollution. ERWs are described as lakes or streams that exhibit the same high quality resource values as ORWs, but which may be adversely affected by point source pollution. Four ERWs were identified within 1 mile of NLX Project construction limits.

Table 4-26, Table 4-27, Table 4-28 and Table 4-29 summarize major surface waters within the NLX study area (listed from south to north), pertinent details on regulatory statutes and relevant NLX Project improvements. The NLX study area ranges from 0.25 mile from construction limits for surface waters in general, to 1 mile from construction limits for surface waters that are impaired or have a special regulatory status. There are 19 surface waters identified in the NLX study area that are listed as impaired.⁹ Regulatory requirements apply to work directly within public waters, and 23 public water crossings have been identified within the proposed construction limits. Because of these requirements, construction activities proposed in public waters are explicitly described in addition to the activities that are within 0.25 mile or 1 mile from the listed surface waters. In addition, approximately 70 unnamed streams and 85 unnamed lakes or ponds are located within the NLX study area, but are not listed in these tables unless they have an impairment or other special regulatory status.

⁹ *General Permit No. MN R100001 defines impaired waters as those impaired for phosphorus (nutrient eutrophication biological indicators), turbidity, dissolved oxygen, or aquatic biota (fish bioassessment, aquatic plant bioassessment and aquatic macroinvertebrate bioassessment. No other impairments are considered in this document.*

Table 4-26: Streams, Rivers and Other Drainages within the NLX Study Area in Minnesota

| River or Stream | County | Regulatory Status ^a | NLX Project Improvement and Proximity to River or Stream | Stream Crosses Construction Limits? |
|---|----------|--|---|-------------------------------------|
| Bassett Creek | Hennepin | Impaired for chloride, fecal coliform and fish bioassessments. No Total Maximum Daily Load (TMDL) plan. Public water. | Within 1 mile of Target Field Station, main track construction and turnout construction. | No |
| Mississippi River | Hennepin | Impaired for mercury, fecal coliform and Polychlorinated Biphenyls (PCBs) in fish tissue. TMDL plan for mercury. Public water. | Within 1 mile of Target Field Station, main track construction, turnout and crossover construction and a new rail grade crossing at Harrison Street Northeast. | No |
| Rice Creek | Anoka | Impaired for aquatic macroinvertebrate bioassessments. No TMDL plan. Public water. | Within 1 mile of crossover construction, new bridge over Mississippi Street Northeast, and a new rail grade crossing at Osborne Road Northeast. Construction of a new third main track and a new bridge are proposed directly over the limits of Rice Creek. | Yes |
| County Ditch 17 | Anoka | Impaired for aquatic macroinvertebrate bioassessments. No TMDL plan. Public water. | Within 1 mile of new rail grade crossings at 77th Avenue Northeast and 85th Avenue Northwest and turnout construction. Construction of a new third main track and a culvert extension are proposed directly over and within the limits of County Ditch 17. | Yes |
| Unnamed Ditch (south of Minnesota State Highway [MN] 610) | Anoka | Impaired for aquatic macroinvertebrate bioassessments. No TMDL plan. Public water. | Within 1 mile of turnout and crossover construction, track shifts, new rail grade crossing and reconstructed roadway approaches at Foley Boulevard and construction of Coon Rapids Station. Construction of a new third main track and a culvert extension are proposed directly over and within the limits of Unnamed Ditch. | Yes |



| River or Stream | County | Regulatory Status ^a | NLX Project Improvement and Proximity to River or Stream | Stream Crosses Construction Limits? |
|-----------------|--------|--|--|-------------------------------------|
| Coon Creek | Anoka | Impaired for aquatic macroinvertebrate bioassessments. No TMDL plan. Public water. | Within 1 mile of new third main track, crossover construction, new rail grade crossing and reconstructed roadway approaches at Foley Boulevard, construction of Coon Rapids Station, track shifts, reconstruction of Coon Creek Junction, median construction at Andover Boulevard Northwest, and rehabilitation and 50 percent tie replacement of existing Andover siding. Conversion from an open deck bridge to a ballast deck bridge is proposed directly over the limits of Coon Creek. | Yes |
| County Ditch 48 | Anoka | No special designation attributed to this water body. | Within 0.25 mile of track shifts, median construction at 191st Avenue Northwest and extension of Andover siding. | Yes |
| Cedar Creek | Anoka | Public water. | Within 0.25 mile of track shifts, rail grade crossing work and median construction at Cedar Drive Northwest. | No |
| Rum River | Isanti | Impaired for mercury. TMDL plan for mercury. Wild and Scenic River. Public water. Navigable water. | Within 1 mile of median construction at 281st Avenue Northeast, County State Aid Highway 25 (CSAH-25), CSAH-5, 305th Avenue Northeast, County Road 43 (CR-43), 11th Avenue Southwest and Emerson Avenue North. Rail grade crossing work and median construction at County Road 43, rebuild of roadway approaches at intersection of 343rd Avenue Northeast and Main Street North, track shifts and track undercutting, turnout construction, bridge construction over an unnamed stream south of MN 149 and construction of the Cambridge Station. | No |
| Isanti Brook | Isanti | Public water. | Extension of Isanti siding and construction of a new bridge are proposed directly over the limits of Isanti Brook. | Yes |



| River or Stream | County | Regulatory Status ^a | NLX Project Improvement and Proximity to River or Stream | Stream Crosses Construction Limits? |
|--|---------|--|--|-------------------------------------|
| Beckins Creek | Isanti | No special designation attributed to this water body. | Within 0.25 mile of rebuild of roadway approaches at intersection of 357th Avenue Northwest and MN 65 and track undercutting. | No |
| County Ditch 5 | Isanti | No special designation attributed to this water body. | Within 0.25 mile of ballast (rock) replacement and rebuild of roadway approaches at intersection of CSAH-6 and MN 65. | No |
| Unnamed Stream (south of 379th Avenue Northeast) | Isanti | Public water. | Within 0.25 mile of track undercutting. Construction of additional roadbed and track shifts are proposed directly over the limits of Unnamed Stream. | Yes |
| Lower Stanchfield Branch | Isanti | Public water. | Within 0.25 mile of track undercutting, median construction at CSAH-3 and construction of new Stanchfield siding. | No |
| Snake River | Kanabec | Impaired for mercury. TMDL plan for mercury. Public water. Navigable water. | Within 1 mile of rebuild of roadway approaches along MN 65 and median construction at CSAH-23. | No |
| Mud Creek (County Ditch 10) | Pine | Impaired for fish bioassessments and fecal coliform. No TMDL plan. Public water. | Within 1 mile of track undercutting, rebuild of roadway approaches including at the intersection of MN 107 and Paddle Road and at the intersection of 5th Avenue (CSAH-12) and 1st Street Southeast, extension of existing Grasston siding, and installation of a new turnout. | No |
| Pokegama Creek | Pine | Public water. | Within 0.25 mile of track shifts, turnout replacement and new roadway approaches at intersection of MN 23 and 3rd Street. Extension of Brook Park siding and conversion from an open deck bridge to a ballast deck bridge are proposed directly over the limits of Pokegama Creek. | Yes |



| River or Stream | County | Regulatory Status ^a | NLX Project Improvement and Proximity to River or Stream | Stream Crosses Construction Limits? |
|---------------------|--------|---|---|-------------------------------------|
| East Pokegama Creek | Pine | Public water. | Within 0.25 mile of rebuild of roadway approaches at Aspen Road. Extension of Brook Park siding is proposed directly over the limits of East Pokegama Creek. | Yes |
| Mission Creek | Pine | Public water. Becomes a designated trout stream greater than 1 mile from construction. | Within 0.25 mile of track shifts, extension of Brook Park siding and rail grade crossing work at Two Rivers Road. Installation of new universal crossover is proposed directly over the limits of Mission Creek. | Yes |
| Grindstone River | Pine | Impaired for fish bioassessments and fecal coliform. No TMDL plan. Public water. Navigable water. | Within 1 mile of track shifts, rail grade crossing work at 3rd Street Southwest and at 2nd Street Southeast. Median construction 3rd Street Southwest, 2nd Street Southeast and at Main Street, extension of existing Brook Park siding, and construction of Hinckley Station. Conversion from an open deck bridge to a ballast deck bridge is proposed directly over the limits of Grindstone River. | Yes |
| Spring Creek | Pine | Trout stream. Public water. | Within 1 mile of track shift. | No |
| Skunk Creek | Pine | Public water. | Within 0.25 mile of track shift. | No |
| Kettle River | Pine | Impaired for mercury. No TMDL plan. Wild and Scenic River. Public water. Navigable water. | Within 1 mile of track shifts, rail grade crossing work and median construction at MN 123 and at Oak Street, construction of Sandstone Maintenance Facility and track undercutting. | No |
| Bear Creek | Pine | Public water. | Within 0.25 mile of median construction at Bregnedalgade Street, turnout construction and extension of existing Askov siding. Track undercutting is proposed directly over the limits of Bear Creek. | Yes |



| River or Stream | County | Regulatory Status ^a | NLX Project Improvement and Proximity to River or Stream | Stream Crosses Construction Limits? |
|--|---------|--|--|-------------------------------------|
| Murphy Creek | Pine | Public water. | Within 0.25 mile of siding rehabilitation, rebuild of roadway approaches at CSAH-44 and turnout construction. Track undercutting is proposed directly over the limits of Murphy Creek. | Yes |
| Little Willow River | Pine | Public water. | Within 0.25 mile of rebuild of roadway approaches at road T-892. Track shifts are proposed directly over the limits of Little Willow River. | Yes |
| Willow River | Pine | Public water. Navigable water. | Within 0.25 mile of rebuild of roadway approaches at Range Line Road and at Erickson Road. | No |
| Nemadji River | Pine | Trout stream designation starts approximately 0.5 mile from the construction limits. Impaired for turbidity. No TMDL plan. Public water. | Within 1 mile of track shifts, turnout construction, track undercutting, siding rehabilitation, Dahlgren Road crossing, and median construction at Main Street and at CR-145. Extension of Nickerson siding and box culvert extension are proposed directly over and within the limits of Nemadji River. | Yes |
| Unnamed Stream (Tributary to Nemadji River) | Carlton | Trout stream. Public water. | Within 1 mile of track shifts, turnout construction, track undercutting, siding rehabilitation and median construction and roadway widening at Main Street and at CR-145. | No |
| Anderson Creek | Carlton | Trout stream. Public water. | Within 1 mile of track shifts and median construction at CR-153. | No |
| Unnamed Stream (Tributary to Anderson Creek) | Carlton | Trout stream. Public water. | Within 1 mile of track shifts and median construction at CR-153. | No |
| Unnamed Stream (Tributary to Silver Creek) | Carlton | Trout stream. Public water. | Within 1 mile of track shifts and median construction at CR-153. | No |

| River or Stream | County | Regulatory Status ^a | NLX Project Improvement and Proximity to River or Stream | Stream Crosses Construction Limits? |
|--|---------|--------------------------------|--|-------------------------------------|
| Nemadji River, South Fork (Silver Creek) | Carlton | Trout stream. Public water. | Within 1 mile of track shifts. | No |
| Unnamed Stream (Multiple Tributaries to Nemadji River, South Fork) | Carlton | Trout stream. | Within 1 mile of track shifts, rail grade crossing work at CR-147 and rebuild of roadway approaches at CR-145. | No |
| Net River | Carlton | Trout stream. Public water. | Within 1 mile of track shifts, rail grade crossing work at CR-147 and rebuild of roadway approaches at CR-145. | No |
| Unnamed Stream (Multiple Tributaries to Net River) | Carlton | Trout stream. Public water. | Within 1 mile of track shifts, rail grade crossing work at CR-147 and Stadin Road and rebuild of roadway approaches at CR-145 and Granzow Road. | No |
| Little Net River | Carlton | Trout stream. Public water. | Within 1 mile of track shifts and rail grade crossing work at Stadin Road. | No |
| Unnamed Stream (Tributary to Net River, northeast of T-365) | Carlton | Trout stream. Public Water. | Reestablishment of embankment slopes and track shift are proposed directly over the limits of Unnamed Stream. | Yes |
| Unnamed Stream (Tributary to Section 36 Creek, west of T-367) | Carlton | Public Water. | Track shifts and rebuild of roadway approaches at Clark Road are proposed directly over the limits of Unnamed Stream. | Yes |
| Section 36 Creek | Carlton | Trout stream. Public water. | Within 1 mile of track shifts, rebuild of roadway approaches at Clark Road, rail grade crossing work at Stadin Road and at CSAH-8 and median construction at CSAH-8. | No |



| River or Stream | County | Regulatory Status ^a | NLX Project Improvement and Proximity to River or Stream | Stream Crosses Construction Limits? |
|---|-----------|--|--|-------------------------------------|
| Unnamed Stream (Multiple Tributaries to Section 36 Creek) | Carlton | Trout stream. Public water. | Within 1 mile of track shifts, rebuild of roadway approaches at Clark Road, rail grade crossing work at Stadin Road and at CSAH-8 and median construction at CSAH-8. | Yes |
| State Line Creek | Carlton | Trout stream. Public water. | Within 1 mile of track shifts, turnout construction, rebuild of roadway approaches at Nindorf Road and extension of existing Foxboro siding. | No |
| Unnamed Stream (Multiple Tributaries to State Line Creek) | Carlton | Trout stream designation begins approximately 0.3 mile from construction limits. Public water. | Within 1 mile of track shifts, turnout construction, rebuild roadway approaches at Nindorf Road and extension of existing Foxboro siding. | Yes |
| St. Louis River | St. Louis | Impaired for dichlorodiphenyltrichloroethane (DDT), dieldrin, dioxin (including 2,3,7,8-Tetrachlorodibenzo-p-Dioxin [TCDD]), mercury in fish tissue, mercury in water column, PCB in fish tissue, PCB in water column and toxaphene. No TMDL plan. EPA Great Lakes Area of Concern. Navigable water. | Within 1 mile of new track construction and operating and control systems rehabilitation at Grassy Point Bridge over St. Louis River. | Yes |
| Keene Creek | St. Louis | Trout stream. Impaired for E. coli. No TMDL plan. Public water. | Within 1 mile of turnout construction, construction of a second track, shift of an existing track shift and new rail grade crossings at private road. | No |
| Merritt Creek | St. Louis | Trout stream. Impaired for E. coli. No TMDL plan. | Within 1 mile of turnout and crossover construction. | Yes |
| Miller Creek | St. Louis | Trout stream. Impaired for Chloride, E. coli, aquatic macroinvertebrate bioassessments, lack of a coldwater assemblage and temperature (water). No TMDL plan. Public water. | Within 1 mile of turnout, crossover and main track construction. | Yes |



| River or Stream | County | Regulatory Status ^a | NLX Project Improvement and Proximity to River or Stream | Stream Crosses Construction Limits? |
|------------------|-----------|--------------------------------|--|-------------------------------------|
| Coffee Creek | St. Louis | Trout stream. | Within 1 mile of turnout, crossover and new track construction, construction of the Duluth Station and Duluth Maintenance and/or Layover Facility. | Yes |
| Buckingham Creek | St. Louis | Trout stream. | Within 1 mile of turnout construction, main track construction, construction of the Duluth Station and Duluth Maintenance and/or Layover Facility. | Yes |

^a TMDL studies are performed to determine the sources, background concentrations and other characteristics of pollutants in a waterbody. The studies can result in the development of a TMDL plan, which is a plan to achieve attainment with water quality standards by setting qualitative and/or quantitative pollutant reduction goals.



Table 4-27: Streams, Rivers and Other Drainages within the NLX Study Area in Wisconsin

| River or Stream | County | Regulatory Status | NLX Project Improvement and Proximity to River or Stream | Stream Crosses Construction Limits? |
|---|---------|--|--|-------------------------------------|
| Balsam Creek (Big Balsam) | Douglas | Trout stream (Class II). | Within 1 mile of track shifts, rebuild of roadway approaches at Nindorf Road and at South Warring Road, extension of existing Foxboro siding, turnout construction, rail grade crossing work at County Road W (CR-W) and at Dedham Road, median construction at CR-W, conversion from an open deck bridge to a ballast deck bridge and track undercutting. | Yes |
| Little Balsam Creek | Douglas | Trout stream (Class I). Exceptional resource water. | Within 1 mile of conversion from an open deck bridge to a ballast deck bridge and track undercutting. | Yes |
| Empire Creek | Douglas | Trout stream (Class I). Exceptional resource water. | Within 1 mile of track shifts and rebuild of roadway approach at South Warring Road. | No |
| Unnamed Tributary to Balsam Creek T47n R15w S23 | Douglas | Trout stream (Class I). Exceptional resource water. | Within 1 mile of track undercutting and track shifts. | No |
| Miller Creek | Douglas | Trout Stream (Class II) designation starts approximately 0.4 miles upstream of construction. | Within 0.25 mile of track undercutting, track shifts and rail grade crossing work at Reed Merrill Road. | Yes |
| Rock Creek | Douglas | Trout stream (Class I). Exceptional resource water. | Within 1 mile of track shifts and track undercutting. | Yes |
| Black River | Douglas | Trout Stream (Class III). Navigable water. | Within 1 mile of conversion from an open deck bridge to a ballast deck bridge, rebuild of roadway approaches at Station Road and track shifts. | Yes |
| Stony Brook | Douglas | No special designation attributed to this water body. | Within 0.25 mile of track shifts, rail grade crossing work at Ellison Road, rebuild of roadway approaches at Charlie Drive and turnout construction. | No |

| River or Stream | County | Regulatory Status | NLX Project Improvement and Proximity to River or Stream | Stream Crosses Construction Limits? |
|-----------------|---------|---|--|-------------------------------------|
| Nemadji River | Douglas | Wisconsin Department of Natural Resources: not a designated trout stream but used for trout migration; no spawning. | Within 1 mile of track shifts, rail grade crossing work at Ellison Road, at Short Cut Road and at CR-C, rebuild of roadway approaches at Charlie Drive, at Schallermeir Road, at Ames Road and at North 69th Street, conversion from an open deck bridge to a ballast deck bridge over Nemadji River, bridge undercutting, crossover and turnout construction, and potential construction of a new single track. | Yes |
| Pokegama River | Douglas | No special designation attributed to this water body. | Within 0.25 mile of track shifts, crossover and turnout construction, rebuild of roadway approaches at Schallermeir Road, at Ames Road and at North 69th Street, and potential construction of a new single track. | No |
| St. Louis River | Douglas | Impaired for dichlorodiphenyltrichloroethane (DDT), dieldrin, dioxin (including 2,3,7,8-Tetrachlorodibenzo-p-Dioxin [TCDD]), mercury in fish tissue, mercury in water column, Polychlorinated Biphenyls (PCBs) in fish tissue, PCB in water column and toxaphene. United States Environmental Protection Agency Great Lakes Area of Concern. Navigable water. | Within 1 mile of new track construction and operating and control systems rehabilitation at Grassy Point Bridge over St. Louis River. | Yes |



Table 4-28: Lakes and Ponds within the NLX Study Area in Minnesota

| Lake or Pond | County | Regulatory Status ^a | NLX Project Improvement and Proximity to Lake or Pond | Stream Crosses Construction Limits? |
|---|----------|--|--|-------------------------------------|
| St. Anthony Falls Pool | Hennepin | Located in Mississippi River. | Within 0.25 mile of main track construction and turnout and crossover construction. | No |
| Sandy (Sullivan) Lake | Anoka | Impaired for nutrient and eutrophication biological indicators. No Total Maximum Daily Load (TMDL) plan. | No construction within 1 mile that flows to Sandy Lake. | No |
| Locke Lake | Anoka | Public water. | Construction of a new third main track and a new bridge are proposed directly over the limits of Rice Creek, which flows through Locke Lake. | Yes |
| McKay Lake | Anoka | Public water. | Within 0.25 mile of track shifts. | No |
| Unnamed (northwest portion) Wetland south of 161st Avenue Northwest | Anoka | Public water. | Extension of existing Andover siding is proposed directly over the limits of Unnamed Wetland. | Yes |
| Unnamed Wetland south of Ward Lake | Anoka | Public water. | Extension of existing Andover siding is proposed directly over the limits of Unnamed Wetland. | Yes |
| Ward Lake | Anoka | Public water. | Within 0.25 mile of median construction at Ward Lake Drive. Extension of existing Andover siding is proposed directly over the limits of Ward Lake. | Yes |
| Swan Lake | Anoka | Public water. | Within 0.25 mile of median construction at 191st Avenue Northwest and at Viking Boulevard Northwest. Extension of existing Andover siding and track shifts are proposed directly over the limits of Swan Lake. | Yes |
| Sandshore Lake | Anoka | No special designation attributed to this water body. | Within 0.25 mile of median construction at County State Aid Highway 24 (CSAH-24). | No |



| Lake or Pond | County | Regulatory Status ^a | NLX Project Improvement and Proximity to Lake or Pond | Stream Crosses Construction Limits? |
|---|---------|--------------------------------|--|-------------------------------------|
| Stratton Lake | Isanti | Public water. | Within 0.25 mile of median construction at County Road 56 (CR-56). | No |
| Cajima Marsh | Isanti | Public water. | Within 0.25 mile of track undercutting and median construction at Minnesota State Highway (MN) 149, and extension of existing Isanti siding. | No |
| Unnamed Wetland north of T-133 (305th Avenue Northeast) | Isanti | Public water. | Extension of existing Isanti siding is proposed directly over the limits of Unnamed Wetland. | Yes |
| Magnuson Lake | Isanti | Public water. | Within 0.25 mile of track shifts, rail grade crossing work and median construction at CR-43, and extension of existing Isanti siding. | No |
| Florence Lake | Isanti | Public water. | Within 0.25 mile of rehabilitation and 50 percent tie replacement of existing Cambridge siding. | No |
| Wrench Pond | Isanti | | Within 0.25 mile of track undercutting and median construction at 349th Avenue Northeast. | No |
| Jones Lake | Kanabec | Public water. | Within 0.25 mile of track undercutting. | No |
| Hinckley Pond 1 | Pine | Public water. | Within 0.25 mile of Hinckley Station construction and conversion from an open deck bridge to a ballast deck bridge over Grindstone River. | No |
| Hinckley Pond 2 | Pine | Public water. | Within 0.25 mile of Hinckley Station construction and conversion from an open deck bridge to a ballast deck bridge over Grindstone River. | No |
| Hinckley Pond 3 | Pine | Public water. | Within 0.25 mile of Hinckley Station construction and conversion from an open deck bridge to a ballast deck bridge over Grindstone River. | No |



| Lake or Pond | County | Regulatory Status ^a | NLX Project Improvement and Proximity to Lake or Pond | Stream Crosses Construction Limits? |
|------------------------|-----------|---|--|-------------------------------------|
| Kettle River Reservoir | Pine | | Within 0.25 mile of track undercutting and track shifts. | No |
| Hicks Lake | Pine | Public water. | Within 0.25 mile of track shifts. | No |
| Lake Margaret | Pine | Public water. | Within 0.25 mile of rebuild of roadway approaches at CSAH-46 and at Klein Road. | No |
| Maheu Lake | Pine | Public water. | Within 0.25 mile of track shifts, turnout constructions, rail grade crossing work at Dahlgren Road, track undercutting and extension of existing Nickerson siding. | No |
| St. Louis Bay | St. Louis | Impaired for mercury and Polychlorinated Biphenyls (PCBs). No TMDL plan. Navigable water. Public water. | Within 1 mile of Superior, Wisconsin Station construction, track shifts, turnout construction, second track construction, new rail grade crossings, construction of the Duluth Maintenance and/or Layover Facility and improvements to the Duluth Station. Rehabilitation of the operating and control systems at Grassy Point Bridge is proposed directly over the limits of St. Louis Bay. | Yes |
| Upper Twin Pond | St. Louis | Impaired for mercury in fish tissue and PCBs in fish tissue. No TMDL plan. Public water. | No drainage to Twin Pond. | No |
| Lake Superior | St. Louis | Impaired for mercury in fish tissue and PCBs in fish tissue. No TMDL plan. Public water. Navigable water. | Within 1 mile of Superior, Wisconsin Station construction, track shifts, turnout construction, operating and control systems rehabilitation at Grassy Point Bridge over St. Louis River, second track construction and new rail grade crossings. Construction of the Duluth Maintenance and/or Layover Facility and improvements to the Duluth Station. | No |

^a TMDL studies are performed to determine the sources, background concentrations and other characteristics of pollutants in a waterbody. The studies can result in the development of a TMDL plan, which is a plan to achieve attainment with water quality standards by setting qualitative and/or quantitative pollutant reduction goals.



Table 4-29: Lakes and Ponds within the NLX Study Area in Wisconsin

| Lake or Pond | County | Regulatory Status ^a | NLX Project Improvement and Proximity to Lake or Pond | Stream Crosses Construction Limits? |
|---------------|---------|--|--|-------------------------------------|
| Spirit Lake | Douglas | Navigable water. | Within 1 mile of Superior, Wisconsin Station construction, track shifts, turnout construction, operating and control systems rehabilitation at Grassy Point Bridge over St. Louis River, second track construction and new rail grade crossings. | Yes |
| St. Louis Bay | Douglas | Impaired for mercury and Polychlorinated Biphenyls (PCBs). No Total Maximum Daily Load (TMDL) plan. Navigable water. | Within 1 mile of Superior, Wisconsin Station construction, track shifts, turnout construction, operating and control systems rehabilitation at Grassy Point Bridge over St. Louis River, second track construction and new rail grade crossings. | Yes |

^a TMDL studies are performed to determine the sources, background concentrations and other characteristics of pollutants in a waterbody. The studies can result in the development of a TMDL plan, which is a plan to achieve attainment with water quality standards by setting qualitative and/or quantitative pollutant reduction goals.



4.6.2.3 Floodplains

In accordance with Executive Order 11988, Federal Emergency Management Agency (FEMA) public datasets (FEMA, 2016) were reviewed to determine the location of regulatory floodplains within the NLX study area. Flood Insurance Rate Maps identify Special Flood Hazard Areas that are defined as the area that would be inundated by a flood having a 1 percent chance of being equaled or exceeded in any given year. This flood is commonly referred to as the base flood or the 100-year flood. Within the NLX study area, these locations are labeled as Zone A or Zone AE. Zone A areas have a 1 percent annual chance of flooding, but no detailed analysis has been performed and no depths or base flood elevations are provided. Zone AE areas have a 1 percent annual chance of flooding, and the base flood elevations are provided. Moderate flood hazard areas are labeled as Zone X, which indicates the area between the 100-year floodplain and the 0.2 percent annual chance (or 500-year) flood. Zone X areas are not subject to the same regulations as areas designated as Zone A areas and Zone AE areas. Where construction occurs within any designated flood zone, coordination with the local floodplain administrator for notification, regulatory and design purposes would occur. Proposed construction activities would extend within 32 Zone A areas and Zone AE areas, as described in **Table 4-30**.

Table 4-30: Estimated Longitudinal Distance of Zone A Floodplains Located within the Construction Limits

| County | Estimated Length of Floodplain Area Affected (feet) | Associated Surface Water(s) | Associated Construction Activities |
|----------|---|---|--|
| Hennepin | 45 | Mississippi River | Track removal and construction on west bank of Mississippi River near downtown Minneapolis |
| Anoka | 100 | Rice Creek | New bridge over Rice Creek |
| Anoka | 3,000 | Coon Creek | Rehabilitation and 50 percent tie replacement of existing Andover siding south of Crosstown Boulevard Northwest |
| Anoka | 4,210 | Ward Lake and an unnamed tributary to Mahoney Brook | Extension of Andover siding north of Ward Lake Drive Northwest and a culvert extension in an unnamed stream south of 181st Avenue Northwest |
| Anoka | 520 | County Ditch 48 | Extension of Andover siding north of 181st Avenue Northwest, track shift and culvert extension in County Ditch 48 |
| Isanti | 80 | Unnamed tributary to Rum River | New control point and a new turnout west of the intersection of Railroad Avenue Southeast and Palomino Road Southeast, just north of an unnamed stream in Isanti |
| Isanti | 110 | Unnamed tributary to Rum River | Track undercutting and siding extension north of County State Aid Highway 5 (CSAH-5) in Isanti |

| County | Estimated Length of Floodplain Area Affected (feet) | Associated Surface Water(s) | Associated Construction Activities |
|---------|---|---|---|
| Isanti | 160 | Unnamed tributary to Rum River | Track undercutting, siding extension and construction of a new bridge over an unnamed stream south of Minnesota State Highway (MN) 149 |
| Isanti | 930 | Isanti Brook | Siding extension and construction of a new bridge over Isanti Brook |
| Isanti | 1,340 | Unnamed wetland north of T-133 | Siding extension north of T-133 (305th Avenue Northeast) |
| Isanti | 1,820 | Unnamed tributary to Beckins Creek | Rebuild of roadway approaches at T-75 (343rd Avenue Northeast) and track undercutting |
| Isanti | 430 | Unnamed tributary to Lower Stanchfield Branch | Track shift and construction of additional roadbed near an unnamed stream, west of 375th Avenue Northeast |
| Isanti | 2,090 | Unnamed tributary to Lower Stanchfield Branch | Track shift and construction of additional roadbed adjacent to an unnamed stream, south of 379th Avenue Northeast |
| Isanti | 990 | Unnamed tributary to Lower Stanchfield Branch | Construction of new siding and a culvert extension in an unnamed stream northeast of the intersection of Naples Street Northeast and Stanchfield Road Northeast |
| Isanti | 1,380 | Unnamed tributary to Lower Stanchfield Branch | Construction of new siding and a culvert extension in an unnamed stream south of County Road 36 (395th Avenue Southeast) |
| Kanabec | 0 | None applicable | None applicable |
| Pine | 420 | Pokegama Creek | Siding upgrade, rebuild of roadway approaches and conversion from an open deck bridge to a ballast deck bridge over Pokegama Creek |
| Pine | 2,070 | Unnamed tributary to Pokegama Creek | Siding extension and rail grade crossing work at T-97 (Township Road) |
| Pine | 190 | Grindstone River | Conversion from an open deck bridge to a ballast deck bridge over Grindstone River |
| Carlton | 0 | None applicable | None applicable |
| Douglas | 150 | Balsam Creek (Big Balsam) | Conversion from an open deck bridge to a ballast deck bridge over Balsam Creek (Big Balsam) |
| Douglas | 135 | Little Balsam Creek | Track shift adjacent to Little Balsam Creek |
| Douglas | 405 | Unnamed tributary to Miller Creek | Track shift adjacent to unnamed stream, west of East County Road B |
| Douglas | 215 | Miller Creek | Track shift adjacent to Miller Creek |
| Douglas | 500 | Black River | Conversion from an open deck bridge to a ballast deck bridge over Black River |

| County | Estimated Length of Floodplain Area Affected (feet) | Associated Surface Water(s) | Associated Construction Activities |
|--------------|---|--------------------------------------|--|
| Douglas | 490 | Stony Brook | Track shift adjacent to Stony Brook |
| Douglas | 815 | Nemadji River | Conversion from an open deck bridge to a ballast deck bridge over Nemadji River and track undercutting adjacent to the river |
| Douglas | 925 | St. Louis River | Operating and control systems rehabilitation at Grassy Point Bridge over St. Louis River |
| St. Louis | 815 | St. Louis River | Operating and control systems rehabilitation at Grassy Point Bridge over St. Louis River |
| St. Louis | 780 | Keene Creek and St. Louis River | Construction of a second track and a new turnout east of Keene Creek |
| St. Louis | 95 | Unnamed tributary to St. Louis River | Construction of a new crossover and a new turnout southwest of Richard L. Bong Memorial Bridge |
| St. Louis | 920 | Merritt Creek | Track shift and turnout construction near Merritt Creek and St. Louis Bay |
| Total | 26,130 | | |

Several improvements to bridges and culverts are planned as part of the NLX Project. **Table 4-31** summarizes these proposed NLX Project construction activities at surface water crossings, generally ordered from south to north.

Table 4-31: Bridge Improvements and Culvert Extensions at Surface Water Crossings within the Study Area

| County | Improvement | Flood Zone ^a |
|--------|--|-------------------------|
| Anoka | New bridge over Rice Creek | AE |
| Anoka | 15-foot culvert extension in unnamed tributary to Mississippi River, south of 78th Avenue Northeast | X |
| Anoka | 15-foot culvert extension in unnamed drainageway, east of Liberty Street Northeast | X |
| Anoka | 15-foot culvert extension in unnamed tributary to County Ditch 17, located southeast of County Ditch 17 crossing | X |
| Anoka | 15-foot culvert extension in County Ditch 17 | X |
| Anoka | 15-foot culvert extension in unnamed tributary to Mississippi River, east of Norway Street Northwest | X |
| Anoka | 15-foot culvert extension in unnamed tributary to Mahoney Brook, located south of 181st Avenue Northwest | AE |
| Anoka | 20-foot culvert extension in County Ditch 48 | A |

| County | Improvement | Flood Zone ^a |
|----------------------------------|--|-------------------------|
| Isanti | New bridge over unnamed tributary to Rum River, located south of Minnesota State Highway (MN) 149 | A |
| Isanti | New bridge over Isanti Brook | A |
| Isanti | 15-foot culvert extension in unnamed tributary to Lower Stanchfield Branch, located north of 379th Avenue Northeast | X |
| Isanti | 15-foot culvert extension in unnamed tributary to Lower Stanchfield Branch, located south of County State Aid Highway 3 (CSAH-3) | X |
| Isanti | 15-foot culvert extension in unnamed tributary to Lower Stanchfield Branch, located north of CSAH-3 | A |
| Isanti | 15-foot culvert extension in unnamed tributary to Lower Stanchfield Branch, located south of County Road 36 | A |
| Pine | Conversion from an open deck bridge to a ballast deck bridge over Pokegama Creek | A |
| Pine | Conversion from an open deck bridge to a ballast deck bridge over Grindstone River | A |
| Pine | Box culvert extension on both sides of Nemadji River | X |
| Douglas (Wisconsin) | Conversion from an open deck bridge to a ballast deck bridge over Balsam Creek (Big Balsam) | A |
| Douglas (Wisconsin) | Conversion from an open deck bridge to a ballast deck bridge over Black River | A |
| Douglas (Wisconsin) | Conversion from an open deck bridge to a ballast deck bridge over Nemadji River | A |
| Douglas (Wisconsin) St. Louis | Operating and control systems rehabilitation at Grassy Point Bridge over St. Louis River | AE |

^a Zone A areas have a 1 percent annual chance of flooding, but no detailed analysis has been performed and no depths or base flood elevations are provided. Zone AE areas have a 1 percent annual chance of flooding, and the base flood elevations are provided. Zone X areas are moderate flood hazard areas, which indicates the area between the 100-year floodplain and the 0.2 percent annual chance (or 500-year) flood.

4.6.2.4 Shorelands

Shoreland areas are defined by MnDNR and WDNR as lands located within 1,000 feet from the ordinary high water level of a lake, pond or flowage; and 300 feet from a river or stream, or the landward extent of a designated floodplain. Shoreland limits could be reduced for topographical divides, if they have been approved by state regulation. Minnesota and Wisconsin have established minimum requirements for the subdivision, use, development and alteration of shoreland areas of public waters. The states delegate shoreland management and regulation to counties and local government units, which must adhere to or expand upon state requirements.

Table 4-26, Table 4-27, Table 4-28 and Table 4-29 list surface waters in the NLX study area and water crossings where construction activities would occur.

4.6.2.5 Coastal Zone Management Areas – Lake Superior

The National Coastal Zone Management Program, administered by the National Oceanic and Atmospheric Administration, is a partnership between federal and state entities to address coastal issues. The program is based on the protection, restoration and management of coastal communities and resources. Minnesota's coastal zone is divided into three areas, two of which are located near the proposed NLX Project. One area is the St. Louis River in Carlton County, south of Duluth, which empties into St. Louis Bay and is crossed by the Grassy Point Bridge. The St. Louis River is designated by the EPA as a Great Lakes Area of Concern, originally listed under the Great Lakes Water Quality Agreement of 1987 (EPA, 2017a). Areas of Concern are areas where significant impairment of beneficial uses has occurred due to human activities. EPA and U.S. Steel have proposed a plan to clean contaminated sediment in Spirit Lake, which is a section of the St. Louis River (EPA, 2017b). The other area includes the City of Duluth and surrounding areas of urban growth and expansion to the north and west. Wisconsin's coastal zone includes all of Douglas County, which borders Lake Superior.

Coastal zone management is based on long-term management plans that identify goals and policies. Coastal zone management is administered through shoreland management, floodplain management, wetland conservation, water quality (for example, NPDES permits and Total Maximum Daily Load [TMDL] plans), local surface water management plans and other permits and planning programs discussed throughout this section. The NLX Project would be located in coastal zone management areas and would adhere to the development and operation rules that govern water quality, applicable to the NLX Project.

4.6.2.6 Navigable Waters

Ten navigable waters were identified in the NLX study area:

- Rum River
- Snake River
- Grindstone River
- Kettle River
- Willow River
- St. Louis River
- Black River
- Spirit Lake
- St. Louis Bay
- Lake Superior

Navigable waters are defined by 33 CFR 329, as “those waters that are subject to the ebb and flow of the tide, and/or are presently used, or have been used in the past, or could be susceptible for use to transport interstate or foreign commerce.” Section 10 of the Rivers and Harbors act of 1899 prohibits the obstruction or

alteration of navigable waters of the United States without a permit from USACE, which publishes a list of navigable waters.

4.6.2.7 Wild and Scenic Rivers

The Rum River is designated as a scenic river by MnDNR, is located within 1 mile of proposed NLX Project construction limits and would receive indirect runoff from NLX Project construction activities. The NLX Project crosses the Kettle River, which is designated as a scenic river near the NLX Project crossing, and as a wild river south of the NLX Project crossing.

4.6.3 Impacts

The following provides a description of the surface water resource impacts associated with the area required for proposed NLX Project construction and operation. The following sections discuss the impacts on surface water associated with the No Build Alternative and the Build Alternative. Impact analysis considered all track, roadway, bridge, station and maintenance and layover facilities as identified in the beginning of this chapter. Where impacts are specific to a type of proposed improvement, they are described below. The Build Alternative impacts discussion analyzes long-term operations and maintenance impacts and short-term construction impacts as described in the beginning of this chapter. A discussion of potential impacts at station and maintenance and layover facility sites is also presented, as well as a general discussion of the potential impacts within the BNSF right of way. Avoidance, minimization and mitigation measures are described in Section 4.6.4.

4.6.3.1 No Build Alternative

Under the No Build Alternative, the NLX Project would not occur and would not alter current conditions. There would be no changes except planned and programmed actions that are independent of the NLX Project.

4.6.3.2 Build Alternative – Operations

Land Cover (Erosion and Sedimentation)

The NLX Project would result in impacts on land cover during operation because of the development of new impervious areas, including the construction of passenger stations, maintenance and layover facilities, expanded track ballast and construction of new bridges. Aerial imagery was reviewed to compare existing land cover with the proposed locations of stations and maintenance and layover facilities. It is anticipated that

construction of these facilities would result in an increased impervious surface up to approximately 47 acres. Additional impervious surface would also be created as result of track and bridge work.

Existing drainage patterns would be altered where new track and stations would be constructed; however, the direction of runoff would not substantially change. Vegetated swales (drainage ditches) or similar BMPs would be constructed in rural areas. Urban areas typically rely on curb and gutter to manage stormwater runoff. Other BMPs, such as vegetated buffers, could be considered. Where developments (homes, businesses, parks, etc.) exist directly next to the track, there is a possibility that no drainage ditches or similar conveyance BMPs would be constructed. In these cases, there would be minimal changes to drainage patterns and vegetated buffers would be maintained to the extent practicable outside of the permanent construction limits. The exact details would be determined during future design activities.

Surface Waters

The NLX Project would result in impacts on surface waters during operation as a result of the change in land cover and the pollutant loading associated with the permanent facilities (see **Table 4-26**). Permanent changes in land cover would result in new impervious areas, as discussed in the Land Cover (Erosion and Sedimentation) description in Section 4.6.3.2, potentially resulting in higher runoff rates and volumes and a reduction in the pre-treatment of stormwater runoff entering surface waters. This would result in increased pollutant loading potential.

New piers would be in place where the new bridge would be constructed over Rice Creek in Anoka County and the extension of existing culverts over other streams in construction areas (seven in Anoka County, four in Isanti County and one in Pine County). Culvert extensions would be same size as the existing culvert to maintain drainage capacity.

During operation, pollutants generated by operation and maintenance activities at passenger stations, maintenance and layover facilities and loading and unloading activities would be exposed to precipitation. Such pollutants could include oil or grease storage in aboveground containers, waste disposal containers, equipment washing, painting, fueling, raw material and equipment storage. Though these pollutants would be addressed by BMPs through implementation of an approved Stormwater Pollution Prevention Plan (SWPPP), they would have potential to affect surface water resources when exposed to precipitation during NLX operations.

Floodplains

The NLX Project was evaluated in accordance with Executive Order 11988 (regarding floodplain management). This order addresses building in the floodplain and floodplain safety. According to FEMA Flood Insurance Rate

Maps (FIRMs), the NLX Project crosses the 100-year floodplain in locations identified in **Table 4-30. Appendix D** shows the floodplain in relation to the NLX Project.

The NLX Project track, stations and maintenance and layover facility sites would be located within existing railroad right of way or at existing developed or vacant sites that have been previously developed, resulting in little to no change to the floodplain. The NLX Project would cross 32 mapped floodplains and potentially fill up to 26,130 longitudinal feet of floodplains.

Final design would comply with Executive Order 11988 and local permitting requirements related to floodplain management and flood protection (see Section 5.2.3). Therefore, the NLX Project would not result in substantial changes to floodplain values, flood flows or flood elevations and would not have adverse effects on floodplains, flood flows or flood levels, and would not result in a significant floodplain encroachment as defined in federal regulations. None of the floodplain crossings would cause a substantial potential for interruption or termination of a transportation facility needed for emergency vehicles or the community's only evacuation route. Crossings would be consistent with local floodplain management goals and objectives, which include maintaining the natural and beneficial floodplain values and avoiding support of incompatible floodplain development. Additionally, floodplain crossings would be designed to avoid and minimize impacts to existing flood profiles on adjacent landowners' properties.

Shorelands

The NLX Project crosses several shoreland areas, some of which could have permanent impacts resulting from track and bridge improvements required for the NLX Project. No impacts on shorelands are anticipated stations or maintenance and layover facilities are proposed. Further study will be completed during future design activities to quantify impacts on shorelands when current and accurate information is available to assess final impacts for permitting. Where construction is anticipated adjacent to a surface water, the unit of government regulating shoreland management (County, municipality or township) would be consulted to coordinate permitting during future design activities.

Coastal Zone Management Areas – Lake Superior

The NLX Project would result in impacts on coastal zone management areas along Lake Superior during operation. Coastal zone management is based on long-term management plans that identify goals and policies, administered through shoreland management, floodplain management, wetland conservation, water quality (for example, NPDES permits and TMDL plans), local surface water management plans and other permits and planning programs discussed throughout this section. Operations impacts on coastal zone management areas, including the EPA-designated St. Louis River Area of Concern, would be those impacts associated with changes

to land cover, as described in **Table 2-1** and throughout Section 4.6.3.2. Work in the identified coastal zone management areas would be limited to track work.

Navigable Waters

The U.S. Coast Guard and USACE were consulted to discuss potential impacts and permitting requirements as part of the Tier 1 EA, in accordance with Section 10 of the Rivers and Harbors Act of 1899 and in accordance with Section 404 of the CWA. Consultation concluded that a Section 10 permit is not required for the NLX Project because there would be no planned obstructions or alterations of navigable waters resulting from proposed operational activities and bridge deck modifications. The nature of the NLX Project improvements identified over navigable waters during the Tier 2 EA resulted in no substantial change. Further coordination with the U.S. Coast Guard and USACE for Section 10 would not be required (see **Appendix I**). A Section 404 permit would be required for work outside of navigable waters that impacts waters of the United States, including wetlands.

Wild and Scenic Rivers

The Tier 1 EA indicates that MnDNR was consulted and no specific concerns were noted for the Kettle River during operation beyond the potential impacts described by Section 4.6.3.2. At the time of consultation during the Tier 1 EA, proposed NLX Project construction activities included rehabilitation of the bridge that spans the Kettle River. Modifications to NLX Project improvements during the Tier 2 EA no longer anticipate the bridge deck modification over Kettle River. No impacts on the Kettle River would occur.

4.6.3.3 Build Alternative – Construction

Land Cover (Erosion and Sedimentation)

The NLX Project would result in impacts on land cover during construction as a result of activities that would disturb existing vegetation and expose sediment to erosion. This would increase the potential to increase erosion and sedimentation to surface water resources.

Surface Waters

The NLX Project would result in impacts on surface water during construction due to the location and nature of construction activities and their proximities to surface water, and the change in land cover and the pollutant loading associated with construction (see **Table 4-26**). Construction impacts would include the addition of piers where the new bridge would be constructed over Rice Creek in Anoka County and the extension of existing

culverts over other streams in construction areas (seven in Anoka County, four in Isanti County and one in Pine County). Culvert extensions would be the same size as the existing culvert to maintain drainage capacity. Rainfall over exposed soil during construction could clog stormwater treatment BMPs such as vegetative filters and reduce the treatment capacity of storage BMPs such as retention ponds. There is potential for sediment and construction period pollutants to be carried into surface water resources via stormwater runoff during construction. Temporary changes to land cover could result in higher runoff rates and volumes and a reduction in the pre-treatment of stormwater runoff prior to entering surface waters. This would result in increased pollutant loading potential.

Floodplains

The NLX Project would result in impacts on floodplains during construction from the placement of temporary fill or as a result of sediment transport depositing sediment onto floodplains. As a result, floodplains would have decreased capacity to convey flow. Temporary fill may consist of grading to facilitate track or bridge work, or it may be the placement of stockpiles or other construction materials. **Table 4-30** indicates approximately 26,130 longitudinal feet of floodplains are located within the proposed construction limits and would potentially be affected.

Shorelands

The NLX Project would extend through several shoreland areas, some of which could have temporary impacts resulting from construction activities. Soil erosion and sediment transport have potential to deposit sediment onto downstream shorelands. No impacts on shorelands are anticipated where construction of stations or maintenance and layover facilities are proposed.

Coastal Zone Management Areas – Lake Superior

Construction impacts on coastal zone management areas along Lake Superior, including the EPA-designated St. Louis River Area of Concern, are those impacts associated with changes to land cover, as described in Section 4.6.3.3. Work in the identified coastal zone management areas would be limited to track work.

Navigable Waters

The NLX Project would result in construction impacts on navigable waters commensurate with the impacts described in Section 4.6.3.3 (for example, potential increases in pollutant loading). A Section 10 permit would not be required for the NLX Project because there are no planned obstructions or alterations of navigable waters resulting from proposed construction activities and bridge deck conversions.

Wild and Scenic Rivers

Proposed track shifts and track undercutting are planned in areas adjacent to the Kettle River and would potentially result in temporary impacts during construction, such as sediment deposition into the Kettle River.

4.6.4 Avoidance, Minimization and Mitigation Measures

The NLX Project would continue efforts to avoid, minimize and mitigate impacts as the project advances through construction. Mitigation measures have not been identified for navigable waters or Wild and Scenic Rivers because the NLX Project would not impact those resources.

4.6.4.1 Surface Waters

During future design activities, MnDOT would notify state agencies and local government units of the proposed construction, and the design documents would be reviewed to confirm compliance with surface water resource regulations. To the extent practical, green infrastructure would be incorporated to minimize surface water impacts. Green infrastructure could include bioswales, rain gardens and permeable pavements for parking lots and access road.

An NPDES construction stormwater permit from MPCA and WDNR would be required because the NLX Project would disturb more than 1 acre of land. Local government units have permit application processes that include plan review, compliance with design standards and permanent maintenance agreements.

Construction mitigation measures for surface waters including land cover would include minimum design standards for work in public waters to accommodate fish spawning and migration, and the development of a construction SWPPP for Minnesota and Stormwater Management Plan (SWMP) for Wisconsin. A SWPPP or SWMP would describe structural and non-structural practices to reduce pollutants in stormwater discharges from construction sites. This would include the development of an erosion control plan to prevent erosion, minimize sediment and pollutant transport and manage stormwater runoff that is carried to surface water resources. The erosion control plan would require the design and implementation of BMPs. Erosion prevention BMPs could include surface roughening to prepare exposed areas for site restoration, installing erosion control blanket, seeding, disk mulching, hydromulching or installing riprap or other scour protection device at concentrated flow outlets. Sediment control BMPs could include the installation of sediment control logs, silt fence, silt curtain, inlet protection, vehicle trackout controls and similar practices. The construction SWPPP and SWMP would include provisions for minimizing disturbance on steep slopes, controlling dust, efficiently stabilizing exposed soils, protecting stockpiles, good housekeeping practices and inspection and maintenance of BMPs.

During construction, soil stabilization techniques would be used to avoid and minimize impacts on surface waters. At a minimum, all soils would be temporarily or permanently stabilized within 14 days of construction temporarily or permanently ceasing in that area. In areas that are more sensitive or with more stringent regulatory requirements, such as within 1 mile of impaired streams, soils would be stabilized within 7 days of construction temporarily or permanently ceasing. For areas that are located within 200 feet of MnDNR public waters or designated trout streams, stabilization would be completed within 24 hours of construction temporarily or permanently ceasing. Such measures would be employed until the all disturbed areas have achieved final stabilization. Final stabilization means that all soil-disturbing activities have been completed, and all soils that were exposed during construction are stabilized with a uniform perennial vegetative cover with a density of 70 percent of its expected final growth. Further efforts to avoid and/or minimize soil and land cover impacts would be developed during future design activities to comply with state and local regulations.

Operations mitigation measures would include permanent treatment of stormwater runoff from new impervious area as required by the NPDES construction stormwater permits from MPCA and WDNR and the maintenance of permanent BMPs. NPDES multi-sector or industrial stormwater permits from MPCA and WDNR would be required during operations because passenger rail and transportation are industries regulated under the NPDES program. The development and implementation of a multi-sector or industrial SWPPP for Minnesota and Wisconsin is required by the NPDES program and would provide further minimization of impacts on surface water resources. The industrial SWPPP would provide locations and descriptions of potential operations pollutants and BMPs that are designed to prevent exposure of pollutants to stormwater runoff or to otherwise prevent pollutant discharges. The industrial SWPPP would include provisions for practicing good housekeeping and inspection and maintenance of BMPs to ensure their integrity. Compliance with industrial SWPPP provisions could require sampling of stormwater runoff and correction of deficiencies if they are apparent.

4.6.4.2 Floodplains

In compliance with Executive Order 11988, coordination with local floodplain administrators would determine the permitting compliance measures required for floodplain impacts.

4.6.4.3 Shorelands

Where construction is anticipated adjacent to a surface water, the unit of government regulating shoreland management (County, municipality or township) would be consulted to coordinate permitting during future design activities.

4.6.4.4 Coastal Zone Management

Throughout the design and construction process, MnDOT would continue to coordinate with the EPA remediation team for the EPA-designated St. Louis River Area of Concern. These efforts would help prevent the NLX Project from hindering EPA remediation and restoration efforts related to the St. Louis River Area of Concern.

4.6.5 Summary

The Tier 1 EA indicates that the NLX Project would have water quality impacts on surface waters attributed to erosion, sedimentation and increase in impervious surfaces resulting from construction. The Tier 2 EA indicates that the nature of water quality impacts on resources including surface waters, shorelands, coastal zone management areas, navigable waters and Wild and Scenic Rivers are consistent with those impacts described in the Tier 1 EA. Though the type of water quality impacts is similar, the Tier 2 EA indicates a potentially greater extent of impacts due to the estimated area disturbed by construction increasing from 420 acres of land during the Tier 1 EA to 878 acres of land during the Tier 2 EA. The difference in the total acreage within the construction limits is primarily because the Tier 2 EA construction limits include the rehabilitation of existing track, while the Tier 1 EA construction limits did not. Acreage associated with the construction of stations and maintenance and layover facilities are also included with the estimates of disturbed area.

During the Tier 1 EA, approximately 415 linear feet of floodplain and 11 FEMA waterbody crossings were identified in areas of new construction. The Tier 2 EA identifies approximately 26,130 linear feet of floodplain and 32 FEMA waterbody crossings in areas of new construction. The difference in the length of floodplain impacted is primarily because the Tier 2 EA construction limits include the rehabilitation of existing track, while the Tier 1 EA construction limits did not. The increase in floodplain limits and FEMA waterbody crossings is due to modifications in NLX Project design that would result in additional track and bridge work located along floodplains. Furthermore, floodplain extents were not available in GIS format during the Tier 1 EA. Different data sources and processes used for the assessment may have resulted in the potential for further variance. No special issues for shoreland districts, coastal zone management areas, navigable waters or Wild and Scenic Rivers were identified in either the Tier 1 EA or the Tier 2 EA that are not addressed through surface water quality or floodplain issues.

4.7 Groundwater

The Tier 1 EA analysis indicates that the NLX Project would have impacts on groundwater. This section analyzes the NLX Project impacts based on proposed construction limits that have been updated since the Tier 1 EA.

Table 4-32 presents the NLX study area used for groundwater impact analysis; **Table 4-33** compares the results of the Tier 1 EA and the Tier 2 EA analyses. The revised impacts supersede the results presented in the Tier 1 EA and are summarized at the end of this section.

Table 4-32: NLX Study Area for Groundwater

| NLX Study Area Definition | Basis for NLX Study Area |
|---|--|
| Construction limits from preliminary engineering plus 0.25-mile buffer. | Describes the context of the surrounding areas where construction activities have been identified. Direct impacts on groundwater are limited to the construction limits. |

Table 4-33: Groundwater Comparison – NLX Tier 1 Service Level EA and NLX Tier 2 Project Level EA

| Identified Impacts in NLX Tier 1 Service Level EA | Identified Impacts in NLX Tier 2 Project Level EA |
|---|---|
| Impacts could occur in construction areas in wellhead protection areas, source water assessment areas and drinking water supply management areas. | Similar impacts. |

As appropriate and necessary, this Tier 2 EA would be refined through future supplemental NEPA documentation as the final design advances and funding is secured for the NLX Project. Future supplemental environmental documentation is identified as appropriate throughout this Tier 2 EA.

4.7.1 Regulatory Context and Methodology

4.7.1.1 Legal and Regulatory Context

The following agencies have a role in groundwater management in the NLX study area:

- **Minnesota Department of Health (MDH)** – MDH is responsible for safe supply of all public water systems in Minnesota as required by the federal Safe Drinking Water Act and Minn. Stat. 103I. MDH also operates the Well Management Program through Minnesota Administrative Rules Chapters 4725 and 4727, which protects public health and groundwater quality by assuring the proper construction of new wells and borings and the proper sealing of unused wells and borings.

- **MnDNR** – MnDNR is responsible for managing groundwater appropriations and ensuring that sufficient groundwater supply is available for all beneficial uses. Authority is granted to MnDNR through Minn. Stat. 103G and implemented through Minnesota Administrative Rules Chapter 6115.
- **WDNR** – WDNR is responsible for all aspects of groundwater management, including wellhead protection under Wisconsin Administrative Code Chapter NR 811, groundwater appropriation under Wisconsin Administrative Code Chapter NR 820 and well construction under Wisconsin Administrative Code Chapter NR 812.
- **Public water systems** – All public water systems are required to delineate an inner wellhead management zone and inventory and manage potential contamination sources in that zone.

4.7.1.2 Methodology

The methodology for characterization and assessment of impacts on groundwater focused on identifying the resource and its presence within the NLX study area, and determining the impacts that would occur within or near the construction limits. Impacts were assessed based on the proximity of identified resources to NLX improvements and the nature of the specific improvements near each resource.

Groundwater resources present in the NLX study area were identified using:

- MDH public datasets described in Section 4.7.2.1
- Minnesota Well Index
- MnDNR karst feature inventory
- WDNR Groundwater Retrieval Network
- Wisconsin Geological and Natural History Survey Springs Reporter website
- WDNR provided input on Source Water Areas in the NLX study area.

4.7.2 Affected Environment

The following provides a description of the affected environment for the proposed NLX Project.

4.7.2.1 Wellhead Protection

MDH provides public datasets containing locations where wellhead protection is designated around public water supply wells. The following datasets were inventoried to identify potential effects on drinking water supplies in the NLX study area:

- Wellhead Protection Area (WHPA). A surface and subsurface area surrounding a public water supply well or well field that supplies a public water system, through which contaminants could potentially move toward and reach the well or well field.
- Source Water Assessment Area (SWAA). A surface and subsurface area surrounding a public water supply well that contains the water associated with 1 year time-of-travel area. The time-of-travel for a non-vulnerable SWAA is 3 years and for a vulnerable SWAA is 10 years. Ultimately, the SWAA would be replaced by a WHPA and a corresponding Drinking Water Supply Management Area (DWSMA).
- DWSMA. A surface and subsurface area surrounding a public water supply well that contains the WHPA and is delineated by identifiable physical features, landmarks, or political and administrative boundaries. DWSMAs have a vulnerability ranking that incorporates the likelihood for a potential contaminant source in the DWSMA to contaminate a public water supply well. The vulnerability ranking is based on the aquifer's geologic sensitivity and the composition of the groundwater. The DWSMA vulnerability ranking ranges from very low to very high, and allows for an unknown designation. Aquifer vulnerability is designed as either vulnerable or not vulnerable.

Vulnerability rankings were included in the Tier 1 EA and updated based on the defined study area for the Tier 2 EA. The latest WHPA, SWAA and DWSMA datasets from MDH were used, dated February 19, 2015 (MDH, 2015). WHPAs, SWAAs and DWSMAs that intersect the NLX study area are listed in **Table 4-34**, **Table 4-35** and **Table 4-36**.

Table 4-34: Minnesota Wellhead Protection Areas within NLX Study Area

| County | City | Wellhead Protection Area Name | Wellhead Protection Area ID | DWSMA ID | Public Water Supply Type |
|--------|------------|--|-----------------------------|-------------------|-----------------------------|
| Anoka | Fridley | Fridley CJDN 11 | 16304 | 163 | Community |
| Anoka | Andover | Andover Central QBAA | 37802 | 378 | Community |
| Isanti | Isanti | Isanti | 64201 | 642 | Community |
| Isanti | Grandy | Brass Rail #1 | N/A | PWSID: 5300051 | Transient, non-community |
| Pine | Brook Park | The Tavern in Duquette #1 ^a | N/A | PWSID: 5580381 | Transient, non-community |
| Pine | Hinckley | Hinckley | 58201 | 582 | Community |
| Pine | Bruno | St. Paul's Lutheran Church #1 | N/A | PWSID: 5580056 | Transient, non-community |

Drinking Water Supply Management Area = DWSMA; Not Applicable = N/A

^a The Minnesota Department of Health dataset places the Tavern in Duquette #1 in Brook Park, Minnesota. This location should be verified.

Table 4-35: Minnesota Source Water Assessment Areas within NLX Study Area

| County | City | Source Water Assessment Area Name | Source Water Assessment Area ID |
|--------|-----------|-----------------------------------|---------------------------------|
| Isanti | Cambridge | Pine Village, Inc. | 1140 |
| Pine | Sandstone | Sandstone 1-2 | 1190 |

Table 4-36: Minnesota Drinking Water Supply Management Areas within NLX Study Area

| County | City | DWSMA NAME | DWSMA ID | DWSMA Vulnerability ID | DWSMA Vulnerability Code | Aquifer Vulnerability Code ^a |
|--------|-----------|-----------------|----------|------------------------|--------------------------|---|
| Anoka | Fridley | Fridley | 163 | 163001 | Moderate | V |
| Anoka | Fridley | Fridley | 163 | 163004 | Low | N |
| Anoka | Fridley | Brooklyn Center | 800 | 800001 | High | V |
| Anoka | Fridley | Brooklyn Center | 800 | 800004 | Moderate | V |
| Anoka | Andover | Andover Central | 818 | 818002 | Moderate | V |
| Isanti | Isanti | Isanti | 642 | 642001 | Low | N |
| Isanti | Isanti | Isanti | 642 | 642002 | Moderate | V |
| Isanti | Isanti | Isanti | 642 | 642003 | High | V |
| Isanti | Cambridge | Cambridge 1 | 394 | 394001 | Moderate | V |
| Isanti | Cambridge | Cambridge 4 | 395 | 395001 | Moderate | V |
| Pine | Hinckley | Hinckley | 582 | 582001 | Moderate | V |

Drinking Water Supply Management Area = DWSMA

^a V = Vulnerable; N = Not Vulnerable

Emergency response areas were inventoried for the Tier 2 EA. An emergency response area is the surface and subsurface area surrounding a public water supply well that contains the water associated with 1 year time-of-travel. The emergency response area dataset provided by MDH is dated February 19, 2015 (MDH, 2015). One emergency response area is located in the NLX study area and is described in **Table 4-37**.

Table 4-37: Minnesota Emergency Response Areas within NLX Study Area

| County | City | Emergency Response Area ID | DWSMA ID | Wellhead Protection Area ID |
|--------|--------|----------------------------|----------|-----------------------------|
| Isanti | Isanti | 642010101 | 642 | 64201 |

Drinking Water Supply Management Area = DWSMA

The WDNR was contacted to identify NLX Project specific wellhead protection information. **Table 4-38** summarizes two public water supply systems that have source water areas in the NLX study area.

Table 4-38: Wisconsin Source Water Areas within NLX Study Area

| County | City | Public Water Supply Name | Public Water Supply ID | Public Water Supply Type |
|---------|----------|--------------------------|------------------------|------------------------------|
| Douglas | Superior | Maranatha Academy, Inc | 81602180 | Non-transient, non-community |
| Douglas | Superior | Superior Town Hall | 81602158 | Transient, non-community |

Source: Personal communication (email) dated June 9, 2016, from Wisconsin Department of Natural Resources to HDR.

4.7.2.2 Wells

A review of the Minnesota Well Index (MDH, 2016) was performed for the Tier 2 EA based on the NLX study area, including stations, maintenance and layover facilities, rail grade crossings and track upgrades. No wells were found within the construction limits. A grouping of monitoring wells is present on the parcel west of the proposed Sandstone Maintenance Facility, but is not within the construction limits.

For the portion of track located in Wisconsin, the WDNR Groundwater Retrieval Network was reviewed for wells drilled since 1988 (WDNR, 2016e) and the Wisconsin Department of Agriculture, Trade and Consumer Protection well construction report database (2016) was reviewed for wells constructed from 1936 to 1989. No wells are located within the construction limits in Wisconsin.

Although the well databases described above represent the most exhaustive inventories of wells in Minnesota and Wisconsin, it is possible that undocumented wells could exist in the NLX study area.

4.7.2.3 Springs and Sinkholes

The karst feature inventory generated by MnDNR was reviewed to identify the presence of springs and sinkholes in the NLX study area (MnDNR, 2015c). The karst feature inventory contained no springs or sinkholes in the NLX study area in Minnesota; however, Sandstone City staff indicated fresh water springs could be present at the proposed Sandstone Maintenance Facility site (see **Appendix B**). The City of Sandstone overlies the Hinckley Sandstone bedrock formation, which has been noted to develop karst features in some areas (MnDNR, 2015d).

The Wisconsin Geological and Natural History Survey's *Wisconsin Springs Reporter* website (2016) was reviewed. No springs have been reported in the NLX study area in Wisconsin.

4.7.2.4 Shallow Groundwater

Shallow groundwater is vulnerable to the effects of construction (for example, dewatering, leaks and spills) due to its proximity to the ground surface. There is potential for shallow groundwater to be present in the NLX study area. Shallow groundwater often occurs near surface water bodies (Section 4.6), but could be present elsewhere, such as in low topographic areas.

4.7.3 Impacts

The following sections discuss the impacts on groundwater associated with the No Build Alternative and the Build Alternative. Impact analysis considered all track, roadway, bridge, station and maintenance and layover facilities as identified in the beginning of this chapter. Where impacts are specific to a type of proposed improvement, they are described below. The Build Alternative impacts discussion analyzes long-term operations and maintenance impacts and short-term construction impacts as described in the beginning of this chapter. A discussion of potential impacts at station and maintenance and layover facility sites is also presented, as well as a general discussion of the potential impacts within the BNSF right of way. Avoidance, minimization and mitigation measures are described in Section 4.7.4.

4.7.3.1 No Build Alternative

Under the No Build Alternative, the NLX Project would not occur and would not alter current conditions. There would be no changes except planned and programmed actions that are independent of the NLX Project.

4.7.3.2 Build Alternative – Operations

The NLX Project could result in impacts on groundwater due to spills and leaks of oil or fuel percolating into the ground at maintenance facilities. Spills and leaks may occur from maintenance vehicles or from storage containers that would be kept on site.

The stations and maintenance and layover facilities in Minneapolis; Coon Rapids; Cambridge; Hinckley; Sandstone; Superior, Wisconsin; and Duluth would connect to municipal water and sewer as needed, and would not require installation of groundwater supply wells or onsite septic systems.

Wellhead Protection

Stormwater runoff from stations and maintenance and layover facilities has the potential to affect groundwater quality in public water systems. Public water system WHPAs and source water areas have been identified within the construction limits. For Minnesota and Wisconsin, the WHPAs and associated source water areas have conditional uses coupled with them to prevent groundwater contamination. Within the WHPAs, the introduction of stormwater infiltration systems associated with station and maintenance and layover facilities could be in conflict with the conditional uses; in these situations, alternative stormwater management solutions may be necessary. There are requirements that prohibit potential contamination sources within a certain distance from the well, including stormwater infiltration ponds and petroleum storage tanks. These requirements are contained in the wellhead protection plans maintained by the public water system.

Wells

Physical damage to wells, including wells used for public and domestic water supply, irrigation, commercial, industrial and other purposes is not anticipated during operations because no wells were identified in the NLX study area.

Springs and Sinkholes

No springs or sinkholes have been inventoried in the NLX study area. Although springs reportedly could exist at the proposed Sandstone Maintenance Facility site, none were observed from limited field reviews.

Shallow Groundwater

There is potential to encounter existing contamination that could create long-term liability for MnDOT. Rail operations could generate hazardous materials (for example, spills or leaks) during operation that could pose

impacts on groundwater quality. See Section 4.10 for analysis of contamination-related impacts and mitigation.

4.7.3.3 Build Alternative – Construction

The NLX Project could result in impacts on groundwater due to the nature of construction, and require coordination and permitting from local and state groundwater resources agencies. The proposed construction activities would comply with applicable local and state groundwater regulations and BMPs to minimize potential impacts on groundwater.

As identified in the Tier 1 EA, the stations and maintenance and layover facilities in Minneapolis; Coon Rapids; Cambridge; Hinckley; Sandstone; Superior, Wisconsin; and Duluth would connect to municipal water and sewer, as needed, and would not require installation of groundwater supply wells or onsite septic systems.

Wellhead Protection

Stormwater runoff from areas disturbed during construction has the potential to affect groundwater quality in public water systems by mixing with construction period pollutants and percolating into the ground, introducing contaminants to the groundwater supply.

Wells

No wells were identified within the construction limits. Physical damage to wells, including wells used for public and domestic water supply, irrigation, commercial, industrial and other purposes are not anticipated because no wells were identified in the NLX study area. Undocumented wells could exist near the NLX study area. Potential impacts on nearby wells outside of the NLX study area would include temporary drawdown of water levels during dewatering activities (if applicable) and corresponding temporary reduction of well yield. The degree of impact would depend on aquifer properties, distance, layout and yield of the dewatering system and duration of dewatering.

Springs and Sinkholes

No springs or sinkholes have been inventoried in the NLX study area. Although springs reportedly could exist at the proposed Sandstone Maintenance Facility site, none were observed from limited field reviews.

Shallow Groundwater

There is potential for encountering existing contamination or generating hazardous materials during construction (for example, construction excavation or dewatering, or equipment spills or leaks) during construction that could pose impacts on groundwater quality. See Section 4.10 for analysis of contamination-related impacts and mitigation.

Based on preliminary engineering, it is unknown if or where any shallow groundwater dewatering would be needed. Dewatering activities, including the number and spacing of dewatering wells, would be defined during future design activities. If dewatering were to be required, the water table could be substantially affected by drawdown.

4.7.4 Avoidance, Minimization and Mitigation Measures

The NLX Project would continue efforts to avoid, minimize and mitigate impacts as the project advances through construction. During future design activities, MnDOT would notify owners of public water systems located in the NLX study area about the proposed construction. Wellhead protection plans would be reviewed for source water protection requirements. Within WHPAs, it would be desirable to route stormwater runoff outside of the protected area prior to infiltration, if possible. If infiltration rate attenuation is required in a protected area, the treatment facility (for example, stormwater pond) could require lining to ensure that infiltration does not occur. Storage and handling of hazardous materials could have specific requirements in WHPAs.

If any unused or unsealed wells are discovered in the NLX study area during construction, they would be addressed in accordance with Minnesota Administrative Rules Chapter 4725 and Wisconsin Administrative Code Chapter NR 812.26. Undocumented wells would be visually identified during construction and physical damage to the well would be avoided.

Springs reportedly could exist at the proposed Sandstone Maintenance Facility site. During future design activities, a spring survey would be conducted at this site to determine the presence or absence of springs. If springs are discovered, MnDNR would be contacted and the spring would be avoided during construction and operation of the NLX Project.

If groundwater dewatering is necessary to construct permanent facilities, proper permits for the appropriation and disposal of groundwater would be obtained from MnDNR and WDNR prior to any work.

A plan for assessing and managing existing contamination in construction areas would be developed. Spill prevention, control and countermeasures would be developed to avoid impacts from any leaks or spills that could potentially occur during NLX Project construction and operation.

4.7.5 Summary

The construction limits have increased from the Tier 1 EA to the Tier 2 EA, as described in the introduction of this chapter. Impacts could occur in construction areas that are located in wellhead protection areas, source water assessment areas and drinking water supply management areas. The Tier 1 EA indicated that the NLX Project would have impacts on groundwater, which was confirmed during the Tier 2 EA.

4.8 Air Quality

The Tier 1 analysis indicates that the NLX Project would reduce emissions due to fewer vehicles traveling by road. This section analyzes the NLX Project impacts based on proposed construction limits that have been updated since the Tier 1 EA. **Table 4-39** presents the NLX study area used for air quality impact analysis; **Table 4-40** compares the results of the Tier 1 EA and Tier 2 EA analyses. The revised impacts supersede the results presented in the Tier 1 EA and are summarized at the end of this section.

Table 4-39: NLX Study Area for Air Quality

| NLX Study Area Definition | Basis for NLX Study Area |
|--|---|
| Entire NLX route and parallel freeway (i.e., I-35). | Estimate project-generated net emissions changes for the NLX Project as a whole. |
| Hennepin and Anoka Counties portion of NLX route and parallel freeway. | Estimate project-generated net emissions changes for the Twin Cities Metropolitan Area counties that are part of the carbon monoxide (CO) maintenance area (former National Ambient Air Quality Standards (NAAQS) nonattainment for CO). This determines whether General Conformity rules apply to the NLX Project. |

Table 4-40: Air Quality Comparison – NLX Tier 1 Service Level EA and Tier 2 Project Level EA

| Identified Impacts in Tier 1 Service Level EA | Identified Impacts in Tier 2 Project Level EA |
|---|---|
| Reduction in emissions of carbon monoxide, nitrogen oxide, volatile organic compounds, particulate matter and carbon dioxide. | Similar impacts. |

As appropriate and necessary, this Tier 2 EA would be refined through future supplemental NEPA documentation as the final design advances and funding is secured for the NLX Project. Future supplemental environmental documentation is identified as appropriate throughout this Tier 2 EA.

4.8.1 Regulatory Context and Methodology

4.8.1.1 Legal and Regulatory Context

Under the Clean Air Act (CAA) of 1970 and the Clean Air Act Amendments (CAAA) of 1977 and 1990, the United States Environmental Protection Agency (EPA) has responsibility to establish National Ambient Air Quality

Standards (NAAQS) for six criteria air pollutants, which are the pollutants considered the most pervasive and of the greatest concern nationwide. The current NAAQS are summarized in **Table 4-41**.

Minnesota also has its own ambient air quality standards, which are either the same as or less stringent than the NAAQS for the pollutants listed in **Table 4-41**. Minnesota has additional ambient air quality standards for hydrogen sulfide (H₂S), total suspended particulate matter (TSP or PM) and annual average PM₁₀. EPA has dropped the latter two standards as no longer a concern for public health, and H₂S is not expected to be emitted in measurable quantities from the transportation sources assessed here. Therefore, emissions are presented in this section only with respect to NAAQS pollutants (or precursors) estimated to be emitted in measurable amounts due to Project operations. There would also be minor amounts of PM and PM₁₀ emitted by Project construction, but the mitigation discussed below should negate any measurable effects on localized air quality during construction. Wisconsin also has its own ambient air quality standards, which are the same as the NAAQS in most cases, or which are less stringent than the NAAQS for some newer standards that have not yet been incorporated into Wisconsin standards.

In addition to NAAQS-regulated pollutants, EPA has established various requirements for regulations of hazardous air pollutants, for pollutants affecting stratospheric ozone depletion and for greenhouse gases (GHGs).

EPA, with recommendations and consultation from states, defines all areas of the nation as either meeting or not meeting the NAAQS. Areas not meeting the NAAQS for a given pollutant are designated as nonattainment areas for that pollutant, while areas meeting the NAAQS for a pollutant are designated as attainment areas. Areas that were formerly in nonattainment status, but have come into attainment, are known as maintenance areas for the relevant pollutant. The attainment/maintenance status remains in place for 20 years after an area is redesignated from nonattainment to attainment, after which time the maintenance designation is removed and the area is just an attainment area, assuming it did not revert to nonattainment within the 20 year period.

Note that the current ozone NAAQS of 70 parts per billion (ppb) (0.070 parts per million [ppm]) was established in October 2015, so EPA has not yet made initial attainment/nonattainment designations in any states with respect to the new standard. Existing designations for ozone are based on the pre-existing NAAQS of 75 ppb.

Table 4-41: National Ambient Air Quality Standards (NAAQS)

| Pollutant | Averaging Period | NAAQS | Unit |
|---|----------------------|-------|--|
| Nitrogen Dioxide (NO ₂) | 1-hour ^a | 100 | parts per billion (ppb) |
| | Annual ^b | 53 | |
| Carbon Monoxide (CO) | 1-hour ^c | 35 | parts per million (ppm) |
| | 8-hour ^c | 9 | |
| Sulfur Dioxide (SO ₂) | 1-hour ^d | 75 | ppb |
| | 3 hour ^c | 0.5 | ppm |
| | 24 hour ^d | 0.14 | ppm |
| | Annual ^b | 0.03 | ppm |
| Particulate Matter up to 10 micrometers in size (PM ₁₀) | 24-hour ^e | 150 | micrograms per cubic meters air (µg/m ³) |
| Particulate Matter up to 2.5 micrometers in size (PM _{2.5}) | 24-hour ^f | 35 | µg/m ³ |
| | Annual ⁱ | 12 | µg/m ³ |
| Ozone (O ₃) | 8-hour ^g | 0.070 | ppm |
| Lead (Pb) | 3-month ^h | 0.15 | µg/m ³ |

Source: 40 Code of Federal Regulations 50.

^a The 1-hour NO₂ standard is met when the 3-year average of the annual 98th percentile of the daily maximum 1-hour average concentration is less than or equal to 100 ppb.

^b Annual arithmetic mean.

^c Maximum concentration not to be exceeded more than once per year.

^d The 1-hour SO₂ standard is met when the 3-year average of the annual 99th percentile of the daily maximum 1-hour average concentration is less than or equal to 75 ppb.

^e The 24-hour average PM₁₀ standard is attained when the expected number of exceedances per year is less than or equal to one, averaged over 3 years.

^f The 24-hour average PM_{2.5} standard is attained when the average of the annual 98th percentile concentrations over a 3-year period is less than or equal to 35 µg/m³.

^g The ozone standard is attained when 3-year average of the calendar year fourth-highest daily maximum 8-hour average ozone concentration does not exceed 0.070 ppm (2015 O₃ NAAQS).

^h Maximum arithmetic mean averaged over a 3-month period.

ⁱ Annual arithmetic mean, averaged over 3 years.

General Conformity

The federal General Conformity (GC) rules (40 CFR 93, Subpart B) apply to certain federal actions or approvals in areas designated as either nonattainment or maintenance with respect to NAAQS. If a federal action or approval would result in emissions that exceed GC *de minimis* emission thresholds for any affected pollutant, then the responsible federal agency must coordinate with local, state and federal air quality regulatory agencies to ensure that the increased emissions do not impede plans to maintain acceptable air quality in maintenance areas, or delay attainment of the NAAQS in nonattainment areas.

The NLX Project includes portions of Hennepin and Anoka Counties, which were previously designated as nonattainment areas for CO. All or portions of eight counties in the Twin Cities Metropolitan Area (Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, Washington and Wright) were redesignated from nonattainment to attainment/maintenance status for CO on November 29, 1999. On November 8, 2010, EPA approved a limited maintenance plan request for the Twin Cities maintenance area. Under a limited maintenance plan, EPA has determined that there is no requirement to project emissions over the maintenance period and that "an emission budget may be treated as essentially not constraining for the length of the maintenance period."

The NLX Project also includes part of St. Louis County in Duluth, which was a CO nonattainment area until June 13, 1994, when it was re-designated as a attainment/maintenance area. Given that more than 20 years have passed since that date, the Duluth area is no longer in maintenance status for CO. Therefore, the portion of the NLX Project subject to either nonattainment or maintenance status includes only those portions within Anoka and Hennepin Counties, which are in CO maintenance status. Due to the maintenance status of these counties with respect to CO, any increase in NLX Project CO emissions in these two counties (combined) that exceeds the GC *de minimis* threshold of 100 tons per year (TPY) would be subject to possible emissions offsetting and other mitigation requirements under the GC rules. However, it is likely that Anoka and Hennepin Counties would drop out of CO maintenance status by 2020 (over 20 years since nonattainment). If so, the GC emission thresholds would no longer apply when the area reverts to normal attainment as opposed to attainment/maintenance.

Criteria Air Pollutant Effects

The following sections describe the six criteria air pollutants that are the pollutants considered to be the most pervasive and of the greatest concern nationwide.

Ozone

Ground-level ozone is a primary constituent of smog and is a pollution problem in many areas of the United States, especially landlocked areas surrounded by mountainous terrain. Exposures to ozone can make people

more susceptible to respiratory infection, result in lung inflammation and aggravate pre-existing respiratory diseases such as asthma. Ozone is not emitted directly from vehicles but is formed as volatile organic compounds (VOCs) and nitrogen oxides (NO_x) react in the atmosphere in the presence of sunlight. Transportation sources emit NO_x and VOCs and can therefore affect atmospheric ozone concentrations. However, due to the phenomenon of atmospheric formation of ozone from chemical precursors at significant distance downwind, concentrations are not expected to be elevated near a particular roadway, railway, or near construction equipment activity.

Particulate Matter

PM is the term for particles and liquid droplets suspended in the air. Particles come in a wide variety of sizes and have been historically assessed based on size, typically measured by the diameter of the particle in micrometers. PM_{2.5} or fine particulate matter refers to particles that are 2.5 micrometers or less in diameter. PM₁₀ refers to particulate matter that is 10 micrometers or less in diameter.

Motor vehicles (that is, cars, trucks and buses) and construction equipment emit PM from their tailpipes, as well as from normal brake and tire wear. Dust from paved and unpaved roads may be re-entrained, or re-suspended, in the atmosphere due to vehicle movements on the roads. In addition, PM_{2.5} can be formed in the atmosphere from gases such as sulfur dioxide (SO₂), NO_x and VOCs.

PM₁₀ and PM_{2.5} can penetrate the human respiratory system's natural defenses and damage the respiratory tract when inhaled, with PM_{2.5} penetrating deeper in the lung due to its smaller size, and representing a greater risk than PM₁₀. Numerous scientific studies have linked particle pollution exposure to a variety of problems, including the following (EPA, 2016a):

- Increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing
- Decreased lung function
- Aggravated asthma
- Development of chronic bronchitis
- Irregular heartbeat
- Nonfatal heart attacks
- Premature death in people with heart or lung disease

Nitrogen Dioxide (Nitrogen Oxides)

Nitrogen oxides, or NO_x, are the generic term for a group of highly reactive gases, all of which contain nitrogen and oxygen in varying amounts. Nitrogen oxides form when fuel is burned at high temperatures, as in a

combustion process. The primary sources of NO_x are motor vehicles, electric utilities and other industrial, commercial and residential sources that burn fuels. In addition to being a precursor to ozone, NO_x can affect existing respiratory irritation and cause an increased risk of premature death from heart or lung disease.

Sulfur Dioxide

SO₂ and other sulfur oxide gases (SO_x) are formed when fuel containing sulfur, such as coal and fuel oils are burned. Sulfur dioxide is a heavy, pungent, colorless gas. Elevated levels can impair breathing, lead to other respiratory symptoms and at very high levels aggravate heart disease. People with asthma are most at risk when SO₂ levels increase. Once emitted into the atmosphere, SO₂ can be further oxidized to sulfuric acid, a component of acid rain. SO₂ emissions from onroad and nonroad engines have been dramatically reduced in the last two decades due to phased-in EPA standards to restrict the amount of sulfur in liquid fuels.

Lead

Due to the phase-out of leaded gasoline, lead is no longer a pollutant associated with vehicular emissions. Current lead concerns in the environment are primarily a result of legacy use of lead in paints and other coatings on structures, and well as contaminated sites near former or current lead smelters. Lead does not pose an issue for the NLX study area and is not discussed further.

Carbon Monoxide

CO is a colorless, odorless gas emitted mainly by combustion processes. CO has historically been primarily a traffic-related pollutant. Traffic-related CO emissions were responsible for noncompliance with the NAAQS in many metropolitan areas nationwide 20 to 30 years ago. However, due primarily to stricter emissions standards, and associated implementation of improved combustion efficiency and catalytic converters on most new onroad and nonroad vehicle engines, all metropolitan areas of the country are now meeting the NAAQS for CO. Most concerns with CO in the nation are now related to indoor air pollution, caused mainly by malfunctioning heaters and furnaces, which cause a substantial number of deaths and injuries each year.

4.8.1.2 Methodology

The primary focus of the air quality analysis is to quantify total NLX Project-generated operational net emissions changes and to also quantify the portion of those emissions within the Twin Cities CO maintenance area for comparison with the applicable GC *de minimis* threshold of 100 TPY for a CO maintenance area (40 CFR 93, Subpart A). Construction emissions must also be less than the *de minimis* threshold or else be subject to mitigation. Given the relatively small scale of construction for the NLX Project, the construction

emissions were not quantified because they were assumed (based on experience in quantifying emissions from other rail construction projects) to be quite small in relation to the *de minimis* threshold.

Operation period emissions of the NAAQS-regulated pollutants and GHG calculated as carbon dioxide equivalent (CO₂e) were estimated using EPA procedures and data.

To estimate emissions from locomotive operations, this analysis used EPA emission factors for Tier 4 locomotives, as provided in EPA Publication No. EPA-420-F-09-025, and converted to a grams-per-gallon basis using EPA recommendations in this publication. The annual total locomotive fuel use was estimated based on the total one-way route length of 152 miles (304 miles round trip), multiplied by the assumed number of trips per year (four round trips per day, 7 days per week) and by a train fuel efficiency of 1.73 gallons per mile based on the manufacturer specifications for the Next-Generation Siemens Charger locomotive.

Highway vehicle emissions were estimated based on an assumed average one-way trip distance of 152 miles (304 miles round trip). Annual ridership diversions from highway to rail with NLX Project implementation are shown in **Table 4-42**. Automobile trip diversions were used to estimate the emissions reductions in other modes of travel due to the implementation of the NLX Project.

Table 4-42: Trip Diversions to Passenger Rail, by Vehicle Mode

| Current Travel Mode | 2020 | 2040 |
|----------------------|----------------|----------------|
| Auto | 601,100 | 800,400 |
| Bus | 41,450 | 45,700 |
| Air | 36,650 | 54,650 |
| Induced ^a | 52,550 | 64,150 |
| Total | 731,750 | 964,900 |

Source: Ridership and Revenue Forecast prepared by Quandel Consultants, LLC (see **Appendix C**).

^a Induced travel mode refers to passengers that currently do not travel between the Twin Cities and Duluth but would use the passenger rail upon its availability; hence, they would not be diverted from an existing mode.

The automobile trips diverted were assumed to be 50 percent sedans and 50 percent light trucks and sport utility vehicles, based on recent sales data indicating approximately equal numbers of sales in the categories of light trucks, sport utility vehicles and vans and sedans and crossovers. Occupancy rates for automobiles (cars and light trucks and sport utility vehicles) were assumed to be 1.63 riders per vehicle, based on a 2004 U.S. DOT study (Federal Highway Administration, 2004). For buses, which were assumed in this case to be classified as intercity buses, an average occupancy rate of 32.6 passengers per bus was used based on a 2016 report by the American Bus Association Foundation. Based on the above ridership data and these vehicle

occupancy rates and data, the annual VMT for each vehicle type were calculated, and the VMTs were then multiplied by emission factors in grams per VMT, as obtained using the EPA's Motor Vehicle Emission Simulator (MOVES) model, Version 2014a (EPA, 2016b).

The MOVES emission factors were generated for the analysis years of 2020 and 2040, using the following inputs and assumptions:

- National default vehicle age distributions
- Climate data for Hennepin County
- Exhaust and crankcase emissions components for all gaseous pollutants
- For PM₁₀ and PM_{2.5}, inclusion of exhaust, crankcase and tire wear emissions components

The MOVES model analysis did not include brake-wear particulate matter emissions because the I-35 freeway route from the Twin Cities to Duluth typically involves little braking, as compared to travel in congested urban areas. Resuspended fugitive dust from paved road travel was not included. Given that the diverted passenger vehicles would represent a small fraction of the total traffic, it was assumed that the remaining traffic on I-35 would provide enough vehicle wake effects to re-suspend essentially the same amount of fugitive dust, with or without NLX Project implementation.

Finally, this analysis presents only with locomotive versus highway vehicle emissions. It does not include analysis of emission savings from diversion of air passengers. The projected air travel ridership values in 2020 and 2040 are approximately 6 percent and 8 percent of total trips diverted to NLX based on the data in **Table 4-42**. This makes the emissions analysis slightly conservative in that it does not account for slightly greater emissions decreases than those tabulated for impacts in Section 4.8.3.

4.8.2 Affected Environment

EPA uses an average of the most recent 3 calendar years of data to determine NAAQS attainment and nonattainment status. As shown in **Table 4-43**, available air quality monitoring data for the past 3 calendar years (2013–2015) from the counties containing the NLX study area indicate that pollutant levels are in compliance with the NAAQS, and by wide margins for most pollutants. The one exception is ozone, where the measured data in Anoka County show a 3-year average of 65 ppb, compared to the recently (2015) issued ozone NAAQS of 70 ppb. Ozone concentrations in Hennepin, Carlton and St. Louis Counties are below those in Anoka County. Note that despite the CO maintenance status for Anoka and Hennepin Counties, the recent measurements in these counties are far below the NAAQS. This is due in large part to dramatic reductions in CO emissions from newer motor vehicles compared to 30 years ago. Later model year vehicles are required by EPA to have catalytic converters on their exhausts to reduce the CO emissions.

Table 4-43: Representative Monitoring Data from Counties in the Study Area

| County | Location | Pollutant | Averaging Period/Rank | Units | Monitored Concentration | | | | |
|--------------|--------------------------------|-------------------|-------------------------|-------------------|-------------------------|-----------------|-----------------|---------|-------|
| | | | | | 2013 | 2014 | 2015 | Average | NAAQS |
| Hennepin | 528 Hennepin Ave., Minneapolis | CO | 8-hr/2nd high | ppm | 0.6 | 0.9 | 0.9 | 0.8 | 9 |
| | | | 1-hr/2nd high | ppm | 1.4 | 1.8 | 1.6 | 1.6 | 35 |
| | 1444 E 18th St., Minneapolis | NO _x | 1-hr 98th % | ppb | 45 | 48 | 48 | 47.0 | 100 |
| | | | Annual Mean | ppb | NA ¹ | 15.86 | 13.82 | 14.8 | 53 |
| | 1444 E 18th St., Minneapolis | Ozone | 8-hr/4th high | ppm | 0.063 | 0.06 | 0.053 | 0.059 | 0.070 |
| | 309 2nd Ave. S, Minneapolis | PM ₁₀ | 24-hr/2nd high | µg/m ³ | 36 | 38 | 36 | 36.7 | 150 |
| | 1444 E 18th St., Minneapolis | PM _{2.5} | Annual Mean | µg/m ³ | NA ² | 9.8 | 8.4 | 9.1 | 12 |
| | | | 24-hr/98th % | µg/m ³ | NA ² | 23 | 18 | 20.5 | 35 |
| | 528 Hennepin Ave., Minneapolis | SO ₂ | 1-hr/99th % | ppb | 15 | 6 | 5 | 8.7 | 75 |
| | | | 24-hr/2nd high 24-hr | ppb | 14.9 | 5 | 3.9 | 7.9 | 140 |
| | | Annual Mean | ppb | 0.9 | 1.0 | 1.2 | 1.0 | 30 | |
| Anoka | 9399 Lima St., Blaine | CO | 8-hr/2nd high | ppm | NA ³ | 0.7 | 0.9 | 0.8 | 9 |
| | | | 1-hr/2nd high | ppm | NA ³ | 0.9 | 1.2 | 1.1 | 35 |
| | 9399 Lima St., Blaine | NO _x | 1-hr/98th % | ppb | 43 | 50 | 44 | 45.7 | 100 |
| | | | Annual Mean | ppb | 7.22 | 7.7 | 6.55 | 7.2 | 53 |
| | 9399 Lima St., Blaine | Ozone | 8-hr/4th high | ppm | 0.067 | 0.064 | 0.064 | 0.065 | 0.070 |
| | | | 24-hr/2nd high | µg/m ³ | 49 | 41 | 54 | 48.0 | 150 |
| | 9399 Lima St., Blaine | PM _{2.5} | Annual Mean | µg/m ³ | 7 | 6.6 | 5.6 | 6.4 | 12 |
| | | | 24-hr/98th % | µg/m ³ | 22 | 19 | 16 | 19 | 35 |
| | 9399 Lima St., Blaine | SO ₂ | 1-hr/99th % | ppb | NA ³ | 5 | 4 | 4.5 | 75 |
| | | | 24-hr/2nd high | ppb | NA ³ | 1.2 | 2 | 1.6 | 140 |
| | | Annual Mean | ppb | NA ³ | NA ¹ | 0.7 | 0.7 | 30 | |
| Carleton | 175 University Rd., Cloquet | Ozone | 8-hr/4th high | ppm | 0.059 | 0.055 | NA ¹ | 0.057 | 0.070 |
| | 28 University Rd., Cloquet | PM _{2.5} | Annual Mean | µg/m ³ | NA ³ | NA ³ | 6.8 | 6.8 | 12 |
| 24-hr/98th % | | | µg/m ³ | NA ³ | NA ³ | 23 | 23.0 | 35 | |

| County | Location | Pollutant | Averaging Period/Rank | Monitored Concentration | | | | | |
|-----------|------------------------------------|-------------------|-----------------------|-------------------------|-------|-------|-----------------|---------|-------|
| | | | | Units | 2013 | 2014 | 2015 | Average | NAAQS |
| St. Louis | 314 W. Superior St., Duluth | CO | 8-hr/2nd high | ppm | 1.4 | 0.8 | NA ³ | 1.1 | 9 |
| | | | 1-hr/2nd high | ppm | 4.6 | 1.3 | NA ³ | 3.0 | 35 |
| | 1202 E Univ. Circle, Duluth | Ozone | 8-hr/4th high | ppm | 0.052 | 0.052 | 0.054 | 0.053 | 0.070 |
| | 37th Ave W. and Oneota St., Duluth | PM ₁₀ | 24-hr/2nd high | µg/m ³ | 59 | 86 | 67 | 70.7 | 150 |
| | 327 First St. S., Duluth | PM _{2.5} | Annual Mean | µg/m ³ | 7.7 | 8.4 | NA ¹ | 8.1 | 12 |
| | | | 24-hr/98th % | µg/m ³ | 18 | 18 | 18 | 18.0 | 35 |

^{a.} Counties in the project study area for which monitoring data is available are included. There are no monitoring data available for Isanti, Kanabec, or Pine Counties in Minnesota or Douglas County in Wisconsin.

^{b.} NA¹ - Indicates the mean does not satisfy minimum data completeness criteria

^{c.} NA² - Data not available for this calendar year at this site

^{d.} NA³ - No data available in county for this calendar year

4.8.3 Impacts

The following sections discuss the impacts on air quality associated with the No Build Alternative and the Build Alternative. Impact analysis considered all track, roadway, bridge, station and maintenance and layover facilities as identified in the beginning of this chapter. Where impacts are specific to a type of proposed improvement, they are described below. The Build Alternative impacts discussion analyzes long-term operations and maintenance impacts and short-term construction impacts as described in the beginning of this chapter. A discussion of potential impacts at station and maintenance and layover facility sites is also presented, as well as a general discussion of the potential impacts within the BNSF right of way. Avoidance, minimization and mitigation measures are described in Section 4.8.4.

4.8.3.1 No Build Alternative

Under the No Build Alternative, the NLX Project would not occur and interstate highway traffic in the NLX Project study area would continue to increase based on population growth. Air pollutant emissions from this traffic would likely continue to decrease, as has been the case in recent years, because the emission rates per vehicle are dropping faster than the growth in vehicle miles travelled. This would contribute to improvement (decreases) in measured air pollutant levels in the region. Thus, under the No Build Alternative, there are no anticipated changes to air quality trends that are being driven by other factors, including planned and programmed actions.

4.8.3.2 Build Alternative – Operations

Based on the methodology described above, the estimated NLX Project total net operation-generated emissions are shown as a comparison against the No Build Alternative in **Table 4-44** and **Table 4-45** for the years 2020 and 2040, respectively. Note that emissions of all pollutants shown are forecast to decrease with NLX Project implementation compared to the No Build Alternative in 2020. However, in 2040, Project implementation is projected to cause a slight NO_x emission increase compared to the No Build Alternative. The reason for the slight increase in emissions of NO_x in 2040 is that while both locomotive fleet and highway vehicle fleet NO_x emission rates are dropping quickly, the highway vehicle fleet emissions are dropping more quickly than the locomotive fleet emissions. Therefore, travel by highway vehicles is expected to result in slightly lower emissions of these pollutants in the 2040 design year.

Table 4-44: Estimated 2020 Net Emissions Changes for NLX Project (short tons per year)

| Pollutant | Annual Emissions | | |
|-------------------|------------------|------------------|------------|
| | Train Increase | Highway Decrease | Net Change |
| CO | 22.47 | 311.42 | -288.95 |
| NO _x | 17.56 | 32.13 | -14.58 |
| PM ₁₀ | 0.26 | 1.60 | -1.34 |
| PM _{2.5} | 0.26 | 0.86 | -0.60 |
| SO ₂ | 0.08 | 0.27 | -0.19 |
| VOC | 0.74 | 4.22 | -3.48 |
| CO ₂ e | 8,624 | 40,276 | -31,652 |

Table 4-45: Estimated 2040 Net Emissions Changes for NLX Project (short tons per year)

| Pollutant | Annual Emissions | | |
|-------------------|------------------|------------------|------------|
| | Train Increase | Highway Decrease | Net Change |
| CO | 22.47 | 148.82 | -126.35 |
| NO _x | 17.56 | 8.36 | 9.20 |
| PM ₁₀ | 0.26 | 1.45 | -1.19 |
| PM _{2.5} | 0.26 | 0.52 | -0.27 |
| SO ₂ | 0.08 | 0.23 | -0.15 |
| VOC | 0.74 | 0.99 | -0.25 |
| CO ₂ e | 8,624 | 35,156 | -26,533 |

Net emissions changes as compared to the No Build Alternative were also estimated for the affected counties in the Twin Cities CO maintenance area, Anoka and Hennepin Counties, for establishing applicability of GC requirements. For estimating these emissions, the total NLX Project emissions shown in **Table 4-46** and **Table 4-47** were multiplied by the ratio of NLX Project miles in these counties (31.3) to the total NLX Project miles (152). The CO net emissions change is not greater than the 100 TPY *de minimis* increase threshold for GC applicability, given the net change in CO emissions is a decrease in both 2020 and 2040.

Table 4-46: Estimated 2020 Net Emissions Change for Anoka and Hennepin Counties (short tons per year)

| Pollutant | Annual Emissions | | | <i>de minimis</i> |
|-------------------|------------------|------------------|------------|-------------------|
| | Train Increase | Highway Decrease | Net Change | |
| CO | 4.63 | 64.13 | -59.50 | 100 |
| NO _x | 3.62 | 6.62 | -3.00 | NA |
| PM ₁₀ | 0.05 | 0.33 | -0.28 | NA |
| PM _{2.5} | 0.05 | 0.18 | -0.12 | NA |
| SO ₂ | 0.02 | 0.06 | -0.04 | NA |
| VOC | 0.15 | 0.87 | -0.72 | NA |
| CO ₂ e | 1,776 | 8,294 | -6,518 | NA |

Table 4-47: Estimated 2040 Net Emissions Change for Anoka and Hennepin Counties (short tons per year)

| Pollutant | Annual Emissions | | |
|-------------------|------------------|------------------|------------|
| | Train Increase | Highway Decrease | Net Change |
| CO | 4.63 | 30.64 | -26.02 |
| NO _x | 3.62 | 1.72 | 1.89 |
| PM ₁₀ | 0.05 | 0.30 | -0.24 |
| PM _{2.5} | 0.05 | 0.11 | -0.05 |
| SO ₂ | 0.02 | 0.05 | -0.03 |
| VOC | 0.15 | 0.20 | -0.05 |
| CO ₂ e | 2,129 | 6,739 | -4,609 |

4.8.3.3 Build Alternative – Construction

Construction activity for stations, maintenance and layover facilities and for rail improvements would generate emissions from equipment exhaust and from fugitive dust due to earthmoving and other construction activities. The construction duration along rail improvements is generally expected to be 2 to 3 weeks at any one location. For stations and maintenance and layover facilities, construction is likely to be completed in one construction season.

The emission amounts from construction activity would be expected to be minimal in any one area, and would not be expected to substantially affect ambient air quality, assuming application of BMPs. Because construction emissions are intermittent by nature and tend to be distributed across the concentration site, any impacts are not nearly as persistent or concentrated at any one location as with a stationary emissions source. Given EPA's increasingly stringent exhaust emissions and fuel quality standards, the emissions from construction equipment should not present either a hazard or a nuisance, as long as engines are properly maintained (that is, no excessive oil burning). Fugitive dust emissions can be a hazard or a nuisance as well, but these would be controlled by application of BMPs. Such practices could include suspending earthmoving operations in dry, windy conditions and/or application of water sprays to exposed earth piles and unpaved driving surfaces. If residences, daycares, schools, playgrounds or other sensitive receptors are near an NLX Project construction site, fugitive dust control measures would be implemented to optimize dust control near these receptors to minimize health risk.

4.8.3.4 High-Level Analysis of Emissions at Proposed Stations and Maintenance and/or Layover Facilities

In addition to the emissions from moving trains, implementation of the proposed NLX Project would result in a relatively small (compared to moving train emissions) amount of emissions at stations and at maintenance and/or layover facilities due to idling locomotives. These emissions would be minor for two reasons. First, diesel locomotive engines consume very little fuel when idling, usually approximately 1 percent of the fuel use at full load, based on data compiled by EPA for the 1998 Locomotive Emissions Standards. Second, the proposed NLX Project would use locomotives that are compliant with the latest, most stringent EPA locomotive emissions standards, referred to as Tier 4 standards. Thus, emissions from idling locomotives, whether at stations to drop off and pick up passengers or at maintenance and/or layover facilities, would be very small in comparison to the total train increase in emissions shown in **Table 4-44**. For comparison, the emissions increases for all pollutants shown in **Table 4-44** are below the major modification thresholds for stationary emissions sources, which are 100 TPY for CO; 40 TPY for NO_x, SO₂ and VOC; 15 TPY for PM₁₀ and 10 TPY for PM_{2.5}. Based on experience with stationary source permitting and analysis, idling emissions that are very small fractions of these thresholds would not substantially affect air quality.

4.8.4 Avoidance, Minimization and Mitigation Measures

The NLX Project would continue efforts to avoid, minimize and mitigate impacts as the project advances through construction.

As required under federal rules, all locomotive diesel fuel and construction equipment diesel fuel would be ultra-low sulfur diesel, with a sulfur content not to exceed 15 parts per million by weight. Locomotive emissions would be mitigated by limiting idle time to the extent practicable. The construction emissions would be minimized to the extent practicable by minimizing construction equipment engine idling time. In addition, the construction contractor would be required to prohibit use of, or immediately repair, engines with continuous visible exhaust plumes indicative of excessive oil use or other maintenance issues. Fugitive dust generation during construction would be minimized as appropriate by dust control measures, such as watering of dry, exposed soils during earthmoving activities.

4.8.5 Summary

The NLX Project would have generally small effects on air pollutant emissions and air quality. For most pollutants, there would be a slight decrease in emissions with NLX Project implementation. However, for the 2040 design year, NLX Project implementation is predicted to result in a slight increase in emissions of NO_x and VOC compared to the No Build Alternative. The slight changes in emissions, both increases and decreases, are

very small portions of current emission inventories, and are not expected result in any measurable degradation or improvement in air quality in the NLX study area. Because emissions are not expected to exceed GC *de minimis* emission thresholds for any affected pollutant, no coordination with air quality regulatory agencies is required.

The air emissions and air quality impacts assessed in this Tier 2 EA analysis are generally a slight benefit (except for NO_x in 2040) with NLX Project implementation. Because the number of trains would be less for this Tier 2 EA, compared to the Tier 1 EA, the air quality benefits for this Tier 2 EA are slightly less than the benefits that would have been derived from the NLX Project as proposed in the Tier 1 EA.

4.9 Noise and Vibration

The Tier 1 EA identifies potential noise and vibration impacts during construction and operation. This section analyzes the impacts for the NLX Project based on proposed service operations that have been updated since the Tier 1 EA. **Table 4-48** defines the noise and vibration study area, and **Table 4-49** presents an overview and comparison of noise and vibration impacts from Tier 1 EA and the Tier 2 EA. The updated impacts vary depending on the maintenance facility location in either Sandstone or Duluth.

Table 4-48: Noise and Vibration Study Area

| Study Area Definition | Basis for Study Area |
|---|---|
| Noise and vibration impacts extend beyond the NLX construction limits based on existing levels and anticipated changes. | Noise and vibration impacts were analyzed using criteria as defined in the FRA guidance manual (FRA, 2012). |

Table 4-49: Noise and Vibration Comparison – NLX Tier 1 Service Level EA and NLX Tier 2 Project Level EA

| Identified Impacts in NLX Tier 1 Service Level EA | Identified Impacts in NLX Tier 2 Project Level EA with Sandstone Maintenance Facility Alternative | Identified Impacts in NLX Tier 2 Project Level EA with Duluth Maintenance and/or Layover Facility Alternative |
|---|---|---|
| Temporary construction noise. | No change. | No change. |
| Operation noise: <ul style="list-style-type: none"> • 43 severe residential impacts • 18 severe institutional (parks, churches, schools) impacts • 279 moderate residential impacts • 10 moderate institutional impacts | Operation noise: <ul style="list-style-type: none"> • 84 severe residential impacts • 13 severe institutional (parks, churches, schools) impacts • 228 moderate residential impacts • 16 moderate institutional impacts | Operation noise: <ul style="list-style-type: none"> • 33 severe residential impacts • 13 severe institutional (parks, churches, schools) impacts • 234 moderate residential impacts • 16 moderate institutional impacts |
| Temporary construction vibration. | No change. | No change. |
| Operation vibration: 4 residential impact | Operation vibration: 1 residential impact | Operation vibration: 1 residential impact |

As appropriate and necessary, this Tier 2 EA would be refined through future supplemental NEPA documentation as the final design advances and funding is secured for the NLX Project. Future supplemental environmental documentation is identified as appropriate throughout this Tier 2 EA.

4.9.1 Regulatory Context and Methodology

This noise and vibration assessment is based on the FRA's 2012 *High-Speed Ground Transportation Noise and Vibration Impact Assessment* (FRA, 2012) guidance manual. FRA's updated guidance manual recommends the use of the Federal Transit Authority's (FTA's) 2006 *Transit Noise and Vibration Impact Assessment* (FTA, 2006) guidance manual for methodologies and noise source reference levels for diesel-electric locomotive-hauled trains operating within the proposed NLX speed range of 20–90 mph. Noise and vibration impacts for the NLX Project are based on the criteria as defined in the FRA 2012 guidance manual. The criteria contained in this section are applicable for considering noise and vibration impacts as part of preparing NEPA (41 USC 4321) and MEPA (Minn. Stat. 116D) review documents. The FRA regulations preempt state regulation of noise from commuter/passenger railroads; therefore, MPCA's noise regulations do not apply to the NLX Project. A brief description of noise and vibration fundamentals and descriptors, as well as noise and vibration impact criteria, provides background for the assessment methodology.

4.9.1.1 Noise Fundamentals and Descriptors

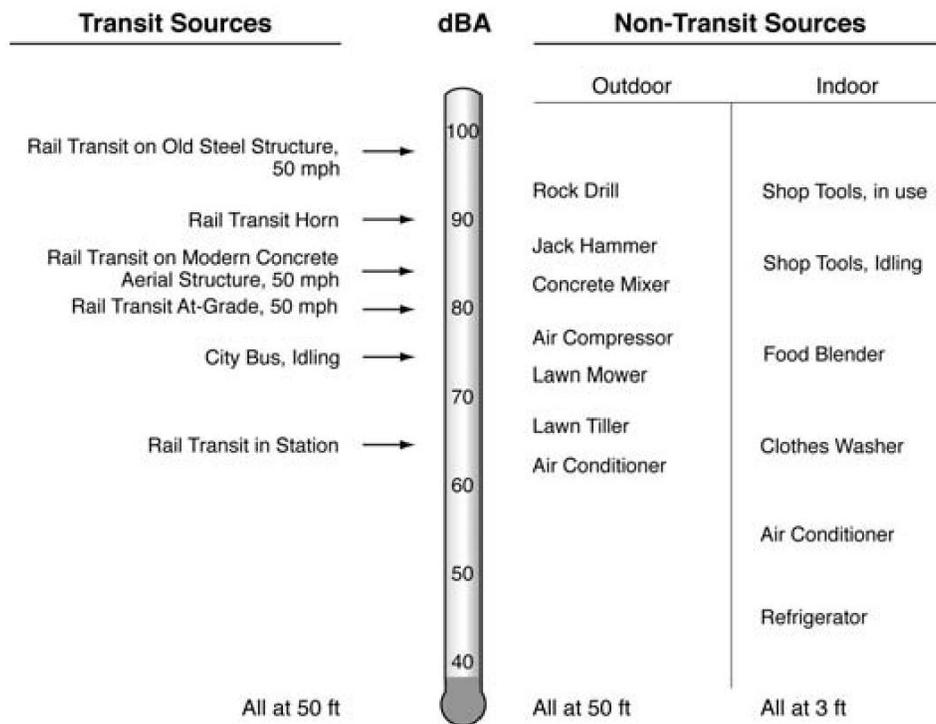
This analysis begins with key background information from the Noise and Vibration Technical Report (Harris Miller Miller & Hanson, 2011), prepared for the Tier 1 EA to aid in the understanding of the impact assessments. The vibration criteria have been updated based on revisions in the FRA's 2012 *High-Speed Ground Transportation Noise and Vibration Impact Assessment* guidance manual.

Noise from a high speed train system is expressed in terms of a source-path-receiver framework. The source generates noise levels, which depend on the type of source (for example, high speed train) and its operating characteristics (for example, speed). The receiver is the noise-sensitive land use (for example, residence, hospital, or school) exposed to noise from the source. In between the source and the receiver is the path where the noise is reduced by distance, intervening buildings and topography. Environmental noise impacts are assessed at the receiver. Not all receivers have the same noise-sensitivity. Consequently, noise criteria are established for the various types of receivers.

Noise is typically defined as unwanted or undesirable sound, where sound is characterized by small air pressure fluctuations above and below the atmospheric pressure. The basic parameters of environmental noise that affect human response are (1) intensity or level, (2) frequency content and (3) variation with time. The first parameter is determined by how greatly the sound pressure fluctuates above and below the atmospheric pressure, and is expressed on a compressed scale in units of decibels. By using this scale, the range of normally encountered sound can be expressed by values between 0 and 120 decibels. On a relative basis, a 3-decibel change in sound level generally represents a barely noticeable change outside the laboratory, whereas a 10-decibel change in sound level would typically be perceived as a doubling (or halving) the loudness of a sound.

The frequency content of noise is related to the tone or pitch of the sound, and is expressed based on the rate of the air pressure fluctuation in terms of cycles per second (called Hertz and abbreviated as Hz). The human ear can detect a wide range of frequencies from about 20 Hz to 17,000 Hz. However, because the sensitivity of human hearing varies with frequency, the A-weighting system is commonly used when measuring environmental noise to provide a single number descriptor that correlates with human subjective response. Sound levels measured using this weighting system are called A-weighted sound levels, and are expressed in decibel notation as dBA. The A-weighted sound level is widely accepted by acousticians as a proper unit for describing environmental noise. Typical A-weighted sound levels for rail transportation and other sources are shown in **Figure 4-1**.

Figure 4-1: Typical A-weighted Sound Level

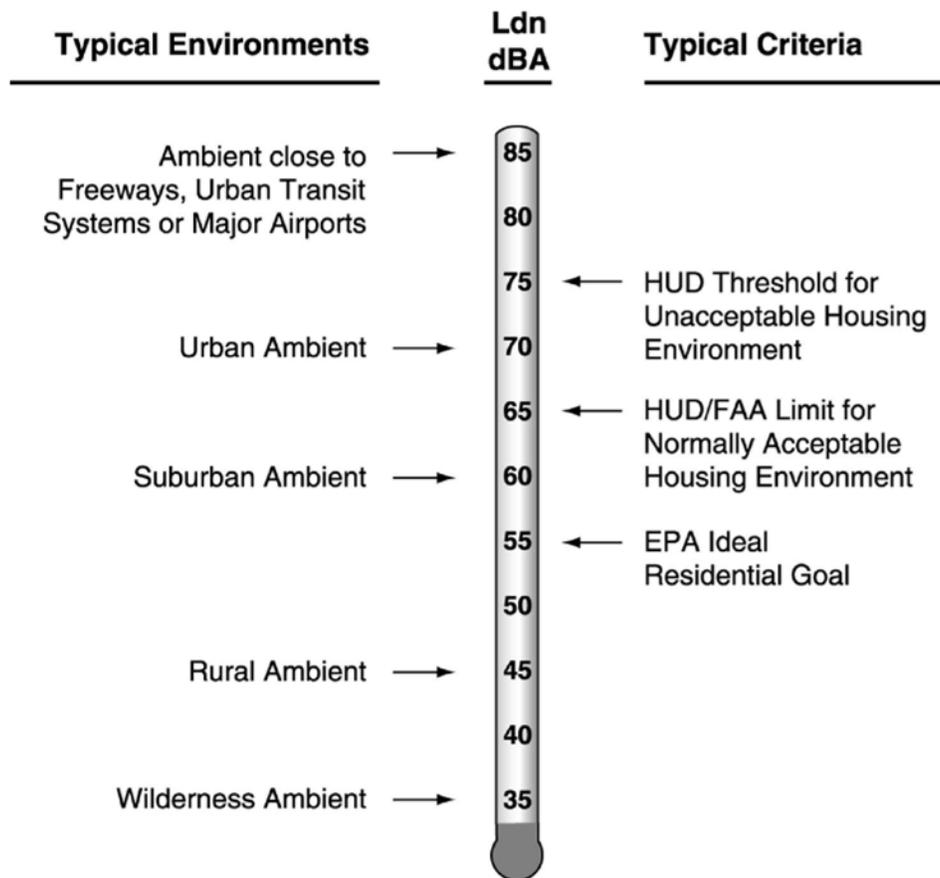


Source: FTA, 2006.

Because environmental noise fluctuates from moment to moment, it is common practice to condense all this information into a single number or value, called the equivalent sound level (Leq). Leq can be thought of as the

steady sound level that represents the same sound energy as the varying sound levels over a specified time period (typically 1 hour or 24 hours). Often the Leq values over a 24-hour period are used to calculate cumulative noise exposure in terms of the day-night average sound level (Ldn). Ldn is the A-weighted Leq for a 24-hour period with an added 10-decibel penalty imposed on noise that occurs during the nighttime hours (between 10 p.m. and 7 a.m.). Many surveys have shown that Ldn is well correlated with human annoyance; therefore, this descriptor is widely used for environmental noise impact assessment. **Figure 4-2** provides examples of typical noise environments and criteria in terms of Ldn. While the extremes of Ldn are shown to range from 35 dBA in a wilderness environment to 85 dBA in noisy urban environments, Ldn is generally found to range between 55 dBA and 75 dBA in most communities. As shown in **Figure 4-2**, this spans the range between an ideal residential environment and the threshold for an unacceptable residential environment.

Figure 4-2: Examples of Typical Outdoor Noise Exposure



Source: Harris Miller Miller & Hanson, Inc. 2011.

4.9.1.2 Ground-Borne Vibration Fundamentals and Descriptors

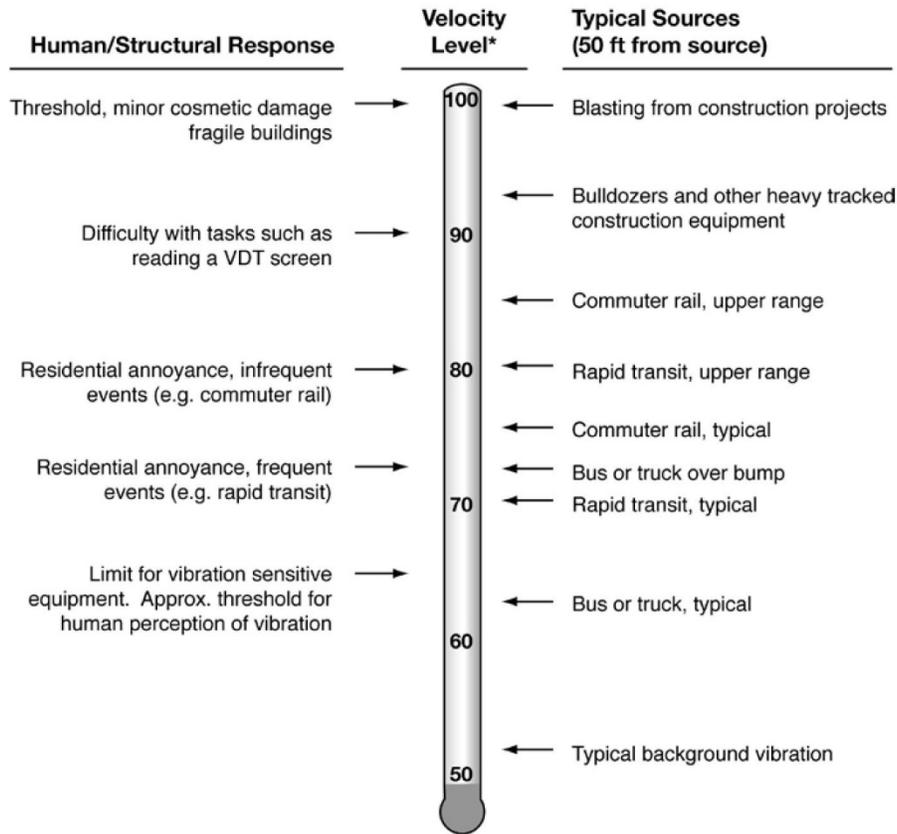
Ground-borne vibration is the oscillatory motion of the ground about some equilibrium position that can be described in terms of displacement, velocity or acceleration. Because sensitivity to vibration typically corresponds to the amplitude of vibration velocity within the low-frequency range of most concern for environmental vibration (roughly 5-100 Hz), velocity is the preferred measure for evaluating ground-borne vibration from surface transportation projects.

Vibration from a high speed train system is expressed in terms of a source-path-receiver framework. The source is the train rolling on the tracks which generates vibration energy transmitted through the supporting structure under the tracks and into the ground. Once the vibration gets into the ground, it propagates through the various soil and rock strata, the path, to the foundations of nearby buildings, the receivers. Ground-borne vibrations generally reduce in level with distance depending on the local geological conditions. A receiver is a vibration-sensitive building (for example, residence, hospital, or school) where the vibrations may cause perceptible shaking of the floors, walls and ceilings and a rumbling sound inside rooms. Not all receivers have the same vibration-sensitivity. Consequently, vibration criteria are established for the various types of receivers.

The most common measure used to quantify vibration amplitude is the peak particle velocity (PPV), defined as the maximum instantaneous positive or negative peak of the vibratory motion. PPV is typically used in monitoring blasting and other types of construction-generated vibration, since it is related to the stresses experienced by building components. Although PPV is appropriate for evaluating building damage, it is less suitable for evaluating human response, which is better related to the average vibration amplitude. Thus, ground-borne vibration from high speed trains is usually characterized in terms of the smoothed root mean square (rms) vibration velocity level, in decibels (VdB), with a reference quantity of 1 micro-inch per second. VdB is used in place of dB to avoid confusing vibration decibels with sound decibels.

Figure 4-3 illustrates typical ground-borne vibration levels for common sources as well as criteria for human and structural response to ground-borne vibration. As shown, the range of interest is from approximately 50 to 100 VdB, from imperceptible background vibration to the threshold of damage. Although the approximate threshold of human perception to vibration is 65 VdB, annoyance is usually not significant unless the vibration exceeds 70 VdB.

Figure 4-3: Typical Ground-Borne Vibration Levels and Criteria



* RMS Vibration Velocity Level in VdB relative to 10⁻⁶ inches/second

Source: FRA, 2012.

4.9.1.3 Noise Impact Criteria

Operations Noise

The FRA noise impact criteria are founded on well-documented research on community reaction to train noise and are based on change in noise exposure using a sliding scale. Although higher levels of train noise are allowed in neighborhoods with high levels of existing noise, smaller increases in total noise exposure are allowed with increasing levels of existing noise. The criteria apply to high speed train operations as well as to fixed facilities such as storage and maintenance yards, passenger stations and terminals, parking facilities and substations.

The FRA Noise Impact Criteria group noise sensitive land uses into three categories as described in **Table 4-50**. Ldn is used to characterize noise exposure for residential areas (Category 2). For other noise sensitive land uses such as parks and school buildings (Categories 1 and 3), the maximum 1-hour Leq during the NLX Service operating period is used.

There are two levels of impact included in the FRA criteria. The interpretation of these two levels of impact is summarized below:

- **Severe Impact:** Project-generated noise in the severe impact range can be expected to cause a significant percentage of people to be highly annoyed by the new noise and represents the most compelling need for mitigation. Noise mitigation would normally be specified for severe impact areas unless there are truly extenuating circumstances that prevent it.
- **Moderate Impact:** In this range of noise impact, the change in the cumulative noise level is noticeable to most people but may not be sufficient to cause strong, adverse reactions from the community. In this transitional area, other project-specific factors must be considered to determine the magnitude of the impact and the need for mitigation. These factors include the existing noise level, the predicted level of increase over existing noise levels, the types and numbers of noise-sensitive land uses affected, the noise sensitivity of the properties, the effectiveness of the mitigation measures, community views and the cost of mitigating noise to more acceptable levels.

Table 4-50: Land Use Categories and Metrics for High Speed Train Noise Impact Criteria

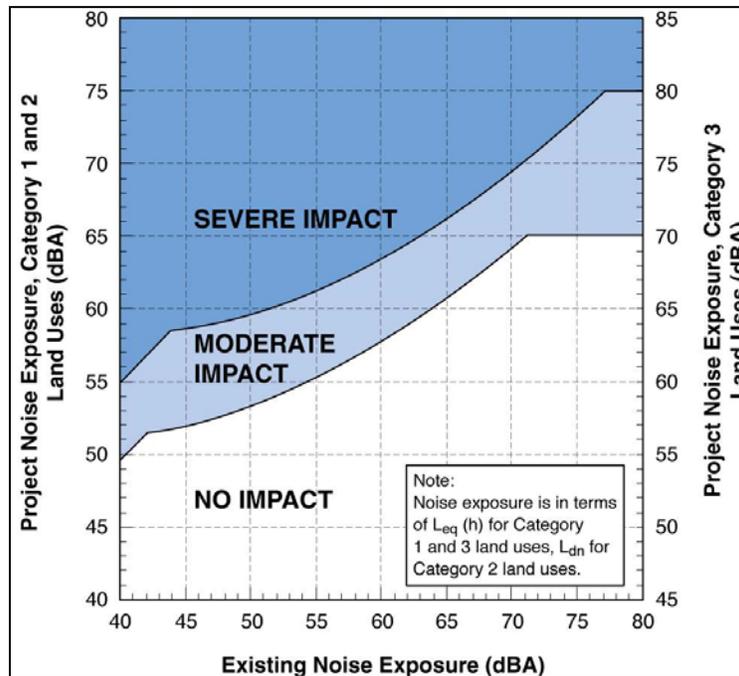
| Land Use Category | Noise Metric (dBA) | Description of Land Use Category |
|-------------------|-----------------------|---|
| 1 | Outdoor $L_{eq}(h)^a$ | Tracts of land where quiet is an essential element in their intended purpose. This category includes lands set aside for serenity and quiet, and includes such land uses as outdoor amphitheaters and concert pavilions, as well as National Historic Landmarks with significant outdoor use. |
| 2 | Outdoor L_{dn} | Residences and buildings where people normally sleep. This category includes homes, hospitals and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance. |
| 3 | Outdoor $L_{eq}(h)^a$ | Institutional land uses with primarily daytime and evening use. This category includes schools, libraries and churches where it is important to avoid interference with such activities as speech, meditation and concentration on reading material. Buildings with interior spaces where quiet is important, such as medical offices, conference rooms, recording studios and concert halls fall into this category, as well as places for meditation or study associated with cemeteries, monuments and museums. Certain historical sites, parks and recreational facilities are also included. |

Source: FRA, 2012

^a L_{eq} for the noisiest hour of train-related activity during hours of noise sensitivity.

The noise impact criteria are summarized in **Figure 4-4**, which shows the relationship between the existing noise exposure and the NLX Project noise exposure that would cause moderate impact and severe impact. FRA strongly encourages noise abatement on high speed rail projects, especially where severe noise impacts are identified.

Figure 4-4: Noise Impact Criteria for High Speed Rail Projects



Source: FRA, 2012.

Noise Effects on Wildlife and Domestic Animals

Noise effects on wildlife and domestic animals are also considered based on the FRA report *High-Speed Ground Transportation Noise and Vibration Impact Assessment* (FRA, 2012).

Although no established criteria relate high speed train noise and animal behavior, some characteristics of high speed train noise are similar to those from aircraft overflights and researchers generally agree that such noise can have a disturbing effect on both domestic livestock and wildlife. Some animals get used to noise exposure, while some do not; documented effects range from simply taking notice and changing body position to taking flight in panic. Whether these responses represent a threat to survival of animals remains unclear, although

panic flight may result in injuries to animals in rough terrain or in predation of unprotected eggs of birds (FRA, 2012).

In lieu of established criteria, a limited amount of quantitative noise data relating actual aircraft overflight noise levels to effects provides enough information to develop a screening procedure to identify areas where noise from high speed train operations could affect domestic and wild animals. While a noise descriptor for noise effects on animals has not been universally adopted, recent research indicates the sound exposure level (SEL) is the most useful predictor of responses; this metric represents the sound energy at a receiver location from a single noise event (FRA, 2012). The criteria used to screen where animals may be affected by high speed trains are shown in **Table 4-51**. Noise exposure limits are an SEL of 100 dBA from train passbys. A screening assessment was conducted to determine typical and maximum distances from the NLX tracks at which this limit may be exceeded. Train passby SELs were calculated for the maximum train speed along the NLX Project. To provide a conservative estimate, no shielding due to intervening structures or terrain was assumed.

Table 4-51: Interim Criteria for High Speed Train Noise Effects on Animals

| Animal Category | Class | Noise Metric | Noise Level (dBA) |
|-----------------|---------------------|--------------|-------------------|
| Domestic | Mammals (Livestock) | SEL | 100 |
| | Birds (Poultry) | SEL | 100 |
| Wild | Mammals | SEL | 100 |
| | Birds | SEL | 100 |

Source: FRA, 2012.

Construction Noise

Construction noise criteria are based on the guidelines provided in the FRA guidance manual. These criteria, summarized in **Table 4-52**, are based on land use and time of day and are given in terms of Leq for an 8-hour work shift.

Table 4-52: FRA Construction Noise Assessment Criteria

| Land Use | 8-hour L_{eq} dBA | | Noise Exposure (dBA) |
|-------------|---------------------|-------|----------------------|
| | Day | Night | 30-day Average |
| Residential | 80 | 70 | 75 ^a |
| Commercial | 85 | 85 | 80 ^b |
| Industrial | 90 | 90 | 85 ^b |

Source: FRA, 2012.

^a In urban areas with very high ambient noise levels ($L_{dn} > 65$ dB), L_{dn} from construction operations should not exceed existing ambient + 10 dB.

^b 24-hour L_{eq} , not L_{dn} .

4.9.1.4 Vibration Impact Criteria

Operations Vibration

The FRA groups vibration-sensitive land uses into three categories. Since ground-borne vibration does not typically annoy people who are outdoors, vibration impact is only assessed inside buildings. In addition to the potential for human annoyance, vibration impact is also assessed for certain equipment that is sensitive to vibration.

- **Vibration Category 1 – High Sensitivity:** Included in this category are buildings where vibration would interfere with operations. Vibration levels may be well below those associated with human annoyance. These buildings include vibration-sensitive research and manufacturing facilities, hospitals with sensitive equipment and university research operations. The sensitivity to vibration is dependent on the specific equipment present. Some examples of sensitive equipment include electron-scanning microscopes, magnetic resonance imaging scanners and lithographic equipment.
- **Vibration Category 2 – Residential:** Residences and buildings where people normally sleep. This category includes homes, hospitals and hotels.
- **Vibration Category 3 – Institutional:** This category includes buildings with primarily daytime and/or evening use. This category includes schools, libraries and churches.

The FRA ground-borne vibration and noise impact criteria are based on land use and train frequency, as shown in **Table 4-53**. There are some buildings, such as concert halls, recording studios and theaters that can be very sensitive to vibration and noise but do not fit into any of the three categories listed in **Table 4-53**. Due to the sensitivity of these buildings, they usually warrant special attention during the environmental assessment of a high speed rail project. **Table 4-54** gives criteria for acceptable levels of ground-borne vibration and noise for various types of special buildings.

There are separate FRA criteria for ground-borne noise: the rumble that can be radiated from the motion of room surfaces in buildings due to ground-borne vibration. Although expressed in dBA, which emphasizes the more audible middle and high frequencies, the criteria are set significantly lower than for airborne noise to account for the annoying low-frequency character of ground-borne noise. Because airborne noise tends to mask ground-borne noise for above ground (that is, at-grade or elevated) rail systems, ground-borne noise criteria are primarily applied to subway operations where airborne noise is not a factor. For the aboveground high speed rail system planned along the proposed rail alignment, ground-borne noise criteria are applied only to buildings that have sensitive interior spaces that are well insulated from exterior noise.

Table 4-53: Ground-Borne Noise and Vibration Impact Criteria

| Land Use Category | Ground-Borne Vibration Impact (VdB re 1 micro-inch/sec) | | | Ground-Borne Noise Impact (dB re 20 micro-Pascals) | | |
|--|--|--------------------------------|--------------------------------|---|--------------------------------|--------------------------------|
| | Frequent Events ^a | Occasional Events ^b | Infrequent Events ^c | Frequent Events ^a | Occasional Events ^b | Infrequent Events ^c |
| Category 1: Buildings where vibration would interfere with interior operations. | 65 VdB ^d | 65 VdB ^d | 65 VdB ^d | N/A ^e | N/A ^e | N/A ^e |
| Category 2: Residences and buildings where people normally sleep. | 72 VdB | 75 VdB | 80 VdB | 35 dBA | 38 dBA | 43 dBA |
| Category 3: Institutional land uses with primarily daytime use. | 75 VdB | 78 VdB | 83 VdB | 40 dBA | 43 dBA | 48 dBA |

Source: FRA, 2012.

^a "Frequent Events" is defined as more than 70 vibration events per day.

^b "Occasional Events" is defined as between 30 and 70 vibration events of the same kind per day.

^c "Infrequent Events" is defined as fewer than 30 vibration events per day.

^d This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.

^e Vibration-sensitive equipment is not sensitive to ground-borne noise.

Table 4-54: Ground-Borne Noise and Vibration Impact Criteria for Special Buildings

| Type of Building or Room | Ground-Borne Vibration Impact (VdB re 1 micro-inch/sec) | | Ground-Borne Noise Impact (dB re 20 micro-Pascals) | |
|--------------------------|--|---|---|---|
| | Frequent Events ^a | Occasional Infrequent Events ^b | Frequent Events ^a | Occasional Infrequent Events ^b |
| Concert Halls | 65 VdB | 65 VdB | 25 dBA | 25 dBA |
| TV Studios | 65 VdB | 65 VdB | 25 dBA | 25 dBA |
| Recording Studios | 65 VdB | 65 VdB | 25 dBA | 25 dBA |
| Auditoriums | 72 VdB | 80 VdB | 30 dBA | 30 dBA |
| Theaters | 72 VdB | 80 VdB | 35 dBA | 43 dBA |

Source: FRA, 2012.

^a "Frequent Events" is defined as more than 70 vibration events per day.

^b "Occasional or Infrequent Events" is defined as fewer than 70 vibration events per day.

Construction Vibration

In addition to ground-borne vibration criteria for humans in residential, institutional and special buildings and vibration-sensitive equipment, there are ground-borne vibration criteria for potential damage to structures. The limits of vibration that structures can withstand are substantially higher than those for humans and for sensitive equipment. The FTA has established vibration damage criteria (FTA, 2006) **Table 4-55** presents criteria for assessing the potential for vibration damage to structures based on the type of building construction. This table includes rms vibration levels in VdB reference to 1 micro-inch per second and peak-particle velocity levels in inches per second. A crest factor of four (representing a PPV-rms difference of 12 decibels) is used to calculate the approximate rms vibration velocity levels from the PPV values in this table. It should be noted that these criteria are more conservative than other standards such as the U.S. Bureau of Mines frequency-dependent vibration criteria which is equivalent to approximately 114 VdB at 40 Hz and above.

Table 4-55: Construction Vibration Damage Criteria

| Building Category | PPV (in/sec) | Approximate L_v^a |
|---|--------------|---------------------|
| I. Reinforced-concrete, steel or timber (no plaster) | 0.5 | 102 |
| II. Engineered concrete and masonry (no plaster) | 0.3 | 98 |
| III. Non-engineered timber and masonry buildings | 0.2 | 94 |
| IV. Buildings extremely susceptible to vibration damage | 0.12 | 90 |

Source: FRA, 2012.

^a rms velocity in VdB re 1 micro-inch/second.

4.9.2 Affected Environment

The proposed NLX Project would extend passenger rail service from Minneapolis to Duluth, Minnesota. In Minneapolis and the northern suburbs, the study area is densely populated with a mix of residential land use and some sections of commercial land use. Traveling north, the study area then becomes more rural in between many small towns. The NLX Project runs directly through many of these downtown areas. At the northern end of the NLX Project, the tracks run through the city of Superior, Wisconsin, and then cross a bridge to Duluth, Minnesota, to the west. Noise-sensitive and vibration-sensitive receptors along the proposed NLX Project largely consist of single and multifamily residences, schools, churches, hotels and parks. A majority of the land use along the NLX Project is Category 2, as defined in **Table 4-50**, which includes all residential land use, along with hotels and other land use with nighttime sensitivity, as well as scattered Category 3 land uses. Bayfront Festival Park in Duluth, Minnesota, is the only Category 1 noise land use.

The primary sources contributing to the existing noise environment at most locations along the NLX Project are freight train operations on the BNSF track, including horns that are sounded in the vicinity of rail grade crossings, and motor vehicle traffic on nearby roadways. The Northstar service and Amtrak passenger rail service are also contributing noise sources along the existing tracks for locations south of the Coon Creek Junction. All the existing rail grade crossings along the BNSF track between Minneapolis and Andover are within quiet zones¹⁰ where the locomotive warning horns are not sounded (FRA, 2016). Other noise sources include aircraft overflights and general residential and commercial activities. BNSF freight and Northstar operations are the most significant sources of existing ground-borne vibration along the existing tracks and

¹⁰ Quiet zones are areas where municipalities have worked with FRA to implement safety improvements at the rail grade crossings to limit train horn usage by train operators to emergency situations rather than as a standard operating procedure.

represent the dominant sources of existing noise and vibration along the NLX Project between Minneapolis and Duluth.

The *Noise and Vibration Technical Report* (Harris Miller Miller & Hanson, 2011) was reviewed, as were various land uses along the NLX Project. The primary land uses along the NLX Project have not changed significantly since the Tier 1 EA was published. Likewise, train operations and local traffic have not changed enough to influence Ldn noise levels since the Tier 1 EA noise and vibration measurements were performed for the Noise and Vibration Technical Report in 2011. Therefore, the existing noise and vibration levels presented in the Tier 1 EA study were used in the operations impact assessment for the Tier 2 EA analysis.

4.9.3 Impacts

The following sections discuss the impacts on noise and vibration associated with the No Build Alternative and the Build Alternative. Impact analysis considered all track, roadway, bridge, station and maintenance and layover facilities as identified in the beginning of this chapter. Where impacts are specific to a type of proposed improvement, they are described below. The Build Alternative impacts discussion analyzes long-term operations and maintenance impacts and short-term construction impacts as described in the beginning of this chapter. A discussion of potential impacts at station and maintenance and layover facility sites is also presented, as well as a general discussion of the potential impacts within the BNSF right of way. Avoidance, minimization and mitigation measures are described in Section 4.9.4.

4.9.3.1 No Build

Under the No Build Alternative, the NLX Project would not occur and would not alter current conditions. There would be no changes except planned and programmed actions that are independent of the NLX Project.

4.9.3.2 Build Alternative – Operations

The primary components of wayside noise from train operations on the NLX Project are locomotive warning horns sounding as trains approach rail grade crossings; wheel/rail noise, which results from the steel wheels rolling on steel rails; and power car (locomotive) noise, which results from the engine. The projection of wayside noise from train operations was carried out using the procedures presented in the FRA and the FTA guidance manuals, based on the NLX Tier 2 Build Alternative operational characteristics. **Table 4-56** presents the proposed Tier 2 operational characteristics for this noise and vibration analysis.

Table 4-56: NLX Project Operational Characteristics

| Operation Characteristic | Tier 2 EA |
|--------------------------|---|
| Train Consist | One locomotive, five coaches and one cab car |
| Length | Locomotive – 71.5 feet Coach/Cab – 85 feet |
| Operating Times | <ul style="list-style-type: none"> • First northbound train leaving Minneapolis at 8:40 a.m. • Last train arriving in Duluth at 11:43 p.m. • First southbound train leaving Duluth at 4:57 a.m. • Last train arriving in Minneapolis at 7:52 p.m. |
| Trains Per Day | Four trains per day in each direction |
| Maximum Speed | 90 mph |

In addition to the wayside noise from NLX Project operations, noise from fixed facilities such as maintenance and layover facilities was also addressed using the FTA guidance manual procedures. The noise level produced by a fixed facility is based on a source emission level at 50 feet for a maintenance or layover facility for a set number of train operations adjusted by the NLX Project operations and the distance from the fixed facility to the nearest Category 2 noise receptor to develop an Ldn noise level. The two alternative maintenance facility sites would be adjacent to the tracks in Sandstone and Duluth, Minnesota. A layover facility is also proposed in Duluth. The sites would be located on existing BNSF right of way. The maintenance facility would handle inspection, servicing, maintenance and repair activities required to keep NLX trains in service. Between trips, trains would park at a layover facility where limited servicing, inspection and minor repair functions could occur.

Operations Noise Impact

The results of the noise analysis based on current NLX Project operational assumptions are presented in **Table 4-57**, **Table 4-58** and **Table 4-59**. Two residential (Category 2) noise impact tables are presented.

The two alternative maintenance facility sites and one layover facility would be adjacent to the railroad tracks in Sandstone and/or Duluth. The facilities would not create an impact as a stand alone noise source. The noise level at the nearest Category 2 noise receptor to the proposed Sandstone Maintenance Facility would be 57 dBA Ldn. The Duluth Maintenance and/or Layover Facility would produce an Ldn noise level of 50 dBA at the nearest Category 2 noise receptor. With existing Ldn noise levels of 72 and 61 dBA, respectively, there would not be a noise impact from these fixed facilities.

There would be no noise impact at Bayfront Festival Park in Duluth, the only Category 1 noise land use along the NLX Project. **Table 4-57**, **Table 4-58** and **Table 4-59** provide detailed results within separate communities for the impacted receivers. **Table 4-57** and **Table 4-58** present impacts for Category 2 (residential) noise receptors and **Table 4-59** presents impacts for Category 3 (non-residential) noise receptors. **Appendix D** provides information noise receptor locations and impacts along the NLX Project.

The FRA noise impact criteria as summarized in **Figure 4-4** is based on the relationship between the existing noise exposure and the NLX Project noise exposure that would cause moderate impact and severe impact. For impacted receivers, **Table 4-57** and **Table 4-58** provide the location by community, the **Appendix D** page numbers for the community, noise mile post along the alignment (see table note for explanation of mile post designations for purposes of noise and vibration studies), distance from the NLX track centerline, range of train speeds, existing noise level and noise impact criteria, predicted NLX sound level, as well as total future noise level and increase above existing, and the number of noise impacts. For communities with no noise impacts, the projected levels and other information are provided for the residential receptor closest to the NLX track.

In Minneapolis, one multifamily residential building, located west of the tracks east of 1st Street North and consisting of four residences, is predicted to have moderate noise impact. These noise impacts are due to the proximity of the proposed alignment to the building, which would be approximately 30 feet away. Trains currently do not sound their horns in this area. In Braham, there is one park (Freedom Park) with severe noise impact due to the proximity of the proposed alignment. This severe noise impact represents a conservative estimate of the potential noise increase at the park site. Specifically, the analysis compares the noise level without any trains (that is, no freight trains or passenger trains) to the noise level when an NLX passenger train passes the park. However, about 10 to 12 freight trains pass Freedom Park each day; these trains are usually 10,000 feet long and take several minutes to pass the park. The addition of up to eight passenger trains, which are 650 feet long and would take less than 1 minute to pass the park, would not substantially alter the recreational experience at the park. All of the other noise impacts listed in **Table 4-57**, **Table 4-58** and **Table 4-59** would be caused primarily by the sounding of locomotive warning horns as trains approach rail grade crossings. The increase in nighttime operations would change the noise impact between Sandstone and Duluth, decreasing the number of moderate residential impacts but increasing the number of severe residential impacts. Overall, noise levels from the NLX Project are similar to noise levels receptors experience from freight trains operating in the BNSF right of way.

Table 4-57: Residential (Category 2) Noise Impacts – Sandstone Maintenance Facility Alternative

| Receptor Location | Appendix D Page Number | Noise Mile Post* | Distance to NLX Track (feet) ^d | NLX Train Speed (mph) | Existing Noise Level ^a | NLX Project Noise Level ^a | | | Total Noise Level ^a | Noise Level Increase ^a | Number of Impacts | |
|---|------------------------|------------------|---|-----------------------|-----------------------------------|--------------------------------------|-------------------|-------------------|--------------------------------|-----------------------------------|-------------------|-----------|
| | | | | | | Predicted ^b | Impact Criteria | | | | Moderate | Severe |
| | | | | | | | Moderate | Severe | | | | |
| Minneapolis | 1-7 | 0-5 | 29 | 60 | 55 | 60.2 | 55.3 | 61.2 | 61 | 6 | 4 | 0 |
| Fridley | 7-15 | 5-11 | 61 ^c | 79 ^c | 67 ^c | 56.0 ^c | 62.2 ^c | 67.5 ^c | 67 ^c | 0 ^c | 0 | 0 |
| Coon Rapids | 15-24 | 11-16 | 95 ^c | 71 ^c | 62 ^c | 52.3 ^c | 58.9 ^c | 64.5 ^c | 62 ^c | 0 ^c | 0 | 0 |
| Andover | 24-41 | 16-30 | 133-221 | 90 | 75 | 64.0-67.6 | 65 | 73.2 | 75-76 | 0-1 | 7 | 0 |
| Bethel | 41-48 | 30-35 | 116-215 | 90 | 75 | 66-70.4 | 65 | 73.2 | 76 | 1 | 7 | 0 |
| Isanti | 48-52 | 35-37 | 98-119 | 90 | 75 | 67.3-68.6 | 65 | 73.2 | 76 | 1 | 22 | 0 |
| Cambridge | 52-65 | 37-46 | 82-140 | 20-90 | 70 | 66.1-69.9 | 64 | 69.5 | 71-73 | 1-3 | 4 | 9 |
| Stanchfield | 65-71 | 46-53 | 85-146 | 90 | 70-78 | 65.8-69.7 | 64.4-65.0 | 69.5-75.1 | 71-79 | 1 | 11 | 0 |
| Braham | 71-73 | 53-54 | 96 | 90 | 78 | 68.8 | 65 | 75.1 | 78 | 0 | 12 | 0 |
| Grasston | 73-81 | 54-60 | 98-116 | 90 | 78 | 67.5-68.6 | 65 | 75.1 | 78 | 0 | 2 | 0 |
| Henriette | 81-90 | 60-65 | 86-146 | 90 | 78 | 68.7-72.5 | 65 | 75.1 | 78-79 | 0-1 | 11 | 0 |
| Brook Park | 90-100 | 65-73 | 52-73 | 87-90 | 83 | 70.7-73.1 | 65 | 75.1 | 83 | 0 | 4 | 0 |
| Hinckley | 100-111 | 73-79 | 59-222 | 20-90 | 83 | 65.3-74.6 | 65 | 75.1 | 83-84 | 0-1 | 27 | 1 |
| Sandstone | 111-122 | 79-88 | 159 | 75-90 | 72 | 65.2 | 65.0 | 70.9 | 73 | 1 | 1 | 0 |
| Askov | 122-137 | 88-99 | 160-226 | 90 | 72 | 65.2-70.6 | 65.0 | 70.9 | 73-74 | 1-2 | 27 | 1 |
| Bruno | 137-145 | 99-105 | 229-338 | 90 | 72 | 65.1-65.3 | 65.0 | 70.9 | 73 | 1 | 4 | 0 |
| Kerrick | 145-150 | 105-113 | 224-231 | 90 | 72 | 65.1-68.2 | 65.0 | 70.9 | 73-74 | 2 | 7 | 0 |
| Nickerson | 150-156 | 105-113 | 31-234 | 90 | 72 | 65.0-65.9 | 65.0 | 70.9 | 73 | 1 | 5 | 0 |
| Holyoke | 156-172 | 113-124 | 142-388 | 90 | 62 | 61.4-68.5 | 58.9 | 64.5 | 65-69 | 3-7 | 8 | 8 |
| Superior, Wisconsin | 172-203 | 124-146 | 53-528 | 73 | 62-63 | 60.9-64.9 | 58.9-59.6 | 64.5-65.0 | 65-67 | 2-5 | 65 | 65 |
| Duluth | 203-211 | 146-154 | 474 ^c | 45 ^c | 61 ^c | 45.7 ^c | 58.4 ^c | 63.9 ^c | 61 ^c | 0 ^c | 0 | 0 |
| Total Residential Noise Impacts – Sandstone Maintenance Facility Alternative | | | | | | | | | | | 228 | 84 |

*Noise Mile Posts used in this table are specific to the noise and vibration study references, are based on the NLX Project using Mile Post 0 as the southern terminus in Minneapolis.

^a Noise levels for land use category 2 are based on Ldn and measured in dBA (Harris Miller Miller & Hanson, Inc., 2011).

^b Predicted levels include horn and bell noise, where applicable (rounded to the nearest decibel).

^c Data are for the closest non-impacted residential receptor in this location. There are no noise impacts in this section.

^d The range of distances reflect that multiple receptors are located at varying distances from NLX track.



Table 4-58: Residential (Category 2) Noise Impacts-Duluth Maintenance and/or Layover Facility Alternative

| Receptor Location | Appendix D Page Number | Noise Mile Post* | Distance to NLX Track (feet) ^d | NLX Train Speed (mph) | Existing Noise Level ^a | NLX Project Noise Level ^a | | | Total Noise Level ^a | Noise Level Increase ^a | Number of Impacts | |
|---|------------------------|------------------|---|-----------------------|-----------------------------------|--------------------------------------|-------------------|-------------------|--------------------------------|-----------------------------------|-------------------|-----------|
| | | | | | | Predicted ^b | Impact Criteria | | | | Moderate | Severe |
| | | | | | | | Moderate | Severe | | | | |
| Minneapolis | 1-7 | 0-5 | 29 | 60 | 55 | 60.2 | 55.3 | 61.2 | 61 | 6 | 4 | 0 |
| Fridley | 7-15 | 5-11 | 61 ^c | 79 ^c | 67 ^c | 56.0 ^c | 62.2 ^c | 67.5 ^c | 67 ^c | 0 ^c | 0 | 0 |
| Coon Rapids | 15-24 | 11-16 | 95 ^c | 71 ^c | 62 ^c | 52.3 ^c | 58.9 ^c | 64.5 ^c | 62 ^c | 0 ^c | 0 | 0 |
| Andover | 24-41 | 16-30 | 133-221 | 90 | 75 | 64.0-67.6 | 65.0 | 73.2 | 75-76 | 0-1 | 7 | 0 |
| Bethel | 41-48 | 30-35 | 116-215 | 90 | 75 | 66-70.4 | 65.0 | 73.2 | 76 | 1 | 7 | 0 |
| Isanti | 48-52 | 35-37 | 98-119 | 90 | 75 | 67.3-68.6 | 65.0 | 73.2 | 76 | 1 | 22 | 0 |
| Cambridge | 52-65 | 37-46 | 82-140 | 20-90 | 70 | 66.1-69.9 | 64.0 | 69.5 | 71-73 | 1-3 | 4 | 9 |
| Stanchfield | 65-71 | 46-53 | 85-146 | 90 | 70-78 | 65.8-69.7 | 64.4-65.0 | 69.5-75.1 | 71-79 | 1 | 11 | 0 |
| Braham | 71-73 | 53-54 | 96 | 90 | 78 | 68.8 | 65.0 | 75.1 | 78 | 0 | 12 | 0 |
| Grasston | 73-81 | 54-60 | 98-116 | 90 | 78 | 67.5-68.6 | 65.0 | 75.1 | 78 | 0 | 2 | 0 |
| Henriette | 81-90 | 60-65 | 86-146 | 90 | 78 | 68.7-72.5 | 65.0 | 75.1 | 78-79 | 0-1 | 11 | 0 |
| Brook Park | 90-100 | 65-73 | 52-73 | 87-90 | 83 | 70.7-73.1 | 65.0 | 75.1 | 83 | 0 | 4 | 0 |
| Hinckley | 100-111 | 73-79 | 59-222 | 20-90 | 83 | 65.3-74.6 | 65.0 | 75.1 | 83-84 | 0-1 | 27 | 1 |
| Sandstone | 111-122 | 79-88 | 159 | 75-90 | 72 | 65.2 | 65.0 | 70.9 | 73 | 1 | 1 | 0 |
| Askov | 122-137 | 88-99 | 93-138 | 90 | 72 | 69.0-69.1 | 65.0 | 70.9 | 74 | 2 | 13 | 0 |
| Bruno | 137-145 | 99-105 | 251 | 90 | 72 | 64.9 | 65.0 | 70.9 | 73 | 1 | 0 | 0 |
| Kerrick | 145-150 | 105-113 | 224 | 90 | 72 | 65.7 | 65.0 | 70.9 | 73 | 1 | 1 | 0 |
| Nickerson | 150-156 | 105-113 | 151 | 90 | 72 | 65.6 | 65.0 | 70.9 | 73 | 1 | 2 | 0 |
| Holyoke | 156-172 | 113-124 | 142-317 | 90 | 62 | 58.9-66.0 | 58.9 | 64.5 | 64-67 | 2-5 | 11 | 5 |
| Superior, Wisconsin | 172-203 | 124-146 | 104-376 | 73-90 | 62-63 | 59.1-68.2 | 58.9-59.6 | 64.5-65.0 | 64-69 | 2-6 | 95 | 18 |
| Duluth | 203-211 | 146-154 | 474 ^c | 45 ^c | 61 ^c | 41.6 ^c | 58.4 ^c | 63.9 ^c | 61 ^c | 0 ^c | 0 | 0 |
| Total Residential Noise Impacts – Duluth Maintenance and/or Layover Facility Alternative | | | | | | | | | | | 234 | 33 |

*Noise Mile Posts used in this table are specific to the noise and vibration study references, are based on the NLX Project using Mile Post 0 as the southern terminus in Minneapolis.

^a Noise levels for land use category 2 are based on Ldn and measured in dBA (Harris Miller Miller & Hanson, Inc., 2011).

^b Predicted levels include horn and bell noise, where applicable (rounded to the nearest decibel).

^c Data are for the closest non-impacted residential receptor in this location. There are no noise impacts in this section.

^d The range of distances reflect that multiple receptors are located at varying distances from NLX track.



Table 4-59: Non-Residential (Category 3) Noise Impact Summary

| Receptor Location | Appendix D Page Number | Noise Mile Post | Distance to NLX Track (feet) ^d | NLX Train Speed (mph) | Existing Noise Level ^a | NLX Project Noise Level ^a | | | Total Noise Level ^a | Noise Level Increase ^a | Number of Impacts | |
|--|------------------------|-----------------|---|-----------------------|-----------------------------------|--------------------------------------|-----------------|-----------|--------------------------------|-----------------------------------|----------------------------------|----------------------------------|
| | | | | | | Predicted ^b | Impact Criteria | | | | Moderate | Severe |
| | | | | | | | Moderate | Severe | | | | |
| Andover | 24-41 | 16-30 | 237 | 90 | 45 | 62.1 | 57 | 63.7 | 62 | 17 | 1 School | 0 |
| Bethel | 41-48 | 30-35 | 473 | 90 | 45 | 60.1 | 57 | 63.7 | 60 | 15 | 1 Church | 0 |
| Isanti | 48-52 | 35-37 | 288 | 90 | 45 | 63.6 | 57 | 63.7 | 64 | 19 | 1 Church | 0 |
| Cambridge | 52-65 | 37-46 | 80-456 | 20-34 | 45 | 57.4-69.8 | 57 | 63.7 | 58-70 | 13-25 | 2 Churches 1 Daycare | 1 Cemetery |
| Stanchfield | 65-71 | 46-53 | 101-127 | 90 | 45-49 | 66.5-68.1 | 57-58 | 64.3-63.7 | 67-68 | 19-22 | 0 | 2 Churches 1 Cemetery |
| Braham | 71-73 | 53-54 | 44-176 | 90 | 49 | 64.2-76.9 | 58 | 64.3 | 64-77 | 15-28 | 1 Park | 1 Park |
| Hinckley | 100-111 | 73-79 | 52-250 | 20 | 46 | 67.6-78.7 | 57.2 | 63.8 | 68-79 | 22-33 | 0 | 1 School 3 Churches 1 Park |
| Sandstone | 111-122 | 79-88 | 79-375 | 75-90 | 45 | 58.8-69.9 | 57 | 63.7 | 59-70 | 14-25 | 1 School 1 Church | 2 Parks |
| Askov | 122-137 | 88-99 | 194-363 | 90 | 45 | 62.0-63.5 | 57.0 | 63.7 | 62-64 | 17-19 | 1 School 2 Churches 1 Park | 0 |
| Bruno | 137-145 | 99-105 | 296-459 | 90 | 45 | 57.4-63.4 | 57.0 | 63.7 | 58-63 | 13-18 | 1 School 1 Church | 0 |
| Duquette | 145-156 | 105-113 | 196 | 90 | 45 | 63.4 | 57.0 | 63.7 | 63 | 18 | 1 Park | 0 |
| Superior, Wisconsin | 172-203 | 124-146 | 135 | 89 | 45 | 66.1 | 57.0 | 63.7 | 66 | 21 | 0 | 1 School |
| Total Non-Residential Noise Impacts | | | | | | | | | | | 4 Schools | 2 Schools |
| | | | | | | | | | | | 8 Churches | 5 Churches |
| | | | | | | | | | | | 3 Parks | 4 Parks |
| | | | | | | | | | | | 0 Cemeteries | 2 Cemeteries |
| | | | | | | | | | | | 1 Daycare | 0 Daycare |

*Noise Mile Posts used in this table are specific to the noise and vibration study references, are based on the NLX Project using Mile Post 0 as the southern terminus in Minneapolis.

^a Total Noise Level^a is the result of combining the Existing Noise Level with the Predicted Noise Level from NLX Project operations. Noise levels for land use category 3 are based on Leq and measured in dBA (Harris Miller Miller & Hanson, Inc., 2011).

^b Predicted levels include horn and bell noise, where applicable (rounded to the nearest decibel).

^c The range of distances reflect that multiple receptors are located at varying distances from NLX track.

Noise Effects on Wildlife and Domestic Animals

In locations where NLX trains would sound horns, the wildlife and domestic animal noise exposure limit would be reached approximately 170 feet from the track centerline. In locations where NLX trains would not sound horns, this noise exposure limit would be reached approximately 10 feet from the track centerline.

Operations Vibration Impact

The results of the vibration analysis based on current NLX Project operational assumptions indicate that there would be one residential ground-borne vibration impacts from NLX trains. **Table 4-60** provides detailed information for sensitive vibration receivers within separate communities including the distance of the closest receiver from the NLX track centerline, location by mile post along the alignment, range of train speeds, existing vibration level, projected vibration level, vibration impact criterion and number of vibration impacts. All the data in **Table 4-60** are for residential locations except for the Duluth Depot.

The ground-borne vibration and ground-borne noise impact criteria for special buildings from **Table 4-53** were applied to the Duluth Depot Great Hall auditorium. For the ground-borne noise assessment, the ground-borne noise levels were estimated using the methods recommended in the preliminary vibration assessment methodology provided in Chapter 8 of the FRA guidance manual (FRA, 2012). Using a conservative assessment of the ground-borne vibration and ground-borne noise in the auditorium, the levels were substantially below the impact criteria, and no ground-borne noise or vibration impact is projected at the Duluth Depot Great Hall.

There is one projected vibration impact at a single-family residence in Nickerson, Minnesota. This vibration impact is caused by the proximity of the residence to the existing BNSF track to be used by NLX, approximately 35 feet, and the speed of the passing NLX trains, proposed at 90 mph.

Vibration levels typically decrease very rapidly as the distance from the vibration source increases. The vibration levels from higher-speed passenger trains are generally lower in level than freight trains. One reason for this is the significantly greater weight of a freight locomotive compared to a modern high speed train locomotive. Additionally, the track standards for a higher-speed train system are typically higher than for freight service, resulting in smoother rails with no corrugations or other defects or surface irregularities that lead to higher vibration levels.

Table 4-60: Vibration Impact Summary

| Receptor Location | Appendix D Page Number | Noise Mile Post | Distance to NLX Track (feet) | NLX Train Speed (mph) | Existing Freight Vibration Level ^a | Projected NLX Vibration Level ^a | Vibration Impact Criterion ^a | Number of Vibration Impacts ^b |
|--|------------------------|-----------------|------------------------------|-----------------------|---|--|---|--|
| Minneapolis | 1-7 | 0-5 | 29 | 60-79 | 86 | 79 | 80 | 0 |
| Fridley | 7-15 | 5-11 | 61 | 79 | 78 | 76 | 80 | 0 |
| Coon Rapids | 15-24 | 11-16 | 159 | 46-90 | 74 | 73 | 80 | 0 |
| Andover | 24-41 | 16-30 | 86 | 90 | 78 | 74 | 80 | 0 |
| Bethel | 41-48 | 30-35 | 116 | 90 | 76 | 71 | 80 | 0 |
| Isanti | 48-52 | 35-37 | 98 | 90 | 77 | 73 | 80 | 0 |
| Cambridge | 52-65 | 37-46 | 121 | 90 | 73 | 72 | 80 | 0 |
| Stanchfield | 65-71 | 46-53 | 51 | 90 | 81 | 78 | 80 | 0 |
| Braham | 71-73 | 53-54 | 126 | 90 | 79 | 71 | 80 | 0 |
| Grasston | 73-81 | 54-60 | 128 | 90 | 78 | 71 | 80 | 0 |
| Henriette | 81-90 | 60-65 | 86 | 90 | 75 | 74 | 80 | 0 |
| Brook Park | 90-100 | 65-73 | 58 | 90 | 77 | 77 | 80 | 0 |
| Hinckley | 100-111 | 73-79 | 64 | 65-90 | 82 | 73 | 80 | 0 |
| Sandstone | 111-122 | 79-88 | 159 | 76-90 | 73 | 69 | 80 | 0 |
| Askov | 122-137 | 88-99 | 93 | 90 | 76 | 74 | 80 | 0 |
| Bruno | 137-145 | 99-105 | 206 | 90 | 70 | 66 | 80 | 0 |
| Nickerson | 145-150 | 105-113 | 31 | 90 | 85 | 82 | 80 | 1 |
| Holyoke | 150-156 | 113-124 | 142 | 90 | 74 | 69 | 80 | 0 |
| Superior, Wisconsin | 156-172 | 124-146 | 141 | 89-90 | 74 | 79 | 80 | 0 |
| Duluth | 172-203 | 146-154 | 178 | 45 | 73 | 63 | 80 | 0 |
| Total NLX Project Vibration Impacts | | | | | | | | 1 |

*Noise Mile Posts used in this table are specific to the noise and vibration study references, are based on the NLX Project using Mile Post 0 as the southern terminus in Minneapolis.

^a Vibration levels are measured in VdB referenced to 1 μ -inch/second (Harris Miller Miller & Hanson, Inc. 2011).

^b All impacts are residential unless otherwise noted.

^c Special building vibration impact criteria from **Table 4-54** applied to Duluth Depot Great Hall auditorium.

Stations

Noise and vibration levels around the stations would be controlled by the NLX Project operations. Impacts near the stations were addressed previously in Section 4.9.3.2 under Operational Noise Impact.

4.9.3.3 Noise and Vibration Impacts – Construction

Temporary noise and vibration impacts could result from activities associated with the construction of new tracks and stations, utility relocation, grading, excavation, track work, demolition, and installation of systems components. Such impacts may occur in residential areas and at other noise-sensitive land uses located within several hundred feet of the alignment. The potential for noise impact would be greatest at locations near pile-driving operations for bridges and other structures and at locations close to any nighttime construction work. The potential for vibration impact would also be greatest at locations near pile-driving for bridges and other structures, and at locations close to vibratory compactors used for compacting soil. **Table 4-61** presents some typical construction equipment noise levels at a distance of 50 feet.

Table 4-61: Construction Equipment Noise Emission Levels

| Equipment | Typical Noise Level (dBA) 50 feet from Source |
|----------------------|---|
| Air compressor | 81 |
| Backhoe | 80 |
| Ballast equalizer | 82 |
| Ballast tamper | 83 |
| Compactor | 82 |
| Concrete mixer | 85 |
| Concrete pump | 82 |
| Concrete vibrator | 76 |
| Crane, derrick | 88 |
| Crane, mobile | 83 |
| Dozer | 85 |
| Generator | 81 |
| Grader | 85 |
| Impact wrench | 85 |
| Jack hammer | 88 |
| Loader | 85 |
| Paver | 89 |
| Pile-driver (impact) | 101 |
| Pile-driver (sonic) | 96 |
| Pneumatic tool | 85 |
| Pump | 76 |
| Rail saw | 90 |
| Rock drill | 98 |
| Roller | 74 |
| Saw | 76 |
| Scarifier | 83 |
| Scraper | 89 |
| Shovel | 82 |
| Spike driver | 77 |
| Tie cutter | 84 |
| Tie handler | 80 |
| Tie inserter | 85 |
| Truck | 88 |

Source: FTA, 2006.

4.9.4 Avoidance, Minimization and Mitigation Measures

The NLX Project would continue efforts to avoid, minimize and mitigate impacts as the project advances through construction.

4.9.4.1 Operations Noise Mitigation Measures

The projected noise impacts from NLX Service are primarily due to the sounding of horns near rail grade crossings rather than wheel/rail noise, which results from the steel wheels rolling on steel rails, and power car (locomotive) noise, which results from the engine. The most feasible way to mitigate the noise impacts would be for municipalities to establish quiet zones for rail grade crossings near noise-sensitive receivers. The establishment of quiet zones is a separate regulatory approval process with FRA's Office of Safety.

Municipalities must initiate the request to establish quiet zones with FRA. In quiet zones, because of safety improvements at the rail grade crossings, train operators would sound horns only in emergency situations rather than as a standard operating procedure. To meet safety criteria, local municipalities would be required to provide improvements at rail grade crossings, such as modifications to the streets, raised medians, warning lights and other devices. The FRA regulation also authorizes the use of automated wayside horns at rail grade crossings along with flashing lights and gates as a substitute for the train horn. While activated by the approach of trains, these devices are pole-mounted at the rail grade crossing, thereby limiting the horn noise exposure area to the immediate vicinity of the crossing.

The establishment of quiet zones would eliminate all but four moderate noise impacts at one multifamily residential building in Minneapolis, described above, and one severe noise impact at Freedom Park in Braham; these noise impacts that would remain after full implementation of quiet zones are referred in subsequent text as residual impacts. If municipalities are unable to obtain approval for quiet zones, the incremental noise impact from the NLX Project would be unmitigated.

Table 4-62 summarizes the noise impacts by community, without mitigation and with the implementation of quiet zones along the NLX Project. The implementation of quiet zones for the NLX Project would have the additional benefit of reducing the existing noise from freight train locomotive horns. This would be expected to decrease the Ldn at sensitive locations along the NLX Project by up to 5 dBA to 15 dBA compared to existing levels. Since a noise barrier cannot extend across a roadway, the implementation of noise barriers would not be an effective mitigation option for the NLX Project where noise impacts are caused by locomotive horn noise.

Table 4-62: Summary of Noise Mitigation Effectiveness

| Receptor Location ^a | Number of Moderate and Severe Noise Impacts | | | | | |
|--------------------------------|--|---|--|---|---|--------|
| | Sandstone Maintenance Facility | | Duluth Maintenance and/or Layover Facility | | With Municipality-Developed Quiet Zones | |
| | Without Mitigation | | Without Mitigation | | | |
| | Moderate | Severe | Moderate | Severe | Moderate | Severe |
| Minneapolis | 4 Residential | 0 | 4 Residential | 0 | 4 Residential | 0 |
| Fridley | 0 | 0 | 0 | 0 | 0 | 0 |
| Coon Rapids | 0 | 0 | 0 | 0 | 0 | 0 |
| Andover | 7 Residential 1 School | 0 | 7 Residential 1 School | 0 | 0 | 0 |
| Bethel | 7 Residential 1 Church | 0 | 7 Residential 1 Church | 0 | 0 | 0 |
| Isanti | 22 Residential 1 Church | 0 | 22 Residential 1 Church | 0 | 0 | 0 |
| Cambridge | 4 Residential 2 Churches 1 Cemetery 1 Daycare | 9 Residential 1 Cemetery | 4 Residential 2 Churches 1 Cemetery 1 Daycare | 9 Residential 1 Cemetery | 0 | 0 |
| Stanchfield | 11 Residential | 2 Churches 1 Cemetery | 11 Residential | 2 Churches 1 Cemetery | 0 | 0 |
| Braham | 12 Residential 1 Park | 1 Park | 12 Residential 1 Park | 1 Park | 0 | 1 Park |
| Grasston | 2 Residential | 0 | 2 Residential | 0 | 0 | 0 |
| Henriette | 11 Residential | 0 | 11 Residential | 0 | 0 | 0 |
| Brook Park | 4 Residential | 0 | 4 Residential | 0 | 0 | 0 |
| Hinckley | 27 Residential | 1 Residential 1 School 3 Churches 1 Park | 27 Residential | 1 Residential 1 School 3 Churches 1 Park | 0 | 0 |
| Sandstone | 1 Residential 1 School 1 Church | 2 Parks | 1 Residential 1 School 1 Church | 2 Parks | 0 | 0 |
| Askov | 13 Residential 1 School 2 Churches 1 Park | | 13 Residential 1 School 2 Churches 1 Park | 0 | 0 | 0 |
| Bruno | 4 Residential 1 School 1 Church | | 1 School 1 Church | 0 | 0 | 0 |
| Kerrick | 5 Residential | | 1 Residential | 0 | 0 | 0 |
| Duquette | 1 Park | | 1 Park | 0 | 0 | 0 |

| Receptor Location ^a | Number of Moderate and Severe Noise Impacts | | | | | |
|--------------------------------|---|---|---|---|---|---------------|
| | Sandstone Maintenance Facility | | Duluth Maintenance and/or Layover Facility | | With Municipality-Developed Quiet Zones | |
| | Without Mitigation | | Without Mitigation | | | |
| | Moderate | Severe | Moderate | Severe | Moderate | Severe |
| Nickerson | 7 Residential | | 2 Residential | 0 | 0 | 0 |
| Holyoke | 8 Residential | 8 Residential | 11 Residential | 5 Residential | 0 | 0 |
| Superior, Wisconsin | 65 Residential | 65 Residential 1 School | 95 Residential | 18 Residential 1 School | 0 | 0 |
| Duluth | 0 | 0 | 0 | 0 Residential | 0 | 0 |
| Total | 228 Residential 4 Schools 8 Churches 3 Parks 1 Daycare | 84 Residential 2 Schools 5 Churches 4 Parks 2 Cemeteries | 234 Residential 4 Schools 8 Churches 3 Parks 1 Daycare | 33 Residential 2 Schools 5 Churches 4 Parks 2 Cemeteries | 4 Residential | 1 Park |

^a Unless otherwise noted, all locations are in Minnesota.

Trains do not currently sound horns in the area of the multifamily residential building with residual moderate impact in Minneapolis, so the noise impacts would be caused by the proposed NLX trains. The impacted multifamily building is elevated above the alignment in this location. A noise barrier could potentially mitigate this noise impact if located near the track, but it would need to be approximately 12 feet to 15 feet high to provide noise reduction from the locomotive noise source. Providing sound insulation for this building is another potential mitigation option. Before any final decision is made regarding noise mitigation at this building, a site-specific long-term existing noise measurement would be conducted as the NLX Project advances through the design process.

The residual severe noise impact at Freedom Park in Braham could potentially be mitigated with a noise barrier, but may not be feasible due to its proximity to the track.

4.9.4.2 Operations Vibration Mitigation Measures

The NLX Project is projected to cause one residential vibration impact. Specific vibration mitigation measures would be recommended as the NLX Project advances through the design process, when more specific characteristics of the train consist are known. Additionally, site-specific ground-borne vibration propagation testing would be conducted as the NLX Project advances through the design process to provide less conservative results that may indicate no vibration impact.

4.9.4.3 Construction Noise and Vibration Mitigation Measures

Construction activities would be carried out in compliance with all applicable local noise regulations. The following mitigation measures can be applied as needed to minimize temporary construction noise and vibration impacts:

- Avoiding nighttime construction in residential neighborhoods
- Locating stationary construction equipment as far as possible from noise-sensitive sites
- Constructing noise barriers, such as temporary walls or piles of excavated material, between noisy activities and noise-sensitive receivers
- Routing construction-related truck traffic to roadways that will cause the least disturbance to residents
- Using alternative construction methods to minimize the use of impact and vibratory equipment (for example, pile-drivers and compactors)

4.9.5 Summary

The Tier 1 EA evaluated noise and vibration impacts of NLX Project operations and proposed infrastructure improvements for eight daily round trips (16 trains per day) at speeds up to 110 mph. The Tier 2 EA addresses changes to the NLX Project, as described in Chapter 2 Alternatives. That is, the Tier 2 EA evaluates noise and vibration impacts of operations and proposed infrastructure for four daily round trips (eight trains per day) at speeds up to 90 mph.

The proposed Sandstone Maintenance Facility would create one additional round trip train operation per night between Sandstone and Duluth. This increase in nighttime operations changes the noise impact between Sandstone and Duluth, decreasing the number of moderate residential impacts but increasing the number of severe residential impacts. The projected noise impacts from NLX Project are primarily due to the sounding of horns near rail grade crossings. The most feasible way to mitigate the noise impacts would be with the establishment of quiet zones for all rail grade crossings near noise-sensitive receivers. Municipalities must initiate the request to establish quiet zones through application to FRA.

The NLX Project would result in one residential vibration impact in Nickerson. There is one projected vibration impact at a single-family residence in Nickerson, Minnesota, that is caused by the proximity of the residence to the existing BNSF track. The vibration levels from higher speed intercity passenger trains are generally lower in level than freight trains, due to the lower weight of higher speed intercity passenger trains compared to heavier freight trains. The improved track standards for a higher speed intercity passenger rail would provide smoother rails to further minimize vibration impacts.

The noise and vibration impacts are similar between Tier 1 EA and Tier 2 EA. The Tier 1 EA identifies the noise and vibration impacts are similar between Tier 1 EA and Tier 2 EA. The Tier 1 EA identifies 279 moderate and 43 severe residential noise impacts, 10 moderate and 18 severe institutional noise impacts and 4 residential vibration impacts. Depending on the maintenance facility alternative, the Tier 2 EA identifies 228 to 234 moderate impacts, 33 to 84 severe residential noise impacts, 16 moderate and 13 severe institutional noise impacts and 1 residential vibration impact.

4.10 Contaminated Properties and Regulated Waste

The Tier 1 EA analysis indicates that the NLX Project would have potential contamination issues. This section analyzes the NLX Project impacts based on proposed construction limits that have been updated since the Tier 1 EA. **Table 4-63** presents the NLX study area used for hazardous waste, contaminated materials and solid waste impact analysis; **Table 4-64** presents the results of the Tier 1 EA and the Tier 2 EA analyses. The revised impacts supersede the results presented in the Tier 1 EA and are summarized at the end of this section.

The Tier 1 EA performed a desktop analysis using the MPCA “What’s in My Neighborhood?” (WIMN) database and WDNR [Remediation and Redevelopment] RR Sites Map to identify potentially contaminated sites within 500 feet of new dedicated track or siding extensions for the NLX Project (based on the rail infrastructure improvements proposed at the time of the Tier 1 EA analysis). The Tier 2 EA summarizes findings from a Limited Phase I Environmental Site Assessment (ESA) prepared for the NLX Project. The Limited Phase I ESA provides a more in-depth evaluation of potential contamination issues than the database reviews used in the Tier 1 EA by including a regulatory database search, site reconnaissance and historical review. However, the Limited Phase I ESA did not address the entire NLX Project construction limits. MnDOT and FRA determined that a focused review of specific Key Locations (described below) within the NLX Project construction limits was an appropriate approach for this stage of the project and availability of resources.

The goal of the Limited Phase I ESA is to determine the likelihood of encountering contaminated materials during the development and operation of the NLX Project. The results of the Limited Phase I ESA are used to initiate risk management planning relative to contaminated materials and focus the development of plans for future Phase II ESAs that would include soil and/or groundwater sampling.

The Limited Phase I ESA developed for the NLX Project differs in the scope and approach of a standard corridor-level Phase I ESA. The Limited Phase I ESA only focused on evaluating Key Locations along the length of the 152-mile NLX Project. Key Locations were selected based on the likelihood of soil disturbance or property acquisition as understood from review of NLX Project conceptual designs. The Key Locations included the following:

- Preliminary construction limits for the stations at Target Field; Coon Rapids; Cambridge; Hinckley; Superior, Wisconsin; and Duluth
- Preliminary construction limits for the maintenance and/or layover facilities at Sandstone and Duluth
- New bridge construction in the city of Fridley over Mississippi Street and Rice Creek
- New bridge construction in Isanti County at MP 111.2 and MP 112.31
- Sixty-eight crossing signal upgrade locations along the NLX study area

The new bridge construction in Isanti County was identified after historical data review and the site reconnaissance had already been conducted for other Key Locations. Due to the smaller anticipated construction limits and less developed area surrounding the Isanti County bridges, the evaluation of these bridge locations was limited to only a MPCA WIMN database search.

Upgrades to 68 crossing signals are proposed for the NLX Project. An initial desktop review of the signal locations was conducted to evaluate surrounding land use and to identify nearby listings in the MPCA WIMN database. The crossing signal locations were then narrowed down to 18 locations, which were included for review during the site reconnaissance.

Areas of new track, new sidings and areas where rehabilitation of existing track would occur within the existing BNSF right of way were not evaluated in the Limited Phase I ESA. MnDOT and FRA determined that it was appropriate to exclude these areas because of a lack of access to BNSF right of way and limited or non-existent regulatory and historical data specific to contaminant releases along BNSF right of way. A qualitative discussion of these areas is included in Section 4.10.3.

Table 4-63: NLX Study Area for Contaminated Properties and Regulated Waste

| NLX Study Area Definition | Basis for NLX Study Area |
|---|--|
| <p>The construction limits for proposed stations, maintenance facilities, layover facilities, crossing signal upgrades and new bridge construction.</p> | <p>The majority of the NLX Project includes existing track that would require minimal ground disturbance for upgrades. The Limited Phase I ESA focused on areas with greater soil disturbance and/or could include future property acquisition within the construction limits, which was narrowed down to Key Location investigations.</p> |

Table 4-64: Contaminated Properties and Regulated Waste Impacts – NLX Tier 1 Service Level EA and Tier 2 Project Level EA

| Identified Impacts in Tier 1 Service Level EA | Identified Impacts in NLX Tier 2 Project Level EA |
|--|--|
| Several contaminated sites within 500 feet of new dedicated track or siding extensions (as defined in Tier 1 EA conceptual engineering); potential to encounter contamination during ground disturbance. | Four High Risk Key Locations, four Medium Risk Key Locations, and one Low Risk Key Location identified (see Section 10.4.3). |
| Potential for impact on water quality from bridge rehabilitation cleaning and painting. | Rehabilitation of existing railroad bridges would include conversion of the superstructure from open deck to closed deck (no substructure work anticipated), cleaning and painting, bearing replacement, and pointing of abutments and/or piers. Of these activities, the removal of potential Polychlorinated Biphenyls (PCBs) and/or lead-containing paint, chemically treated wood, and asbestos containing materials poses the greatest potential for impacts from hazardous waste and regulated materials. |
| Slight increase in potential for spills due to increased rail traffic. | Spills of petroleum and other regulated materials could occur during construction activities, especially where heavy construction equipment is used; spills of these materials could also occur during operation and maintenance of rail vehicles. |
| Solid waste generated during construction. | Solid waste generated during construction may include excess construction materials and demolition materials from bridge rehabilitation and building removal. |
| No Tier 1 EA assessment made for new bridge construction. | Proposed new bridge construction could encounter contamination during construction, especially where excavation and or dewatering is required for bridge piers and abutments. New bridge construction in Isanti County would likely involve less ground disturbance than the bridges in Fridley. The Isanti County bridges are located in less developed areas. The likelihood of encountering contamination still exists and would need to be better defined through further study completed during future design activities. |
| No Tier 1 EA assessment made for crossing signals. | Crossing signal upgrades would require a minimal amount of soil disturbance to depths of up to 5 feet; due to the varying locations and land use at each signal location, potential to encounter contamination exists and would need to be better defined through further study completed during future design activities. |

As appropriate and necessary, this Tier 2 EA would be refined through future supplemental NEPA documentation as the final design advances and funding is secured for the NLX Project. Future supplemental environmental documentation is identified as appropriate throughout this Tier 2 EA.

4.10.1 Regulatory Context and Methodology

4.10.1.1 Regulatory Context

For the NLX Project, EPA, MPCA, MDA and WDNR oversee regulations pertaining to contaminated soil, groundwater and waste cleanup plan approvals; petroleum underground storage tank registration and removal; and NPDES permitting. Activities that encounter contaminated materials must follow state and local requirements for safe handling and disposal under the purview of these agencies. See **Appendix K** for a detailed description of applicable regulations.

4.10.1.2 Methodology

There is no single comprehensive source of information available that identifies known or potential sources of environmental contamination. Therefore, to identify and evaluate sites potentially using hazardous substances and petroleum products, a Limited Phase I ESA was completed in general conformance with American Society for Testing and Materials Standard 1527-13 (ASTM 1527-13), and modified specifically for this Tier 2 EA. The Limited Phase I ESA consisted of the following key components for evaluating Key Locations and their surroundings for the likelihood of contamination: 1) site reconnaissance, 2) records review and 3) historical review.

The Limited Phase I ESA is a qualitative review and attempts to evaluate the history of parcels along the NLX Project that have a history of chemical usage and the potential that such usage may have impacted the soil and/or groundwater that may be encountered during the construction and operation of the NLX Project. The investigation was limited to specific Key Locations where substantial disturbance of soil and/or groundwater could be possible due to construction of stations, maintenance and layover facilities, bridges and crossing signals as understood based on current NLX Project conceptual engineering. This investigation did not measure the severity of hazardous materials or regulated materials that may be found onsite, and it did not attempt to identify individual Recognized Environmental Conditions associated with each site. Rather, the following rankings were used to rate the Key Locations based on the potential to encounter contamination during construction:

- **High Risk for Contamination** – These Key Locations are located within the NLX Project construction limits and have a history of known contamination associated with them or with directly adjacent properties. They also incorporate areas of active railroad or historical railroad-related land use dating back to at least the late 1800s. Numerous sources of contamination and contaminants of concern have been documented at or adjacent to these locations.

- **Medium Risk for Contamination** – These Key Locations are located within the NLX Project construction limits but mostly outside the existing BNSF right of way, and have a history of contamination associated with them or with adjacent properties. Non-agricultural or residential development of these properties has occurred only within the last 50 years. The contaminants of concern are typically petroleum based.
- **Low Risk for Contamination** – These Key Locations are located within the NLX Project construction limits but outside of the BNSF right of way and have been developed with only residential or light commercial land uses. Documented releases or potential offsite contamination from adjacent sources is not associated with the location. Minor releases may have occurred onsite, but are likely *de minimis*¹¹ or highly localized.

4.10.2 Affected Environment

The NLX Project lies primarily within existing BNSF right of way between Target Field Station in Minneapolis and the Duluth Station. The construction limits for the NLX Project encompass 878 acres (which reflects the addition of the existing BNSF track area and the addition of land for stations, maintenance and layover facilities to the Tier 1 EA NLX construction limits); about 19 acres of the construction limits are outside of BNSF right of way. These 19 acres are needed for various NLX Project activities, including construction of stations, maintenance facilities and rail crossing and crossing signal improvements. Potentially contaminated properties are often found in previously developed industrial and commercial areas. These types of land uses are common in the NLX Project construction limits, and there is a potential to encounter contaminated soils, groundwater, and materials based on prior use and development. Data sources were used to characterize known and potential contamination in the NLX study area.

4.10.2.1 Regulatory Database Results

An environmental records search of federal, state and local files for the proposed stations, maintenance and layover facilities and new bridges (Fridley only) was conducted. ASTM guidance defines specific radii of concern for different databases, ranging up to a distance of 1 mile from the construction limits of each station and each maintenance and layover facility. A search radius of over 500 feet was used at the location of the new bridges in Fridley. The listings identified in the search radius for each Key Location was assessed and Sites of Concern¹² were determined based on the type of listing (whether it could indicate subsurface contamination), location of the listing and consideration of multiple listings for one location or business. The Sites of Concern for each Key Location are detailed in the Limited Phase I ESA (see **Appendix K**, Table 3-2

¹¹ A *de minimis* condition is defined as a condition that general does not present a threat to human health or the environment and that generally would not be the subject of regulatory enforcement if brought to the attention of the appropriate agencies.

¹² The term “Sites of Concern” is used to refer to properties that have known or potential contamination based on the number and type of regulatory database listings found for those properties.

through Table 3-8 for descriptions and Attachment A for their mapped locations). The following list summarizes the results of the database search:

- **Target Field Station** – eight Sites of Concern were identified, all within about 500 feet of this Key Location, in addition, Target Field Station was listed.
- **Coon Rapids Station** – one Site of Concern was identified about 625 feet from this Key Location; in addition, a property lying partially within the construction limits of Coon Rapids Station was listed.
- **Cambridge Station** – two Sites of Concern were identified within about 500 feet of this Key Location.
- **Hinckley Station** – no Sites of Concern were identified for this Key Location.
- **Superior, Wisconsin Station** – three Sites of Concern were identified for this Key Location; one Site of Concern lies within the construction limits of the Superior, Wisconsin Station, one is about 350 from the Superior, Wisconsin Station site, and the third site is listed as BNSF property less than 1,200 feet from the Superior, Wisconsin Station site.
- **Duluth Station and Duluth Maintenance and/or Layover Facility** – 13 Sites of Concern were identified within about 220 feet of these Key Locations.
- **Sandstone Maintenance Facility** – seven Sites of Concern were identified within 500 feet of this Key Location.
- **New Bridges in Fridley** – two Sites of Concern were identified within about 250 feet of the proposed new bridge at Mississippi Street, and two Sites of Concern were identified within about 900 feet of the proposed new Rice Creek Bridge.

A review of MPCA WIMN database listings at and adjacent to proposed crossing signal upgrades and the new bridges in Isanti County was conducted to identify potential Sites of Concern. The locations of the potential Sites of Concern for each crossing signal and the new bridges in Isanti County are shown in the Limited Phase I ESA (see **Appendix K**, Attachment D).

4.10.2.2 Historical Data Review

Historical use information was reviewed to develop a history of previous land uses near Key Locations along the NLX study area and to assess these uses for potential hazardous materials impacts that may affect the NLX Project. Historical sources that were readily available and reviewable, and likely to provide useful information, were reviewed. Given the large and primarily rural nature of the NLX study area, historical review was limited to the proposed stations, maintenance and layover facilities and new bridges (Fridley only). The availability of given historical sources (for example, fire insurance maps) and coverage period varied by site. Information

regarding the historical land use at Key Locations where data was available is provided in the Limited Phase I ESA (see **Appendix K**, Table 3-9). The following list summarizes the results of the historical land use review:

- **Target Field Station** – fire insurance maps, city directories, historical topographic maps and historical aerials were available. Review of these resources indicates that the Key Location has been used for railroad purposes since at least 1885. Nearby property included a variety of commercial and industrial uses. Relatively recently, much of the nearby property has been converted to multifamily residential use.
- **Coon Rapids Station** – city directories, historical topographic maps and historical aerials were available. Review of these resources indicates that a railroad has been adjacent to this Key Location since at least 1937. The Key Location and nearby property was undeveloped or agricultural until around the 1970s and 1980s when an electric substation and a few commercial buildings were built.
- **Cambridge Station** – city directories, historical topographic maps and historical aerials were available. Review of these resources indicates that a railroad has been adjacent to this Key Location since at least 1953. The station site was undeveloped until 1978; nearby property was a mix of undeveloped and residential. By 1984, a retail center had been built at the site (currently listed as City government offices and retail stores), by 1991 the parking area surrounding the retail center had been completely paved. Commercial buildings began to appear near this Key Location in the late 1970s.
- **Hinckley Station** – city directories, historical topographic maps and historical aerials were available. Review of these resources indicates that the Key Location was an undeveloped field until about 1977, when the building currently at the station site appeared. A 1991 aerial photograph showed staining on a concrete pad outside of the building. Nearby property has included a mix of residential, commercial and public land uses.
- **Superior, Wisconsin Station** – city directories, historical topographic maps and historical aerials were available. Review of these resources indicates that this Key Location has been used for railroad purposes since at least 1915. Some of the tracks at the station site were removed in the 1970s. Nearby property was used for rail purposes, including rail maintenance buildings. In the late 1900s to early 2000s, some of the buildings were converted to commercial use. Recent aerial photography shows a bulk oil facility and aboveground storage tanks to the north and east of this Key Location, respectively.
- **Duluth Station and Duluth Maintenance and/or Layover Facility** – fire insurance maps, city directories, historical topographic maps and historical aerials were available. Review of these resources indicates that this Key Location and nearby property was used for railroad purposes as early as 1884. A roundhouse was located at the station and maintenance and/or layover facility site between at least 1884 and 1969. A building has been located at the current Union Depot site since at least 1884, but the building was substantially smaller; by 1906 the building had been expanded or rebuilt to about the current size. In the 1940s, industrial and commercial facilities began to appear on nearby property, including an oil depot from at least 1949 to at least 1969.
- **Sandstone Maintenance Facility** – fire insurance maps, city directories, historical topographic maps and historical aerials were available. Review of these resources indicates that this Key Location has been used for railroad purposes since at least 1914. Multiple tracks were present, along with a roundhouse. The roundhouse was removed between 1977 and 1981. Large aboveground tanks were present on the

property from at least 1928 to at least 1981. Nearby properties included several businesses and a quarry. The 1914 fire insurance map indicated that a large creosote plant was located near this Key Location, but the plant could not be located on other historical data.

- **New Bridges in Fridley** – city directories, historical topographic maps and historical aerials were available. Review of these resources indicates that these Key Locations have been used for railroad purposes since at least 1937, and that the Rice Creek Bridge was present since at least that time as well. The bridge over Mississippi Street was constructed sometime around 1978. Nearby property includes a bus facility that has been present since at least 1978, encroachment onto rail property from activities associated with the bus facility operations was observed on several aerial photographs. Other nearby property use was generally agricultural with residential development increasing especially during the 1960s. Commercial buildings appeared near these Key Locations from the 1960s through the 1980s.

Historical data sources were not reviewed for certain Key Locations including the new bridges in Isanti County and the crossing signal locations.

4.10.2.3 Site Reconnaissance

The Key Locations within the NLX study area were reviewed on foot and by automobile on July 6, 2016, and October 20, 2016. The site reconnaissance was conducted by accessing public roadways and public areas located adjacent to the existing BNSF right of way. Access to BNSF properties and right of way was not permitted during the site reconnaissance. However, the majority of the Key Locations were readily reviewable from adjacent public areas and crossings. All of the proposed stations, maintenance and layover facilities and new bridges were located in developed, urban to small urban areas (see **Appendix K**, Section 4.1).

Target Field Station

The review of the proposed Target Field Station was conducted on foot. Direct access to this Key Location was limited by adjacent private businesses and a chain-linked security fence, but was readily viewable from adjacent parking lots and from an elevated position on the 5th Street North viaduct. This Key Location contains an elevated passenger platform for Northstar, located at the southwest end. Tracks are present on either side of the platform. The southwest end continues into a restricted area underneath 5th Street North and Target Field. The northeast end continues toward a switch located just before the Washington Avenue overpass. Surrounding land use is a combination of parking lots, parking ramps, warehouses, converted warehouses (office buildings and apartments), restaurants, breweries and Target Field. An unmarked 100 gallon plastic tote was present next to a storage container in the parking lot of the Ford office building, located at 420 5th Ave. N. No other bulk hazardous materials or petroleum storage was noted in the area.

Coon Rapids Station

The proposed Coon Rapids Station would be located on a partially developed lot located in the northeast quadrant of the intersection of Foley Boulevard and the existing BNSF right of way. A boxing gym (Lyke's) operates out of a small, single-story building situated at the southern end of this Key Location. A dirt driveway extends north from the east side of the building and intersects with another dirt road that parallels (but remains outside of) the BNSF right of way. The road leads north to a communication tower and electrical substation. The remaining portion of the site is lightly wooded, with a mixture of trees and tall grass. An overhead electrical line traverses the length of the Key Location along the western side. Several businesses and warehouses are located nearby. A park and ride facility is located to the south of the Key Location, across Foley Boulevard. No bulk hazardous materials or petroleum storage was noted in the area.

Cambridge Station

The proposed Cambridge Station would be located in a commercial district in Cambridge. The proposed station construction limits include an asphalt parking lot for a strip mall that houses a government center (with police and fire) located on the north end, and retail shops anchored by a grocery co-op located on the south end. The proposed station platform would be situated on the east side (rear) of the strip mall, where deliveries are made and additional parking is present. Surrounding land use consists of fast food restaurants, retail shops, banks and other small businesses to the west. Manufacturing businesses and other industrial land uses are located on the east side of the tracks from the station construction limits. Schlagel Inc. (manufacturer of material handling equipment) and Cortec Advance Film (plastics and film) are both located adjacent to the existing BNSF right of way. Significant outdoor storage of parts and other materials was noted at Schlagel Inc., and nearly a dozen aboveground storage tanks are present at the Cortec Advance Film site. Bulk storage of hazardous materials or petroleum products was not noted within the proposed station construction limits.

Hinckley Station

The proposed Hinckley Station would be situated along the northeastern edge of the town of Hinckley. This Key Location is occupied by a single-story warehouse, with two garage bays in the front. One of the doors is marked Pine Medical Ambulance Service. A trailer for a heating and air conditioning business was parked in front of the other bay, next to a large pile of scrap metal and old water heaters. In the rear of the building are two loading docks and a large open bay. At the time of the site visit, city vehicles were parked in the back lot of the building and piles of dirt and compost were present along the back edge of the lot (closest to the rail line). Adjacent land use consists of Sylvester and Sons Auto and an electrical substation to the north, a school bus parking lot to the northwest, an apartment building and parking lot to the west, a high school to the southwest, a church and residential homes to the south and the railroad corridor to the east. Residential

homes and agricultural fields are located further east, beyond the railroad tracks. Bulk storage of hazardous materials or petroleum products outside was not noted within the proposed station construction limits.

Sandstone Maintenance Facility

The proposed Sandstone Maintenance Facility would be located along nearly the entire west side of the town of Sandstone. This Key Location was reviewed along public roadways that are present along each side of the site. The proposed maintenance facility construction limits are mainly undeveloped, with the exception of two railroad tracks and a public crossing on the north end at Oak Street. Portions of property on the west side of the tracks are wooded or otherwise free of buildings and structures. Piles of scrap metal, concrete plates, railroad ties and wood pallets were staged next to the railroad tracks during the October site reconnaissance. Crews conducting repairs and other construction activity were noted along this segment during the July site reconnaissance. Adjacent businesses include an active gas station (Clark) located to the northwest (across U.S. 23); automobile sales lots to the northwest, east and south; a lumber yard to the east and junk and scrap yards to the southwest. A large amount of scattered debris, vehicles, scrap metal and equipment was noted from the roadway near the junk yard that abuts the southeast side of the maintenance site construction limits. An old automotive garage, house, and additional fenced area are also present. Bulk storage of hazardous materials or petroleum products was not noted within the proposed construction limits, but was present on adjacent properties.

Superior, Wisconsin Station

The proposed Superior, Wisconsin Station would be located at the northern end of an approximately 2.5-mile-long rail terminal in Superior, Wisconsin. This Key Location lies in a mostly vacant portion of the rail yard that is mostly covered with tall vegetation. Railroad tracks are present along the very western edge of the proposed station construction limits. No direct access to the station construction limits was available without entering restricted BNSF right of way. Therefore, the property was surveyed from an elevated position along the pedestrian portion of the U.S. 2 Bridge, which transects not only the site, but the entire width of the rail yard (east to west). Adjacent land use includes a former Waste Management facility and an active gas station (Kwik Trip) to the east. The Waste Management property was undergoing redevelopment, and construction equipment and trailers were present at the time of the October site reconnaissance. The former roundhouse and other structures had been removed from the station construction limits. A bulk oil terminal (AMSOIL), lumber company, aggregate company and ice skating facility are located to the north. A BNSF administrative building and numerous related support structures are present on the west side of the rail terminal, directly across from the proposed Superior, Wisconsin Station. No indications of contamination or bulk storage of hazardous materials or petroleum products were noted within the station construction limits.

Duluth Station and Duluth Maintenance and/or Layover Facility

The proposed Duluth Station would be located at the Depot in downtown Duluth. The Depot is used as a cultural arts center and a rail station for the NSSR. The existing railroad tracks lie at a lower elevation than the surrounding roadways (that is, I-35, South 5th Avenue West and Michigan Street). Parking lots and commercial development surround the proposed station construction limits. The proposed maintenance and/or layover facility would be situated southwest of the Depot. The proposed maintenance and/or layover facility construction limits include an elongated, vacant parcel of land between the I-35 corridor and industrial businesses located along the southeast side of Railroad Street on the Duluth Harbor. Adjacent businesses to the maintenance and/or layover facility construction limits include Georgia Pacific, Duluth Timber Company, Ziegler Cat, Compass Minerals and Bendtec (pipe fabrication). No indications of contamination or bulk storage of hazardous materials or petroleum products were noted within either the proposed station or maintenance and/or layover facility construction limits.

New Bridge Construction in Fridley

The proposed new bridge construction at Mississippi Street (MP 16.5) and at Rice Creek (MP 16.9) would be located in a developed area in Fridley. Much of the surrounding properties were developed during the 1970s, with minimal updates to the building exteriors. Residential development is prevalent in the area in all directions. The exceptions are the properties directly adjacent to the existing railroad corridor. Two large warehouse manufacturing buildings are located adjacent to the east of the Mississippi Street Bridge, one on the north side and one on the south side. Large bays for semi-truck trailers are present at both sites, but no outdoor storage of chemicals or petroleum products was noted. A school bus company and garage are also located southeast of the Rice Creek Bridge and northeast of the Mississippi Street Bridge. A fenced area with storage was noted on the back side (east end) of the building. No outdoor storage of chemicals or petroleum products was noted outside this facility. The Rice Creek Regional Trail runs parallel along the west side of the railroad corridor and Mississippi Street Bridge and then under the Rice Creek Bridge. Both bridges span a large area, and the height of the bridges over the stream/creek is approximately 25 to 30 feet.

Crossing Signal Upgrade Areas and New Bridge Construction in Isanti County

Of the 68 crossing signal upgrades proposed for the NLX Project, 18 locations were identified as Key Locations for additional review during the site reconnaissance based on the results of the MPCA WIMN database search and aerial review. These crossings were reviewed, and adjacent property land use was noted.

The crossings are all located in commercially or industrial developed areas. Adjacent and nearby businesses such as gas stations, electrical substations, motor repair facilities, tank sites and manufacturers were noted

during the site reconnaissance. No areas of obvious contamination or storage of hazardous materials or petroleum products were noted in association with each crossing.

The proposed new bridges in Isanti County are located at MP 111.20 and MP 112.31 (Isanti Parkway Northeast). The proposed bridge at MP 111.20 would be constructed adjacent to the east of an existing bridge over Isanti Brook. The surrounding land use is an agricultural field and wetland area. The proposed bridge at MP 112.31 (Isanti Parkway Northeast) would be located east of an existing bridge over a drainage ditch. Adjacent land use includes an indoor BMX facility, auto machine shop (Cylinder Head Express), waste water treatment plant and biodiesel plant (Ever Cat Fuels).

4.10.3 Impacts

The following sections discuss the impacts on contaminated sites associated with the No Build Alternative and the Build Alternative. Impact analysis considered all track, roadway, bridge, station and maintenance and layover facilities as identified in the beginning of this chapter. Where impacts are specific to a type of proposed improvement, they are described below. The Build Alternative impacts discussion analyzes long-term operations and maintenance impacts and short-term construction impacts as described in the beginning of this chapter. A discussion of potential impacts at station and maintenance and layover facility sites is also presented, as well as a general discussion of the potential impacts within the BNSF right of way. Avoidance, minimization and mitigation measures are described in Section 4.10.4.

No Build Alternative

Under the No Build Alternative, the NLX Project would not occur and would not alter current conditions. Existing contaminated materials and regulated waste would remain largely undisturbed, unless subsurface disturbance occurs in localized areas relating to other development within the NLX study area or from freight railroad maintenance work.

Build Alternative – Operations

Operations impacts are defined as additional contaminated materials and/or regulated wastes produced during the operation of the NLX Project. The NLX Project would likely produce regulated waste at the maintenance facility as a part of normal operation and maintenance of passenger trains. Solid waste generation is expected at the stations in the form of waste receptacles and other general maintenance and upkeep of the stations. Minor spills and releases are also likely due to normal operation of the NLX Project along the tracks, at maintenance and layover facilities and at stations.

Operations impacts also include long-term liability associated with the disturbance and/or acquisition of contaminated property.

Build Alternative – Construction

Construction impacts are defined as the disturbance or generation of contaminated materials and/or regulated waste temporarily or permanently altered by construction activities. Areas of residual contamination due to historical spills and releases along the entire length of the track and right of way are likely, based on the NLX study area's consistent use as a rail corridor for decades. The construction of stations, maintenance and layover facilities, signal upgrades, and new bridges are considered to have the largest potential environmental impact due to the amount of ground disturbance during construction.

The likelihood of existing contamination that could impact the NLX Project (both during construction and property acquisition) was evaluated and Key Locations were ranked based on factors such as current and historical land use at Key Locations and surrounding properties, the number and type of database listings, documented contamination, and observations made during the site reconnaissance. Based on these factors, the following rankings were assigned to the Key Locations for the NLX Project (see **Appendix K** for detailed information regarding these rankings):

■ **High Risk for Contamination**

- Target Field Station
- Sandstone Maintenance Facility
- Superior, Wisconsin Station
- Duluth Station (located next to Union Depot) and Duluth Maintenance and/or Layover Facility

■ **Medium Risk for Contamination**

- Coon Rapids Station
- Cambridge Station
- New bridge construction in Fridley (at Mississippi Street and Rice Creek)

■ **Low Risk for Contamination**

- Hinckley Station

Crossing signal upgrades would require a minimal amount of soil disturbance. Proposed depths of disturbance would not likely exceed 5 feet below ground surface. Adjacent and nearby commercial businesses such as gas stations, electrical substations, motor repair facilities, tank sites, and manufacturers were identified during the site reconnaissance and/or desktop review. The likelihood of encountering contamination during the upgrades to crossing signal that would require offsite disposal remains uncertain.

The proposed new bridges in Isanti County would be located in a less developed area than the new bridge construction in Fridley (at Mississippi Street and Rice Creek). Proposed soil disturbance and overall bridge construction limits would be considerably less because these two areas would span a drainage ditch and small stream. Adjacent land use includes agricultural fields, a recreational facility, a waste water treatment plant and a biodiesel plant. The likelihood of encountering contamination during construction of the bridges that would require offsite disposal remains uncertain.

The NLX Project also includes bridge conversion work, which consists of the conversion of several bridges from open deck to ballasted deck; this work would be confined to the bridge superstructure. Potential cleaning and painting and bearing replacement could result in the removal of potential Polychlorinated Biphenyls (PCBs) and/or lead-containing paint, chemically treated wood, and asbestos containing materials. This poses the greatest potential for impacts from regulated waste and regulated materials for the bridge rehabilitation work. Special handling and disposal requirements would need to be followed under existing regulation, if present.

Additional potential impacts during construction would include temporary storage tanks for fuel for equipment during construction. Spills during construction are known to occur due to equipment failure, refueling, and other construction activities. Solid waste (such as demolition debris and field office waste) is expected to be generated as a result of construction activities.

4.10.4 Avoidance, Minimization and Mitigation Measures

The NLX Project would continue efforts to avoid, minimize and mitigate impacts as the project advances through construction. The following sections present mitigation strategies to address potential contamination or regulated material issues during the operations and construction of the NLX Project. Given the unique nature of addressing contaminated properties and regulated wastes, the discussion of operations and construction mitigation has been combined.

As a part of future design activities and prior to right of way acquisition, further investigation of potentially contaminated properties affected by NLX Project construction would be completed to determine the extent and magnitude of contaminated materials in Key Locations identified in the Limited Phase I ESA. Further investigation would be initiated in the form of targeted Phase I ESAs in areas of significant soil disturbance (that is, stations, maintenance and layover facilities and new bridge construction) and at properties slated for acquisition (in accordance with MnDOT right of way policies and procedures). A Phase II ESA would subsequently be completed, including drilling and sampling to confirm the presence, magnitude, and extent of soil and groundwater contamination prior to construction. The results of the investigations would be used to determine whether the contaminated properties or materials can be avoided or whether the NLX Project's impacts on the properties can be minimized.

If contaminated properties cannot be avoided, the Phase II ESA results can be used to initiate liability protection processes with the appropriate regulatory agencies. The MPCA's Brownfield Program is an example of a regulatory program that can provide liability protection for the acquisition of and/or construction in contaminated property. It is anticipated that environmental construction monitoring and a Contaminated Materials Management Plan approved by the MPCA and WDNR would be implemented during construction as a proper method of handling contamination and regulated waste materials and providing protection for construction workers.

MnDOT and/or BNSF standard construction BMPs would be implemented to avoid spills that could contaminate soil, surface water and groundwater in the NLX study area. In the event of a release during construction, appropriate action to remediate the situation would be taken immediately, in accordance with MPCA and WDNR containment and remedial action procedures. In the event of a hazardous material spill from a passenger train, environmental spill response procedures would be followed to minimize substantial impacts.

For bridge construction and rehabilitation, the contractor would be required to prepare and comply with a containment plan, environmental monitoring plan, waste management plan and contingency plan to avoid contamination to the waterway from PCBs and/ or lead-containing paint and other regulated waste that may be generated. Typical containment systems include tarps, negative pressure, barges/pontoons/small floats and vacuum equipment. Similarly, debris containment measures would be in place as needed to ensure that construction materials for the open deck rehabilitation do not fall into the waterway.

4.10.5 Summary

The NLX Project construction limits have changed from the Tier 1 EA analysis to the Tier 2 EA analysis. Under the Tier 2 EA analysis, construction activities would primarily be contained within existing BNSF right of way; relatively few locations require construction outside of BNSF property. In general, these areas include stations, maintenance and layover facilities and certain roadway crossings.

The Limited Phase I ESA prepared for the Tier 2 EA provided a more in-depth evaluation of Key Locations, which include stations, maintenance and layover facilities, 18 crossing signal upgrade locations, as well as four new bridges. These locations include areas where construction limits are outside of the BNSF right of way, and where it was determined that there was a likelihood of soil disturbance and/or property acquisition. Four Key Locations were identified as having a high risk of encountering contamination during construction, four Key Locations were identified as having a medium risk of encountering contamination, and one Key Location was identified as having a low risk of encountering contamination.

The results of the analysis in this Tier 2 Project Level EA are generally consistent with the results of the earlier Tier 1 EA, which indicated that contaminated properties are present along the NLX Project that pose a concern for right of way acquisition and construction. Both the Tier 1 and Tier 2 EA analyses determined that further investigation, in the form of a targeted Phase I ESA and a Phase II ESA, are warranted during future design activities and prior to construction and property acquisition for the NLX Project.

4.11 Cultural Resources

This section describes the cultural resource surveys and evaluation completed in accordance with the Programmatic Agreement (PA) for the NLX Project (dated August 2013) that guides the cultural resources analysis for the proposed NLX Project. It further describes the regulatory context and methodology being used to assess long-term direct and indirect and short-term (construction) direct and indirect effects of the NLX Project on cultural resources. NEPA requires federal agencies to consider the impacts of their actions on cultural resources, and Section 106 of the National Historic Preservation Act, as amended (54 USC 306108) (referred to herein as Section 106), requires agencies to consider the effects of their undertakings on historic properties.

For the purposes of this section, *cultural resource* means the same as *historic property*. Historic properties are buildings, structures, districts, objects, and sites (including archaeology) that are listed in or eligible for listing on the National Register of Historic Places (NRHP) (36 CFR 800.16(l)(1)). CEQ's *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR Parts 1500–1508) also clarify that, under NEPA, impact is synonymous with effect (40 CFR 1508.8). For consistency with the regulations implementing Section 106 (36 CFR Part 800), the term effect is used throughout this section.

CEQ regulations encourage integration of the NEPA process with other planning and environmental reviews, such as Section 106. The regulations implementing Section 106 also encourage agencies to coordinate Section 106 consultations with the requirements of other statutes, such as NEPA, as applicable. Because federal policy and guidance encourages coordination and integration between NEPA and Section 106, FRA is using the Section 106 process for this NLX Project to fulfill the requirements for the consideration of effects on cultural resources under NEPA.

In December 2012, FRA delegated authority to the MnDOT Cultural Resources Unit (CRU) to aid FRA in many aspects of the Section 106 process, including initiation of consultation with the SHPO, identification of the Area of Potential Effect (APE), identification of historic resources, and conducting consultation with the SHPO and the public, in accordance with 36 CFR 800.2(a)(3).

In 2013, a PA was prepared and signed by FRA, the Surface Transportation Board, MnDOT, WisDOT, the Minnesota State Historic Preservation Office (now the Minnesota Historic Preservation Office [MnHPO]) and the Wisconsin State Historic Preservation Office (WisSHPO) (see **Appendix P**). The PA was established for a 10-year period, and describes how Section 106 activities would be conducted, and guides the cultural resources review process for this Project. This Tier 2 EA summarizes the cultural resources identification, evaluation and consultation conducted during the Tier 2 analysis for the NLX Project. A determination of effects report documenting effects on historic properties would be submitted to the MnHPO as part of the Section 106 process. No Wisconsin properties that are eligible for or listed on the NRHP have been identified

within the Project study area as described in **Table 4-65**. Consultation with the MnHPO and consulting parties would continue to reach resolution on Section 106 prior to the final environmental decision document (FONSI) for the NLX Project (see **Table 4-66**).

Table 4-65: Cultural Resources Analysis Study Area

| Study Area Definition | Basis for Study Area |
|---|---|
| Area of Potential Effect defined by MnDOT CRU in consultation with MnHPO and WisSHPO. | Impacts on cultural resources can include physical impacts within the construction limits as well as visual, atmospheric, or audible impacts. |

Table 4-66: Cultural Resources Considerations – NLX Tier 1 Service Level EA and NLX Tier 2 Project Level EA

| Tier 1 Service Level EA | NLX Tier 2 Project Level EA |
|---|--|
| Programmatic Agreement identifies Section 106 procedures. Effects would be addressed in project level NEPA. | Programmatic Agreement identifies Section 106 procedures. Preliminary assessment of effects in Tier 2. |

As appropriate and necessary, and in accordance with the PA, this Tier 2 EA would be refined through future supplemental NEPA documentation as the final design advances and funding is secured for the NLX Project. Future supplemental environmental documentation is identified as appropriate throughout this Tier 2 EA.

4.11.1 Regulatory Context and Methodology

This section describes the regulatory context and methodology for the historic properties assessment under Section 106. Following an introduction to the Section 106 process, this section describes the development of the APE, the methods used to identify historic properties and evaluate them for the NRHP, how effects on historic properties are assessed, and how adverse effects are resolved under Section 106.

The regulations implementing Section 106 (36 CFR Part 800) direct that the responsible federal agency shall:

- Initiate the Section 106 process by determining whether the action is an undertaking, notifying the State Historic Preservation Office, Indian tribes, and other consulting parties, and developing a plan to involve the public (36 CFR 800.3)
- Identify historic properties that are listed, or eligible for listing, on the NRHP by determining an APE, conducting a survey to identify historic properties and evaluating historic properties under NRHP criteria (36 CFR 800.4)

- Assess the effects of the undertaking on historic properties by applying the criteria of adverse effect and consulting with State Historic Preservation Offices, Indian tribes, other consulting parties, and the public (36 CFR 800.5 and 36 CFR 800.11)
- Resolve any adverse effects by continuing consultation with Section 106 consulting parties to explore measures that avoid, minimize or mitigate the adverse effects, and develop a Section 106 Agreement to document agreed-upon measures (36 CFR 800.6)

The NLX Project passes through the states of Minnesota and Wisconsin, and so must also comply with applicable state laws, including the Minnesota Historic Sites Act (Chapter 138); Minnesota Field Archaeology Act (Chapter 138); Minnesota Private Cemeteries Act (Minn. Stat. 307.08); Wisconsin Historical Societies and Historical Preservation (Chapter 44) and Wisconsin Burial Sites Preservation (Wis. Stat. 157.70).

4.11.1.1 Area of Potential Effect

An APE is “the geographical area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of the undertaking and may be different for different kinds of effects caused by the undertaking” (36 CFR 800.16[d]). An APE must account for both direct and indirect effects, including permanent and temporary effects.

During the Tier 1 EA, MnDOT CRU, under delegation from FRA and in consultation with MnHPO and WisSHPO, defined an APE for the NLX Project (see **Appendix P**, attachment to PA Northern Lights Express Project Area of Potential Effect Rationale, updated February 27, 2012), and received concurrence from the MnHPO on March 15, 2012, and from the WisSHPO on April 19, 2012. The APE encompasses potential physical, auditory, atmospheric and visual impacts on historic properties and included all potential project activities and is still applicable for Tier 2 analysis of historic properties.

NLX Project activities considered in developing the APE included the following:

- Track infrastructure improvements (tracks, sidings, turnouts and crossovers)
- Bridge and culvert improvements (new bridge construction, modification of bridge superstructure from open deck to closed deck, culvert extensions)
- Signal system improvements (control points, CTC with a new PTC system overlay)
- Roadway and grade crossing improvements (grade modifications, warning devices)
- Station, and maintenance and layover facilities

The APE for historic architectural properties was generally 500 feet from track center on either side of new or existing track. For areas with new bridge construction, the APE would expand to 0.25 mile around the NLX

Project area to account for effects from vibration and potential visual effects. The architectural history survey was completed in 2013. For archaeology, the APE was the same as the construction limits and included all areas of proposed construction activities or other potential ground disturbing activities associated with the NLX Project.

With NLX Project refinements for the Tier 2 EA, an archaeology APE was refined to identify areas of potential ground disturbance associated with construction and other activities proposed for the NLX Project that are not coincident with the BNSF right of way. For this Tier 2 EA, no environmental review was undertaken within the BNSF right of way. Non-construction project activities that may occur within the APE include access routes, parking and equipment storage. It was assumed that any modification to the extant railroad grade would not extend below the existing grade. Therefore, unknown archaeological sites that may be located below the extant grade would not be impacted and survey of the existing railroad grade is not required. Where possible, areas of disturbance entirely within the BNSF right of way, but potentially extending beyond the existing grade were visually assessed from public areas outside the right of way to rule out the need for future survey.

4.11.1.2 Identification and Evaluation of Historic Properties

Section 106 requires federal agencies to consider the effects of their undertakings on historic properties that are listed on or are eligible for listing on the NRHP, which is the nation's official list of historic places worthy of preservation. Section 106 gives equal consideration to listed and determined eligible properties. A historic property can be eligible for the NRHP individually, as part of a historic district or both.

The NRHP Criteria for Evaluation (36 CFR Part 63) are used to evaluate a historic property to determine whether it possesses historic significance, is of sufficient age, and retains sufficient integrity to convey any potential significance. In order to qualify for listing on the NRHP, a property must possess significance under at least one of four criteria (36 CFR 60.4; National Park Service, 1997):

- A. Association with events that have made significant contributions to broad patterns of history.
- B. Association with the lives of persons significant in our past.
- C. Embodiment of distinctive characteristics of a type, period, or method of construction; represent the work of a master; possess high artistic values; or represent a significant and distinguishable entity whose components may lack individual distinction.
- D. Has yielded, or may be likely to yield, information important in prehistory or history.

To be eligible for listing on the NRHP, a property must be 50 years old, or, if it is less than 50 years old, possess exceptional significance. A property must also retain sufficient integrity to convey its significance.

To identify historic properties with the NLX Project's historical architecture and archaeological APEs, MnDOT CRU, under authority delegated from FRA and in consultation with MnHPO and WisSHPO, conducted an architecture and history survey (2013), and a Phase IA archaeology survey (2013) and a Phase I archaeology survey (2016). These surveys documented previously identified or evaluated properties, as well as conducted field surveys to document any previously unidentified properties within the defined architectural and archaeological APEs. The reports documenting these surveys include:

- *Phase I and II Architectural History Survey for the Northern Lights Express Project* (The 106 Group, 2013a)(available on the NLX Project website at <http://www.dot.state.mn.us/nlx/documents.html> under "Other documents")
- *Phase IA Archaeology Survey for the Northern Lights Express Project* (The 106 Group, 2013b)
- *Phase I Archaeological Investigations for the NLX High Speed Rail Project* (Commonwealth Heritage Group, 2017)

The historic architectural properties identified in **Table 4-67** are those within the APE for the NLX Project that were listed on the NRHP or determined eligible for listing on the NRHP, and reflect concurrence in eligibility as received by the MnHPO on June 14, 2014, and by the WisSHPO on June 18, 2014. The Phase IA archaeology survey conducted in 2013 was a preliminary study and received concurrence of no further work at the Tier 1 level by MnHPO on January 17, 2014, and WisSHPO on January 16, 2014. The Phase I archaeology survey was conducted in 2016. FRA's determination was that there were no archaeological properties within the APE of the NLX Project for the area surveyed; the archaeology report has been submitted to MnHPO and WisSHPO for comment in accordance with Stipulation VI of the PA. Consultation with MnHPO and WisSHPO regarding the archaeology investigations is ongoing, and resolution of any concerns is anticipated prior to any environmental decision for the NLX Project (see **Appendix P** for correspondence).

4.11.1.3 Standards Used to Assess Effects and Resolve Adverse Effects

The Section 106 process requires an assessment of adverse effects of a project on historic properties. The NRHP regulation specify in 36 CFR 800.5 (a) (1), "an adverse effect on a historic property is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association." An adverse effect can occur if any aspect of a historic property's integrity is diminished. Examples of adverse effects are identified in 36 CFR 800.5(a)(2) and include, but are not limited to, the following:

- Physical destruction of or damage to all or part of the property

- Alternation of a property that is not consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR 68) and applicable guidelines
- Removal of the property from its historic location
- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features
- Neglect of a property that causes its deterioration
- Transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance

4.11.1.4 Preliminary Assessment of Effects

This Tier 2 EA includes a preliminary assessment of effects on NRHP-listed and eligible historic properties based on engineering plans that are still in a conceptual stage. The preliminary assessment is further discussed in Section 4.11.3.2. The purpose of the assessment is described below.

This preliminary assessment of effects is also undertaken to support the analysis of use under Section 4(f) of the U.S. DOT Act of 1966 (49 USC 303) (see **Appendix Q**). Section 4(f) mandates consideration of historic sites as well as publicly owned parks, recreation areas, and wildlife and waterfowl refuges in planning a federal undertaking, and applies to the use or occupancy of a historic site. The Section 106 process is integral to the Section 4(f) process when historic sites are involved, and most particularly for direct effects related to the actual use or occupancy of a historic site as defined under Section 4(f). FRA is seeking comment from consulting parties and the public on the preliminary assessment of effects on historic properties provided in this chapter to assist in the Section 4(f) evaluation requirements.

Following the comment period on this EA, a determination of effects report documenting effects on historic properties would be submitted to the MnHPO as part of the Section 106 process (no Wisconsin properties that are eligible for or listed on the NRHP have been identified within the Project study area). Consultation with the MnHPO and consulting parties would continue to reach resolution on Section 106 at this stage, prior to any environmental decision for the NLX Project.

If FRA determines that the NLX Project would have an adverse effect on any historic properties pursuant to the National Historic Preservation Act, FRA, with the assistance of MnDOT CRU, would consult with MnHPO and WisSHPO, other consulting parties and the public in accordance with 36 CFR 800.6 and the PA (Stipulation VII) for this Project to identify ways to avoid, minimize or mitigate the adverse effect.

4.11.1.5 Section 106 Coordination and Consultation

FRA's Section 106 compliance is being achieved through consultation with MnHPO, WisSHPO, Indian tribes, local governments and other interested parties. The Section 106 tasks conducted to date include initiating consultation, identifying the historic architectural and archaeological APEs, conducting an archaeology survey, identifying historic properties, determining their eligibility for listing on the NRHP, and conducting the preliminary assessment of effect.

To comply with Section 106 requirements, FRA initiated consultation with MnHPO and WisSHPO in March 2012, notifying both offices of the NLX Project and FRA's intent to delegate authority to MnDOT CRU to complete some aspects of the Section 106 process on its behalf, including defining an APE, identifying and evaluating historic properties in the APE for listing on the NRHP and making findings of effect. In September 2016, MnDOT CRU, on behalf of FRA notified local governments and heritage preservation commissions in the cities in which stations would be located and invited them to participate in consultation. In response, the following governments, agencies and organizations accepted the invitation to participate in the Section 106 review as consulting parties under the provisions of 36 CFR 800.2:

- St. Louis County Heritage and Arts Center
- City of Sandstone
- City of Hinckley
- City of Cambridge
- St. Louis and Lake Counties RRA
- City of Minneapolis
- City of Duluth

Consultation with these groups will be ongoing as work is carried out under the PA for the NLX Project.

4.11.1.6 Tribal Consultation

In December 2011, as part of the Tier 1 assessment, FRA sent letters to potentially affected Indian tribes in Minnesota and Wisconsin (see **Appendix P** for a list of tribes in the PA, Attachment C), requesting that they identify any concerns about the proposed NLX Project's potential effects and inviting them to participate in the Section 106 process. No tribes indicated interest in participating in the process at that time.

In June 2016, FRA again sent letters to the potentially affected tribes to request their interest in participation in the NLX process for Tier 2. No tribes expressed interest in participating in the process at this time. If properties are identified in the future or as unanticipated discoveries in final design and construction,

consultation would proceed in accordance with 36 CFR 800.13, and in accordance with the directions in the PA (Stipulation XI) for this Project.

4.11.2 *Affected Environment*

A total of 11 NRHP-listed and 23 NRHP-eligible properties have been identified in the NLX Project APE for historical architecture properties, as shown below in **Table 4-67** and illustrated in **Figure 4-5** and **Figure 4-6**. Of the 11 NRHP-listed properties, two are districts: the Minneapolis Warehouse District and the St. Anthony Falls Historic District. There is also one eligible historic district: the Great Northern and Northern Pacific Railway, Minneapolis Junction to Sauk Rapids Railroad Corridor Overlay Historic District. This eligible district, and the two railroad lines that make up the district, include bridges that are not individually eligible, but that contribute to the corridor (the bridges are not separately enumerated in these property totals). All properties shown below are in Minnesota; no NRHP-listed or NRHP-eligible properties were identified in the APE for the NLX Project in Wisconsin.

Table 4-67: Section 106 Review of NRHP Previously Listed and Determined Eligible Properties

| Property Name (Historic) | | Property Address | NRHP Criteria | Contributing Resources in Railroad Corridors |
|--------------------------|---|--|---|---|
| Hennepin County | | | | |
| 1 | Minneapolis Warehouse Historic District (listed) HE-MPC-0441 | Vicinity of 1st Avenue North, North 1st Street, 10th Avenue North, and North 6th Street, Minneapolis | Criterion A – Commerce Criterion C – Architecture | |
| 2 | St. Anthony Falls Historic District (listed) | Vicinity of Mississippi River between Plymouth Avenue North and 10th Avenue South, Minneapolis | Criterion A – Commerce, industry, transportation Criterion C – Architecture Criterion D – Archaeology | |
| 3 | Minneapolis Fire Department Repair Shop (listed) (in St. Anthony Falls Historic District) HE-MPC-2137 | 24-28 University Avenue Northeast, Minneapolis | Criterion A – Politics/Government | |
| 4 | Northrup, King & Company Complex (eligible) HE-MPC-3788 | 1500 Jackson Street Northeast, Minneapolis | Criterion A – Commerce and industry | |
| 5 | Northwestern Casket Company (eligible) HE-MPC-3792 | 1720 Madison Street Northeast, Minneapolis | Criterion A – Commerce and industry | |
| 6* | St. Paul, Minneapolis and Manitoba/Great Northern Railroad Corridor, Minneapolis Jct. to Breckenridge (eligible) HE-MPC-16387 | N/A (NLX includes the segment from Minneapolis Jct. to TFS), Minneapolis | Criterion A – Transportation | Contributing Railroad Bridges: <ul style="list-style-type: none"> • *HE-MPC-5961 crossing west channel of Mississippi River • *HE-MPC-5962 crossing east channel of Mississippi River |
| 7 | Minneapolis & Pacific Railway Co/Mpls/SP & Sault Ste. Marie/Soo Line/Canadian Pacific Railway, Minneapolis to the Minnesota/North Dakota state line west of Tenney, MN (eligible) HE-MPC-17264 | N/A crosses Northtown Yard (east/west), Minneapolis | Criterion A – Transportation | Contributing Railroad Bridges: <ul style="list-style-type: none"> • HE-MPC-5282 – Bridge no. 5584 crossing over Northtown Yard |

| | Property Name (Historic) | Property Address | NRHP Criteria | Contributing Resources in Railroad Corridors |
|-----|---|---|--|--|
| 8 | St. Paul & Northern Pacific Railway/Northern Pacific Railway, Minneapolis to St. Paul Railroad Corridor Historic District (eligible) HE-MPC-17694 | N/A (joins XX-RRD-011 near 19th Avenue Northeast), Minneapolis | Criterion A – Transportation, agriculture and industry | Contributing Railroad Bridges: <ul style="list-style-type: none"> • HE-MPC-5278 – Bridge no. L8893 crossing over 19th Avenue Northeast • HE-MPC-5280 – Bridge no. 92333 crossing over Monroe Street Northeast • HE-MPC-17373 – Bridge no. 92335 crossing over 18th Avenue Northeast |
| 9* | St. Paul & Pacific Railroad (St. Vincent Extension)/St. Paul, Mpls & Manitoba Railway/Great Northern Railway (Willmar Div., 1st Sub.)/Burlington Northern RR/ Burlington Northern Santa Fe Railway, Mpls. To St. Vincent (eligible) XX-RRD-001 | N/A Superseded on map by XX-RRD-011—(the overlay district) Minneapolis, Fridley and Coon Rapids | Criterion A – Transportation and agriculture | |
| 10* | St. Paul & Northern Pacific Railway/Northern Pacific Railway (St. Paul Div, 1st Sub)/Burlington Northern RR/Burlington Northern Santa Fe Railway, Minneapolis to Sauk Rapids (eligible) XX-RRD-003 | N/A Superseded on map by XX-RRD-011 (the overlay district) Minneapolis, Fridley and Coon Rapids | Criterion A – Transportation and agriculture | |

| | Property Name (Historic) | Property Address | NRHP Criteria | Contributing Resources in Railroad Corridors |
|---------------------|---|---|--|---|
| 11* | Great Northern and Northern Pacific Railway, Minneapolis Junction to Sauk Rapids Railroad Corridor Overlay Historic District (eligible) XX-RRD-011 | Minneapolis, Fridley and Coon Rapids | Criterion A – Transportation and agriculture | Contributing Railroad Bridges: (not individually eligible) <ul style="list-style-type: none"> • *HE-MPC-17266 - Bridge No. L8895 (MP 9.86) • *HE-MPC-17265 - Bridge No. 92336 (MP 10.82) • *HE-MPC-17262 - Bridge No. L8892 (MP 10.91) • *HE-MPC-17263 - Bridge No. L8891 (MP 11.11) • *HE-MPC-17267 - Bridge No. 92332 (MP 11.22) • *HE-MPC-8444 – Lowry Avenue (MP 11.35) • AN-CRC-008 - Bridge No. 6011A • AN-CRC-009 - Bridge No. 6011B |
| 12 | Bridge No. 90664 (eligible) HE-MPC-9002 | St. Anthony Boulevard over the BNSF, Minneapolis | Razed | |
| Anoka County | | | | |
| 13 | Fridley Water Filtration Plant/Minneapolis Water Works – Fridley Plant (eligible) AN-FRC-178 | East River Road, Fridley | Criterion A – Community planning and development Criterion C – Architecture | |
| 14 | Northern Pump Co./Northern Ordnance Plant (eligible) AN-FRC-177 | 4800 E. River Road, Fridley | Criterion A – Engineering, industry and military | |
| 15 | Cedar Potato Warehouse (eligible) AN-OKG-005 | Main Street Northwest and Viking Boulevard, Cedar (Oak Grove) | Criterion A – Agriculture and commerce | |

| Property Name (Historic) | | Property Address | NRHP Criteria | Contributing Resources in Railroad Corridors |
|--------------------------|---|--|---|--|
| Isanti County | | | | |
| 16 | Isanti Farmers Creamery Cooperative (eligible) IA-ISC-002 | 104 Main Street W., Isanti | Criterion A – Agriculture and commerce | |
| 17 | Oscar Olson House (listed) IA-BRC-006 | 309 Beechwood Avenue North, Braham | Criterion B – Oscar Olson Criterion C – Architecture | |
| Pine County | | | | |
| 18 | Minneapolis Trust Company Building (listed) PN-SSC-011 | Main Street North, Sandstone | Criterion A – Settlement /Commerce Criterion B – James J. Hill, Samuel Hill | |
| 19 | Kettle River Sandstone Company Quarry (listed) PN-SSC-008 | Off MN 23, Sandstone | Criterion A – Exploration/Settlement industry | |
| 20 | Askov Great Northern Passenger Depot (eligible) PN-ASC-005 | Brogade Street, Askov | Criterion C – Architecture | |
| 21 | Partridge Township Hall (listed) PN-ASC-006 | 6345 Kobmagergade Street (Main Street), Askov | Criterion A – Settlement /Politics/Government | |
| 22 | Askov American (eligible) PN-ASC-056 | 6351 Kobmagergade Street, Askov | Criterion B – Communication/ Politics/Government for association with Hjalmar Petersen | |
| 23 | Louis Hultgren House and Sand Pit (listed) PN-KEC-003 | 8375 MN 23, Kerrick | Criterion A – Settlement and industry Criterion B – Louis Hultgren | |
| 24 | Kerrick Cheese Factory & Creamery (eligible) PN-KEC-002 | 5357 Hogan Avenue, Kerrick | Criterion A – Agriculture and industry | |

| Property Name (Historic) | Property Address | NRHP Criteria | Contributing Resources in Railroad Corridors |
|--|---|---|--|
| St. Louis County | | | |
| 25* Grassy Point Railroad Bridge (eligible) SL-DUL-0009 | Grassy Point and Waterfront, Duluth | Criterion A – Transportation/Commerce Criterion C – Engineering | |
| 26* Duluth Short Line Railway/St. Paul & Duluth RR/Northern Pacific Railway “Grassy Point Line”/Burlington Northern RR/BNSF /LST&T Jct. to West Duluth Jct. (eligible) XX-RRD-025, (Field No. 1864 in Wis) | N/A (previously SL-XRR-003; renumbered to XX-RRD-025), Duluth | Criterion A – Agriculture, commerce, industry and transportation | |
| 27 North Western-Hanna Coal Dock No. 5 (eligible) SL-DUL-0012 | 303 37th Ave. W, Duluth | Criterion A – Industry and transportation related to iron ore and coal mining | |
| 28 Duluth, Missabe & Iron Range Ore Docks (eligible) SL-DUL-0014 | 34th Avenue West and Waterfront, Duluth | Criterion A – Transportation/Industry | |
| 29 Duluth, Missabe & Iron Range Railway (eligible) SL-DUL-2499 | I-35 and 34th Avenue West to I-35 and 31st Avenue West, Duluth | Criterion A –Transportation | |
| 30 Portion of Lake Superior & Mississippi Railroad mainline (eligible) SL-DUL-2500 | Under I-35, west of 31st Avenue West, Duluth | Criterion A –Transportation | |
| 31 Great Northern Power Co/MN Power & Light Co/Mn Power Substation (eligible) SL-DUL-0191 | 30 W. Superior St., Duluth | Criterion A – Engineering and industry Criterion C – Architecture | |
| 32 Duluth Union Depot (listed) SL-DUL-0658 | 506 W. Michigan St., Duluth | Criterion A – Transportation Criterion C – Architecture | |
| 33 William Crooks Locomotive (listed) (housed in Depot) SL-DUL-2465 | 506 W. Michigan St., Duluth | Criterion A – Transportation | |

| | Property Name (Historic) | Property Address | NRHP Criteria | Contributing Resources in Railroad Corridors |
|----|--|-----------------------------|---------------------------|--|
| 34 | Soo Line Locomotive#2719 (listed) (AHI#30666; moved from Wisconsin/housed in Depot) | 506 W. Michigan St., Duluth | Criterion C – Engineering | |

*All architectural history properties located in Minnesota.
An asterisk (*) indicates that the NLX Project would operate on the railroad line.*

Figure 4-5: NRHP Previously Listed and Eligible Historic Properties (southern portion of NLX Project Area)

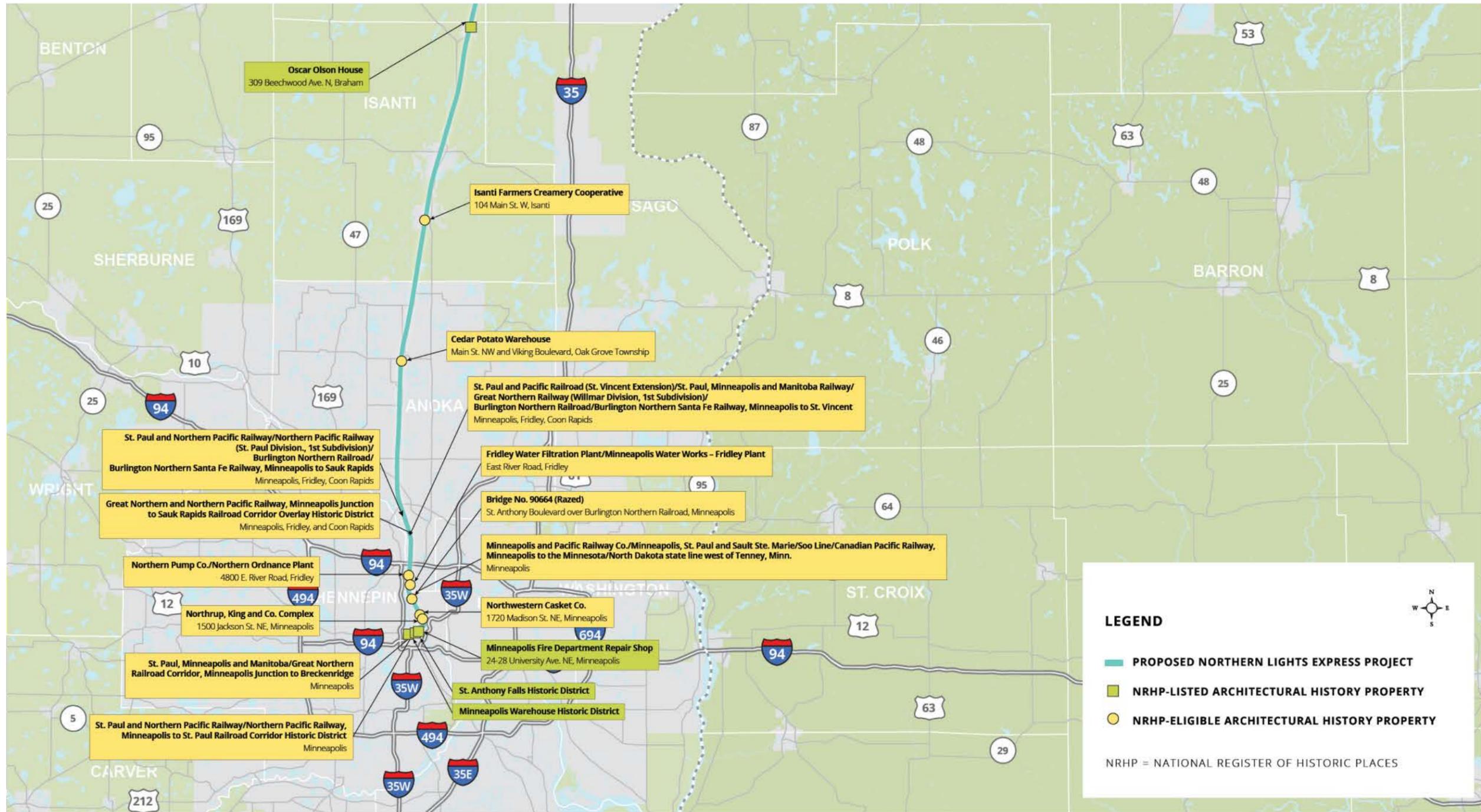
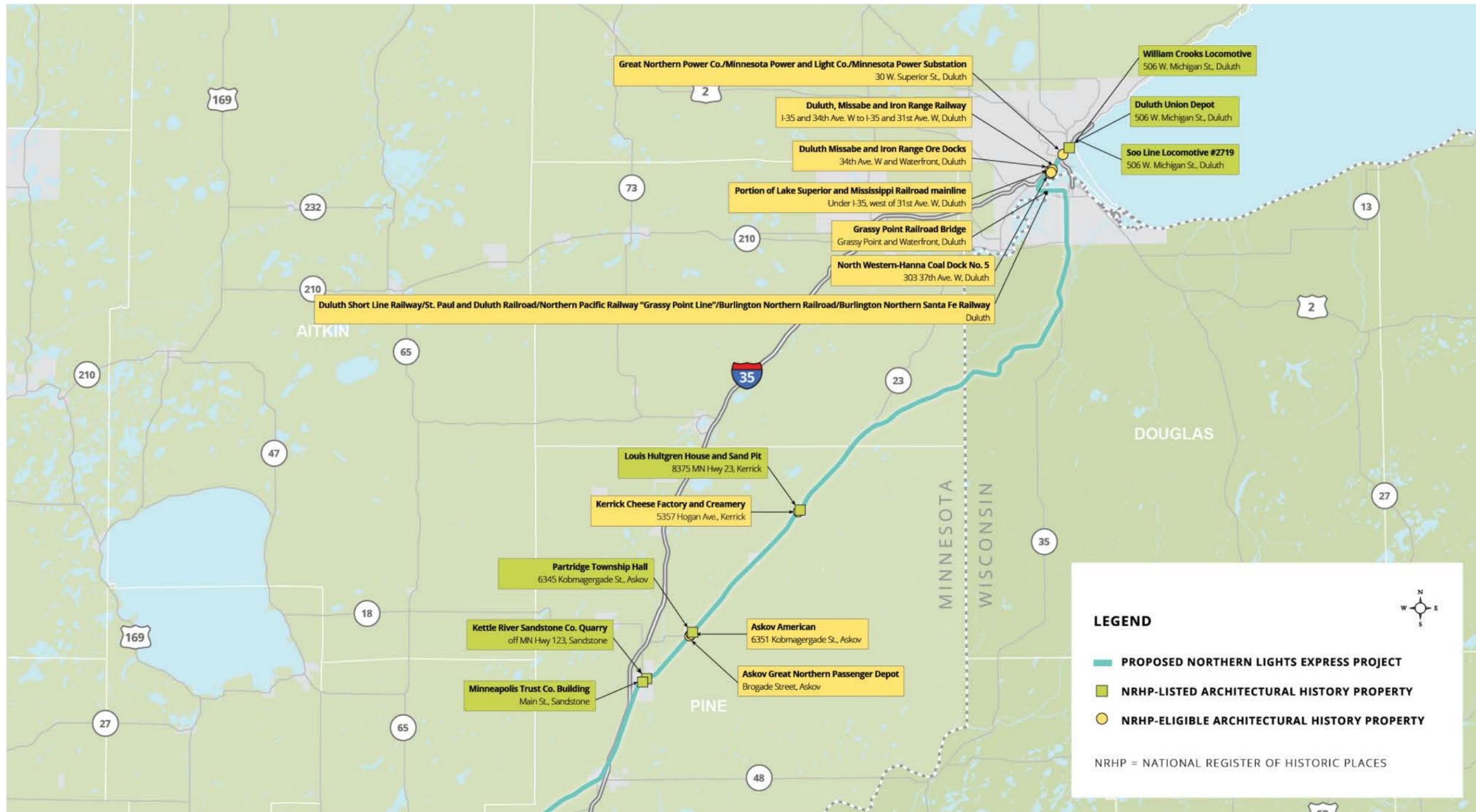


Figure 4-6: NRHP Previously Listed and Eligible Historic Properties (northern portion of NLX Project Area)



4.11.3 Impacts

The following sections provide a preliminary assessment of effects on historic properties associated with the No Build Alternative and Build Alternative. The preliminary assessment of effects considered all track, roadway, bridge, station and maintenance and layover facilities as identified in the beginning of this chapter. Where effects are specific to a type of proposed improvement, they are identified. The Build Alternative preliminary assessment of effects discussion analyzes long-term operations and maintenance effects and short-term construction effects as described in the beginning of this chapter. FRA is seeking comment from consulting parties and the public on the preliminary assessment of effects on historic properties. Avoidance, minimization and mitigation measures are described in Section 4.11.4.

4.11.3.1 No Build Alternative

Under the No Build Alternative, the NLX Project would not occur and would not alter current conditions. There would be no changes except planned and programmed actions that are independent of the NLX Project.

4.11.3.2 Build Alternative – Operations and Construction

Effects on properties were considered according to the criteria of effect under Section 106 as described in Section 4.11.1.3. Direct effects on historic properties were assessed by reviewing the relationship of the property to the NLX study area to determine whether there would be a potential direct effect that physically impacts or alters a historic property. Indirect effects were also considered and utilize the criteria of effect as noted and the types of effects described below.

The preliminary assessment of effects indicates that no adverse effects on historic properties are anticipated from either operations or construction activities. No historic properties would be physically impacted or altered by NLX Project elements. Three historic railroad lines would be traveled by the NLX Project; however, the continued use of those lines to carry trains, and any improvements to those lines would not have an effect on their historic characteristics under Section 106.

The preliminary assessment of effects indicates that there would be no adverse effects on historic properties from construction, assuming the implementation of measures to avoid construction effects in the vicinity of the Cedar Potato Warehouse and the Kerrick Cheese Factory and Creamery.

Factors Considered in Preliminary Assessment of Effects

The NLX Project would introduce eight daily passenger trains traveling at speeds of up to 90 mph on the existing BNSF line. Each 650-foot train consist would include six 85-foot-long coaches and two 70-foot-long push-pull locomotives. New construction would include six stations, as well as maintenance and layover facilities, as described in this EA.

The NLX Project is not introducing rail traffic to any new locations in the corridor. The segments of railroad that make up the NLX Corridor were all developed and used as railroad corridors prior to 1900. Although tracks, crossings and warning devices have been added and improved, and maintenance has occurred, the corridors have had trains in operation since 1900 or prior. Many historic properties identified in this study were built after the railroad was already in operation, and many historic properties were located in proximity to railroads for access or shipping of goods.

Effects on historic properties may be direct or indirect. The types of potential effects identified for this assessment are primarily indirect because many NLX Project activities would occur within the railroad right of way and because the historic properties (other than historic railroads) are generally located away from the right of way. The types of NLX Project activities that may cause effects on historic properties are described in the following paragraphs. These activities were used in the preliminary assessment of effects on NRHP-listed and eligible properties for the NLX Project.

Various NLX Project construction activities, including track, bridge and roadway improvements; station and facility construction; and staging areas for construction activities, may result in effects on historic properties. Direct effects would occur if the NLX Project were to cause physical destruction or damage to part or all of the property or alteration of a property. Effects may also be indirect, in which case a historic property may be affected by nearby construction or ongoing railroad operations activity and the resulting visual or auditory effects. Indirect effects would occur if the NLX Project were to result in changes to the character of the property's use or physical features that contribute to the property's setting, or if the NLX Project activities introduced visual or auditory elements that would diminish the integrity of the property's significant historic features.

Noise and vibration effects and criteria are discussed in Section 4.9.1. For vibration, ground-borne vibrations generally reduce in level with distance. Assessment of potential vibration impacts during operation of the NLX Project indicated only one projected impact at a property that is not historic. The vibration analysis specifically examined the Duluth Depot Great Hall auditorium for vibration and noise, and the results are included in the following section. Potential damage of historic properties was considered in proximity to bridge construction or pile-driving; no historic properties were identified as at risk for these impacts.

Visual effects may result from the construction of new facilities, such as stations or maintenance and layover facilities, or from ongoing operations of the NLX Project, as noted above. Fencing could introduce a visual change to the rail corridor, but it is planned only for safety and security purposes in developed areas where human and train interactions could occur and primarily in urban areas where it is consistent with existing conditions.

The preliminary assessment of effects considered visual and auditory effects from improvements to public rail grade crossings along the NLX Project (see **Appendix E** for crossing numbers). Improvements would include installation of active warning devices, reconstruction of approach roadways, installation of medians and improvements to rail infrastructure. The NLX Project is not proposing to close any public rail crossings.

For areas around stations and maintenance and layover facilities, the preliminary assessment of effects considered any potential effects from related infrastructure and development activities such as roads, traffic and parking needs.

Preliminary Assessment of Effects on Historic Properties in the NLX Project

This preliminary assessment of effects has been prepared based on the discussion of effects, including adverse effects, under Section 106 in Section 4.11.1.3. Each of the NLX Project activities noted above, including potential effects from construction and operations and resulting visual and auditory effects, have been identified where they have potential to affect the NRHP-listed and eligible properties identified below.

NRHP-listed and eligible properties within the APE for the NLX Project are briefly described to explain why they are significant, including the period of significance, and the appropriate criteria for evaluation (see Section 4.11.1.2). This is followed by a preliminary assessment of potential effects, based on the status of engineering for the NLX Project at this time. Following public comment, the preliminary assessment of effect would be the basis for preparing the determination of effects report for submission to the MnHPO and consultation to satisfy Section 106 requirements. Consultation with the MnHPO and consulting parties would continue to reach resolution on Section 106 prior to any environmental decision for the NLX Project.

All properties discussed below are located in Minnesota. Maps indicating the location of each property are included in **Appendix P**. The architectural history survey report is available on the NLX Project website at <http://www.dot.state.mn.us/nlx/documents.html> under "Other documents."

1. Minneapolis Warehouse Historic District - Minneapolis (HE-MPC-0441)

The NRHP-listed Minneapolis Warehouse Historic District consists of 147 contributing properties in a 30-block area of early commercial growth in downtown Minneapolis with a period of significance from 1865 to 1930. The district is located in the vicinity of 1st Avenue North, North 1st Street, 10th Avenue North and North 6th Street. The district is significant under Criterion A for Commerce, representing Minneapolis' importance as the major distribution center in the Upper Midwest; and Criterion C for architecture with examples of Italianate, Queen Anne, Richardsonian Romanesque, Classical Revival, and commercial styles.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The Minneapolis Warehouse Historic District would not be physically impacted or altered by NLX Project elements. The addition of the platform and track upgrades at Target Field Station would be visible from the Minneapolis Warehouse Historic District, but would be similar to the station uses already existing within the BNSF right of way, that includes BNSF freight and Northstar trains and would include the NLX trains on BNSF track. Chain link and/or decorative fencing may be added at the site based on discussions with affected agencies. Neither the addition of eight daily passenger trains within the railroad right of way nor fencing is anticipated to exert either visual or auditory effects on the Historic District, which was developed adjacent to the railroad and currently experiences regular BNSF and Northstar rail activity in a busy downtown Minneapolis setting.

2. St. Anthony Falls Historic District – Minneapolis

The NRHP-listed St. Anthony Falls Historic District includes 85 contributing properties in an area either side of the Mississippi River between Plymouth Avenue North and 10th Avenue South. The St. Anthony Falls District includes a variety of areas built as early as 1848, including the historic St. Anthony Falls Locks and Dam, numerous historic flour mills that have been renovated for new uses, individual historic residences, businesses and public buildings, and multiple archaeological sites. The NLX Project corridor is within the St. Anthony Falls District from roughly 2nd Avenue North, across the Mississippi River to the crossing at University Avenue. The St. Anthony Falls Historic District is significant under Criterion A for commerce, industry and transportation; under Criterion C for architecture; and Criterion D for archaeology.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The St. Anthony Falls Historic District would not be physically impacted or altered by NLX Project elements. Track upgrades within this Historic District would support the existing transportation use within the BNSF right of way that already includes BNSF freight and Northstar trains. The addition of eight daily passenger trains within the railroad right of way is not anticipated to have either visual or auditory effects on the Historic District, which was developed adjacent to the railroad and currently experiences regular BNSF and Northstar rail activity in a downtown Minneapolis setting.

3. *Minneapolis Fire Department Repair Shop – Minneapolis (HE-MPC-2137)*

The Minneapolis Fire Department Repair Shop is individually listed in the NRHP and is located within the St. Anthony Falls Heritage District. This two-story brick industrial building built in 1910 is significant under Criterion A in the area of Politics/Government and represents Minneapolis' efforts to reorganize and centralize specific municipal operations. It represents the early consolidation of fire department operations and the conversion from horse-drawn to motorized vehicles. The period of significance is 1909 to 1933.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. This building is located east of 1st Avenue North, one block from the BNSF line and would not be physically impacted or altered by NLX Project elements. No track improvements are proposed in this area. The addition of eight daily passenger trains within the BNSF right of way that already includes BNSF freight and Northstar trains is not anticipated to have either visual or auditory effects in this commercial district neighborhood. The NLX line is depressed at this location and not visible from the Minneapolis Fire Department Repair Shop.

4. *Northrup, King & Company Complex – Minneapolis (HE-MPC-3788)*

The Northrup, King & Company Complex is eligible for listing in the NRHP under Criterion A, within the areas of commerce and industry. The 11-acre Complex with 15 industrial buildings (built primarily 1916–1947) is located adjacent to the BNSF line. It is an intact example of one of Northeast Minneapolis' largest manufacturing complexes, and the location of one of the largest seed distributors and a major developer and shipper of climate-resistant seeds in the country in the early and mid-twentieth century. The period of significance is 1916 to 1962.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The Northrup, King & Company Complex is located on the east side of the BNSF line and would not be physically impacted or altered by NLX Project elements. No NLX improvements are planned for the track adjacent to this property. The addition of eight daily passenger trains within the BNSF right of way is not anticipated to have either visual or auditory effects on the Northrup-King and Company complex, which was developed adjacent to the railroad and currently experiences regular BNSF and Northstar rail activity.

5. *Northwestern Casket Company – Minneapolis (HE-MPC-3792)*

The Northwestern Casket Company is eligible for listing in the NRHP under Criterion A, within the areas of commerce and industry, as the manufacturing home of caskets, coffins, and other funerary accessories. The company was located on this site from the construction of the main building in 1887 until 2006, due to easy access to railroad lines for shipping their products. Five contributing buildings of the complex remain on this site; the period of significance is 1887 to 1962.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The Northwestern Casket Company is located approximately one-half block west of the BNSF line and would not be physically impacted or altered by NLX Project elements. No NLX improvements are planned for the track adjacent to this property. The addition of eight daily passenger trains within the railroad right of way is not anticipated to have either visual or auditory effects on the property, which was developed to take advantage of railroad access.

6. *St. Paul, Minneapolis and Manitoba/Great Northern Railroad Corridor (HE-MPC-16387)*

This railroad corridor is eligible for listing in the NRHP under Criterion A as a transportation corridor in Minnesota. The period of significance is 1880 to 1956. There are two contributing railroad bridges: HE-MPC-5961 and HE-MPC-5962, which cross the east and west channel of the Mississippi River (also within the St. Anthony Falls Historic District). The proposed NLX Project would operate on this historic district track from Target Field Station to Minneapolis Junction, and would also operate on the two contributing railroad bridges that cross the Mississippi River.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The NLX Project would operate on track within this historic rail corridor. Track upgrades along this historic rail corridor would occur within the existing BNSF right of way, with 0.69 mile of siding converted to a second main track between Harrison and Van Buren Street at Minneapolis Junction and crossing improvements at Harrison Street. No improvements for the NLX Project are proposed on the two contributing bridges, which already have two tracks that cross the Mississippi River. The track improvements to the historic railroad segments are in keeping with the railroad's historic functions, and would maintain the corridor for continued transportation use. The track upgrades and reconfiguration to the historic railroad segments for the NLX Project do not affect the railroad's significance under Criterion A for their historic transportation connections in the state, but would reinforce continued use as a rail corridor.

7. *Minneapolis & Pacific Railway Co/Mpls/SP & Sault Ste. Marie/Soo Line/Canadian Pacific Railway, Minneapolis to the Minnesota/North Dakota state line west of Tenney, MN (HE-MPC-17264)*

This railroad corridor is eligible for listing in the NRHP under Criterion A for its associations with the Minneapolis mill owners who built the line in 1886-1887 to secure their own connection to wheat growers in western Minnesota and North Dakota. It is significant within the areas of transportation, agriculture, commerce and industry as a transportation corridor in Minnesota. This line bridges Northtown Yard over the NLX Project; the NLX Project does not use this railroad track although it is within the Project APE. The period of significance is 1886 to 1961.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The Minneapolis & Pacific Railway Co/Soo Line would not be physically impacted or altered by NLX Project elements and no indirect effects would be anticipated to this railroad line.

8. *St. Paul & Northern Pacific Railway/Northern Pacific Railway, Minneapolis to St Paul Railroad Corridor Historic District, Minneapolis to St. Paul (HE-MPC-17694)*

Built in 1886, this railroad is eligible for listing in the NRHP under Criterion A within the areas of transportation, agriculture and industry and connecting the Northern Pacific system to St. Paul and then to Chicago. The period of significance is 1886 to 1970. This rail line connects to the NLX Project line at 19th Avenue Northeast in Minneapolis; the NLX Project does not use this railroad track although it is within the APE of the NLX Project.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The St. Paul & Northern Pacific Railway would not be physically impacted or altered by NLX Project elements and no indirect effects would be anticipated to this railroad line.

9. *St. Paul and Pacific Railroad (St Vincent Extension)/St. Paul, Mpls & Manitoba Railway/Great Northern Railway (Willmar Div., 1st Sub.)/Burlington Northern RR/Burlington Northern Santa Fe Railway, Mpls. To St. Vincent (XX-RRD-001)*

The St. Paul & Pacific (St. Vincent Extension) was constructed between St. Anthony (Minneapolis Junction) and Sauk Rapids from 1863-1867. Originally built as a branch line, it became the main line when it was completed to St. Vincent in 1879; this line eventually became part of James J. Hill's Great Northern Railway, and ultimately part of the BNSF. It is eligible for the NRHP under Criterion A, in the areas of transportation and agriculture, for the significant role it played in the development of the agricultural and railroad industries in Minnesota. The period of significance is from 1863, when construction started on the line, and concludes in 1970 with the formation of the BN (Burlington Northern). The proposed NLX Project would operate on this track.

See No. 11 below for Preliminary Assessment of Effects.

10. *St. Paul and Northern Pacific Railway/Northern Pacific Railway (St. Paul Div., 1st Sub.)/ Burlington Northern RR/Burlington Northern Santa Fe Railway, Minneapolis to Sauk Rapids (XX-RRD-003)*

The St. Paul and Northern Pacific Railway was constructed in 1884 from Sauk Rapids to Minneapolis Junction to provide the Northern Pacific with a direct link to the Twin Cities from its northern Minnesota route, and conversely to allow the Northern Pacific to compete for passenger and freight traffic from the Twin Cities. It is eligible for the NRHP under Criterion A, in the areas of transportation and agriculture, for the significant role it played in the development of the railroad industry in Minnesota. The period of significance is 1884 to 1970.

When built in the 1880s, the St. Paul and Northern Pacific acquired a 43-foot right of way from the St. Paul & Pacific to construct their parallel track. From that beginning, the GN and the NP operated these tracks as joint parallel lines between Minneapolis Junction and Sauk Rapids, Minnesota, from the time when the NP completed their line in 1884, until 1970 when the GN and NP merged with other operators to form the BN, which is operated today as the BNSF. Dating back to 1879, the NP had trackage rights with the GN for perpetual joint use of their line from Minneapolis Junction to Sauk Rapids. The proposed NLX Project would operate on this track.

See No. 11 below for Preliminary Assessment of Effects.

11. Great Northern and Northern Pacific Railway, Minneapolis Junction to Sauk Rapids Railroad Corridor Overlay Historic District (XX-RRD-011)

The Great Northern and Northern Pacific Railway, Minneapolis Junction to Sauk Rapids Railroad Corridor Overlay Historic District, was developed to encompass the previously determined eligible GN and NP lines between Minneapolis Junction and Sauk Rapids. The Overlay Historic District is eligible under Criterion A for the significant role these lines played in the development of the agricultural and railroad industries in Minnesota. The period of significance is 1884 to 1970. After the GN and NP partnered in 1884 these two parallel lines were used as a double-track mainline, with the GN line serving as the eastbound route and NP line serving as the westbound route. Because they were operated as a double-track mainline between 1884 and 1970 when the BN was created, they shared bridges, maintenance facilities, and other railroad-related resources along this corridor. The Overlay Historic district includes the historic railroad right of way containing the double-track railroad lines between Minneapolis Junction and Sauk Rapids, Minnesota, which encompassed a minimum of 50 feet.

The proposed NLX Project would operate on this track. The portion of the Overlay Historic District within the NLX Project is the section from Minneapolis Junction to Coon Creek Junction. At Coon Creek Junction, the NLX Project continues north and the Overlay District follows the BNSF main line west. Contributing resources to the Overlay Historic District were identified within the NLX Project segment and include a number of railroad bridges that are contributing to the District but are not individually eligible (listed in **Table 4-67**). All contributing bridges identified in the Overlay District are located between Harrison Street and Lowry Avenue in northeast Minneapolis.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The NLX Project would operate on the track within the Great Northern and Northern Pacific Railway Overlay Historic District. This Overlay Historic District was created to recognize the dual nature of the GN and NP tracks and their combined operation for approximately 90 years, in which the two companies operated and shared bridges, maintenance facilities and other railroad-related resources. The proposed changes to the Overlay District include construction of 6.2 mile

of new third main track between I-694 and Coon Creek Junction in Coon Rapids and improvements to accommodate the new third main for that section of the corridor. Improvements include track shifts within the railroad right of way and at MN 610 (Coon Rapids) to allow for the additional track space under the MN 610 bridge, and two new railroad bridges to carry the third main over Mississippi Street and Rice Creek.

There would be temporary construction impacts for these improvements. A narrow, temporary easement north of Mississippi Street in Fridley would be required on the east side of the right of way for new track construction. There would also be temporary construction impacts outside of the right of way for the Mississippi Street and Rice Creek bridges.

Over time, the GN and NP tracks within the Overlay Historic District have experienced minor alignment changes within the right of way, including addition and subtraction of tracks, sidings and warning signals over time. They continue to experience track improvements for supporting businesses, transportation efficiency and safety upgrades. The construction of the 6.2 mile of new third main track would not detract from a transportation corridor setting that has numerous sidings and industrial spurs along its corridor, and does not detract from the double-track main line pair that have been the primary feature of this Overlay Historic District. For the NLX Project, the railroad track improvements to the historic railroad segments are in keeping with the railroad's historic functions, which includes the operation of passenger trains from Minneapolis to Duluth, and will maintain the corridor for continued rail transportation use. Given that the GN/NP Overlay Historic District is significant under Criterion A as a transportation corridor important for the development of agriculture and transportation routes in the state, the proposed NLX improvements would not affect the railroad's significance under Criterion A for their historic transportation connections in the state.

12. Bridge No. 90664 -- Minneapolis (HE-MPC-9002) (RAZED)

Bridge No. 90664 crossed St. Anthony Boulevard over the BNSF Railway. A project unrelated to the NLX Project has razed the bridge since the determination of eligibility in 2014. Because the historic property has been razed, there would be no effects from the NLX Project.

13. Fridley Water Filtration Plant/Minneapolis Water Works – Fridley Plant (AN-FRC-178)

The Fridley Water Filtration Plant/Minneapolis Water Works- Fridley Plant is eligible for listing in the NRHP under Criterion A within the area of community planning and development; and under Criterion C, within the area of architecture. The facility is significant for the role it played in the urban development of Minneapolis in creating a potable water system and the provision of safe drinking water for residents from its construction in 1925. It is eligible under Criterion C as an excellent surviving example of an Italian Renaissance Revival style as applied to a public works building in the Twin Cities. There are six contributing buildings on the approximately 72-acre site, all built in 1955 or prior. The period of significance is 1925 to 1962.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The Fridley Water Plant was built in 1925 on a location west of the BNSF Northtown Rail Yard and East River Road, and adjacent to the Mississippi River. The Fridley Water Plant would not be physically impacted or altered by NLX Project elements. No NLX improvements are planned for the track in the Northtown Rail Yard. The addition of eight daily passenger trains within the railroad right of way is not anticipated to have either visual or auditory effects on the Fridley Water Plant.

14. Northern Pump Co./Northern Ordnance Plant – Fridley (AN-FRC-177)

The Northern Pump Company/Northern Ordnance Plant Complex, an approximately 140-acre site, is eligible for the NRHP under Criterion A within the areas of engineering, industry, and military. The complex was the largest manufacturing plant in Minnesota and played an integral role in the development, engineering, and production of advanced military weaponry for the Army and Navy beginning in 1940. Innovative and technologically advanced military weapons systems were developed and produced at the plant throughout its succession of military defense company ownerships. The period of significance is from 1940, when the first buildings were constructed, to 1962.

Preliminary Assessment of Effects: Recent observation of the Northern Pump Company/Northern Ordnance Plant Complex indicated that much of this site has been redeveloped and remaining buildings have been altered with new exterior cladding; the property does not appear to retain eligibility due to loss of integrity. No assessment of effects from the NLX Project has been completed.

15. Cedar Potato Warehouse – Cedar (Oak Grove) (AN-OKG-005)

The Cedar Potato Warehouse is eligible for the NRHP under Criterion A, within the areas of agriculture and commerce. The ca. 1920 building is a physical representation of the booming potato industry in Anoka County that enabled farmers in the area to diversify their crop yields and prosper both in local Twin Cities markets as well as engage in the national potato market. The building appears to be the only surviving potato warehouse in Cedar, a small rural community (located in Oak Grove) that once had four potato warehouses along the railroad. The period of significance is 1920 until 1940, when trucking eclipsed the railroad for shipping potatoes to markets.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The Cedar Potato Warehouse appears to be located on BNSF right of way, located approximately 50 feet east of the railroad centerline and approximately 300 feet south of the intersection of the NLX rail line and Viking Boulevard NW in Cedar (Oak Grove). The Viking Boulevard crossing is proposed for improvements with the addition of dual gates and median construction. No widening of Viking Boulevard NW is proposed. The Cedar Potato Warehouse faces the railroad tracks and would not experience a visual effect from the roadway improvement to the north. The

addition of eight daily passenger trains within the railroad right of way is not anticipated to have either visual or auditory effects on the property, which was developed to take advantage of railroad access. Although a specific construction staging area has not been identified, construction staging could potentially affect the warehouse; however, the NLX Project would avoid using the southeast quadrant of the intersection for construction staging on the roadway or other NLX Project activities to avoid effects on the Cedar Potato Warehouse. (crossing no. 29). Consultation with MnHPO and other interested parties would occur to ensure that these measures would be carried out to avoid potential effects.

16. Isanti Farmers Creamery Cooperative – Isanti (IA-ISC-002)

The Isanti Farmers Creamery Cooperative is eligible for the NRHP under Criterion A, within the areas of agriculture and commerce. The creamery, constructed in 1924, is significant as a representative example of the overall importance of cooperative creameries to the dairy industry of Isanti County and the state of Minnesota. The period of significance is 1924 until 1970, when the creamery operation was ended.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The Isanti Farmers Creamery Cooperation would not be physically impacted or altered by NLX Project elements. The Creamery is located along Main Street, approximately one block west of the BNSF line in Isanti, where the Main Street crossing of the BNSF line (crossing no. 43) would be improved with quad gates. The addition of eight daily passenger trains and the crossing improvements within the railroad right of way are not anticipated to cause any auditory or visual impacts on the Creamery.

17. Oscar Olson House – Braham (IA-BRC-006)

The Oscar Olson House is listed on the NRHP under Criterion B for its association with community leader and banker Oscar Olson; and under Criterion C for its Colonial Revival architecture. Designed by M.E. Beebe and built in 1914, the large, two-story frame dwelling was Olson's home from 1919 until his death in 1973. The period of significance is 1914 to 1962.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The Oscar Olson House would not be physically impacted or altered by NLX Project elements. The Olson house is located approximately 300 feet east of the BNSF line, buffered by houses, vegetation and a street, in a residential neighborhood within the community of Braham. The addition of eight daily passenger trains within the railroad right of way would not be visible from the Olson House and noise monitoring in the neighborhood indicates no noise impact anticipated in this area.

18. Minneapolis Trust Company Building – Sandstone (PN-SSC-011)

The Minneapolis Trust Company Building is listed on the NRHP under Criterion A, for its association with settlement and commerce, and Criterion B, for its association with James J. Hill and his son, Samuel Hill. This two-story commercial building was constructed of locally quarried Kettle River sandstone and represented the rapid rebuilding of Sandstone after the disastrous Hinckley Fire of September 1, 1894, destroyed the settlement. The Minneapolis Trust Company, of which Samuel Hill was president, moved the railroad division headquarters from Hinckley to Sandstone after the fire, developed a plat for the community and built several buildings including this one. The period of significance is 1894 when the building was constructed.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The Minneapolis Trust Company Building would not be physically impacted or altered by NLX Project elements. The Trust Company Building is located on the east side of Main Avenue in Sandstone’s commercial district approximately 265 feet from the BNSF line. The west side of Main Avenue directly across from the Minneapolis Trust Company Building contains a parking lot buffered by evergreens and a park area that provide a buffer between the BNSF tracks and the Minneapolis Trust Company Building. Beyond the parking lot and trees, a platform would be constructed along the tracks. The addition of eight daily passenger trains within the railroad right of way is not anticipated to cause any auditory or visual impacts on the Minneapolis Trust Company Building.

19. Kettle River Sandstone Company Quarry – Sandstone (PN-SSC-008)

The Kettle River Sandstone Company Quarry is listed on the NRHP under Criterion A in the areas of exploration/settlement and industry. The quarry was the site of Minnesota’s most extensive sandstone quarry in the late nineteenth and early twentieth centuries and was responsible for the platting and development of the town of Sandstone. The quarry supplied high quality stone used for buildings and for street pavers throughout the United States. The Quarry site includes approximately 42 acres, with a period of significance from 1885 when the quarry began, to 1919 when the quarry closed.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The Kettle River Sandstone Company Quarry site would not be physically impacted or altered by NLX Project elements. The Quarry site boundaries extend under the BNSF line as it approaches the Kettle River bridge high over the river gorge on the northeast end of Sandstone. The rest of the Quarry site south of the railroad right of way is now Robinson Park, including the bluffs and the land below along the River. No improvements are planned at the bridge approach or on the Kettle River Bridge. The addition of eight daily passenger trains would not have a visual or auditory effect on the historic characteristics of the Quarry.

20. Askov Great Northern Passenger Depot – Askov (PN-ASC-005)

The Askov Great Northern Passenger Depot is eligible for the NRHP under Criterion C, for architecture, as an exceptional example of a GN standard plan passenger depot. The GN utilized several standard passenger depot plans, such as this one-story frame building with a side gable roof that created a uniform look. Many of the depots along this corridor have been relocated and others later retired; the Askov GN Passenger Depot is the only remaining passenger depot within this BNSF right of way. The period of significance is 1926, when it was moved to Askov (from Bovey) to replace a depot that burned, to 1970 when the GN consolidated with other companies to form the BN.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The Askov Great Northern Passenger Depot would not be physically impacted or altered by NLX Project elements. The Depot is located along Brogade Street and the BNSF line, just west of the intersection with Bregnedalgade crossing of the NLX line (no. 103) that would be improved with quad gates and flashing lights. No track improvements are planned within Askov. Neither visual nor auditory impacts would affect this property, and the addition of eight daily passenger trains within the railroad right of way is consistent with the depot's historic use and location as a train depot adjacent to the BNSF line.

21. Partridge Township Hall – Askov (PN-ASC-006)

The one-story frame construction Partridge Township Hall is listed on the NRHP under Criterion A for its role in settlement, early politics and government in Pine County. Built in 1901 at Partridge Station along the Eastern Railway (GN), it represented the transition of the rural Partridge Station railroad stop into the community of Askov by 1908. The period of significance is 1901 until 1970, when Askov erected a new governmental building.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The Partridge Township Hall would not be physically impacted or altered by NLX Project elements. The Town Hall is located approximately 400 feet west of the BNSF line along Kobmagergade Street, Askov's main commercial street, which is perpendicular to the BNSF line. No track improvements are planned within Askov, although the Bregnedalgade Street crossing of the BNSF line (crossing no. 103) and another crossing one block farther west (crossing no. 102) would be improved with quad gates and flashing lights. The addition of eight daily passenger trains within the railroad right of way and the quad gates with flashing lights would not be directly visible to the Partridge Town Hall.

22. Askov American – Askov (PN-ASC-056)

The Askov American building is eligible for the NRHP under Criterion B in the areas of communication and politics/government for its association with Hjalmar Petersen, who was the founder, owner, editor, and

publisher of the Askov American newspaper for over 50 years. Petersen served in political office at the local and state level, including a short term as Governor in the 1930s. The newspaper was an important employer in the community and he used the publication to promote the community and his political ideals. The period of significance begins with the 1926 construction of this one-story, brick building to house the Askov American, and ends with Petersen's death in 1968.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The Askov American building would not be physically impacted or altered by NLX Project elements. The building is located approximately 500 feet west of the BNSF line along Kobmagergade Street, Askov's main commercial street, which is perpendicular to the BNSF line. No track improvements are planned within Askov, although the Bregnedalgade Street crossing of the BNSF line (crossing no. 103) and another crossing one block farther west (crossing no. 102), would be improved with quad gates and flashing lights. The addition of eight daily passenger trains within the railroad right of way, and the quad gates with flashing lights would not be directly visible to the Askov American building.

23. *Louis Hultgren House and Sand Pit – Kerrick (PN-KEC-003)*

The Louis Hultgren House and Sand Pit are listed on the NRHP under Criterion A for settlement and industry and Criterion B for association with Louis Hultgren and settlement in Pine County. An immigrant from Sweden, Hultgren settled in Kerrick in 1888 just as the railroad was being constructed. His T-shaped, two-story frame dwelling was one of the first in Kerrick and served as a school and an entry point for numerous settlers that followed. He began removing sand from the pit on his property in the mid-1890s; the sand was used for moulding in foundries in the Upper Midwest and Central Canada and was an early industry that supported the development of Kerrick. The period of significance is 1896 when the house was constructed until 1970, when the sand pit operation ended.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The Louis Hultgren House and Sand Pit would not be physically impacted or altered by NLX Project elements due to distance from improvements and vegetation around the Hultgren House. The House and Sandpit are located west of MN 23 and approximately 450 feet west of the BNSF line, and approximately 1,000 feet southwest of the Deerfield Road/Main Street crossing. This crossing would be improved and widened to accommodate a median, dual gates and flashing lights. The addition of eight daily passenger trains within the railroad right of way and addition of dual gates and flashing lights at the crossing are not anticipated to cause any visible impacts on the Hultgren house due to vegetation, and the existing MN 23 adjacent to the BNSF line. No adverse noise effects on the Hultgren House and Sand Pit are anticipated. Noise measurement of a nearby dwelling that is approximately 250 feet from the NLX line resulted in a moderate noise impact under the Sandstone Maintenance facility option. It is anticipated that the Hultgren House, being 200 feet farther from the track, would not experience any effects from noise.

24. Kerrick Cheese Factory & Creamery – Kerrick (PN-KEC-002)

The Kerrick Cheese Factory & Creamery is eligible for the NRHP under Criterion A, within the areas of agriculture and industry. As the first cheese factory constructed in Pine County, it is significant as a representative example of the importance of cheese factories and creameries in the dairy industry in the crossroads settlement of Kerrick and within Pine County. The period of significance is 1935, when the two-and-one-half story brick-faced building was constructed, through 1954 when operations ceased at the creamery.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The Kerrick Cheese Factory and Creamery would not be physically impacted or altered by NLX Project elements. The building faces away from the BNSF tracks, with the rear service portion of the building closest to the tracks and crossing. The Cheese Factory and Creamery is approximately 575 feet from the Deerfield Road/Main Street crossing proposed to be improved and widened to accommodate a median, dual gates and flashing lights. The addition of eight daily passenger trains within the railroad right of way and the addition of the median, dual gates and lights are not anticipated to cause any visual effects for the Cheese Factory and Creamery. Although a specific construction staging location has not been identified, such staging could potentially affect the Cheese Factory and Creamery due to its proximity to the tracks. To avoid any direct or indirect construction effects, the NLX Project would provide an adequate buffer around the Cheese Factory and Creamery in planning for construction staging on the roadway and crossing to avoid effects on the Kerrick Cheese Factory and Creamery. Consultation would occur with the MnHPO and other interested parties to determine appropriate measures to avoid any potential effect on the Kerrick Cheese Factory and Creamery.

25. Grassy Point Railroad Bridge – Duluth (SL-DUL-0009) (see also No. 26, Duluth Short Line Railway)

The Grassy Point Bridge is eligible for the NRHP under Criterion A for transportation and industry and under Criterion C for engineering. It is one of two railroad bridges to connect the Minnesota and Wisconsin sides of the Duluth-Superior Harbor. Grassy Point Bridge provides a direct connection between the two sides of the downtown waterfront, while the other bridge, the Oliver Bridge, is located farther south and serves as a bypass around the busy port areas of Duluth and Superior. Built in 1912 to replace an earlier bridge, the Grassy Point Bridge is a steel truss swing span bridge, of an estimated 1,645 feet; the middle span opens to allow ships to pass through the harbor to the south. The Bridge was built to handle two parallel railroad tracks, but only one track is installed on the swing span. The period of significance is 1912 to 1970. The Grassy Point Bridge has been determined individually eligible, but is also contributing to the Duluth Short Line Railway Historic District.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The NLX Project would cross over St. Louis Bay from Wisconsin to Minnesota on the Grassy Point Bridge. The NLX Project would rehabilitate the bridge operating and control systems, which consists of upgrading the mechanical parts that support the opening and

closing of the swing bridge. These upgrades would increase the efficiency and safety of the bridge and would be entirely within the mechanical portions of the bridge. There would be no impact on the steel truss of the bridge, its appearance, or any of the characteristics that make it eligible for the NRHP.

26. Duluth Short Line Railway/St. Paul & Duluth RR/Northern Pacific Railway "Grassy Point Line" / Burlington Northern RR/BNSF/LST&T Jct. to West Duluth Jct. (Field No. 1864 in Wis.) – Duluth (XXX-RRD-025)¹³

This segment of the Duluth Short Line Railway is eligible for the NRHP under Criterion A, within the areas of transportation, agriculture, commerce and industry. The Short Line Railway is significant for linking the Duluth, Minnesota and Superior, Wisconsin railroad networks across the Grassy Point Bridge, as opposed to maintaining an all-Minnesota or all-Wisconsin railroad networks. The period of significance is 1888, when construction started on the line, and ends with 1970 and the formation of the BN Railroad.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The NLX Project would operate on track within this historic rail corridor. NLX Project improvements on the section of the Duluth Short Line Railway in Minnesota would consist of upgrading the operating and control systems on the individually eligible Grassy Point Bridge, as noted above. A new second track and turnout would be added at Berwind Junction as the BNSF line curves north and leaves the eligible Duluth Short Line segment. This track and turnout re-establish a line that previously existed and would not change the relationship to, or any features of, the eligible Duluth Short Line.

27. North Western-Hanna Coal Dock No. 5 – Duluth (SL-DUL-0012)

The North Western-Hanna Coal Dock No. 5 is eligible for the NRHP under Criterion A, within the areas of industry and transportation relating to iron ore and coal mining. The dock was integral in the M.A. Hanna Company's transportation network, linking the ore deposits in Minnesota to steel plants in the Eastern United States. The dock is also significant in the growth of Duluth as a major shipping port on the Great Lakes. The property includes the earthen dock of approximately 17 acres, concrete seawalls, CN and BNSF railroad spurs, and three contributing buildings. The period of significance is 1910 when the M.A. Hanna Company first began to build the dock until 1962.

¹³ FRA determined the entire section from LST&T Junction in Superior, Wisconsin, and across St. Louis Bay to West Duluth Junction as eligible; the WisSHPO did not concur in the eligibility determination for the rail segment in Wisconsin. Effects have been evaluated for the section of the line from Grassy Point Bridge east into Minnesota. No effects are assessed for the approximately 1-mile rail segment in Wisconsin.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The North Western-Hanna Coal Dock No. 5 would not be physically impacted or altered by NLX Project elements. The NLX Project will install turnouts within the railroad right of way adjacent to the property, and quad gates and flashing lights would be added at Hallet Dock Road, which provides entry to the Dock. Given the industrial hauling and loading, railroad tracks and industrial machinery that operate on the coal dock, the addition of eight daily passenger trains and the gates and lights would not have a visual or auditory effect on the historic characteristics of Coal Dock No. 5.

28. Duluth, Missabe & Iron Range Ore Docks No. 5 and 6 – Duluth (SL-DUL-0014)

The Duluth, Missabe & Iron Range Ore Docks No. 5 and No. 6 are eligible for the NRHP under Criterion A for association with the historic mining transportation system in Duluth. Built in 1914 and 1918, the ore docks played an important role in the efficient and economical transportation of iron ore from the Mesabi Range to steel factories in the Eastern United States. The ore docks in Duluth, including their approaches, were integral to the success of the transportation system by providing a quick and efficient way to transfer ore from railroad cars to ships. The period of significance is 1914 to 1967.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The Duluth, Missabe & Iron Range Ore Docks No. 5 and No. 6 would not be physically impacted or altered by NLX Project elements. The BNSF line runs at grade in this area, while the Ore Docks and their approaches are on structures. No NLX Project improvements are planned on the BNSF line adjacent to the Ore Docks. The addition of eight daily passenger trains would not have a visual or auditory effect on the historic characteristics of Ore Docks No. 5 and No. 6, which were built for, and continue to carry, freight trains loaded with ore products.

29. Duluth, Missabe & Iron Range Railway – Duluth (SL-DUL-2499)

The Duluth, Missabe & Iron Range Railway (DM&IR) is eligible for the NRHP under Criterion A for its association with the historic mining transportation system in Duluth. A segment of the DM&IR intersects I-35 at 31st Avenue West, just east of the DM&IR ore docks, and then continues north (between I-35 and the BNSF line). The DM&IR resulted from a 1938 consolidation of two railroads that shipped ore from the Iron Range to shipping points in Duluth: the Duluth Missabe & Northern (DN&N) and the Duluth and Iron Range (D&IR). The DM&IR is now owned by the Canadian National Railway Company, but continues as the largest iron-ore handling railroad in North America.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. There are no NLX Project improvements in this segment parallel to the DM&IR and there would be no impacts on the DM&IR within the APE.

30. Portion of Lake Superior & Mississippi Railroad mainline – Duluth (SL-DUL-2500)

A segment of the Lake Superior & Mississippi Railroad (LS&M) main line was determined eligible under Criterion A for transportation. Now owned by the BNSF, the LS&M segment was part of the original LS&M main line, the original railroad line constructed between St. Paul and Duluth in 1870. The LS&M main line corridor intersects I-35 at 31st Avenue West just east of the DM&IR ore docks and then continues north (between I-35 and the NLX line) and parallel to the DM&IR line.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. There are no NLX Project improvements in this segment parallel to the LS&M section and there would be no impacts on the portion of the LS&M line within the APE.

31. Great Northern Power Co/MN Power & Light Co/Mn Power Substation – Duluth (SL-DUL-0191)

The Great Northern Power Co/MN Power & Light Co/Mn Power Substation is eligible for the NRHP under Criterion A, for engineering and industry, and Criterion C for architecture. The substation is significant for its association with the Thomson Hydroelectric project, which constructed a dam across the St. Louis River in nearby Thomson, MN, to provide power for Duluth and its shipping industries. The station is also an important component of Minnesota Power, one of the largest electric generating companies in northeastern Minnesota and which provided the electrical power that supported the development of Duluth and the Iron Range. The four-story concrete and brick-faced building is an excellent example of the Italian Renaissance Revival style as applied to an industrial facility. The period of significance is 1905, when the building was constructed, to 1962.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The Great Northern Power Co/MN Power & Light Co/Mn Power Substation would not be physically impacted or altered by NLX Project elements. The Power Substation is located on West Superior Street in an industrial area, approximately 400 feet west of a former railyard site that is proposed for the Duluth Maintenance/Layover facility. Interstate 35 (I-35) forms the west edge of the proposed maintenance/layover facility site, separating the proposed maintenance facility from the Power Substation. Plans for the proposed maintenance facility indicate that the area east across I-35 from the Power Substation would have parking, storage tracks and access roads, with the maintenance facility to the north of the parking area. The Power Substation is already subject to an industrial viewshed, including an interstate highway and railroad lines and the addition of railroad facilities would not result in an effect on the viewshed of this property.

32. Duluth Union Depot – Duluth (SL-DUL-0658)

The Duluth Union Depot is eligible for the NRHP under Criterion A for transportation in Duluth, and Criterion C for architecture. Built in 1892, the Depot is an outstanding example of the French Renaissance Revival style of

architecture designed by the noted Boston firm of Peabody, Stearns and Furber (Peabody and Stearns). The period of significance is 1892 to 1956.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The Duluth Depot Great Hall was the only historic property in the NLX Project that exhibited potential to be affected by ground-borne noise and vibration. It was evaluated for ground-borne noise and vibration impacts according to methodology provided in the FRA guidance manual (FRA, 2010) (see Section 4.9.3). Using a conservative assessment of the ground-borne vibration and ground-borne noise in the auditorium, the levels were substantially below the impact criteria, and no ground-borne noise or vibration impact is projected at the Duluth Depot Great Hall.

A National Register evaluation study was conducted on the Duluth Union Depot in 2016 to determine the historic boundaries for the listed property since they were not identified in the original 1971 NRHP listing. The evaluation concluded that the boundaries included only the historic Depot building and did not include the various additions to the building or the reconstructed train shed (which houses the Lake Superior Railroad Museum), or the ca.1977, flat-roofed former Amtrak station at track level that now serves as a ticket counter/waiting area for the recreational North Shore Scenic Railroad. This former Amtrak station would be removed, and its site, adjacent to the Historic Depot but not within the NRHP boundaries, is proposed as the site for the NLX station at Duluth.

No visual effect is anticipated from the construction of the proposed NLX station. The NLX station site is surrounded by transportation infrastructure of all types. It is located at ground level at the rear of the Duluth Union Depot and adjacent to the reconstructed train shed. North of the NLX station site are the piers supporting the 5th Avenue overpass, while I-35 ramps are located directly east of the site. Chain link and/or decorative fencing may be added near the station but is consistent with the existing railroad uses and views. The upper portions of the station may be visible from the adjacent 5th Avenue overpass, but would be consistent with the existing urban views of the rear of the Depot, adjacent rooftops and roadways. Given the constraints of this site and the below-grade location at the rear of the Duluth Union Depot, no adverse effect would be anticipated from the construction of the NLX station.

33. *William Crooks Locomotive – Duluth (SL-DUL-2465)*

The William Crooks Locomotive is eligible under Criterion A for transportation. It was constructed in 1861 and put into service for the St. Paul and Pacific Railroad in 1862, when it carried its first passengers from St. Paul to St. Anthony (Minneapolis). It was in passenger service until 1897, and then maintained by the Great Northern Railway as a ceremonial and special use locomotive. It has been restored and on display in museums since the 1950s, and was moved to the Lake Superior Railroad Museum in the Duluth Union Depot in 1975. It is one of a few surviving locomotives dating to the Civil War era. The period of significance is 1862 to 1897.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The William Crooks Locomotive is displayed in the Lake Superior Railroad Museum (Duluth Union Depot) at track level. It would not be physically impacted or altered by NLX Project elements. The NLX Project would not exert any changes on the museum displays or their setting.

34. *Soo Line Locomotive #2719 (AHI#30666; moved from Wisconsin)*

The Soo Line Locomotive #2719 was built in 1923 by the American Locomotive Company in Schenectady, New York. It is significant under Criterion C as a representative example of railroad engineering and pulled passenger trains throughout its productive life of 32 years. The period of significance is 1923, the year of construction. It is housed at the Lake Superior Railroad Museum in the Duluth Union Depot.

Preliminary Assessment of Effects: No Adverse Effect is anticipated. The Soo Line Locomotive #2719 is displayed in the Lake Superior Railroad Museum (Duluth Union Depot) at track level. It would not be physically impacted or altered by NLX Project elements. The NLX Project would not exert any changes on the museum displays or their setting.

4.11.4 *Avoidance, Minimization and Mitigation Measures*

The NLX Project would continue efforts to avoid, minimize and mitigate effects as the project advances.

The preliminary assessment of effects indicates that no adverse effects on historic properties are anticipated from either operations or construction activities. No historic properties would be physically impacted or altered by NLX Project elements. Three historic railroad lines would be traveled by the NLX Project; however, the continued use of those lines to carry trains and any improvements to those lines would not have an effect on their historic characteristics under Section 106.

The improvements and operations proposed on St. Paul, Minneapolis and Manitoba/Great Northern Railroad Corridor; the Great Northern and Northern Pacific Railway, Minneapolis Junction to Sauk Rapids Railroad Corridor Overlay Historic District; and the Duluth Short Line Railway “Grassy Point” line are in keeping with each railroad’s historic functions, and would maintain the railroads for continued transportation use. The track upgrades and reconfiguration to the historic railroad segments for the NLX Project do not affect each railroad’s significance under Criterion A for their historic transportation connections in the state, but would reinforce continued use as a rail corridor.

The preliminary assessment of effects indicates that no additional construction or temporary impacts would occur to historic properties, with the provision that the NLX Project would identify measures to avoid construction impacts in the vicinity of the Cedar Potato Warehouse and the Kerrick Cheese Factory and

Creamery. Consultation with MnHPO and other interested parties would occur to ensure that these measures would be carried out to avoid potential adverse effects.

Near the Cedar Potato Warehouse in Cedar, a specific construction staging area has not been identified. However, the NLX Project would avoid using the southeast quadrant of the intersection for construction staging on the roadway or other NLX Project activities to avoid any direct or indirect effects on the Cedar Potato Warehouse (crossing no. 29). Near the Kerrick Cheese Factory and Creamery, a specific construction staging area has not been identified. However, the NLX Project would provide an adequate buffer around the Cheese Factory in planning for construction staging on the roadway and crossing to avoid any direct or indirect effects on the Kerrick Cheese Factory and Creamery.

Following the comment period on this EA, a determination of effects report documenting effects on historic properties would be submitted to the MnHPO as part of the Section 106 process. The determination of effects report would be prepared in accordance with the Section 106 process, as well as the measures established in the PA (Stipulations VII-VIII). Consultation with the MnHPO and consulting parties would continue, to reach resolution on Section 106 at this stage and prior to completion of the final environmental decision document for the NLX Project.

If FRA determines that the NLX Project would have an adverse effect on historic properties pursuant to Section 106, FRA, with the assistance of MnDOT CRU, would consult with MnHPO and WisSHPO, other consulting parties and the public in accordance with 36 CFR 800.6 and the PA (Stipulation VII) to identify ways to avoid, minimize or mitigate the adverse effect.

The PA was established for a 10-year period and would continue to provide direction on Section 106 activities as needed for the NLX Project. Should future NLX Project changes be identified, MnDOT CRU, on behalf of FRA, would determine if APEs for architecture, historic or archaeological properties require revision, and whether additional survey is required, as provided in the PA.

4.11.5 Summary

Since completion of the Tier 1 EA, a survey of architectural and historic properties was completed and concurrence on eligibility was received from MnHPO and WisSHPO in June 2014. A Phase I archaeology survey was completed in 2016 and has been submitted to both MnHPO and WisSHPO for concurrence. Consultation with MnHPO, WisSHPO and other consulting parties would continue in accordance with the PA developed for this NLX Project. Following the public comment period on this EA, a determination of effects report would be prepared and submitted to the MnHPO to reach resolution on Section 106. No adverse effects on historic properties are anticipated as a result of the NLX Project.

4.12 Farmland and Soils

The Tier 1 EA analysis indicates that the NLX Project would have potential impacts on farmland and soils from track infrastructure and preliminary roadway construction limits and grade crossing closures. This section analyzes the NLX Project impacts based on proposed construction limits that have been updated since the Tier 1 EA. **Table 4-68** presents the NLX study area used for farmland and soils impact analysis; **Table 4-69** compares the results of the Tier 1 EA and the Tier 2 EA analyses. The revised impacts supersede the results presented in the Tier 1 EA and are summarized at the end of this section.

Table 4-68: NLX Study Area for Farmland and Soils

| NLX Study Area Definition | Basis for NLX Study Area |
|--|--|
| Proposed construction limits outside of existing transportation rights of way (road and rail), based on preliminary engineering. | Impacts on farmland and soils are limited to the construction limits outside of transportation right of way. |

Table 4-69: Farmland and Soils Comparison – NLX Tier 1 Service Level EA and NLX Tier 2 Project Level EA

| Identified Impacts in NLX Tier 1 Service Level EA | Identified Impacts in NLX Tier 2 Project Level EA |
|---|--|
| Up to 33 acres of prime farmland affected; Up to 70 acres of farmland of statewide importance affected. | Total impact on farmland of approximately 2.7 acres including approximately 1.0 acre of farmland of statewide importance affected and no prime farmland. |
| Land bridge may be needed in area of soft, compressive soils. | Soil correction may be needed in areas of soft soils. |
| Closure of up to 14 private at-grade crossings; potential for effect on farming operations. | No crossing closures and no effect on farming operations. |

As appropriate and necessary, this Tier 2 EA would be refined through future supplemental NEPA documentation as the final design advances and funding is secured for the NLX Project. Future supplemental environmental documentation is identified as appropriate throughout this Tier 2 EA.

4.12.1 Regulatory Context and Methodology

The regulatory context applies to lands that are protected under the Farmland Protection Policy Act (7 USC 4201 et seq. and 7 CFR 658), Minnesota’s State Agricultural Land Preservation and Conservation Policy

Act (Minn. Stat. 17.80–17.84) and Wisconsin’s Agricultural Impact Statement (Wis. Stat. 32.035). These laws were enacted to ensure that impacts on agricultural lands and operations are integrated into the decision-making process, and that impacts on agricultural land are minimized to a reasonable extent.

In recognition of the need to identify and preserve lands that are important for the production of the nation’s food supply and major cash crops, the Natural Resources Conservation Service (NRCS) along with federal, state and local governments have coordinated to inventory important farmlands. Important farmlands fall into two NRCS-designated categories, Prime Farmland and Unique Farmland, and can be recognized on the state and local levels as Farmland of Statewide Importance or Farmland of Local Importance. The United States Department of Agriculture defines 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 also available for these uses” (NRCS, 2000). Unique Farmland is land used for producing specific high-value food or fiber crops. Land that does not fall into either of these categories, but can produce high economic yields when managed according to acceptable farming methods, can be recognized as Farmland of Statewide Importance and/or Farmland of Local Importance.

To protect soils, the MPCA administers the NPDES program (Minn. Stat. 115 and 116 and Minnesota Administrative Rules Chapters 7001, 7050, 7060 and 7090), and WDNR administers the WPDES program (Wis. Stat. 283 and Wisconsin Administrative Code Chapter NR 151 and 216). Soil erosion issues and the NPDES and WPDES programs are discussed in Section 4.6.

The methodology applied for characterization and assessment of impacts on farmland was to identify farmland in accordance with NRCS guidance, locate its presence within the NLX study area and determine the impacts that would occur within the construction limits outside of transportation right of way (road and rail).

The methodology for characterizing soils and predicting impacts was to evaluate the main types of soils within the construction limits, identify any soils with major constructability issues and determine potential impacts and considerations for mitigation measures involving soils of limited constructability.

4.12.2 Affected Environment

Agricultural areas are located outside of urban areas, and are primarily in the central and northern parts of the NLX study area. As noted in Section 4.1, the NLX Project construction limits include approximately 119 acres of agricultural land, which is 14 percent of the total 878 acres within the construction limits of the NLX Project (which reflects the addition of the existing BNSF track area and the addition of land for stations, maintenance and layover facilities to the Tier 1 EA NLX construction limits). Some portions of this agricultural land meet the NRCS definition of Farmland of Statewide Importance, although it is a small percentage of the total amount of

agricultural land cover type within the proposed NLX Project construction limits. No Prime or Unique Farmland was identified.

General soil types throughout the NLX study area include sand, loam, muck and clay, with many soil types capable of hosting prime farmland. Most of the soils within the construction limits have minimal limitations for constructability. However, between Hinckley and Sandstone there is an area of soft, compressive soils that has caused problems with settlement and repeated maintenance to adjust the BNSF track bed and freight rail alignment.

4.12.3 Impacts

The following sections discuss the impacts on farmland and soils associated with the No Build Alternative and the Build Alternative. Impact analysis considered all track, roadway, bridge, station and maintenance and layover facilities as identified in the beginning of this chapter. Where impacts are specific to a type of proposed improvement, they are described below. The Build Alternative impacts discussion analyzes long-term operations and maintenance impacts and short-term construction impacts as described in the beginning of this chapter. A discussion of potential impacts at station and maintenance and layover facility sites is also presented, as well as a general discussion of the potential impacts within the BNSF right of way. Avoidance, minimization and mitigation measures are described in Section 1.12.4.

4.12.3.1 No Build Alternative

Under the No Build Alternative, the NLX Project would not occur and would not alter current conditions. There would be no changes except planned and programmed actions that are independent of the NLX Project.

4.12.3.2 Build Alternative – Operations

Farmland

The NLX Project would impact 2.7 acres of farmland within the NLX study area (**Table 4-70**). The 2.7 acres of farmland consists of 37 areas along the length of the NLX Project and are associated primarily with grade crossing improvements. No private at grade crossings would be closed due to the NLX Project. The average individual area of farmland impact would be 0.1 acre, with individual impacts ranging from 0.01 acre to 0.47 acre. The NRCS Farmland Conversion Impact Rating for Corridor Type Projects letter is included in **Appendix I**. NRCS determined the NLX Project is exempt from Farmland Protection Policy Act provisions because there would be less than 10 acres of direct farmland impacts along the NLX study area. None of the proposed station sites or maintenance and/or layover facility sites would impact farmland.

Table 4-70: Farmland Impacts

| County | Farmland (Not Prime or of Statewide Importance) Outside Existing Transportation Right of Way (acres) | Farmland of Statewide Importance Outside Existing Transportation Right of Way (acres) | Total |
|---------------|--|---|------------|
| Hennepin, MN | - | - | - |
| Anoka, MN | - | - | - |
| Isanti, MN | <0.1 | - | <0.1 |
| Kanabec, MN | 0.1 | - | 0.1 |
| Pine, MN | 1.0 | - | 1.0 |
| Carlton, MN | - | - | - |
| Douglas, WI | 0.6 | 1.0 | 1.6 |
| St. Louis, MN | - | - | - |
| Total | 1.7 | 1.0 | 2.7 |

Source: National Land Cover Database, 2011.

Soils

Portions of the NLX study area between Hinckley and Sandstone are located in an area of soft, compressive soils that may require soil correction, which is the removal of soils unsuitable for supporting rail infrastructure and replacement with soils that can support rail infrastructure. This construction activity would not be expected to result in impacts that are not otherwise addressed in this section.

Stations would be located in developed communities. The maintenance and layover facilities would be located in developed communities and/or along existing transportation rights of way. No soil impacts are anticipated from stations or the maintenance and layover facilities.

4.12.3.3 Build Alternative – Construction

Farmland

No additional impacts on farmland associated with the construction of the NLX Project are anticipated, as long as standard topsoil preservation methods are used (see Section 4.12.4).

Soils

No additional impacts on soils associated with the construction of the NLX Project are anticipated as long as standard erosion control BMPs are followed (see Section 4.12.4).

4.12.4 Avoidance, Minimization and Mitigation Measures

The NLX Project would continue efforts to avoid, minimize and mitigate impacts as the project advances through construction.

4.12.4.1 Farmland

Where practicable, topsoil in farmland would be set aside during construction and replaced or reused in the NLX study area. No other notable farmland impacts are anticipated; therefore, no additional farmland mitigation is proposed beyond compliance with applicable laws.

4.12.4.2 Soils

To minimize impacts from soil disturbance, appropriate erosion and sediment control measures would be implemented in accordance with MnDNR. Implementation of BMPs, including silt curtains and revegetation guidelines, would minimize potential impacts due to soil erosion. See Section 4.6 for additional information regarding erosion and sediment control.

Further efforts to avoid and/or minimize soil impacts would be developed during the design process. Any excavated unsuitable soils would be hauled off site and properly disposed of at appropriate sites.

4.12.5 Summary

Refinements to the NLX Project design evaluated in the Tier 2 EA have yielded smaller construction limits outside the transportation right of way. The Tier 1 EA identifies up to 33 acres of Prime Farmland impact and up to 70 acres of impacted Farmland of Statewide Importance. The Tier 2 analysis identifies 2.7 acres of

farmland impacts, of which none are Prime Farmland and only 1 acre is Farmland of Statewide Importance. Neither the Tier 1 EA nor the Tier 2 EA identifies any other notable soil resource impacts, and both documents acknowledge the need for soil correction in areas of soil that is unsuitable for supporting new rail infrastructure. Further study will be completed during future design activities.

4.13 Parks and Recreation Areas

The Tier 1 EA analysis indicates that the NLX Project would not permanently impact any parks, recreation areas, trails or wildlife/waterfowl refuges. Further, the Tier 1 EA analysis indicates that some temporary closure of trails would occur during construction. This section analyzes the NLX Project impacts based on proposed construction limits that have been updated since the Tier 1 EA. **Table 4-71** presents the NLX study area used for impact analysis; **Table 4-72** compares the results of the Tier 1 EA and the Tier 2 EA analyses. The revised impacts supersede the results presented in the Tier 1 EA and are summarized at the end of this section.

Table 4-71: NLX Study Area for Parks and Recreation Areas, including Trails and Wildlife/Waterfowl Refuges

| NLX Study Area Definition | Basis for NLX Study Area |
|---|--|
| BNSF right of way and proposed construction limits plus a 350 foot buffer to account for noise effects (see Section 4.9). | Any conversion of land would occur within the construction limits; potential noise impacts would be limited to those park properties within 350 feet of the BNSF right of way. |

Table 4-72: Parks and Recreation Areas, including Trails and Wildlife/Waterfowl Refuges, Comparison – NLX Tier 1 Service Level EA and NLX Tier 2 Project Level EA

| Identified Impacts in NLX Tier 1 Service Level EA | Identified Impacts in NLX Tier 2 Project Level EA |
|---|---|
| Temporary closure of Rice Creek, Coon Creek, and Sand Creek Trails during construction. | Temporary impact on Edgewater Gardens Park, Locke Lake Park, Plaza Park, Rice Creek West Regional Trail Corridor, Community Park, Springbrook Nature Center, Bluebird Park and Daughters of the American Revolution State Forest. |
| | Temporary closure of Osborne Road Trail, 85th Avenue Northwest Trail, Coon Rapids Boulevard Extension Trail, Tom Anderson Trail, North Anoka County Regional Trail, Isanti-Cambridge Trail, North Country National Scenic Trail and Cross City Trail. Potential temporary closure of numerous crossing of snowmobile and ATV trails, but it is anticipated that construction would occur during off-season for the snowmobile trails. |
| Temporary noise, dust, and visual impacts on numerous parks during construction. | Temporary noise, dust, and visual impacts on numerous parks during construction. |
| No Section 4(f) use, including temporary occupancy and constructive use. | No Section 4(f) use, including constructive use, is anticipated. |
| No Section 6(f) impact. | No Section 6(f) impact. |
| | No impact on Outdoor Recreation Grant Program properties. |

As appropriate and necessary, this Tier 2 EA would be refined through future supplemental NEPA documentation as the final design advances and funding is secured for the NLX Project. Future supplemental environmental documentation is identified as appropriate throughout this Tier 2 EA.

4.13.1 Regulatory Context and Methodology

4.13.1.1 Legal and Regulatory Context

Potential impacts of the NLX Project on park and recreation areas, including trails and waterfowl/wildlife refuges, are assessed in accordance with FRA’s *Procedures for Considering Environmental Impacts* (64 FR 28545). These procedures indicate that significant changes to recreational opportunities should be identified during the environmental review process.

These resources are also potentially protected by Section 4(f) of the U.S. DOT Act of 1966 (49 USC 303), hereinafter referred to as Section 4(f), Section 6(f) of the Land and Water Conservation Fund Act of 1965 and the Outdoor Recreation Grant Program (Minn. Stat. 85.019) administered by MnDNR.

Section 4(f) prohibits the use of land of significant¹⁴ publicly owned public parks, recreation areas, land of a historic site or wildlife and waterfowl refuges for transportation projects unless U.S. DOT determines either:

- There is no feasible and prudent avoidance alternative and the action includes all possible planning to minimize harm to the property resulting from such use
- The use of the property, including any measure(s) to minimize harm (such as any avoidance, minimization, mitigation, or enhancement measures) would have a *de minimis*¹⁵ impact

The Land and Water Conservation Fund Act of 1965 was enacted to preserve, develop and assure access to outdoor recreation facilities to strengthen the health of U.S. citizens. Section 6 of the Act created the Land and Water Conservation Fund as a funding source to implement the outdoor recreation goals in the law. Protection is provided for outdoor recreational lands under Section 6(f)(3) of the Act where Land and Water Conservation Fund was used for the planning, acquisition or development of the property. These properties may be converted to a non-outdoor recreational use only if replacement land of at least the same fair market value and reasonable equivalent usefulness and location is assured. Conversion of parks and trails funded by Section 6(f) grants requires approval by the National Park Service.

The Outdoor Recreation Grant Program (Minn. Stat. 85.019) is administered by MnDNR and assists local governments in acquiring parkland and developing or redeveloping outdoor recreation facilities. The Program provides matching grants to local units of government for up to 50 percent of the cost of acquisition, development, and/or redevelopment of local parks and recreation areas. Parks and outdoor recreation areas, natural and scenic areas, regional trails, and trail connections are all eligible for funding under this Program. Converting a property developed with Outdoor Recreation Grant Program funds to a non-recreational use requires prior approval by the Minnesota Commissioner of the Department of Natural Resources.

¹⁴ With regard to Section 4(f) properties, significant means that in comparing the availability and function of the park, recreation area or wildlife and waterfowl refuge with the park, recreation or refuge objectives of the agency, community or authority, the property in question plays an important role in meeting those objectives.

¹⁵ "A *de minimis* impact is one that, after taking into account avoidance, minimization, mitigation and enhancement measures, results in no adverse effect to the activities, features, or attributes qualifying a park, recreation area, or refuge for protection under Section 4(f). For historic properties, a *de minimis* impact is one that results in a Section 106 determination of 'no adverse effect' or 'no historic properties affected'" (Federal Highway Administration, 2017).

4.13.1.2 Methodology

The Tier 1 EA assessed park and recreation areas, and trails within 0.25 mile of the proposed NLX construction limits. The NLX study area for the Tier 2 EA was reduced to properties abutting the proposed construction limits for identification of permanent and temporary impacts. Snowmobile and all-terrain vehicle (ATV) trails crossing the NLX Project were identified to determine potential impacts from the NLX Project.

Properties potentially subject to Section 4(f) were identified using the guidance discussed in **Appendix Q** and included:

- Public parks and recreational areas
- Publicly owned wildlife and waterfowl refuges
- Public trails, paths, bikeways and sidewalks, excluding those built primarily for transportation, rather than recreational use

A determination if properties are subject to Section 4(f) would be made by FRA and MnDOT after coordination with MnDNR and local owners with jurisdiction.

Sources used to determine the presence of publicly owned parks and recreation areas and wildlife and waterfowl refuges include maps from federal, state and local agencies; planning documents (transportation plans, master plans, and documents describing recreational resources); property maps from County assessor offices; and websites of specific recreational resources.

Potential Section 6(f) and Outdoor Recreation Grant Program properties in the NLX study area were identified using the MnDNR listing of *Parks and Natural Areas Subject to Permanent Land Use Requirements Through Grant Agreements Administered by the MN Dept. of Natural Resources* (MnDNR, 2015e). Section 6(f) resources in Wisconsin were identified using the *National Park Service Land and Water Conservation Fund Grant Listings by State and County* (National Park Service, 2016). In addition, properties were reviewed for the use of Minnesota Outdoor Recreation Grant (Minn. Stat. 85.019) funds and Wisconsin's Knowles-Nelson Stewardship Program grant funds (Wis. Stat. 23.0915).

4.13.2 Affected Environment

Existing resources in the NLX study area include parks; other recreation areas, such as an ice arena, school playgrounds and public golf courses; a WMA and trails. All of the resources described in Sections 4.13.2.1 through 4.13.2.3 are displayed in the map sets in **Appendix D**.

4.13.2.1 Parks and Recreation Areas

Parks and recreation areas are present within the NLX study area. The location and owner of each park and recreation area are listed in **Table 4-73** and shown in **Appendix D**. Parks not identified in the Tier 1 EA are in bold font in **Table 4-73** and are described in the following paragraphs.

Table 4-73: Parks, Recreation Areas, and Publicly Owned Community Facilities in the NLX Study Area

| Name and Jurisdiction ^a | City | County | State | Side of Existing Track |
|--|-----------------------|-----------------|-----------|------------------------|
| West River Parkway (Minneapolis Park and Recreation Board) | Minneapolis | Hennepin | MN | Both (underneath) |
| Nicollet Island Park (Minneapolis Park and Recreation Board) | Minneapolis | Hennepin | MN | Both |
| BF Nelson Park (Minneapolis Park and Recreation Board) | Minneapolis | Hennepin | MN | North |
| Northeast Ice Arena (Minneapolis Park and Recreation Board) | Minneapolis | Hennepin | MN | East |
| Edison Field (Edison High School, Minneapolis School District) | Minneapolis | Hennepin | MN | East |
| Edgewater Gardens Park (City of Fridley) | Fridley | Anoka | MN | West |
| Locke Lake Park (City of Fridley) ^b | Fridley | Anoka | MN | West |
| Plaza Park (City of Fridley) | Fridley | Anoka | MN | East |
| Rice Creek West Regional Trail Corridor (City of Fridley) | Fridley | Anoka | MN | East |
| Community Park (City of Fridley) ^c | Fridley | Anoka | MN | East |
| Springbrook Nature Center (City of Fridley) | Fridley | Anoka | MN | East |
| Erlandson Park (City of Coon Rapids) | Coon Rapids | Anoka | MN | West |
| Sand Creek Athletic Field and Park (City of Coon Rapids) | Coon Rapids | Anoka | MN | East |
| Sand Creek Trail Park (City of Coon Rapids) | Coon Rapids | Anoka | MN | Both |
| Sand Creek School Park (City of Coon Rapids) ^d | Coon Rapids | Anoka | MN | East |
| Wilderness Park (City of Coon Rapids) | Coon Rapids | Anoka | MN | West |
| Bunker Hills Regional Park and Bunker Hills Golf Course (Anoka County) | Coon Rapids / Andover | Anoka | MN | Both |
| Andover Lions Park (City of Andover) | Andover | Anoka | MN | East |

| Name and Jurisdiction ^a | City | County | State | Side of Existing Track |
|--|------------------|------------------|-----------|------------------------|
| Coon Creek Park (City of Andover) | Andover | Anoka | MN | West |
| Forest Meadows Park (City of Andover) | Andover | Anoka | MN | West |
| Lifelong Learning Center (school) (Anoka County Independent School District 15) | Oak Grove | Anoka | MN | East |
| Shade Tree Commons Park (City of Oak Grove) | Oak Grove | Anoka | MN | East |
| Whisper Ridge Park (City of Isanti) | Isanti | Isanti | MN | West |
| Bluebird Park (City of Isanti) | Isanti | Isanti | MN | West |
| Memorial Rose Garden | Braham | Isanti | MN | West |
| Freedom Park (City of Braham) | Braham | Isanti | MN | West |
| Memorial Park (“The Pit”), also known as Skating Park (City of Hinckley) | Hinckley | Pine | MN | East |
| Train Park (City of Sandstone) | Sandstone | Pine | MN | East |
| Main Park (City of Sandstone) | Sandstone | Pine | MN | East |
| Robinson Park (City of Sandstone) | Sandstone | Pine | MN | South |
| Banning State Park (MnDNR) | Rural | Pine | MN | Both |
| Daughters of American Revolution State Forest (MnDNR) | Rural | Pine | MN | Both |
| Two unnamed city parks | Askov | Pine | MN | Both |
| Bruno Elementary School | Bruno | Pine | MN | East |
| Jackie Berger Memorial Park | Duquette | Pine | MN | North |
| Nemadji State Forest | East of Holyoke | Carlton | MN | Both |
| Douglas County Forest (Douglas County Forestry Department) | Rural | Douglas | WI | Both |
| St. Louis River Grassy Point State Water Access Site (MnDNR) | Duluth | St. Louis | MN | South |
| Grassy Point Peninsula Park (City of Duluth) | Duluth | St. Louis | MN | South |
| Unnamed Canoe Birding Access Area^e (City of Duluth) | Duluth | St. Louis | MN | South |

Sources: Anoka County, 2016a, 2016b, and 2016c; City of Braham, 2016; City of Duluth, 2015; City of Fridley, 2016a; City of Isanti, 2016; City of Minneapolis, 2016; City of Sandstone, 2013, 2015, and 2016; Hennepin County, 2016a; Hinckley Convention and Visitors Bureau, 2015; Isanti County, 2016a; Minneapolis Park and Recreation Board, 2016; and Pine County, 2016.

^a Resources not identified in the Tier 1 EA are in **bold font**.

^b Locke Lake Park was listed as “Lake Park” in the Tier 1 EA, but the Fridley park map and the Anoka County Interactive Map website confirm the proper name is “Locke Lake Park.”

- ^c Community Park was listed as “Fridley Community Park” in the Tier 1 EA, but the Fridley park map and the Anoka County Interactive Map website confirm the proper name is “Community Park.”
- ^d Sand Creek School Park was listed as “Sand Creek Elementary” in the Tier 1 EA, but the Fridley park map and the Anoka County Interactive Map website confirm the proper name is “Sand Creek School Park.”
- ^e Access is by boat (canoe/kayak) only. There is no road access or boat ramp. Listed activities for the park include carry-in canoeing and birding. This area is located south of the onramp to the Blatnik Bridge (Interstate 535) near NLX Project mile post X1.

BF Nelson Park is located on the east bank of the Mississippi River and covers an area of 12 acres. The park features the Pioneer Statue, carved of Minnesota granite and dedicated in 1936. BF Nelson Park also features a network of bicycle and pedestrian paths.

Northeast Ice Arena, located at 13th Avenue Northeast and Central Avenue is owned and operated by the Minneapolis Park and Recreation Board. The arena is open to the public and offers public skating and lessons, a hockey rink, an ice rink, a lacrosse field, a soccer field and public meeting rooms.

Edison Field (Edison High School), located at 22nd Avenue Northeast and Monroe Street Northeast, is a public high school with an athletic field and track open to the public.

Lifelong Learning Center, located in Oak Grove near 190th Lane Northwest and Cedar Drive Northwest, is a public school and features playground facilities and an athletic field open to the public (Independent School District 15, not dated). Based on parcel boundaries as shown on the Anoka County Property Map GIS Application and on an Anoka County parcel shapefile, part of the school’s playground, a swing set and part of the fence surrounding the playground appear to be located within BNSF right of way. Property lines and any easements in effect would be confirmed as design progresses.

Whisper Ridge Park, located in Isanti covers 11 acres and features a tennis court, a basketball court and areas for hiking.

Robinson Park located in Sandstone is a 65-acre site located along the Wild and Scenic Kettle River. The park features picnic shelters, hiking trails, bat hibernaculum and a boat ramp, and activities such as ice climbing, camping, rock climbing, whitewater rafting and fishing.

Douglas County Forest, located in Douglas County, Wisconsin, near Superior, features camping, hunting, fishing, trapping, boat ramps and multiple-use recreational trails (snowmobile, ATV, hiking, bicycling, snow shoeing, dog sledding and horseback riding). Trails located adjacent to or crossing the NLX study area are further discussed below under Trails.

St. Louis River Grassy Point State Water Access Site, located in Duluth on the western bank of the St. Louis River, provides canoe and kayak access to the St. Louis River and the St. Louis River State Water Trail.

Grassy Point Peninsula Park, located in Duluth on the western bank of the St. Louis River, covers 26 acres and provides river access (at the St. Louis River Grassy Point State Water Access Site), wildlife viewing and a fishing dock.

Unnamed Canoe Birding Access Area, located in Duluth adjacent to the NLX study area and the I-35 and I-535 junction provides canoe and kayak access and an area for birding.

4.13.2.2 Wildlife Refuges

Robert and Marilyn Burman Wildlife Management Area is located adjacent to (west of) the NLX study area in Oak Grove. The refuge is open to the public for hunting. MnDNR manages the WMA to provide habitat for deciduous forest species, hardwood forest species, brushland wildlife species, grassland species, wetland species, migratory waterfowl, song birds, deer, pheasants and turkey. Based on a review of the management plan, the WMA is considered to function as a refuge (MnDNR, 2016c). No other wildlife refuges abutting were identified in the NLX study area.

4.13.2.3 Trails

Numerous publicly owned trails in the NLX study area. These include bicycle and pedestrian trails, snowmobile and ATV trails and water trails.

Bicycle and Pedestrian Trails

Bicycle and pedestrian trails primarily occur in the NLX study area within the Twin Cities Metropolitan Area and the Twin Ports Metropolitan Area. The location and owner of each trail is listed in **Table 4-74** and shown in **Appendix D**. Bicycle and pedestrian trails not identified in the Tier 1 EA are in bold font in **Table 4-74**. Unless otherwise noted in the Location column, all trails listed in **Table 4-74** cross the NLX study area at grade. Trails that have been determined by the Tier 2 analysis to have been built for a transportation purpose are not listed in **Table 4-74**. Further study will be completed during future design activities with owners with jurisdiction to confirm whether any of the trails listed in **Table 4-74** were built for a transportation purpose.

Table 4-74: Bicycle and Pedestrian Trails in the NLX Study Area

| Name and Owner ^{aa} | City | County | State | Side of Existing Track | Location |
|--|-------------|----------|-------|------------------------|---|
| Cedar Lake Trail (Hennepin County Recreation) | Minneapolis | Hennepin | MN | South | Between North 5th Street and North Washington Avenue (parallel to and adjacent to existing track) |
| Grand Rounds Trail (in West River Parkway) (Minneapolis Park and Recreation Board) | Minneapolis | Hennepin | MN | Both | North Washington Avenue (beneath existing track) |
| University Avenue Northeast Trail (Hennepin County Recreation) | Minneapolis | Hennepin | MN | East | University Avenue (over existing track) |
| St. Anthony Parkway Trail (Minneapolis Park and Recreation Board) | Minneapolis | Hennepin | MN | Both | St. Anthony Parkway (over existing track, both sides of road) |
| Mississippi River Regional Trail (Anoka County) | Fridley | Anoka | MN | West | Northeast of Ashton Avenue Northeast, ties into the Rice Creek West Regional Trail at Rice Creek (parallel to and beneath existing track) |
| Rice Creek West Regional Trail (Anoka County) | Fridley | Anoka | MN | Both | Northeast of Ashton Avenue Northeast (under and east of existing track) |
| Osborne Road Trail (City of Fridley) | Fridley | Anoka | MN | Both | Osborne Road Northeast |
| 85th Avenue Northwest Trail (City of Coon Rapids) | Coon Rapids | Anoka | MN | Both | 85th Avenue Northwest |
| Coon Rapids Boulevard Extension Northwest Trail (City of Coon Rapids) | Coon Rapids | Anoka | MN | Both | Coon Rapids Boulevard Extension Northwest (under existing track) |
| Egret Boulevard Northwest Trail (sidewalks) north side (City of Coon Rapids) | Coon Rapids | Anoka | MN | Both | Egret Boulevard Northwest |
| Coon Creek Regional Trail (Anoka County) | Coon Rapids | Anoka | MN | Both | North of Northdale Boulevard (under existing track) |

| Name and Owner ^{aa} | City | County | State | Side of Existing Track | Location |
|---|------------------------|-----------|-------|------------------------|---|
| Northern Linkage Trail ^b (Anoka County) | Coon Rapids | Anoka | MN | Both | Main Street Northwest (over existing track on both sides of the road) |
| Bunker Hills Regional Park Trail (Anoka County) | Coon Rapids | Anoka | MN | Both | North of Main Street Northwest (under existing track) |
| Bunker Lake Boulevard Trail (existing) / Central Anoka County Regional Trail (proposed) ^b (Anoka County) | Andover | Anoka | MN | Both | Bunker Lake Boulevard (both sides of the road) |
| Tom Anderson Trail (City of Andover) | Andover | Anoka | MN | Both | North of Bunker Lake Boulevard (under existing track) |
| North Anoka County Regional Trail (proposed) (Anoka County) | Oak Grove | Anoka | MN | Both | 221st Avenue Northwest / County Road 74 |
| Isanti-Cambridge Trail (City of Isanti, City of Cambridge) | Isanti to Cambridge | Isanti | MN | West | 305th Avenue Northeast |
| North Country National Scenic Trail (National Park Service) ^c | Rural, east of Foxboro | Douglas | WI | Both | County Road W |
| Bong Bridge Bike Path (City of Superior, Wisconsin) | Superior | Douglas | WI | Both | Richard I Bong Bridge (over existing track) |
| Bong Bridge Bike Path (City of Duluth) | Duluth | St. Louis | MN | Both | Richard I Bong Bridge (over existing track) |
| Superior Hiking Trail and Cross City Trail (both trails share the same path at this location) (National Park Service) | Duluth | St. Louis | MN | Both | West of West Railroad Avenue (over existing track) |
| Cross City Trail (City of Duluth) | Duluth | St. Louis | MN | Both | Under Interstate 35 |

Sources: Anoka County, 2016d; City of Duluth, 2015; City of Minneapolis, 2015; Hennepin County, 2016b; North Country Trail Association, 2016; Superior Hiking Trail Association, 2016.

^a Resources not identified in the Tier 1 EA are in **bold font**.

^b Northern Linkage Trail is part of the North Anoka County Regional Trail

^c The segment of the North Country Trail crossing the proposed NLX Project is a temporary connector using the existing County Road W to connect two permanent segments of the trail. A permanent off-road trail that would cross the NLX Project is planned, but the design has not been completed.

Snowmobile and All-Terrain Vehicle Trails

Snowmobile and ATV trails are adjacent to and cross the NLX study area in Isanti, Kanabec, Pine and Carlton Counties in Minnesota, and in Douglas County in Wisconsin. Snowmobile and ATV trails were not identified in the Tier I EA. The location of snowmobile trails listed in **Table 4-75** and shown on maps in **Appendix D** are approximate. Further study will be completed during future design activities to confirm precise locations and further coordination will occur with MnDOT, WisDOT and other officials with jurisdiction. All of the snowmobile trails listed in **Table 4-75** cross the NLX study area at grade. Most of the mapped crossings are at existing public or private crossings; a few are located between crossings. The snowmobile trail crossings mapped between existing rail grade crossings would be verified during future coordination with MnDOT, WisDOT and other officials with jurisdiction. Several of these trails cross the NLX study area at multiple locations.

All of the snowmobile trails in Minnesota listed in **Table 4-75** are funded by MnDNR with cooperative agreements with counties and snowmobile clubs. The trails are located on MnDNR land (such as state parks or other recreational lands), MnDOT right of way along highways, county right of way and private property with long-term leases. None of the snowmobile trails in Minnesota are designated for ATV use. Snowmobile and ATV trails in Douglas County, Wisconsin, with the exception of trails within Superior, are developed and maintained by the Douglas County Forestry Department (Douglas County, 2016). Trails within Superior, Wisconsin, are developed and maintained by the City of Superior Parks, Recreation and Forestry Department (City of Superior, 2016). The trails are located on public property (such as the Douglas County Forest) and right of way along county roads (Douglas County, 2016; City of Superior, 2016). ATV trails and season of usage are included in **Table 4-75** to the extent that information is available.

Table 4-75: Snowmobile and All-Terrain Vehicle Trails in the NLX Study Area

| Name and Operator | City | County | State | Side of Existing Track | Location |
|--|-----------|--------|-------|------------------------|-------------------------------|
| Rum River Snowmobile Trail (parallel to 261st Avenue) (Rum River Sno Riders) | Rural | Isanti | MN | Both | 261st Avenue (County Road 56) |
| Cambridge-Weber-Starks-Isanti Snowmobile Trail (Cambridge-Weber-Starks-Isanti Snowmobile Club) | Cambridge | Isanti | MN | Both | 11th Avenue Southeast |
| Northern Lite Snowmobile Trail (Crossing 1) (Northern Lites Snowmobile Club) | Rural | Isanti | MN | Both | 349th Avenue |

| Name and Operator | City | County | State | Side of Existing Track | Location |
|--|------------------------|---------|-------|------------------------|--|
| Northern Lite Snowmobile Trail (Crossing 2) (Northern Lites Snowmobile Club) | Rural | Isanti | MN | Both | Road T66, 357th Avenue |
| Northern Lite Snowmobile Trail (Crossing 3) (Northern Lites Snowmobile Club) | Rural, north of Grandy | Isanti | MN | Both | 370th Avenue (County Road 6) |
| Northern Lite Snowmobile Trail (Crossing 4) | Rural, north of Grandy | Isanti | MN | Both | Southwest of 375th Avenue |
| Northern Lite Snowmobile Trail (Crossing 5) (Northern Lites Snowmobile Club) | Rural, north of Grandy | Isanti | MN | Both | Northwest of 375th Avenue |
| Northern Lite Snowmobile Trail (Crossing 6) (Northern Lites Snowmobile Club) | Stanchfield | Isanti | MN | East | North of 389th Avenue (County Road 3) |
| Northern Lite Snowmobile Trail (Crossing 7A, private) (Northern Lites Snowmobile Club) | Rural, north of Braham | Kanabec | MN | Both | Private crossing north of 421st Avenue Northeast (County Road 4) |
| Northern Lite Snowmobile Trail (Crossing 7B, private) (Northern Lites Snowmobile Club) | Rural, north of Braham | Kanabec | MN | Both | Private crossing north of 6th Street Northwest |
| Hinckley-Pine City Snowmobile Trail (Hinckley-Pine City Flames Snowmobile Club) | Henriette | Pine | MN | Both | Pokegama Avenue E (County Road 11) |
| Hinckley-Pine City Snowmobile Trail (Hinckley-Pine City Flames Snowmobile Club) | Hinckley | Pine | MN | Both | County Road 61 (Old Highway 61) |
| Pine 1, 2, 3s Snowmobile Trail ^a (Northern Pine Riders Snowmobile Club) | Sandstone | Pine | MN | West/North | Minnesota State Highway (MN) 123 (Main Street) |
| Pine 1, 2, 3s Snowmobile Trail (Northern Pine Riders Snowmobile Club) | Sandstone | Pine | MN | West/North | Oak Street |
| Pine 1, 2, 3s Snowmobile Trail (Northern Pine Riders Snowmobile Club) | Askov | Pine | MN | West | MN 23 |

| Name and Operator | City | County | State | Side of Existing Track | Location |
|--|-------------------------------------|---------|-------|------------------------|---|
| Pine 1, 2, 3s Snowmobile Trail (Northern Pine Riders Snowmobile Club) | Rural | Pine | MN | Both | Partridge Drive |
| Pine 1, 2, 3s Snowmobile Trail (Northern Pine Riders Snowmobile Club) | Rural, northeast of Bruno, MN | Pine | MN | Both | Private crossing near Railroad Lane |
| Pine 1, 2, 3s Snowmobile Trail (Northern Pine Riders Snowmobile Club) | Kerrick | Pine | MN | West | Private crossing near MN 23 |
| Pine 1, 2, 3s Snowmobile Trail (Northern Pine Riders Snowmobile Club) | Kerrick | Pine | MN | Both | Deerfield Road and MN 23 |
| Pine 1, 2, 3s Snowmobile Trail (Northern Pine Riders Snowmobile Club) | Kerrick | Pine | MN | Both | Klein Road and MN 23 |
| Pine 1, 2, 3s Snowmobile Trail (Northern Pine Riders Snowmobile Club) | Duquette | Pine | MN | Both | Range Line Road and MN 23 |
| Pine 1, 2, 3s Snowmobile Trail (Northern Pine Riders Snowmobile Club) | Rural | Pine | MN | Both | Erickson Road (Old Highway 23) and MN 23 |
| Pine 1, 2, 3s Snowmobile Trail (Northern Pine Riders Snowmobile Club) | Rural | Pine | MN | East | Berger Road (Old Highway 23) and MN 23 |
| Pine 1, 2, 3s Snowmobile Trail (Northern Pine Riders Snowmobile Club) | Rural | Pine | MN | Both | Wolf Drive |
| Pine 1, 2, 3s Snowmobile Trail (Northern Pine Riders Snowmobile Club) | Rural | Pine | MN | East | Northeast of Wolf Drive |
| Pine 1, 2, 3s Snowmobile Trail (Northern Pine Riders Snowmobile Club) | Nickerson | Pine | MN | Both | Delong Street and Main Street |
| Moosehorn Snowmobile Trail (Moose Horn Rod and Gun Snowmobile Club) | Holyoke | Carlton | MN | North | County Road 145 |

| Name and Operator | City | County | State | Side of Existing Track | Location |
|--|-----------------|---------|-------|------------------------|---------------------------------------|
| Moosehorn Snowmobile Trail (Moose Horn Rod and Gun Snowmobile Club) | East of Holyoke | Carlton | MN | Both | Granzow Road |
| Gandy Dancer Trail and ATV Road Route (Douglas County Forestry Department) | Rural | Douglas | WI | Both | South Reed Merrill Road |
| Gandy Dancer Trail, Douglas County Summer ATV Route (Douglas County Forestry Department) | Rural | Douglas | WI | Both | South Reed Merrill Road |
| Gandy Dancer Trail, Douglas County Snowmobile Route (Douglas County Forestry Department) | Rural | Douglas | WI | Both | South Reed Merrill Road |
| Saunders Grade Snowmobile Trail and Winter ATV Trail (Douglas County Forestry Department) | Rural | Douglas | WI | Both | County Road C north of Short Cut Road |
| Trail 28 (Snowmobile and ATV) (Douglas County Forestry Department) | Superior | Douglas | WI | Both | North 58th Street |
| Orange Trail (Existing Snowmobile and ATV), Proposed North 58th Street (City of Superior, Wisconsin) | Superior | Douglas | WI | Both | North 58th Street |

Sources: City of Sandstone, 2015; Douglas County, 2016; MnDNR, 2016d; Northern Pine Riders Snowmobile Club, 2012; Wisconsin DNR, 2012.

^a The MnDNR snowmobile map (MnDNR, not dated) places part of the Pine 1, 2, 3s Snowmobile Trail in Sandstone within the BNSF property and proposed maintenance facility site. However, the Northern Pine Riders Snowmobile Club trail map places the trail along MN 23. An email from the City of Sandstone City Administrator (March 27, 2015) states that this trail parallels the BNSF property but is on MnDOT right of way.

State Water Trails

MnDNR has established a network of state water trails for recreational paddling (canoes, kayaks and paddleboards) on selected rivers with recreational value. These state water trails are on waters of the state; public-owned river channels with public access points. The NLX study area crosses four state water trails, listed in **Table 4-76**. There are no state water trails in the NLX study area in Wisconsin.

Table 4-76: National and State Water Trails in the NLX Study Area

| Name | City | County | State | Side of Existing Track | Location |
|--|-------------|-----------|-------|------------------------|---|
| Mississippi National River and Recreation Area Water Trail / Mississippi River State Water Trail | Minneapolis | Hennepin | MN | Both | Mississippi River, under existing track near Nicollet Island |
| Snake River State Water Trail | Grasston | Kanabec | MN | Both | Snake River, south edge of Grasston, north of Minnesota State Highway (MN) 70 |
| Kettle River State Water Trail ^a | Sandstone | Pine | MN | Both | Kettle River, northeast of Sandstone |
| St. Louis River State Water Trail ^b | Duluth | St. Louis | MN | Both | St. Louis River, under the Grassy Point Movable Bridge Span |

Sources: City of Duluth, 2016; MnDNR, 2016e.

^a The Kettle River is also designated as a Wild and Scenic River. The segment of the Kettle River in the NLX study area is managed for recreation and is potentially subject to Section 4(f).

^b The City of Duluth is in the process of nominating the St. Louis River State Water Trail to be designated as the St. Louis River National Water Trail.

4.13.2.4 Section 4(f)

The parks and recreation areas, including trails and waterfowl/wildlife refuges identified in Sections 4.13.2.1 through 4.13.2.3 have been determined to be potentially subject to Section 4(f).¹⁶ Appendix Q presents the Draft Section 4(f) Evaluation.

4.13.2.5 Section 6(f) and Outdoor Recreation Grant Program Resources

Section 6(f) funds were used for developing the following parks within the NLX study area:

- Community Park, Fridley
- Springbrook Nature Center, Fridley
- Erlandson Park, Coon Rapids
- Bunker Hills Regional Park and Bunker Hills Golf Course, Coon Rapids and Andover

¹⁶ The resources listed in Table 4-73, Table 4-74, Table 4-75 and Table 4-76 potentially meet the criteria for Section 4(f) resources, as outlined in 49 USC 303, 23 CFR 774, and the Federal Highway Administration's Section 4(f) Policy Paper (2012). See Appendix Q for the Draft Section 4(f) Evaluation.

- Memorial Park (“The Pit”), Hinckley
- Robinson Park, Sandstone
- Kettle River Wild and Scenic River, Sandstone
- Banning State Park, Minnesota
- Daughters of the American Revolution State Forest, rural Pine County

Minnesota Outdoor Recreation Grant Program funds were used for developing the following parks within the NLX study area:

- Sand Creek School, Coon Rapids
- Sand Creek Trail, Coon Rapids

No properties within the NLX study area were developed using Wisconsin’s Knowles-Nelson Stewardship Program grant funds.

4.13.3 Impacts

The following sections discuss the impacts on parks and recreation areas associated with the No Build Alternative and the Build Alternative. Impact analysis considered all track, roadway, bridge, station and maintenance and layover facilities as identified in the beginning of this chapter. Where impacts are specific to a type of proposed improvement, they are described below. The Build Alternative impacts discussion analyzes long-term operations and maintenance impacts and short-term construction impacts as described in the beginning of this chapter. A discussion of potential impacts at station and maintenance and layover facility sites is also presented, as well as a general discussion of the potential impacts within the BNSF right of way. Avoidance, minimization and mitigation measures are described in Section 4.13.4.

Impacts on parks, recreation areas, trails or wildlife/waterfowl refuges were assessed by reviewing the NLX study area, and considering projected right of way and temporary easement needs compared to the locations of the properties.

4.13.3.1 No Build Alternative

Under the No Build Alternative, the NLX Project would not occur and would not alter current conditions. There would be no changes except planned and programmed actions that are independent of the NLX Project.

4.13.3.2 Build Alternative – Operations

The NLX Project would not permanently impact parks, recreation areas, trails or wildlife/waterfowl refuges. Permanent incorporation of land from these resources is not anticipated.

A severe noise impact was identified at Freedom Park in Braham (see Section 4.9.3). This severe noise impact represents a conservative estimate of the potential noise increase at the park site. Specifically, the analysis compares the noise level without any trains (that is, no freight trains or passenger trains) to the noise level when an NLX passenger train passes the park. However, about 10 to 12 freight trains pass Freedom Park each day; the addition of up to eight passenger trains would not substantially alter the recreational experience at the park.

4.13.3.3 Build Alternative – Construction

While the NLX Project would not permanently convert land from parks, recreation areas, trails or wildlife/waterfowl refuges to a transportation use, access may be limited at times due to construction requirements. Temporary construction easements would be required at several properties as discussed below.

Parks and Recreation Areas and Wildlife Refuges

Based on current design, no physical facilities, such as tennis or basketball courts, would be affected in parks or recreation areas. All of the easements to be acquired within these properties would be temporary to allow construction of the NLX Project. Further study would be completed during future design activities to confirm the need for temporary construction easements.

The NLX Project would require temporary easements for construction in the following parks and recreation areas:

- Edgewater Gardens Park, Fridley; approximately 0.04 acre (approximately 25 feet by 55 feet) to construct a new bridge over Mississippi Street Northeast to support construction of a third track
- Locke Lake Park, Fridley; approximately 0.07 acre (approximately 40 feet by 80 feet) to construct a new bridge over Rice Creek to support construction of a third track
- Plaza Park, Fridley; approximately 0.45 acre (approximately 25 feet by 860 feet) to construct a new bridge over Rice Creek to support construction of a third track
- Rice Creek West Regional Trail Corridor, Fridley; approximately 0.35 acre (approximately 20 to 40 feet by 600 feet) to construct a third track
- Community Park, Fridley; approximately 0.35 acre (approximately 25 feet by 700 feet) to construct a third track

- Springbrook Nature Center, Fridley; approximately 0.33 acre (approximately 360 feet by 40 feet) to construct a third track and extend two culverts
- Bluebird Park, Isanti; approximately 0.04 acre (approximately 60 feet by 30 feet) to construct a median at a road crossing
- Daughters of the American Revolution State Forest, northeast of Askov; approximately 0.38 acre (approximately 80 feet by 100 feet and 80 feet by 110 feet) to rebuild road approaches to a grade crossing

Trails

Temporary construction impacts on trails primarily associated with grade crossing improvements would occur as discussed below. Further study would be completed during future design activities to confirm the need for temporary construction easements.

Bicycle and Pedestrian Trails

The following bicycle and pedestrian trails would be temporarily closed for construction:

- Cedar Lake Trail, Minneapolis; approximately 1,100 feet within the construction limits and approximately additional 2,000 feet within 5 to 10 feet of construction limits. The segment of Cedar Lake Trail from North 5th Street to West River Parkway, a distance of approximately 3,000 feet, is located below the grade of most streets and within a fenced area adjacent to the BNSF right of way. Brief and infrequent trail closures in this segment may occur during construction.
- Grand Rounds Trail (in West River Parkway), Minneapolis; depending upon the scope of construction on the bridge over the trail, brief but infrequent trail closures of the trail near the bridge may be required.
- Mississippi River Regional Trail, Fridley; approximately 120 feet of the trail under and near the BNSF bridge over Rice Creek would need to be temporarily closed during bridge construction. An additional 400 feet of the trail south of Locke Park is within the construction limits and would need to be closed during construction.
- Rice Creek West Regional Trail, Fridley; approximately 100 feet of the trail under the BNSF bridge over Rice Creek would need to be temporarily closed during bridge construction. An additional 1,600 feet of the trail is within the construction limits, or within 5 to 10 feet of the construction limits and would need to be closed during construction.

The following trails would be temporarily closed for less than 6 months at existing grade crossings of the BNSF right of way to allow road approaches to be rebuilt and signal equipment to be relocated:

- Osborne Road Trail, Fridley
- 85th Avenue Northwest Trail, Coon Rapids
- Coon Rapids Boulevard Extension Northwest Trail, Coon Rapids

- Egret Boulevard Northwest Trail, Coon Rapids
- Tom Anderson Trail, Andover
- North Anoka County Regional Trail (proposed), Oak Grove
- Isanti-Cambridge Trail, Isanti
- North Country National Scenic Trail, Foxboro
- Cross City Trail, Duluth

Snowmobile and ATV Trails

The following snowmobile and ATV trails would be temporarily closed for less than 6 months at existing grade crossings of the BNSF right of way to allow road approaches to be rebuilt and signal equipment to be relocated. The temporary closures would most likely occur during non-winter months when snow cover is not present. Consequently, snowmobile activities would not be affected. Summer ATV trails within the NLX Study Area in Wisconsin would potentially be affected by temporary closures during a time when the trail would be in use. All potentially affected trails are listed here, in the event that a winter closure is required (see **Table 4-75** for further detail regarding these trails). The following snowmobile and ATV trails could be temporarily closed for construction of the NLX Project:

- Rum River Snowmobile Trail (261st Avenue south of Isanti)
- Cambridge-Weber-Starks-Isanti Snowmobile Trail (11th Avenue Southeast, Cambridge)
- Northern Lite Snowmobile Trail (crossings at 357th Avenue, 370th Avenue, and two crossings near 375th Avenue north of Grandy; and two private crossings north of 6th Street Northwest north of Braham)
- Hinckley-Pine City Snowmobile Trail (Pokegama Avenue near Henriette and Old Highway 61 in Hinckley)
- Pine 1, 2, 3 Snowmobile Trail (a temporary construction access easement northeast of Askov and crossings near Railroad Avenue northeast of Bruno, near MN 23; at Deerfield Road and at Klein Road in Kerrick; at Range Line Road, Erickson Road and Berger Road near Duquette; and at Wolf Drive and DeLong Street near Nickerson)
- Moosehorn Snowmobile Trail (crossings at County Road 145 and at Granzow Road near Holyoke)
- Gandy Dancer Snowmobile Trail and ATV (winter and summer) Road Route (South Merrill Road, rural Douglas County, Wisconsin, southwest of Superior)
- Saunders Grade Snowmobile Trail and Winter ATV Trail (County Road C south of Superior, Wisconsin)
- Trail 28 (Snowmobile and ATV) (North 58th Street in Superior, Wisconsin)
- Orange Trail (Snowmobile and Winter ATV) (North 58th Street in Superior, Wisconsin)
- Proposed North 58th Street Trail, Superior, Wisconsin

State Water Trails

None of the state water trails would be affected by construction. All of the water trails are located under BNSF bridges. No construction would occur over the Mississippi National River and Recreation Area Water Trail/Mississippi River State Water Trail, the Snake River State Water Trail, or the Kettle River State Water Trail. Construction on the Grassy Point Bridge over the St. Louis River State Water Trail would be limited to upgrades to bridge controls and would not require closure of the trail during construction or otherwise affect the trail below.

4.13.3.4 Section 4(f)

All of the park and recreational resources discussed in Section 4.13.2 have been determined to be potentially subject to Section 4(f), as outlined in 49 USC 303, 23 CFR 774, and the Federal Highway Administration's Section 4(f) Policy Paper (2012). Preliminary determinations are that no Section 4(f) uses other than temporary occupancies for construction¹⁷ and *de minimis* impacts¹⁸ of year-round and summer use trails were identified. **Appendix Q** provides the Draft Section 4(f) Evaluation.

4.13.3.5 Section 6(f) and Outdoor Recreation Grant Program

No permanent acquisition of Section 6(f) or Outdoor Recreation Grant Program lands are anticipated. Temporary easements may be required at one Section 6(f) park, Springbrook Nature Center. The construction work in the park would take less than 6 months and the property would be returned to pre-existing conditions following construction. Therefore, the use of the Springbrook Nature Center is not anticipated to be a conversion of the resource. MnDOT and FRA will coordinate with the City of Fridley, MnDNR, and the National Park Service to obtain approval of a temporary non-conforming use. **Appendix Q** provides the Draft Section 6(f) Evaluation.

¹⁷ A temporary occupancy of land for project construction-related activities occurs when the property is not permanently incorporated into a transportation facility, but is used on a temporary basis through a temporary easement. Temporary occupancy can be adverse in terms of the statute's preservation purpose; or so minimal as to not constitute a use within the meaning of Section 4(f).

¹⁸ A de minimis use occurs "if the transportation use of the Section 4(f) property, including incorporation of any measure(s) to minimize harm (such as any avoidance, minimization, mitigation, or enhancement measures), does not adversely affect the activities, features, or attributes that qualify the resource for protection under Section 4(f)" (FHWA, 2012).

4.13.4 Avoidance, Minimization and Mitigation Measures

The NLX Project would continue efforts to avoid, minimize and mitigate impacts as the project advances through construction. Based on current design, the NLX Project would not permanently impact parks, recreation areas, trails or wildlife/waterfowl refuges. If subsequent NLX Project refinement reveals the potential permanent impacts of any properties, an evaluation that further considers avoidance alternatives, as well as measures to minimize harm, would be prepared.

Temporary noise, visual and dust impacts on parks during construction would be minimized through compliance with local ordinances applicable to construction activities.

Measures would be implemented to minimize harm due to temporary closure of trails during construction including posting of trail closure signs and working closely with park officials to provide timely public information regarding closures. Potential detours could be developed to maintain trail access and connectivity, to the extent practicable.

If any requirement for permanent acquisition or easement of properties is identified, further analysis would be needed to determine if a use of Section 4(f) would occur. As documented in **Appendix Q**, a Section 4(f) determination would be required prior to the FRA's approval of any action that requires the use of any properties protected under Section 4(f).

In the event that permanent acquisition or easement from Section 6(f) properties would be required, coordination with the National Park Service and MnDNR would be needed to obtain approval for the conversion and to reach agreement on required mitigation.

4.13.5 Summary

Refinements to the NLX Project design have yielded smaller construction limits outside the transportation right of way for the Tier 2 EA. The Tier 1 EA evaluated potentially impacted parks, recreation areas, trails or wildlife/waterfowl refuges based on concept-level design; the Tier 2 EA evaluation is based on a refined design. The Tier 1 EA did not identify any impacts other than temporary closures of some trails. Similar to the Tier 1 EA, the Tier 2 EA analysis concluded that most of the proposed improvements would occur within existing transportation right of way. The Tier 2 analysis identifies temporary impacts related to construction of a third track and two bridges to support the additional track in Fridley and Coon Rapids.

The Tier 2 EA, based on refined design, evaluated additional bicycle and pedestrian trails in urban areas and snowmobile, ATV and state water trails that were not evaluated in the Tier 1 EA. The additional analysis identifies potential temporary trail closures during construction. The overall conclusion, that there would only be temporary impacts, remains the same in the Tier 2 EA as in the Tier 1 EA.

4.14 Visual

The Tier 1 EA analysis indicated that the NLX Project would have only minor changes in the viewshed because the NLX Project would be constructed primarily in an existing rail corridor. This section analyzes the NLX Project impacts based on proposed construction limits that have been updated since the Tier 1 EA. **Table 4-77** presents the NLX study area used for visual impact analysis; **Table 4-78** compares the results of the Tier 1 EA and the Tier 2 EA analyses. The revised impacts supersede the results presented in the Tier 1 EA and are summarized at the end of this section.

Table 4-77: NLX Study Area for Visual

| NLX Study Area Definition | Basis for NLX Study Area |
|---|---|
| Construction limits from preliminary engineering plus 0.25-mile buffer. | Describes the context of the surrounding areas at sidings, stations and maintenance and layover facilities. |

Table 4-78: Visual Impacts Comparison – NLX Tier 1 Service Level EA and Tier 2 Project Level EA

| Identified Impacts in NLX Tier 1 Service Level EA | Identified Impacts in NLX Tier 2 Project Level EA |
|--|---|
| Generally minor change in views (existing rail corridor). | No change to general view. |
| Fencing would affect views in urban areas (permanent fixture and potential maintenance issue). | Fencing would affect views at stations, in populated areas and at grade crossings where pedestrian crossings currently exist. Construction activities in the corridor would be visible but consistent with corridor context. Operation of additional trains could be noticeable in less populated areas with less train activity, but would be a minor visual change consistent with existing activity. |

As appropriate and necessary, this Tier 2 EA would be refined through future supplemental NEPA documentation as the final design advances and funding is secured for the NLX Project. Future supplemental environmental documentation is identified as appropriate throughout this Tier 2 EA.

4.14.1 Regulatory Context and Methodology

4.14.1.1 Legal and Regulatory Context

Potential visual impacts of the NLX Project are assessed in accordance with FRA's *Procedures for Considering Environmental Impacts* (64 FR 28545). These procedures indicate that significant changes to the aesthetic environment and scenic resources should be identified during the environmental review process.

NEPA (41 USC 4321), MEPA (Minn. Stat. 116D), and WEPA (Wisconsin Administrative Code Chapter Trans 400) form the general basis of consideration for discussing visual impact issues.

4.14.1.2 Methodology

The assessment of visual impacts generally follows the process outlined in the Minnesota Highway Project Development Process (HPDP) Visual Quality guidelines (MnDOT, 2010). The key steps in that process are as follows:

- Identify affected visual resources
- Identify the affected population
- Define existing visual quality
- Identify impacts on visual quality
- Identify potential measures to mitigate impacts

In accordance with the Minnesota HPDP Visual Quality guidelines, a visual impact is a perceived change in the visual quality of an existing scene. A project may affect natural harmony (the natural environment) and/or cultural order (the built environment). Three criteria are used to define the degree of an impact on viewers: value (beneficial or adverse), scale (major or minor) and extent (localized or widespread). The visual impacts are assessed for different viewer groups (such as residents, businesses, travelers, etc.).

4.14.2 Affected Environment

The NLX study area includes urban, suburban and rural communities with a wide range of development patterns. The existing BNSF rail corridor is a noticeable feature of the existing environment for the length of the NLX Project. In addition to the trains themselves, the rail corridor includes track infrastructure (tracks and sidings), bridges and culverts, signal systems, and roadway and grade crossings. The discussion of visual impacts focuses on the built environment where noticeable visual changes would occur as a result of the NLX Project.

The text that follows provides a brief description of the visual character of the NLX study area by segment. The Tier 1 EA defined NLX Project segments, which are shown in Chapter 2 Alternatives, **Figure 2-4**. Section 4.1 provides more detail on the relation of the individual communities to the existing rail corridor. The descriptions below are from south to north unless otherwise noted.

- Segment 1 – Target Field Station in downtown Minneapolis to Minneapolis Junction. This segment contains a mix of commercial, residential and industrial uses and viewers. Key visual features include the high density commercial area of downtown Minneapolis, the Mississippi River and Nicollet Island. The alignment crosses the Mississippi River at Nicollet Island. Nearby and adjacent residential uses include multifamily buildings plus a small number of single family buildings on Nicollet Island.
- Segment 2 – Minneapolis Junction to University Avenue. Adjacent land uses and viewers in this segment are primarily industrial (warehouses and rail yards) and residential (primarily single family) with limited commercial uses. In some cases, homes are adjacent to the NLX study area; in other cases, they are buffered by open space or other uses. The NLX study area crosses beneath two arterial roadways, Central Avenue NE (MN 65) and University Avenue (MN 47).
- Segment 3 – University Avenue to Coon Creek Junction. The dominant land use and visual feature of this segment is Northtown Yard, a large rail yard that extends from MN 47 on the south to I-694 on the north. The yard has heavy rail use and contains multiple tracks and spurs. Otherwise, the segment includes suburban residential areas (typically buffered from the tracks by trees and other vegetation) interspersed with warehouses and other light industrial uses. Much of the rail corridor also includes a large transmission line. The segment includes grade-separated crossings of two highways, MN 610 and I-694, and at-grade crossings at local roads.
- Segment 4 – Coon Creek Junction to Isanti gradually transitions from suburban to exurban to rural character. From south to north, it passes through Coon Rapids, Andover, Oak Grove, Saint Francis, Bethel, East Bethel, Athens and Isanti. Adjacent land uses vary from suburban and rural residential to rural, farm and open space with occasional light industrial uses.
- Segment 5 – Isanti to Cambridge includes these two communities and the rural area between them. Adjacent land uses are similar to those described for Segment 4.
- Segment 6 – Cambridge to Hinckley is a mix of smaller cities interspersed with areas of more rural character, including farms and forested areas. Communities within this segment include Grandy, Stanchfield, Braham, Grasston, Henriette and Brook Park. In some of these communities, the rail corridor is on the edge of town, separated from development by a highway, while in others the NLX study area travels through the center of town and is a prominent visual element in the community.
- Segment 17¹⁹ – Hinckley to Boylston contains small cities and towns, having a rural character. The segment includes areas such as Banning State Park, large forested areas and stream crossings that have a more

¹⁹ The segment designations were developed during the prior (Level 1) analysis of multiple alternatives. Segments 7 through 16 considered in that analysis are not part of the Preferred Build Alternative corridor.

natural, undeveloped visual character. This segment is much more natural in visual quality and less populated than those segments are to the south.

- Segment 18 – Adjacent land uses on the Boylston to Superior, Wisconsin, segment transition from forested areas, wetlands with occasional farmland and rural residences to the urban character of Superior, Wisconsin. In south Superior, much of the east side of the existing tracks is developed with residential and light industrial uses and much of the west side is undeveloped and vegetated. At the north end of this segment, a large rail yard is located west of the existing rail corridor, separated by a vegetated buffer, with industrial uses on the east side. Most residential uses in Superior, Wisconsin, are buffered from the tracks by vegetation and/or open space.
- Segment 19 – Superior, Wisconsin, to Duluth is primarily urban with industrial visual character. This segment begins adjacent to the rail yard in the northern part of Superior, Wisconsin (see Segment 18) and then crosses the St. Louis River into Duluth. At the south end of Duluth, adjacent land uses are primarily industrial and highway transportation (I-35) adjacent to the river and the southwestern tip of Lake Superior. The NLX Project ends at Union Depot in downtown Duluth.

4.14.2.1 Station Sites

The following describes the existing conditions at the six proposed NLX station sites. Detailed descriptions of each site and of the station site evaluation and selection process is described in the *NLX Facilities Site Analysis and Design Technical Memorandum* (see **Appendix B**). Illustrations of each site are provided in Chapter 2 Alternatives, **Figures 2-15** through **2-22**.

- In Minneapolis, an NLX platform and boarding area would be integrated with the existing Target Field Station in downtown Minneapolis. The location is a mixed-use urban downtown setting with office, commercial, residential and industrial uses. The NLX platform would be located along the existing BNSF tracks that carry freight and commuter rail. The station is located in the Minneapolis Warehouse Historic District, which is listed on the NRHP.
- The Coon Rapids Station site would be located along the BNSF right of way and across Foley Boulevard from the existing Foley Boulevard Metro Transit park and ride facility. The area around the site contains mostly low-density warehouse and industrial land uses. As documented in the Foley Boulevard Station Plan, the area is anticipated to transition to higher density employment uses over time.
- The Cambridge Station site would be located at the existing City Center Mall in downtown Cambridge. A residential neighborhood is located to the north of the site, with commercial and industrial uses and railroad tracks adjacent in other directions. The station site would be integrated with the publicly owned portions of the City Center Mall, which includes facilities for City hall, fire and police department functions. A portion of the mall is also used for other community and retail services.
- The Hinckley Station site is located northeast of downtown Hinckley and the Hinckley-Finlayson High School. The site encompasses a City of Hinckley maintenance building and is adjacent to the Trinity Episcopal Church. Other nearby land uses range from lower density single-family residences to small light

industrial and civic uses. Although the area has a range of civic, industrial and residential uses, it has a small town rural character.

- The Superior, Wisconsin Station site is located at the western edge of downtown Superior, Wisconsin, along the BNSF tracks and west of Oakes Avenue. A majority of the station would be located on BNSF property. The vacant site is immediately west of a closed Waste Management site. Nearby and adjacent land uses are railroad, open space and industrial.
- The Duluth Station is adjacent to the existing historic Union Depot, located at the south end of downtown Duluth on the west side of I-35. The existing context is urban; adjacent and nearby land uses include transportation (I-35 and railroad tracks), parking garages, the Duluth Public Library and other civic, office and commercial uses.

4.14.2.2 Maintenance and Layover Facility Sites

Two maintenance facility sites are under consideration for the NLX Project: one in which a maintenance facility would be located in Sandstone and an overnight layover facility would be located in Duluth, and one in which all maintenance and layover activities would occur in Duluth.

The following describes the existing conditions at the sites under consideration. Detailed descriptions of each site and of the site evaluation and selection process is described in the Facilities Site Analysis and Design technical memorandum (see **Appendix B**). Illustrations of these sites are provided in Chapter 2 Alternatives, **Figures 2-23 through 2-33**.

- Sandstone: A maintenance facility is being considered for Sandstone, Minnesota, in Pine County. The site would be located just north of MN 123 and between MN 23 and the BNSF tracks. Most of the site is a former rail yard. The site is primarily vacant and does not have any structures that would need to be removed. The southern portion of the city's main street and downtown business district parallels the site about one block to the east. Train Park abuts the NLX study area east of the proposed maintenance facility. Main Park abuts the NLX study area east of the northern end of the proposed maintenance facility. The area to the west of the site is generally open undeveloped land.
- Duluth: Two options are being considered in Duluth, Minnesota, in St. Louis County: (1) A maintenance and layover facility and (2) a layover facility only if the maintenance facility is located in Sandstone. The site being considered for both options would be at the location of an existing rail yard southwest of Union Depot along Railroad Street. The site is bounded by I-35 to the west and West Railroad Street to the east. The elevated crossing of the Superior Hiking Trail and Cross City Trail (both trails share the elevated crossing) is the approximate northern boundary; Garfield Avenue is the approximate southern boundary. The site contains two BNSF tracks and an unpaved internal service road.

4.14.3 Impacts

The following sections discuss the impacts on land cover associated with the No Build Alternative and the Build Alternative. Impact analysis considered all track, roadway, bridge, station and maintenance and layover facilities as identified in the beginning of this chapter. Where impacts are specific to a type of proposed improvement, they are described below. The Build Alternative impacts discussion analyzes long-term operations and maintenance impacts and short-term construction impacts as described in the beginning of this chapter. A discussion of potential impacts at station and maintenance and layover facility sites is also presented, as well as a general discussion of the potential impacts within the BNSF right of way. Avoidance, minimization and mitigation measures are described in Section 4.14.4.

No Build Alternative

Under the No Build Alternative, the NLX Project would not occur and would not alter current conditions. There would be no changes except planned and programmed actions that are independent of the NLX Project.

Build Alternative – Operations

The NLX Project is not expected to alter the general visual character of the adjacent landscape. A majority of proposed improvements would occur within the existing BNSF right of way. Track infrastructure would double in width where additional track or siding extensions are proposed; however, because the NLX study area is currently used for freight rail, the additional infrastructure would not greatly alter the existing visual character of the surrounding communities. Additional signals and gates at at-grade crossings where there are none today would be a minor visual change in communities and at rural area crossings. This change would be consistent with the existing rail corridor.

Fencing is planned only for safety and security purposes in developed areas where likely human and train interactions could occur. Generally, fencing would be provided in locations where there is a high probability where people would cross the tracks, such as at grade crossings and in developed areas with residential development on both sides of the tracks. Fencing is anticipated to be chain link or similar and approximately 6 feet high. While the addition of fencing would be a noticeable change to viewers in some locations, it is visually consistent with the existing rail corridor context. North of Coon Creek and south of Duluth-Superior, the addition of four round trip, relatively short passenger trains per day to a rail corridor that currently carries 10 to 20 freight trains per day would be a minor visual change, consistent with the existing condition. This new train activity would be less of a visual change in the Twin Cities and Twin Ports Metropolitan Areas, where the existing visual environment has relatively more freight rail activity than in the more rural portions of the NLX study area.

The addition of the six NLX stations would result in construction of new facilities including platforms and warming shelters, station buildings, surface parking lots and driving lanes. While construction of NLX station facilities would be a visual change in some locations, the new facilities would be consistent with their surroundings and generally would result in minimal visual impacts. The construction of new maintenance and/or layover facilities in locations of existing or former railroad use would similarly result in minimal visual impact.

Some removal of vegetation is expected throughout the NLX study area. There are an estimated 193 acres of forested land within the NLX Project construction limits, most of which is within the existing BNSF right of way. Some of the trees within this area would be removed to construct the NLX Project. It is anticipated that the actual forested acreage affected by the NLX Project would be less than this total, which would be refined as the Project advances through the design process. Some impacted areas within the construction limits would be expected to revegetate over time and would be maintained consistent with railroad vegetation maintenance practices.

Track Segments

The potential visual impacts of the individual segments of the NLX Project are described below; the descriptions focus on changes caused by proposed improvements:

- Segment 1 – Target Field Station to Minneapolis Junction and Segment 2 – Minneapolis Junction to University Avenue (segment length: 3.5 miles [combined]). Potential NLX Project modifications in this segment include constructing a platform extension at Target Field Station and construction of 0.69 mile of second main track at Target Field Station adjacent to the existing track. Visual impacts are anticipated to be minor because the additional platform and track are consistent with the existing context of a railroad right of way and the track extension is primarily in an industrial area or buffered from residential areas. No substantial changes to views to or from the segment would result.
- Segment 3 – University Avenue to Coon Creek Junction (segment length: 9.7 miles). The segment would include 6.2 miles of new track and new parallel railroad bridges over Mississippi Street and Rice Creek in Fridley. Adjacent viewers include both industrial users and suburban residential neighborhoods. The track and bridge improvements are within an existing freight rail corridor and are not expected to affect views or visual quality in this area.
- Segment 4 – Coon Creek Junction to Isanti (segment length: 23.9 miles). Potential NLX Project modifications in this segment would include minor modifications to the railroad bridge over Coon Creek and an extension of the Andover siding track. The additional track would be within existing railroad right of way and would represent a minor visual change for properties adjacent to the NLX study area. No substantial changes in views to or from the segment would result.
- Segment 5 – Isanti to Cambridge (segment length: 5.6 miles). Potential NLX Project improvements in this segment include extensions of the Cambridge and North Cambridge sidings, modification of one curve to

increase speeds, and construction of two new bridges parallel to existing main track bridges over a drainage ditch and Isanti Creek. In this segment, the NLX Project is adjacent to residential areas in Isanti and Cambridge with rural farmland in between. While the new bridges would be a noticeable visual change for adjacent viewers, the modifications would be consistent with the existing rail corridor and would result in minor visual impacts on adjacent viewers.

- Segment 6 – Cambridge to Hinckley (segment length: 34.1 miles). Potential NLX Project improvements would include a new Stanchfield siding, upgraded Grasston siding, bridge deck conversion on the bridge over Pokegama River at Brook Park, upgraded Brook Park siding and north extension, upgraded South Hinckley siding and modification of seven curves to increase speeds. A majority of this segment is adjacent to rural farmland and forested land but there are also scattered rural residences and several smaller communities. The changes to the visual environment from the NLX Project would be consistent with the rail uses that are the existing condition, and resulting long-term visual changes in the NLX study area would be minor. No substantial changes in views to or from existing visual features would result.
- Segment 17 – Hinckley to Boylston (segment length: 60.5 miles). Potential NLX Project improvements would include numerous siding upgrades and extensions, a new second siding between MP 35.9 and MP 38.7, potential single track construction at MP 12.43, a new turnout at Boylston, minor modifications at four river crossings and modification of 36 curves to increase train speeds. Adjacent lands on this segment are largely forested, with occasional farms and a smaller number of rural residences. Visual impacts would be minor due to the limited number of viewers and consistency of the improvements with the existing rail corridor. No substantial changes in views to or from existing visual features would result.
- Segments 18 and 19 – Boylston to Union Depot in Duluth (segment length: 15.1 miles). Potential NLX Project modifications would include construction of several miles of new track, modification of six curves and mechanical improvements to the Grassy Point swing bridge over the St. Louis River. These activities would occur within the existing freight rail corridor, including in an active rail yard. In Superior, Wisconsin, the new track would be west of the existing main track, which separates the new track from adjacent residential and commercial areas. The modifications to the existing Grassy Point bridge would have little to no visual impact. Adjacent lands on this segment include forest, farm and industrial, as well as residential neighborhoods in Superior, Wisconsin. Because the improvements are consistent with the existing rail corridor and because the residential neighborhoods are typically already buffered from the NLX study area, visual impacts would be minor.

Stations

Minimal impacts are anticipated adjacent to the proposed NLX stations due to the addition of station infrastructure required for the proposed NLX Service. The NLX stations are visually compatible with the surrounding urban or central business district settings of all the station communities. The potential visual impacts of each of the six proposed NLX stations are described below. In Chapter 2 Alternatives, **Figures 2-15** through **2-22** illustrate the proposed stations.

- The Target Field Station accommodations would consist of an extension of the north side of the existing Northstar platform at Target Field Station located between 5th Street North and Washington Avenue

North. The platform would be connected to the other facilities at Target Field Station. No additional heated waiting area or other facilities would be provided. Chain link and/or decorative fencing may be added around the site based on discussions with MnDOT and the affected agencies. The new facilities could be viewed by neighbors and train users. This platform extension would be consistent with the surrounding urban, public transportation and rail context of Target Field Station. No visual impacts are anticipated.

- The Coon Rapids Station would include an enclosed station building, a platform, two warming shelters, an access road, a passenger drop-off area and a parking lot (approximately 160 spaces). The site currently contains two small structures that would be removed. One structure is a small commercial building owned by Anoka County Regional Rail Authority, which leases the space to a local business. The other small structure is on adjacent property under separate ownership. Likely viewers of the improvements would be travelers on Foley Blvd, the users of the nearby Foley Boulevard Park and Ride, and train users. The station features would be consistent with the surrounding low-density warehouse and industrial context; no visual impacts are anticipated.
- The Cambridge Station site would include a station platform, two warming shelters, a parking lot (approximately 350 spaces) and a passenger drop-off area. Most of the parking lot area exists today. An interior passenger waiting area would be provided within the existing City Center Mall building. Chain link and/or decorative fencing may be added around the site based on future discussions with MnDOT and the affected agencies. In addition to being seen by station users, the improvements could be viewed by other users of the existing public facilities and private businesses at the site. The station features would be consistent with the existing site context and most of the new station facilities would be within existing buildings. No visual impacts are anticipated.
- The Hinckley Station site would include a station building, station platform, two warming shelters, an access road, and a parking lot (approximately 170 spaces). A retaining wall to address grade issues and landscape screening to replace existing scrub vegetation on railroad property would be added between the passenger drop-off facilities and the back side of the church property immediately to the west. Chain link and/or decorative fencing may be added around the site based on discussions with MnDOT and the affected agencies. Viewers of the station improvements would include train users as well as people at the immediately adjacent properties including the church. The station features would be consistent with the existing area and site context.
- The Superior, Wisconsin Station site would include a station building, two warming shelters, a station platform, an access road, a parking lot (approximately 245 spaces), and a passenger drop-off area. Chain link and/or decorative fencing may be added around the site based on discussions with MnDOT and the affected agencies. Viewers of the station facilities would include train users and travelers on adjacent roadways. The station features would be consistent with the existing railroad and industrial site context; no visual impacts are anticipated.
- The Duluth Station would be designed to complement the existing NRHP-listed Union Depot to create a new NLX station while minimizing impacts on the historic building and existing Union Depot uses. Exterior modifications would include a new NLX station entrance, new station building at track level, two new passenger drop-off points and modification to the track area behind the Union Depot. Existing parking

facilities would be used. The station improvements would be at ground level and behind the existing historic Union Depot building. In addition to train users, viewers of the new facilities would include users of the adjacent roadways. The upper portions of the improvements would be visible from the adjacent South 5th Avenue Northwest and possibly from I-35 but would be consistent with the existing visual quality of buildings and roadways. Chain link and/or decorative fencing may be added in the track area based on discussions with MnDOT and the affected agencies. These modifications would be consistent with the existing railroad uses and site context and no visual impacts would result.

Maintenance and Layover Facilities

Potential visual impacts of each of the maintenance and layover facilities under consideration are described below. Figures illustrating the proposed facilities are provided in Chapter 2 Alternatives, **Figures 2-23 through 2-33**.

- Sandstone: The maximum use for this site would include a maintenance facility with two maintenance bays and storage tracks. The facility would include a long narrow building (approximately 700 feet by 90 feet) to house trains during maintenance operations, an associated office and shop building, a parking lot, access road, wash bay and additional track for train storage. The proposed facility would be consistent with the existing transportation, light industrial and commercial character of the area. The maintenance building would be partially screened from lower Main Street by the existing light industrial warehouse-style buildings located on the west side of Main Street and from travelers on MN 23 by vegetation. Chain link and/or decorative fencing may be added around the site based on discussions with MnDOT and the affected agencies. No visual impacts are anticipated.
- Duluth: For the purpose of this analysis, the Duluth Maintenance and/or Layover Facility was evaluated based on its maximum use, which would be a maintenance facility with train layover storage tracks. The facility would include a long narrow building (approximately 700 feet by 90 feet) to house trains during maintenance operations, an associated office and shop building (approximately 240 feet by 50 feet), a parking lot, access road, wash bay and additional track for train storage. Chain link and/or decorative fencing may be added around the site based on discussions with MnDOT and the affected agencies. The maintenance facility would be at least partially visible from the adjacent areas, including Garfield Avenue, I-35, and West Railroad Street. The facility would be consistent with its surroundings, given the industrial and transportation-related adjacent uses and context. No visual impacts are anticipated.

Build Alternative – Construction

Visual impacts during construction could result from equipment operating on and near the rail corridor during the construction of new track and related features. These impacts would be temporary and would be consistent with the context of the rail corridor, including periodic maintenance activities that may occur under existing conditions.

4.14.4 Avoidance, Minimization and Mitigation Measures

No visual impacts have been identified, and no mitigation is proposed. If any visual impacts were identified as the NLX Project advances through construction, MnDOT would work to avoid, minimize and mitigate those impacts.

4.14.5 Summary

The Tier 1 EA evaluated visual impacts of NLX Project operations and proposed infrastructure improvements for eight daily round trips (16 trains per day) at speeds up to 110 mph. The Tier 2 EA addresses changes to the NLX Project, as described in Chapter 2 Alternatives. That is, this Tier 2 EA evaluates visual impacts of operations and proposed infrastructure for four daily round trips (eight trains per day) at speeds up to 90 mph.

The Tier 1 EA concluded that the NLX Project would cause minor impacts on visual quality, primarily due to the need for fencing in developed areas. The Tier 2 EA analysis also identifies minor impacts on visual quality. Fencing is planned only for safety and security purposes in developed areas where likely human and train interactions could occur. On a general level, it is assumed that fencing would be provided in locations where there is a high probability where people would cross the tracks, such as at grade crossings and in developed areas with residential development on both sides of the tracks. The proposed NLX Project infrastructure components would be consistent with the visual setting of the NLX study area.

4.15 Socioeconomics

The Tier 1 EA analysis indicates that the NLX Project would not affect the overall socioeconomic character of the study area. This section analyzes the NLX Project impacts based on proposed construction limits that have been updated since the Tier 1 EA. **Table 4-79** presents the study area used for socioeconomic impact analysis; **Table 4-80** compares the results of the Tier 1 EA and the Tier 2 EA analyses. The revised impacts supersede the results presented in the Tier 1 EA and are summarized at the end of this section.

Table 4-79: Study Area for Socioeconomics

| Study Area Definition | Basis for Study Area |
|---|---|
| Socioeconomic resources: Construction limits from preliminary engineering plus 0.5-mile buffer. | Incorporates the neighborhoods, community facilities and populations surrounding the NLX Project and includes sidings, stations and maintenance and layover facilities. |
| Community facility resources: 1,000 feet from the existing BNSF mainline track alignment. | Focuses analysis on resources proximate (within 3-4 blocks) to the NLX Project. |

Table 4-80: Socioeconomics Comparison – NLX Tier 1 Service Level EA and Tier 2 Project Level EA

| Identified Impacts in Tier 1 Service Level EA | Identified Impacts in NLX Tier 2 Project Level EA |
|--|---|
| Temporary impact on rear parking lot of Cambridge City Center Mall. | Cambridge: Cambridge Station construction may temporarily affect the City-owned portions of the parking lot at the City Center Mall due to the reconfiguration of parking spaces in the front and back of the building. The rear parking area may be temporarily affected by construction staging. |
| | Hinckley: The City of Hinckley maintenance building would be relocated for the Hinckley Station. A strip of vacant land (0.3 acre) would be acquired from the Trinity Episcopal Church for the Hinckley Station, but no church facilities would be affected. |
| | Duluth: The existing North Shore Scenic Railroad ticket office at Union Depot would be replaced by the new NLX passenger waiting area for the Duluth Station; both services would be co-located in the new waiting area. The Scenic Railroad ticket office would need to be temporarily relocated within Union Depot during construction. Temporary access disruptions may occur to other existing facilities located at Union Depot during the construction of the Duluth Station. |
| | Communities adjacent to the NLX Project may experience temporary inconveniences during construction such as construction noise; visual changes from construction activities and staging; dust impacts; and temporary access changes to reconstruct crossings and install new warning devices. |
| | NLX stations and facilities will need to be connected to existing public and private utility services. In some locations, utilities may need to be extended from public rights of ways to the station and facility buildings. |
| | NLX stations and facilities would require the relocation of public and private utilities in some locations. |
| Closure of up to 14 private rail grade crossings. Potential change to Braham Area Sportsman’s Club access. | No public or private rail grade crossings closures; no impact on access to communities and community facilities; roadway reconstruction required at crossings improvements. |
| Enhanced safety at existing rail grade crossings. | Enhanced safety at existing public rail grade crossings. |
| Moderate noise impacts on four schools, three churches and two parks. Severe noise impacts on two schools, eight churches, two cemeteries, one daycare and four parks. | Depending on selected maintenance facility site, moderate impacts at up to four schools, eight churches, three parks and one daycare; severe impacts at two schools, five churches, two cemeteries and four parks. Noise impacts are discussed under Section 4.9. |

Source: Quandel Consultants, LLC., 2014.

Study area: Construction limits from Preliminary Engineering plus 0.5-mile buffer.

As appropriate and necessary, this Tier 2 EA would be refined through future supplemental NEPA documentation as the final design advances and funding is secured for the NLX Project. Future supplemental environmental documentation is identified as appropriate throughout this Tier 2 EA.

4.15.1 Regulatory Context and Methodology

4.15.1.1 Legal and Regulatory Contexts

Potential socioeconomic impacts of the NLX Project are assessed in accordance with FRA's *Procedures for Considering Environmental Impacts* (64 FR 28545). These procedures indicate that significant changes to socioeconomics should be identified during the environmental review process.

No specific laws or executive orders regulate the consideration of socioeconomic impacts as part of preparing NEPA review documents. NEPA (41 USC 4321) and MEPA (Minn. Stat. 116D), and WEPA (Wisconsin Administrative Code Chapter Trans 400) form the general basis of consideration for discussing socioeconomic issues.

4.15.1.2 Methodology

Socioeconomic Resources

The socioeconomic analysis of the study area allows for a general understanding of the demographic profile of communities. The analysis updates the 2010 census data from the Tier 1 EA and uses the latest census data from the 2010-2014 American Community Survey 5-year estimates (U.S. Census Bureau, 2015b). For this document, data was gathered at the county, city (place), and census tract level. The census tract level was used to calculate population and jobs for the study area. County and city level data was used for comparison purposes.

Community Facilities

The inventory of community facilities in the study area was updated from the Tier 1 EA inventory through a variety of sources. Sources include a desktop review of Google Maps, ArcGIS Online national facility databases from ESRI and county databases. Additional facilities may be present, that are not recorded in publicly available data sources. Typical community facilities include churches, schools and commercial entertainment or recreation facilities. Public parks and recreation areas are addressed in Section 4.13.

4.15.2 Affected Environment

This section describes the existing socioeconomic conditions of the study area by county. City and county socioeconomic data is included for comparison purposes. Detailed information is provided by census tracts within the study area in **Appendix L**. Communities and related facilities are described by community within each county. An inventory of community facilities (for example, government buildings, churches, schools, medical facilities) within the study area is presented in **Appendix M**. Detailed crossing information for each community is provided in **Appendix M**.

4.15.2.1 Hennepin County

Hennepin County is in central Minnesota at the southern terminus of the NLX Project. From Target Field Station in downtown Minneapolis, the NLX Project generally travels south to north through the county into Anoka County.

Socioeconomic Overview

The study area in Hennepin County has a population of 90,821, accounting for about 8 percent of the population in Hennepin County. Hennepin County is the economic hub of the Twin Cities region with a diverse economic base. The county is home to 10 Fortune 500 companies, including Target and Best Buy, and the University of Minnesota (Greater MSP, 2016). The study area in Hennepin County contains approximately 170,000 jobs, accounting for 23 percent of jobs in the city and 7.6 percent of jobs in the county. **Table 4-81** summarizes the population and jobs information for the study area and the communities in Hennepin County.

Table 4-81: Socioeconomics – Hennepin County

| Location | Population | Jobs |
|------------------------------|------------|---------|
| Study area – Hennepin County | 90,821 | 169,120 |
| Minneapolis (city) | 394,424 | 305,765 |
| Hennepin County | 1,184,091 | 820,910 |

Sources: U.S. Census Bureau, 2015b (population data) and 2011 (jobs data).

Community Overview

A description of community facilities present in the study area in Hennepin County is provided below.

Minneapolis, MN

Minneapolis is the only community the NLX Project passes through in Hennepin County. From Target Field Station in downtown Minneapolis, the NLX Project travels eastward over the Mississippi River and across Nicollet Island before turning northward toward Fridley. There are 14 community facilities within the study area in Minneapolis, including churches, schools, community centers, libraries and emergency services. Three churches, two school facilities, Target Field and the Firefighters Hall and Museum are within one block of the existing track. Other community facilities are two or more blocks from the NLX Project.

4.15.2.2 Anoka County

Anoka County is just north of Hennepin County. The NLX Project travels south to north through the center of the county passing through the cities of Fridley, Coon Rapids, Andover and Bethel, with a proposed NLX station in Coon Rapids off Foley Boulevard, adjacent to the existing Foley Boulevard Metro Transit Park and Ride.

Socioeconomic Overview

The Anoka County segment of the study area includes 107,333 people, representing about 32 percent of the population in Anoka County. The largest employers in Anoka County have a strong focus on manufacturing, and include Medtronic, Aveda, BAE Systems and Cummins (Greater MSP, 2016). The study area in Anoka County contains 36,615 jobs, which is almost one-third of the 113,720 total jobs in the county. **Table 4-82** summarizes population and jobs data for the study area and the communities in Anoka County.

Table 4-82: Socioeconomics – Anoka County

| Location | Population | Jobs |
|---------------------------|------------|---------|
| Study area – Anoka County | 107,333 | 36,615 |
| Fridley (city) | 27,494 | 22,295 |
| Coon Rapids (city) | 61,809 | 23,990 |
| Andover (city) | 31,271 | 5,325 |
| Bethel (city) | 401 | 245 |
| Oak Grove (city) | 8,145 | 945 |
| Anoka County | 336,316 | 113,720 |

Sources: U.S. Census Bureau, 2015b (population data) and 2011 (jobs data).

Community Overview

A description of each community and the community facilities present along the study area in Anoka County is provided below.

Fridley, MN

Fridley is a suburban community located between Minneapolis and Coon Rapids. The NLX Project runs along existing railroad track east of the Mississippi River near the western Fridley city limits. Major north to south routes through the city are East River Road (County Highway 1) and University Avenue Northeast (MN 47). Community facilities within the study area include numerous parks, several of which are located directly adjacent to the existing tracks (See Section 4.13 for more information about parks and recreation). Three community facilities are within the study area, including the Redeemer Lutheran Church and Preschool within a block of the tracks.

Coon Rapids, MN

Within Coon Rapids, the study area is primarily single-family housing, multifamily housing, manufactured housing, commercial and industrial property and parkland.

There are seven community facilities within the study area in Coon Rapids. Creekside Estates, a mobile home community, is located at Egret Boulevard Southwest, just west of the existing track within the study area.

Additional community facilities within the study area in Coon Rapids include a church, two fire stations, and an assisted living facility.

The only school in the study area in Coon Rapids is Arona Academy, with a building within 200 feet of the existing tracks.

Andover, MN

Andover is predominantly a residential community. Community facilities in Andover are generally located at least 1.0 mile away from the study area, with the exception of four parks adjacent to the existing track (see Section 4.13 for information about parks). Two churches are approximately a 0.25 mile away from the track.

Oak Grove, MN

The NLX Project runs along the eastern portion of Oak Grove. The former town of Cedar, now part of Oak Grove, is located adjacent to the existing tracks. Approximately three blocks of residences, as well as industrial uses, are located in the area formerly known as Cedar. Lifelong Learning Center is a continuing adult education and early childhood education center located within one block of the existing track at 190th Lane Northwest.

Bethel, MN

The NLX Project runs along the eastern edge of this small community with about 400 people. Bethel is accessed via County Road 24 on the southern edge of town and more directly by Main Street. One church is located a block away from the existing track, while a school and post office are also within 0.25 mile away.

4.15.2.3 Isanti County

The NLX Project crosses through the center of Isanti County passing through the cities of Isanti, Cambridge, Grandy, Stanchfield and Braham, with a proposed station in Cambridge.

Socioeconomic Overview

The study area in Isanti County has a population of 27,129, accounting for 71 percent of the population in Isanti County. The city of Cambridge, which surrounds the Cambridge Station, contains approximately 8,000 people. Isanti County has a manufacturing-based economy with major employers such as Team Industries, Aurelius Manufacturing, Arrow Tank and Engineering and Schlage Manufacturing (Greater MSP, 2016). The study area in Isanti County contains 10,030 jobs, which encompasses nearly all of the county's 11,225 jobs. The

city of Cambridge contains over 58 percent of the county's jobs with 6,555 jobs. **Table 4-83** summarizes population and jobs data for the study area and the communities in Isanti County.

Table 4-83: Socioeconomics – Isanti County

| Location ^a | Population | Jobs |
|----------------------------|------------|--------|
| Study area – Isanti County | 27,129 | 10,030 |
| Isanti (city) | 5,396 | 1,035 |
| Cambridge (city) | 8,223 | 6,555 |
| Stanchfield (township) | 120 | 0 |
| Braham (city) | 1,885 | 565 |
| Isanti County | 38,190 | 11,225 |

Sources: U.S. Census Bureau, 2015b (population data) and 2011 (jobs data).

^a Table does not include unincorporated community of Grandy; census data unavailable.

Community Overview

A description of each community and the community facilities present along the study area in Isanti County is provided below.

Isanti, MN

Isanti is an older core community with a small downtown area. Many new houses and businesses are being developed around the perimeter of the community. Commercial, industrial, residential and park properties are located within a block of the NLX rail grade crossings. Community facilities within one block of the existing tracks include one church, a fire station, post office, and the City hall, as well as various other community uses. Two additional churches are within several blocks of the tracks near Main Street. The David C. Johnson Civic Arena site abuts the existing tracks on the west.

Cambridge, MN

Cambridge is bisected by the existing rail corridor and MN 65. The tracks separate the downtown, community facilities, and established residential areas on the west side of the tracks from the existing retail complex and newly developing residential areas to the east, closer to MN 65.

The Cambridge City Center Mall municipal office, police station and fire station abut the rail corridor on the west. The Cambridge City Center Mall is the site of the proposed NLX station. Several churches and schools are located in the study area, west of the tracks. Two of the churches, near 10th Avenue Southwest, are within several hundred feet of the existing tracks. Two cemeteries, Cambridge Union Cemetery and Christ the King Catholic Cemetery, are situated east of the existing tracks in the study area between 20th Avenue Southwest and 11th Avenue Southwest. There is a mobile home park west of South Main Street between 23rd Pine Lane and 21st Pine Lane, beginning one block away from the existing tracks. Several other community facilities are located within the study area, including churches, county uses and other civic and community uses.

Grandy, MN

Grandy is an unincorporated town adjacent to the existing tracks. The uses in the study area are primarily industrial or commercial. A post office and a church are located within a block of the existing tracks.

Stanchfield, MN

The NLX Project runs through the community of Stanchfield, which has several blocks of residences located on either side of the existing railroad tracks. A church and a cemetery are located just west of the tracks one block away. A post office and church are further from the existing tracks, but within the study area.

Braham, MN

The NLX Project runs through the center of Braham, immediately east of MN 107 (Main Street). Residential neighborhoods are located both east and west of the tracks, with residences abutting the tracks on either side. The downtown business area is located west of the tracks. The City hall and fire station are located downtown. As discussed in Section 4.13, Freedom Park is located directly adjacent to the existing tracks on the west side and Rose Memorial Garden is located west of the tracks across MN 107. Residents on the east side of the tracks cross the railroad to access downtown, the school, Freedom Park, churches and the community center. Likewise, residents on the west side of the tracks cross the railroad to access a community park (Hidden Park) and church that are located on the east side of town. Community facilities within the study area include two churches, a post office and the Braham City Hall complex including the fire department and police department.

4.15.2.4 Kanabec County

The NLX Project passes through Kanabec County at the southeastern corner of the county, traveling through a portion of Braham (discussed in Isanti County, above) and Grasston. There are no stations or other NLX facilities in Kanabec County.

Socioeconomic Overview

The NLX Project travels through the southeastern corner of Kanabec County. Kanabec County is a rural community that is sparsely populated with 16,084 residents. The study area in Kanabec County contains 5,151 residents, which represents just over 32 percent of the county's population. The study area in Kanabec County contains 370 jobs, representing about 8 percent of the county's total jobs. **Table 4-84** summarizes population and jobs data for the study area and the communities in Kanabec County.

Table 4-84: Socioeconomics – Kanabec County

| Location | Total Population | Jobs |
|-----------------------------|------------------|-------|
| Study area – Kanabec County | 5,151 | 370 |
| Grasston (city) | 241 | 25 |
| Kanabec County | 16,084 | 4,665 |

Sources: U.S. Census Bureau, 2015b (population data) and 2011 (jobs data).

Community Overview

A description of the only community and its community facilities present in the study area in Kanabec County is provided below.

Grasston, MN

The NLX Project runs through the eastern edge of the small town of Grasston that contains 241 people. Several blocks of residences are located on the west side of the tracks. Grasston is the only community the NLX Project travels through in Kanabec County. No community facilities are within the study area in the Kanabec County portion of Grasston. One church is within the study area in the Pine County portion of Grasston.

4.15.2.5 Pine County

The NLX Project traverses Pine County from the southwest corner to the northeast corner of the county. In Pine County, the NLX Project passes through the communities of Henriette, Brook Park, Hinckley, Sandstone, Askov, Bruno, Kerrick, Duquette and Nickerson with a station in Hinckley and a potential maintenance facility in Sandstone.

Socioeconomic Overview

The study area in Pine County contains 18,475 residents, accounting for about 63 percent of the county's total population. The Pine County economy is based in the entertainment and recreation industry due to the Grand Casino Hinckley operated by the Mille Lacs Band of Ojibwe, the county's largest employer, and other outdoor attractions, such as the numerous state parks and forests (Pine County, 2014). The study area in Pine County has 2,965 jobs, which is almost one-third of the county's total jobs. Hinckley has 2,710 jobs, while Sandstone has just over 1,200 jobs. **Table 4-85** summarizes population and jobs data for the study area and the communities in Pine County.

Table 4-85: Socioeconomics – Pine County

| Location ^a | Total Population | Jobs |
|--------------------------|------------------|--------|
| Study area – Pine County | 18,475 | 2,965 |
| Henriette (city) | 50 | 4 |
| Brook Park (city) | 141 | 35 |
| Hinckley (city) | 1,727 | 2,710 |
| Sandstone (city) | 2,786 | 1,235 |
| Askov (city) | 371 | 210 |
| Bruno (city) | 85 | 125 |
| Kerrick (city) | 48 | 35 |
| Pine County | 29,347 | 10,200 |

Sources: U.S. Census Bureau, 2015b (population data) and 2011 (jobs data).

^a Table does not include unincorporated communities of Duquette and Nickerson; census data unavailable.

Community Overview

A description of each community and the community facilities present in the study area in Pine County is provided below.

Henriette, MN

Henriette is located on both sides of the NLX Project. The Henriette City offices are within a block of the existing tracks.

Brook Park, MN

The NLX Project runs along the north edge of Brook Park. A post office is located within the study area. No other community facilities in Brook Park were identified.

Hinckley, MN

The NLX Project passes through Hinckley and has multiple rail grade crossings with local streets and MN 61. Hinckley-Finlayson High School, City hall, the public library and Gateway Family Health Clinic are located west of the existing track within the study area. Additional facilities within the study area include Hinckley Elementary School and Memorial Park (“The Pit”) east of the tracks. Several churches are situated within several hundred feet of the tracks. The station site includes a strip of land owned by an adjacent church and land that currently holds a City maintenance building.

Sandstone, MN

At Sandstone, the NLX Project runs along the west side of County Highway 64 (Main Street). Much of the community is situated east of the tracks. In Sandstone, 11 community facilities were identified within the study area. The facilities include City hall, a public library and several churches. One church and the fire department are located within one block of the tracks. Train Park (also known as Railroad Park) and Main Park are east and adjacent to the existing tracks. Train Park property is owned by BNSF and leased by the City of Sandstone whereas Main Park is owned by the City. Additional community facilities, including churches, a post office and a school, are within the study area in Sandstone.

Askov, MN

The NLX Project runs through the middle of Askov, a community that has adopted Danish names for its streets in honor of its Danish heritage. There are houses facing the railroad as well as a warehouse adjacent to the track. The City hall and fire department are located west of the existing tracks and churches and parkland are located east of the tracks, all within the study area. A church, post office and the Pine County Historical Society are all further from the tracks, but within the study area.

Bruno, MN

The community of Bruno is located primarily east of the existing tracks. Main Street, a rail grade crossing, provides access to MN 23 on the west side of the track. A church and a post office are within the study area; however, no facilities are adjacent to the existing tracks.

Kerrick, MN

Kerrick is a small town located just southeast of the existing tracks. A post office and Kerrick Fire and Rescue are located approximately one block away from the existing tracks. A church is approximately two blocks away.

Duquette, MN

Duquette is a small, unincorporated town adjacent to the existing tracks. One park is located in Duquette west of the existing tracks.

Nickerson, MN

Nickerson is a small, unincorporated town adjacent to the existing tracks. No community facilities were identified in the study area in Nickerson.

4.15.2.6 Carlton County

The NLX Project travels through the southern portion of the Carlton County and does not travel through any incorporated communities. No NLX stations or facilities are proposed in Carlton County.

Socioeconomic Overview

The study area in Carlton County contains 7,788 people, accounting for about 23 percent of the county's population. The Carlton County economy is primarily based in wood products and other manufacturers. Carlton County also includes a portion of the Fond du Lac reservation, which is one of the county's largest employers. The Fond du Lac Band operates the Black Bear Casino, another large employer (Northland Connection, 2016a). The study area has 2,920 jobs, which is just over 20 percent of the county's total jobs. **Table 4-86** summarizes population and jobs data for the study area and the communities in Carlton County.

Table 4-86: Socioeconomics – Carlton County

| Location | Total Population | Jobs |
|-----------------------------|------------------|--------|
| Study area – Carlton County | 7,788 | 2,920 |
| Carlton County | 35,430 | 13,705 |

Sources: U.S. Census Bureau, 2015b (population data) and 2011 (jobs data).

Community Overview

The NLX Project does not travel through any communities in Carlton County.

4.15.2.7 Douglas County, Wisconsin

The NLX Project travels in Wisconsin via the northwest corner of Douglas County through Foxboro, the town of Superior, Boylston, the village of Superior, South Superior and the city of Superior, Wisconsin. An NLX station is planned in downtown Superior, Wisconsin.

Socioeconomic Overview

The study area in Douglas County, Wisconsin, has a population of 30,367, which is 69 percent of the county's total population. The major industry in Douglas County, Wisconsin, is transportation due to the county's location at the head of Lake Superior (home of the Port of Duluth-Superior) and proximity to other forms of ground transportation, such as freight rail and major highways (I-35 and WIS 53). The largest employers in the county are the Superior School District, the University of Wisconsin-Superior and Halvor Lines (transportation) (Northland Connection, 2016b). The study area in Douglas County, Wisconsin has 14,315 jobs, which represents 80 percent of the county's total jobs. **Table 4-87** summarizes population and jobs data for the study area and the communities in Douglas County, Wisconsin.

Table 4-87: Socioeconomics – Douglas County, Wisconsin

| Location ^a | Total Population | Jobs |
|--|------------------|--------|
| Study area – Douglas County, Wisconsin | 30,367 | 14,315 |
| Superior (village), Wisconsin | 653 | 125 |
| Superior (city), Wisconsin | 26,932 | 14,990 |
| Douglas County, Wisconsin | 43,901 | 17,890 |

Sources: U.S. Census Bureau, 2015b (population data) and 2011 (jobs data).

^a Table does not include unincorporated communities of Foxboro, Town of Superior and Boylston; census data unavailable.

Community Overview

A description of each community and the community facilities present in the study area in Douglas County, Wisconsin is provided below.

Foxboro, WI

The NLX Project runs adjacent to Foxboro, a small, unincorporated town in Wisconsin. The town is rural in nature with no community facilities identified.

Town of Superior, WI

The Town of Superior contains three community facilities within the study area, the town hall, a school and Greenwood Cemetery.

Village of Superior, WI

The village of Superior, Wisconsin, is an independent municipality located approximately 2.0 miles south of the city of Superior, Wisconsin. The village maintains a separate identity from its northern neighbor. The NLX Project runs along the western edge of the village. Community facilities within the study area include a church and a cultural/entertainment destination.

Superior, WI

North of the village of Superior, the NLX Project passes through Superior, Wisconsin. A majority of the community of Superior, Wisconsin is located east of the existing tracks. A mobile home community is located adjacent to the tracks at North 40th Street. A park is located approximately 300 feet from the tracks at 18th Street and Oakes Avenue. (See Section 4.13 for more information about parks). Additionally, a church, an assisted living facility and the Superior Ice Arena are all within the study area in Superior, Wisconsin.

4.15.2.8 St. Louis County

The NLX Project travels across the St. Louis River on the Grassy Point Bridge into St. Louis County and the city of Duluth. The NLX Project passes through the proposed Duluth Maintenance and/or Layover Facility, located just north of Garfield Avenue, and stops at its northern terminus at the Duluth Station.

Socioeconomic Overview

The study area in St. Louis County contains 26,675 people, accounting for about 26 percent of the total county population of 200,563. St. Louis County has a diverse economic base with major employers that include Essentia Health, St. Luke's Health Care System, St. Louis County and the University of Minnesota Duluth (Northland Connection, 2016c). **Table 4-88** summarizes population and jobs data for the study area and the communities in St. Louis County.

Table 4-88: Socioeconomics – St. Louis County

| Location | Total Population | Jobs |
|-------------------------------|------------------|---------|
| Study area – St. Louis County | 26,675 | 28,950 |
| Duluth (city) | 86,239 | 58,180 |
| St. Louis County | 200,563 | 100,345 |

Sources: U.S. Census Bureau, 2015b (population data) and 2011 (jobs data).

Community Overview

A description of the only community and its community facilities present along the NLX Project in St. Louis County is provided below.

Duluth, MN

After entering Duluth via the Grassy Point Bridge, the NLX Project travels north along St. Louis Bay and along I-35. The NLX Project terminates at the proposed Duluth Station, located next to Union Depot at 506 West Michigan Street. Downtown Duluth is located directly north of the station, providing convenient access to the city. The Duluth Entertainment Convention Center, Bayfront Festival Park and the Great Lakes Aquarium are east and south of the station within the study area. The Union Depot currently houses the St. Louis County Heritage and Arts Center.

In the study area, there are 18 identified community facilities, including the Duluth Animal Shelter and uses associated with the Union Depot within one block of the NLX Project. Duluth has multiple fire stations providing emergency services, including one station located in the eastern portion of the study area.

4.15.3 Impacts

The following sections discuss the impacts on socioeconomics associated with the No Build Alternative and the Build Alternative. Impact analysis considered all track, roadway, bridge, station and maintenance and layover facilities as identified in the beginning of this chapter. Where impacts are specific to a type of proposed improvement, they are described below. The Build Alternative impacts discussion analyzes long-term operations and maintenance impacts and short-term construction impacts as described in the beginning of this chapter. A discussion of potential impacts at station and maintenance and layover facility sites is also presented, as well as a general discussion of the potential impacts within the BNSF right of way. Avoidance, minimization and mitigation measures are described in Section 4.15.4.

Socioeconomic impacts include effects on communities, neighborhoods, community cohesion or categories of people uniquely sensitive to transportation. Socioeconomic impacts can result from physical impacts due to construction, right of way acquisition, access closures or train operations. Noise impacts are addressed in Section 4.9.

4.15.3.1 No Build Alternative

Under the No Build Alternative, the NLX Project would not occur and would not alter current conditions. There would be no changes except planned and programmed actions that are independent of the NLX Project.

4.15.3.2 Build Alternative – Operations

A range of socioeconomic impacts and benefits of the Build Alternative are discussed in individual sections below.

Community Facilities

As discussed in Section 4.15.2, several community facilities are located within the study area. However, no facilities would be permanently impacted because track improvements for the NLX Project would remain within the existing BNSF right of way.

Portions of stations and maintenance and/or layover facilities located outside BNSF or publicly owned right of way would have anticipated impacts and benefits to community facilities as described below:

- At Target Field Station, the NLX Project would avoid impacts on nearby community facilities by using and expanding existing station infrastructure. The NLX Project would expand access to services throughout the region through connections to existing multimodal services at the station.
- At the proposed Coon Rapids Station, the NLX Project would support and facilitate connections to services throughout the region with the adjacent Metro Transit Foley Boulevard park and ride.
- The proposed Cambridge Station would share existing building and parking facilities at City-owned properties of the Cambridge City Center Mall. The station site would provide direct access to city services located in the same building, as well as to services throughout the city via on-demand public transportation connections at the station site. The station site would be designed to avoid impacts on fire and police services that operate out of the City Center Mall site.
- The proposed Hinckley Station is within walking distance (two blocks) of the city's central business district and its associated community services. The Hinckley Station would require relocating the City maintenance building and acquiring a strip of land (0.285 acre) along the railroad from the Trinity Episcopal Church. No church facilities would be impacted. The station, which is adjacent to the Hinckley-Finlayson High School,

would avoid impacts on the school and its support buildings, drop-off and pick-up locations and parking areas.

- The proposed Superior, Wisconsin Station would not affect community facilities. The station site is located within walking distance (within one block) of downtown Superior, Wisconsin, and would be accessible to nearby services and businesses. DTA provides transit service in Superior, Wisconsin, and it expressed an interest in modifying a local route to serve the station, which would expand access to services throughout the Duluth-Superior area.
- At the proposed Duluth Station, the NLX Project would complement existing activities and functions at Union Depot. A separate station entrance would be provided next to the Depot to avoid conflicts with existing Depot functions. The Duluth Station would reconstruct the existing passenger waiting area/ticket area at track level that is currently used by the NSSR. The new waiting area would be of sufficient size to accommodate the needs of NLX and the NSSR; both services would be co-located in the new waiting area. A new NLX platform would be constructed at track level. The existing NSSR boarding area would remain in place and would not be affected by the adjacent NLX platform. The station site is accessible to community facilities and services via DTA transit services, including the Duluth Transit Center located two blocks from the Depot.
- The Sandstone Maintenance Facility would not affect community facilities or services because the facility would primarily be located in existing BNSF right of way that is not used by community facilities.
- The Duluth Maintenance and/or Layover Facility would not affect community facilities or services because the facility would be constructed in existing BNSF right of way that is not used by community facilities.

Community Access

No public or private rail grade crossings would be permanently closed due to NLX operations; therefore, no long-term impacts on community access would result from the NLX Project.

Warning devices at crossings would delay traffic for brief periods to allow NLX trains to pass, typically between 40 to 80 seconds in duration. Crossing wait times would be shorter than typically experienced with an average freight train. Trains stopped at stations to allow for passenger loading and unloading would not block nearby crossings.

Because of new sidings, improved crossing safety devices, enhanced switching and additional track capacity, the enhancements associated with the NLX Project are expected to provide long-term operational benefits to the BNSF freight service. The operational benefits to freight could also benefit communities by potentially reducing the time freight trains block crossings, which would reduce travel delay on local streets.

Community Cohesion

The NLX Project would not affect community cohesion because the existing tracks and freight traffic already constitute a physical presence within the communities. In addition, all existing public and private rail grade crossings would be maintained and local access would remain unchanged.

The existing rail and local road rights of way would accommodate track infrastructure and grade crossing improvements needed for NLX Service. At select locations where new main track would be installed or sidings extended, infrastructure would be about 15 feet closer to adjacent properties. However, this would not affect the existing and potential social interaction between or among geographically defined groups and the spatial connectivity of individual sites within communities. In some cases, infrastructure improvements, such as extended sidings and improved turnouts may minimize freight delays and benefit local communities. Potential track improvements throughout the NLX Project are detailed in Chapter 2 Alternatives.

The stations and facilities would not negatively affect community cohesion. MnDOT conducted public outreach to inform the station and facilities site analysis and site selection process. Outreach included close coordination with local community staff and elected officials, public open houses in station communities, and smaller stakeholder meetings and events throughout the study area. Through stakeholder input and site analysis, the proposed stations and facilities are designed and located to improve community cohesion through their proximate location to existing community services and business districts. More information on the public involvement process can be found in Chapter 5 Public and Agency Involvement. The NLX Project would provide improved multimodal connections within and among communities.

Possible Barriers to Elderly and Handicapped

No impacts on elderly and handicapped populations are anticipated as improvements, including proposed station facilities, would comply with ADA requirements. The NLX Project would provide added multimodal access to elderly and handicapped populations.

Safety and Security/Public Health

In general, diverting trips from automobile to rail travel usually results in a reduction in accidents, fatalities and injuries from fewer automobile crashes on roadways and highway.

The NLX Project would provide improved grade crossings and warning devices, which could reduce potential train-vehicle crashes, and improve safety. To ensure safety at rail crossings, railroads must comply with signal and train control systems required by federal regulations. These regulations cover hazardous materials,

operating procedures, rail grade crossings, and other issues related to safety and security. In addition, the NLX Project would upgrade signalization and communication systems, further enhancing safety.

Fencing is planned only for safety and security purposes in developed areas where likely human and train interactions could occur. Generally, fencing would be provided in locations where there is a high probability where people would cross the tracks, such as at grade crossings and in developed areas with residential development on both sides of the tracks.

NLX stations and facilities would provide a number of features to help ensure safety including lighting, ADA compliance and adherence to local and state building and safety codes.

Infrastructure and Public Services

The NLX Project would not require the expansion of local infrastructure other than roadway improvements and new warning devices at improved rail grade crossings (see Chapter 2 Alternatives, for more information about infrastructure).

The operation of the NLX Project would not result in a disruption of emergency services but would require local public safety departments to respond to any potential passenger rail emergency in accordance with local and County emergency management plans.

NLX stations and facilities would be connected to existing public and private utility services including water, sewer, gas and electric services. In some locations, (Coon Rapids, Hinckley and Superior, Wisconsin) utilities would be extended from public rights of ways to the station and facility buildings. All station and facility sites are located within urbanized areas that have adequate utility capacity to serve NLX facilities.

The development of NLX stations and facilities would require the replacement or relocation of public and private utilities in some locations. The extent of utility relocations would be determined during future design activities.

Based on preliminary utility research conducted for the stations and facilities site evaluation and design process, the Coon Rapids and Superior, Wisconsin stations were found to have major utility facilities within the construction limits of the sites as follows:

- **Coon Rapids Station:** The site contains a 60-foot utility easement that parallels the BNSF corridor. It contains two, high pressure gas lines and a 48-inch sanitary sewer interceptor. The conceptual site plan for the station proposes construction of driving lanes or parking areas, rather than permanent structures (that is, station building and platform) over these major underground utilities to avoid utility relocation.

- Superior, Wisconsin Station: The site contains an 8-inch, high-pressure oil pipeline that runs north to south through the station site. The pipeline would run under the proposed station parking lot, avoiding the placement of permanent structures on top of the pipeline and avoiding pipeline relocation.

Acquisitions and Relocations

Stations and proposed maintenance and layover facilities are primarily located on public property or BNSF right of way. Approximately 4 acres of additional private property would be acquired at the Superior, Wisconsin Station, Cambridge Station, Hinckley Station and proposed maintenance facility site at Sandstone. A majority of the affected property is vacant (see Section 4.2 for more information about right of way acquisitions).

The NLX Project would not acquire or relocate residences or private businesses. A maintenance building owned by the City of Hinckley, and used for City maintenance activities, would need to be relocated prior to construction of the Hinckley Station.

During the station and facility planning and design process, MnDOT coordinated closely with local communities to locate stations and facilities in areas consistent with local land use and economic development plans. The designs proposed for the stations and facilities were developed with feedback from the local communities and public to minimize and avoid impacts on surrounding neighborhoods and community facilities. As a result, the acquisitions and relocation associated with NLX stations and facilities are not expected to affect socioeconomic resources.

4.15.3.3 Build Alternative – Construction

Community Facilities

Potential temporary access impacts on community facilities could occur during construction where rail grade crossings are closed for short durations to reconstruct crossings and install new warning devices.

The construction of the Cambridge Station would create a temporary impact on the City-owned portions of the parking lot at Cambridge City Center Mall due to parking space reconfigurations and the rear parking area may be temporarily closed or reconfigured for construction staging.

The construction of the new passenger waiting area and NLX platform at Union Depot for the Duluth Station may result in temporary access impacts on the NSSR and other uses at Union Depot.

Community Access

Potential temporary impacts on community access would occur during construction where crossings are closed for short durations to reconstruct crossings and install new warning devices.

Community Cohesion

Communities adjacent to the NLX Project may experience temporary inconveniences during construction such as construction noise; visual changes from construction activities and staging; dust impacts; and access changes to reconstruct crossings and install new warning devices. These impacts would be short-term and are not expected to affect community cohesion.

Possible Barriers to Elderly and Handicapped

No additional construction impacts on elderly and handicapped persons are expected beyond those discussed in this section.

Safety and Security/Public Health

No impacts on safety and security are anticipated during construction. Construction of the system would follow BMPs and adhere to local ordinances and safety requirements.

Infrastructure and Public Services

If utilities require relocation prior to construction of NLX station and facilities, some utility services may be temporarily disconnected.

Acquisitions and Relocations

No construction-related acquisitions and relocations would occur, beyond what is required for operation of the NLX Project.

4.15.4 Avoidance, Minimization and Mitigation Measures

The NLX Project would continue efforts to avoid, minimize and mitigate impacts as the project advances through construction.

4.15.4.1 Community Facilities

MnDOT would coordinate with the NSSR and owner and operator of Duluth Station to identify a temporary space for the NSSR's ticketing office functions while the NLX passenger waiting area is under construction.

MnDOT would coordinate with affected community facilities during construction to ensure temporary construction impacts would be managed and alternate access is provided.

4.15.4.2 Community Access

Mitigation strategies during construction would include developing a traffic management plan to identify alternate access during crossing closures and continuing public outreach to keep local communities informed of construction schedules and crossing closures.

4.15.4.3 Community Cohesion

No mitigation is required since there are no negative impacts on community cohesion.

4.15.4.4 Possible Barriers to Elderly and Handicapped

No mitigation is required since there are no negative impacts regarding barriers to elderly or handicapped.

4.15.4.5 Safety and Security/Public Health

Fencing is planned only for safety and security purposes in developed areas where likely human and train interactions could occur. Generally, fencing would be provided in locations where there is a high probability where people would cross the tracks, such as at grade crossings and in developed areas with residential development on both sides of the tracks.

4.15.4.6 Infrastructure and Public Services

During future design activities, MnDOT would continue to coordinate with utilities to avoid or minimize utility impacts, and avoid service disruptions during construction.

4.15.4.7 Acquisitions and Relocations

Mitigation for unavoidable land acquisitions, displacements or relocations of privately owned properties would comply with the Uniform Act (49 CFR 24), which applies to the acquisition of properties for federally funded

projects. The Uniform Act provides for fair and equitable treatment of persons whose real property is acquired for the NLX Project (see Section 4.2).

4.15.5 Summary

The Tier 1 EA evaluated socioeconomic impacts of NLX Project operations and proposed infrastructure improvements for eight daily round trips (16 trains per day) at speeds up to 110 mph. The Tier 2 EA addresses changes to the NLX Project, as described in Chapter 2 Alternatives. That is, the Tier 2 EA evaluates socioeconomic impacts of operations and proposed infrastructure for four daily round trips (eight trains per day) at speeds up to 90 mph.

The Tier 2 EA identifies the following socioeconomic and community impacts from the NLX Project:

- Temporary impact on the City-owned portions of the parking lot in Cambridge at the City Center Mall due to the reconfiguration of parking spaces in the front and back of the building. The rear parking area may be temporarily affected by construction staging.
- Relocation of City of Hinckley maintenance building.
- Acquisition of approximately 4 acres of private property for station and maintenance facility construction.
- The existing NSSR ticket office at Union Depot would be replaced by the new NLX passenger waiting area for the Duluth Station. The Northshore Scenic Railroad ticket office would need to be temporarily relocated within Union Depot during construction. Temporary access disruptions to existing facilities located at Union Depot during the construction of the Duluth Station.
- No permanent access changes to communities and community facilities because the NLX Project would not close public or private rail grade crossings.
- Enhanced safety at existing rail grade crossings.
- Communities may experience temporary inconveniences during construction such as construction noise; visual changes from construction activities and staging; dust impacts.
- Temporary access changes to reconstruct crossings and install new warning devices.
- In some locations, utilities may need to be extended from public rights of ways to the station and facility buildings.

The results of the analysis in this Tier 2 EA are generally consistent with the results of the earlier Tier 1 EA. No significant socioeconomic impacts were identified in either the Tier 1 or Tier 2 EA analyses. Both the Tier 1 EA and Tier 2 EA analyses determined that the proposed NLX Project is would not result in substantial socioeconomic or community impacts.

- Community Facilities: The Tier 1 EA found that impacts on community facilities would be minor throughout the study area and primarily consist of temporary changes to access during construction. The Tier 2 EA also

found no substantial impact on community facilities, although it provided more details about potential impacts related to stations and facilities. Community facilities that may be affected by NLX stations include: temporary construction-related impacts at the City-owned portions of the City Center Mall; a City of Hinckley maintenance building that would be relocated; a strip of land that would be acquired from the Trinity Episcopal Church for the proposed Hinckley Station; and temporary relocation of the NSSR ticket office during construction of the passenger waiting area for the Duluth Station.

- **Community Access:** The Tier 1 EA determined that access would remain substantially unchanged since all public crossings would remain open, and only temporary closures would be required during construction where crossings are closed for the reconstruction and installation of new warning devices. The Tier 1 EA identified up to 14 private rail grade crossings would be closed and alternate access would be provided during construction. However, based on updated engineering analysis, no public or private rail grade crossings would be closed for the NLX Project.
- **Community Cohesion:** The Tier 1 EA determined that impacts on community cohesion resulting from the addition of NLX Service would be minimal given that existing tracks and freight traffic already constitute a physical barrier within some communities and no public rail grade crossings would be closed. The Tier 2 EA came to a similar conclusion and determined that in some cases, infrastructure improvements, such as extended sidings and improved turnouts may minimize freight delays and benefit local communities. The proposed NLX stations and facilities would not negatively affect community cohesion because the sites are designed and located, in coordination with local officials, to improve community cohesion through their proximate location to existing community services and business districts.
- **Possible Barriers to Elderly and Handicapped:** The Tier 1 EA concluded that these special populations would not be impacted by the NLX Project because improvements would comply with ADA requirements. The Tier 2 EA also came to the same conclusion and added that these populations would benefit from new multimodal linkages.
- **Safety and Security/Public Health:** The Tier 1 EA concluded that the NLX Project would not diminish safety and security and public health because the NLX Project would comply with all federal regulations for signal and train control systems and fencing would be provided in urbanized areas to ensure pedestrian safety. The Tier 2 EA also concluded that the NLX Project would not negatively affect public safety and health for similar reasons. The Tier 2 EA added that proposed NLX stations and facilities would provide a number of features to help ensure safety including lighting, ADA accessibility and adherence to local and state building and safety codes.
- **Infrastructure and Public Services:** The Tier 1 EA concluded that the NLX Project would not require new or expanded public infrastructure or services other than roadway improvements at crossings, modification of the MN 610 overpass, and replacement of the 379th Street overpass. This information is updated in the Tier 2 EA. Other infrastructure reconstruction would be associated with roadway improvements at improved rail grade crossings. Modification of the overpasses is no longer required. The stations and facilities would be served by existing public and private utilities that would be extended from public rights of ways to serve site locations in Coon Rapids, Hinckley and Superior, Wisconsin. The development of proposed NLX stations and facilities may require the replacement or relocation of public and private utilities in some locations.

- **Acquisitions and Relocations:** The Tier 1 EA concluded that no community facilities would be directly affected by right of way acquisition. The Tier 2 EA provided more details about acquisitions and relocations and concluded that approximately 3.96 acres of private property would be acquired at the proposed Superior, Wisconsin Station, Hinckley Station and maintenance facility site at Sandstone. A maintenance building owned by the City of Hinckley would need to be relocated prior to construction of the Hinckley Station. These acquisitions and relocations are not expected to affect socioeconomic and community resources because MnDOT coordinated closely with local communities to locate stations and facilities in areas consistent with local land use and economic development plans and the designs were developed to minimize and avoid impacts on surrounding neighborhoods and community facilities.

4.16 Environmental Justice

The Tier 1 EA analysis indicated that the NLX Project would have no disproportionately high and adverse impacts on minority and low-income populations. This section analyzes the NLX Project impacts based on proposed construction limits that have been updated since the Tier 1 EA. **Table 4-89** presents the study area used for environmental justice impact analysis; **Table 4-90** compares the results of the Tier 1 EA and the Tier 2 EA analyses. The revised impacts supersede the results presented in the Tier 1 EA and are summarized at the end of this section.

Table 4-89: Study Area for Environmental Justice

| Study Area Definition | Basis for Study Area |
|--|--|
| Construction limits from preliminary engineering plus 0.5-mile buffer. | Describes the context of the surrounding track, stations and maintenance and layover facilities. |

Table 4-90: Environmental Justice Comparison – NLX Tier 1 Service Level EA and Tier 2 Project Level EA

| Identified Impacts in Tier 1 Service Level EA | Identified Impacts in NLX Tier 2 Project Level EA |
|---|---|
| Minority and low-income populations identified in the study area, but no disproportionately high and adverse impacts. | No changes from Tier 1 EA impacts. |

Source: Quandel Consultants, LLC., 2014.

As appropriate and necessary, this Tier 2 EA would be refined through future supplemental NEPA documentation as the final design advances and funding is secured for the NLX Project. Future supplemental environmental documentation is identified as appropriate throughout this Tier 2 EA.

4.16.1 Regulatory Context and Methodology

4.16.1.1 Regulatory Context

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, dated February 11, 1994, states that “each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low income populations in the United States....” Because the proposed NLX Project anticipates

requesting federal funding and permits, the NLX Project is considered a federal action for purposes of compliance with Executive Order 12898.

The NLX Project environmental justice analysis follows the direction outlined in Executive Order 12898 and guidance in the Minnesota HPDP Environmental Justice guidelines (MnDOT, 2015c), and Environmental Justice Guidance Under the National Environmental Policy Act (CEQ, 1997a). Based on these, the environmental justice analysis for the NLX Project (MnDOT, 2015c):

- Identifies minority and low-income populations (poverty rate) based on the most current demographic data.
- Discusses all potential positive and adverse effects of the NLX Project on identified minority and low-income populations, including all reasonably foreseeable social, economic and environmental effects of the Project during and after construction.
- Describes actions incorporated into the NLX Project to address adverse effects.
- Discusses remaining effects, if any, and why further mitigation is not proposed.
- Determines whether there will be disproportionately high and adverse effects on the identified minority and low-income populations.

4.16.1.2 Methodology

The environmental justice analysis includes the census tracts that are within or bisect the study area described in **Table 4-89**. The environmental justice analysis uses U.S. Census Bureau tract data from the 2010–2014 American Community Survey 5-Year Estimates (U.S. Census Bureau, 2015b). The analysis examines both minority population data and median household income data to determine the presence of minority and low-income populations. The census tracts in the study area are broken down by the counties: Hennepin, Anoka, Isanti, Kanabec, Pine, Carlton, Douglas (Wisconsin) and St. Louis. In addition, the environmental justice analysis includes a review of the minority and low-income data for communities in the study area. This was required because in some of the less populated or rural areas of the study area (outside the cities of Minneapolis; Fridley; Coon Rapids; Superior, Wisconsin; and Duluth), the census tracts cover larger geographical areas than would be appropriate to represent the demographics of the study area. Therefore, the community data were used to capture a more geographically constrained level of analysis.

For this environmental justice analysis, minority populations are identified as census tracts where the **minority population is either 10 percentage points higher than the county average; or greater than 50 percent of the total geographic unit**. This threshold was developed based on Minnesota HPDP Environmental Justice guidelines (MnDOT, 2015c) and *Environmental Justice Guidance Under the National Environmental Policy Act* (CEQ, 1997b). The guidance is used for the Minnesota and Wisconsin portions of the study area.

The threshold used for identifying low-income populations is based on guidance in *FTA Circular 4703.1* for FTA's grant programs (FTA, 2012). Low-income populations are identified as tracts where the median household income is at or below 150 percent of the U.S. Department of Health and Human Services poverty threshold. The 2016 U.S. Department of Health and Human Services' Poverty Guidelines lists the poverty guideline for a family of four at \$24,300. **The low-income threshold used for this analysis is \$36,450 (150 percent of \$24,300).**²⁰

To determine if the NLX Project would have disproportionately high or adverse effects on minority and low-income populations, the results of the impact analyses from the Tier 2 EA were reviewed along with the proposed mitigation measures. To support the conclusions of the environmental justice analysis, public engagement was used to confirm the presence of minority and low-income populations within the study area and to identify any issues related to the NLX Project's potential impacts that may be of concern to minority and low-income populations. See Section 4.16.6 for a summary of outreach, and see Chapter 5 Public and Agency Involvement for more information on NLX Project outreach efforts.

4.16.2 Affected Environment

This section reviews existing conditions to identify the presence of minority and low-income populations in the study area. See **Appendix N** for tables that contain minority and low-income data for each census tract and community that are within or bisect the study area.

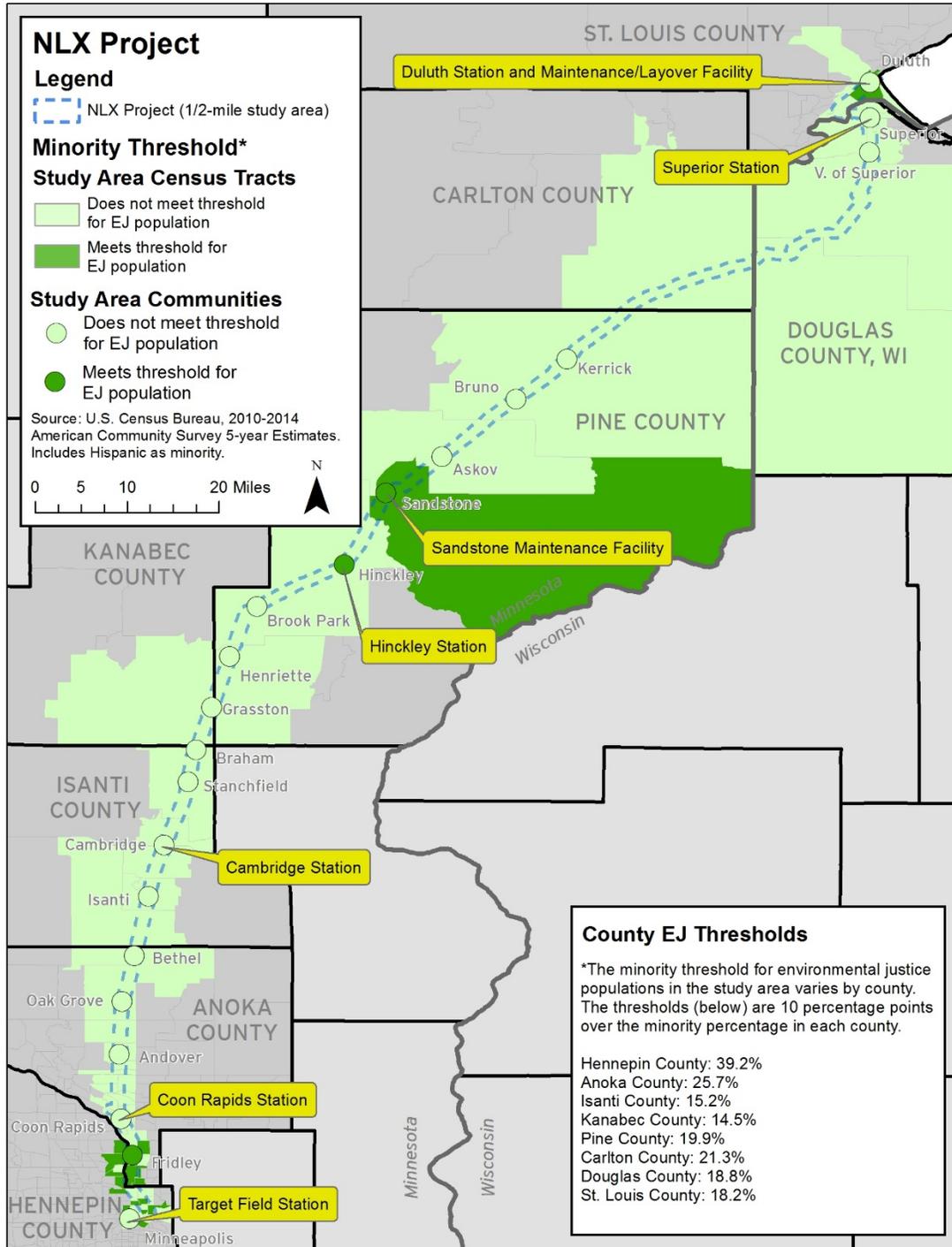
4.16.2.1 Minority Populations

Figure 4-7 shows the census tracts and communities along the NLX Project that meet the minority thresholds (varies by county) established in Section 4.16.1.2 for environmental justice populations. In general, there are three areas within the study area that meet the minority thresholds:

- At the southern end of the NLX Project, between Minneapolis and Coon Rapids, there are a number of census tracts that meet the threshold for minority populations. In addition, the city of Fridley in Anoka County meets the threshold for minority populations.

²⁰ *FTA Circular 4703.1 suggests the use of a locally developed poverty threshold, such as that used for FTA's grant program, to identify a low-income person (FTA, 2012). The grant program defines a low-income person as an individual whose family income is at or below 150 percent of the U.S. Department of Health and Human Services poverty guideline. The poverty guidelines are issued each year and are a simplification of the poverty thresholds published by the U.S. Census Bureau. The U.S. Department of Health and Human Services' Poverty Guidelines are used for administrative purposes by federal agencies to determine, for example, financial eligibility for certain federal programs (U.S. Department of Health and Human Services, 2016).*

Figure 4-7: NLX Project Minority Populations



- In Pine County, the census tract where Sandstone is located meets the threshold for minority populations. In addition, both the city of Hinckley and city of Sandstone meet the threshold for minority populations.
- At the northern end of the NLX Project, a number of census tracts in downtown Duluth meet the threshold for minority populations.

More detailed discussions by county are provided below. Minority threshold maps for each county are provided at the end of this subsection (see **Figure 4-8** through **Figure 4-15**).

Hennepin County: The study area in Hennepin County has a relatively high proportion of minority populations (40.8 percent) compared to Hennepin County as a whole (29.2 percent), but similar to the city of Minneapolis (39.0 percent). The high minority percentage in the study area in Hennepin County is driven by the presence of relatively large Black or African American and Asian populations. The study area in Hennepin County contains 11 tracts (out of 26) that meet the 39.2 percent threshold for minority populations in Hennepin County. Of those, tracts 17, 1018, 1026, 1031 and 1261 are proximate to the NLX Project. No communities in the county along the study area meet the minority threshold (see **Figure 4-8**).

Anoka County: The study area in Anoka County is 17.8 percent minority, which is slightly higher than Anoka County (15.7 percent) as a whole. The study area in Anoka County contains five tracts (out of 26) that meet the 25.7 percent threshold for minority populations in Anoka County (Tracts 511.02, 512.01, 512.06, 513.04, 514). Tracts 512.01, 512.06 and 514 abut the existing tracks. The minority population tracts in Anoka County are generally concentrated at the southern end of the county in the city of Fridley. Fridley is the only community in the county along the study area that meets the threshold for minority populations (see **Figure 4-9**).

Isanti County: The study area in Isanti County is 5.2 percent minority, which is the same as Isanti County (5.2 percent) as a whole. The study area in Isanti County does not contain census tracts that meet the 15.2 percent threshold for minority populations in Isanti County. No communities in the county along the study area meet the minority threshold (see **Figure 4-10**).

Kanabec County: The study area in Kanabec County is 3 percent minority, which is slightly less than the county (4.5 percent minority) as a whole. The study area in Kanabec County does not contain census tracts that meet the 14.5 percent threshold for minority populations in Kanabec County. No communities in the county along the study area meet the minority threshold (see **Figure 4-11**).

Pine County: The study area in Pine County is 12.6 percent minority, which is higher than Pine County (9.9 percent) as a whole. The study area in Pine County contains one tract (out of five) that meets the 19.9 percent threshold for minority populations in Pine County. Both the city of Hinckley (28.3 percent) and city of Sandstone (33.8 percent) represent a large portion of the overall minority population in the county and both communities meet the threshold for minority populations in Pine County. The minority population in

Hinckley is primarily comprised of American Indian or Alaska Native and people with Two or More Races. The minority population in Sandstone primarily consists of Black or African American and Latino, and includes residents at the Federal Correctional Institution in Sandstone (see **Figure 4-12**).

Carlton County: Minority populations make up 8 percent of the population in the study area in Carlton County, which is slightly lower than Carlton County (11.3 percent) as a whole. The largest minority populations in the study area are American Indian or Alaska Native and Latino. The census tracts for the study area in Carlton County do not meet the 21.3 percent threshold for minority populations in Carlton County. No communities in the county along the study area meet the minority threshold (see **Figure 4-13**).

Douglas County, Wisconsin: Minority populations make up 7.8 percent of the population in the study area in Douglas County, Wisconsin, which is the same as Douglas County, Wisconsin (7.8 percent), as a whole. The study area in Douglas County, Wisconsin, does not contain any census tracts (out of eight) that meet the 17.8 percent threshold for minority populations in Douglas County, Wisconsin. No communities in the county along the study area meet the minority threshold (see **Figure 4-14**).

St. Louis County: Minority populations make up 17.2 percent of the population in the study area in St. Louis County, which is considerably higher than the county as a whole (8.2 percent). The study area in St. Louis County contains four tracts (out of 11) that meet the 18.2 percent threshold for minority populations in St. Louis County. The minority population tracts (Tracts 16, 18, 19 and 156) are near downtown Duluth. No communities in the county along the study area meet the minority threshold (see **Figure 4-15**).

Figure 4-8: Hennepin County – Minority Populations

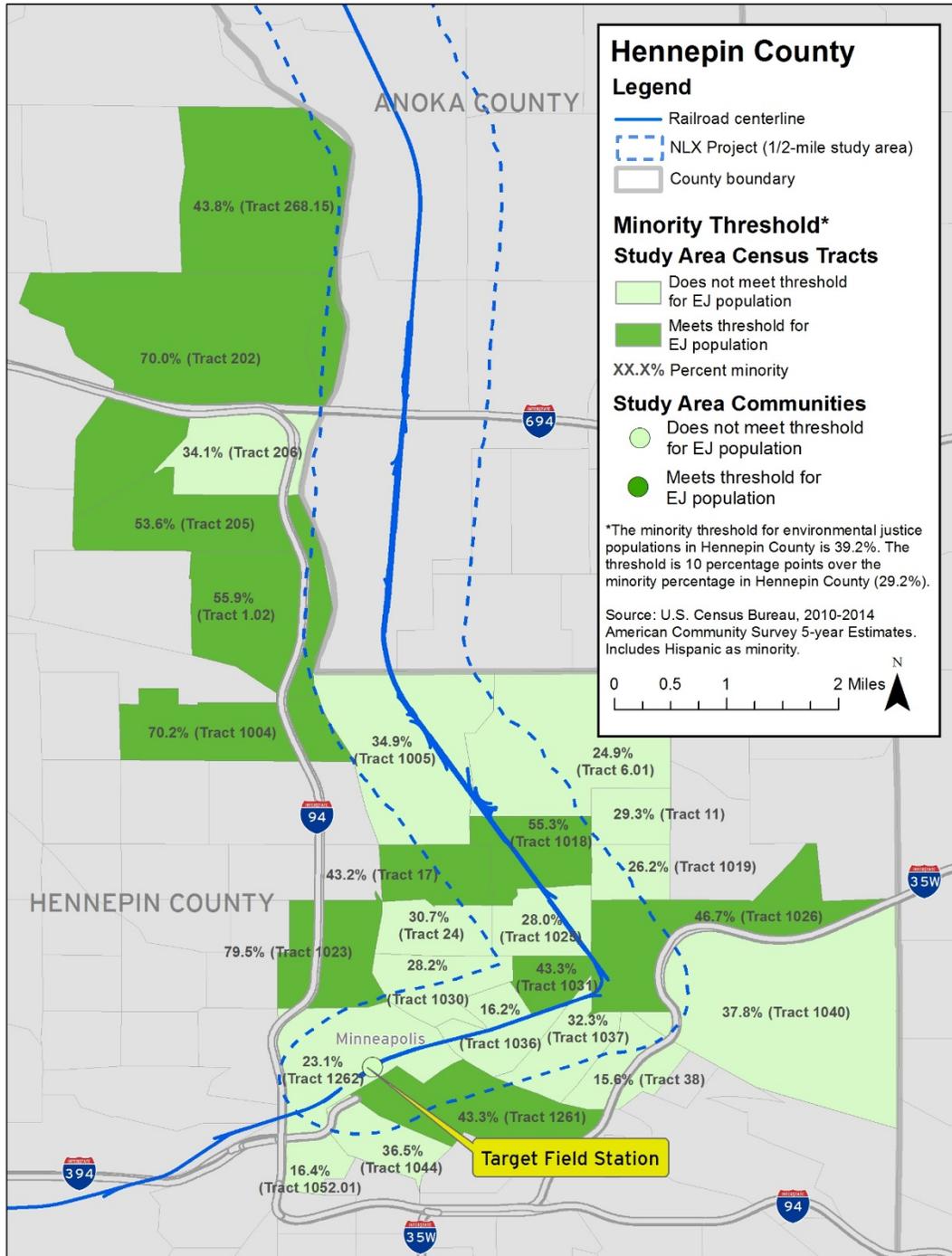


Figure 4-9: Anoka County – Minority Populations

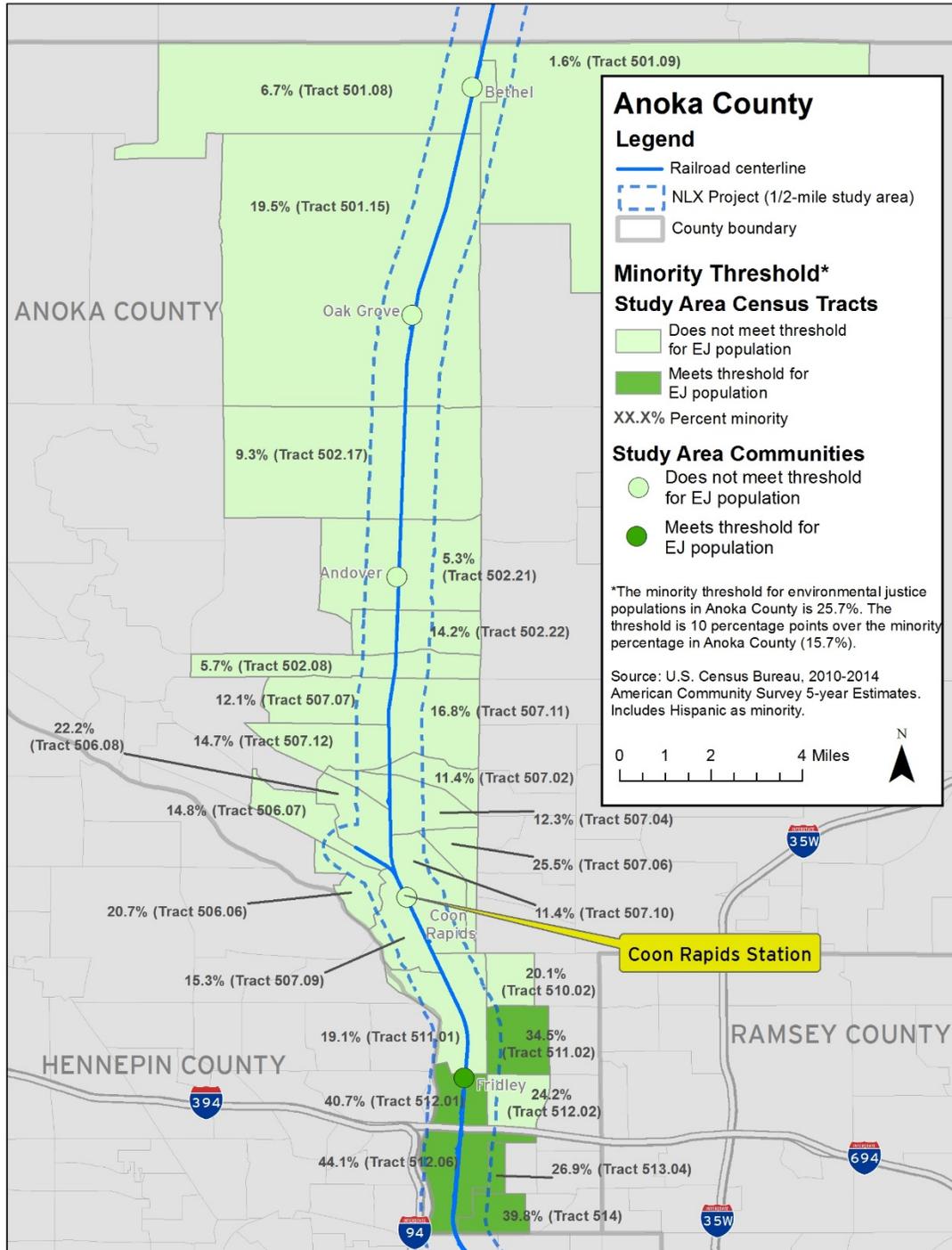


Figure 4-10: Isanti County – Minority Populations

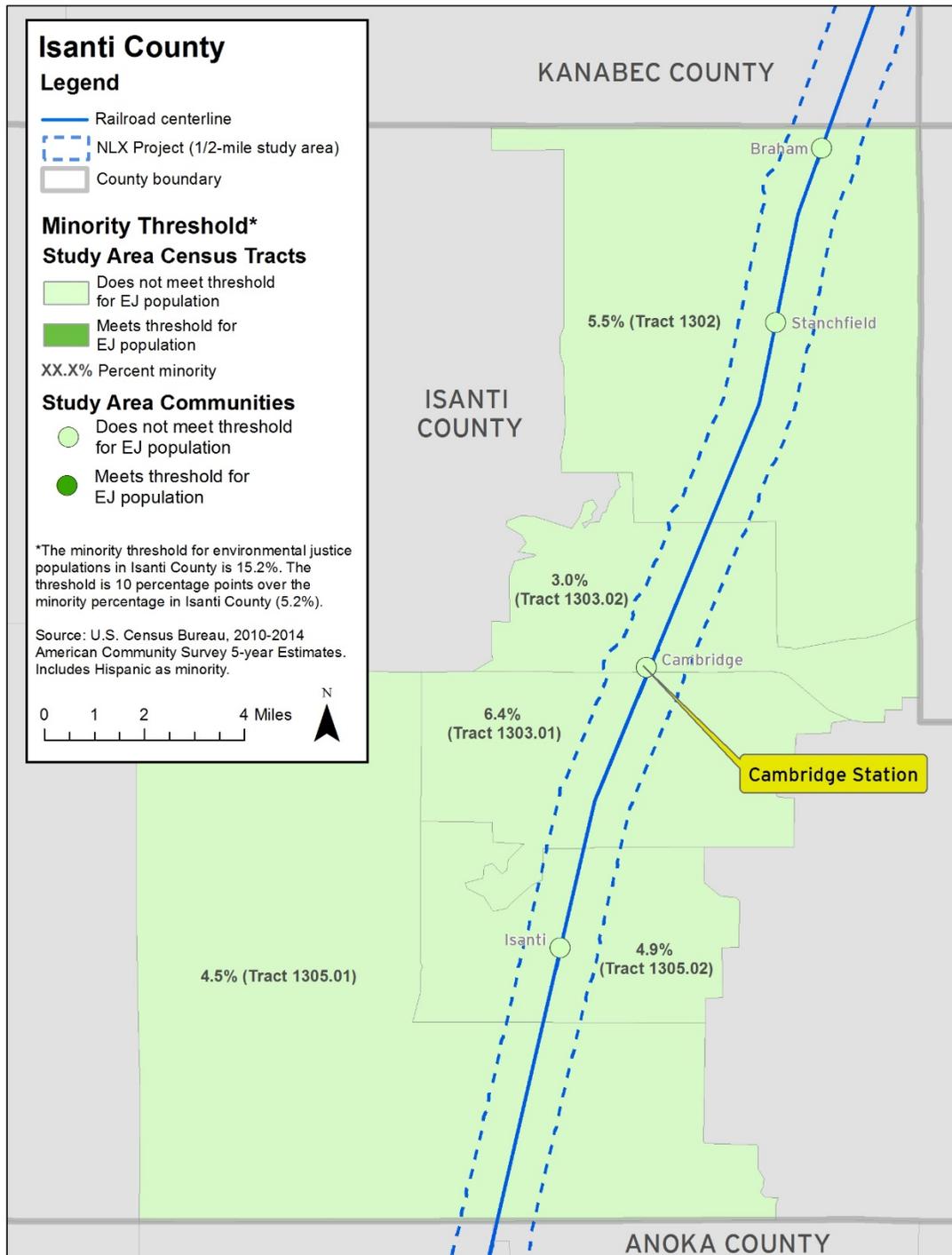


Figure 4-11: Kanabec County – Minority Populations

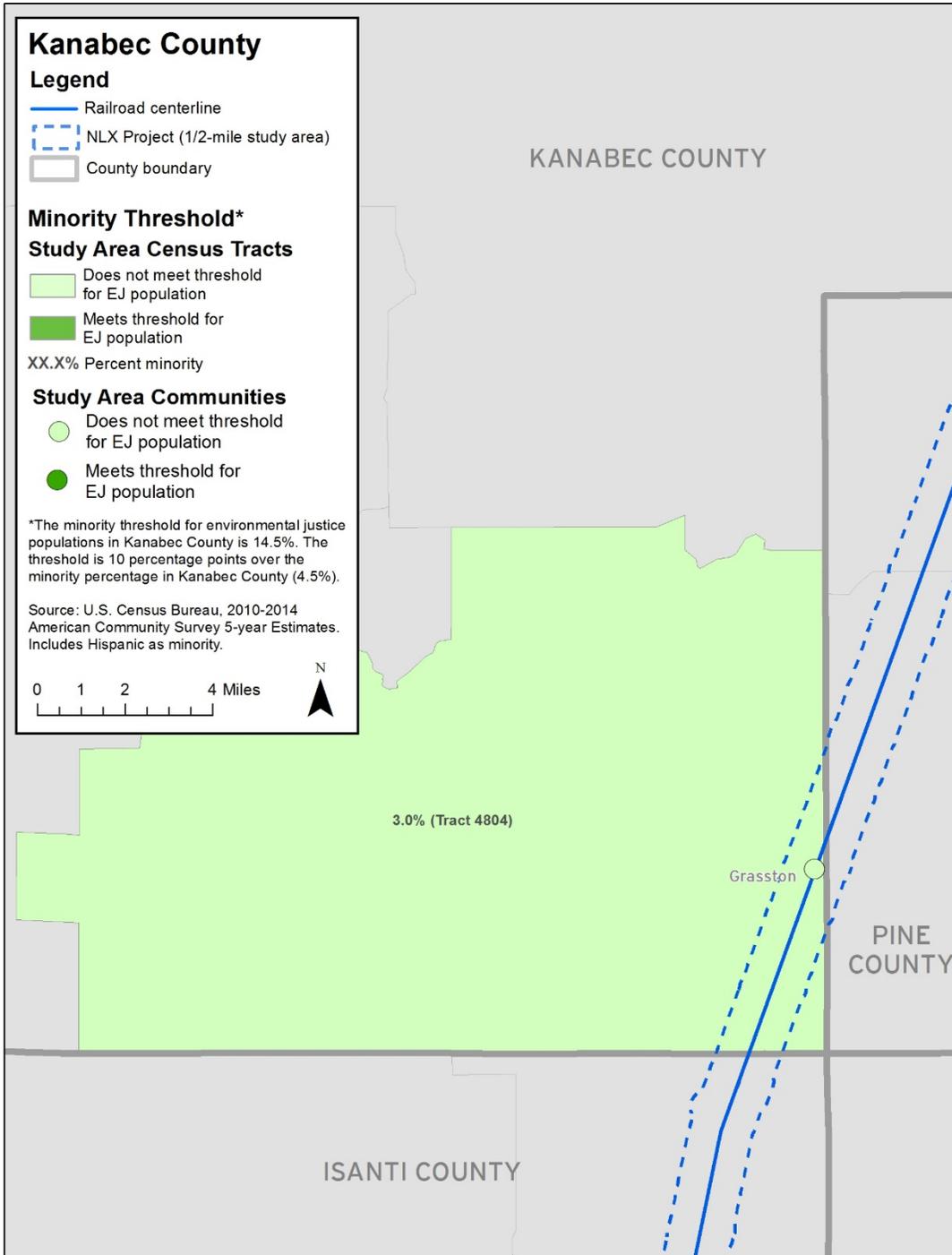


Figure 4-12: Pine County – Minority Populations

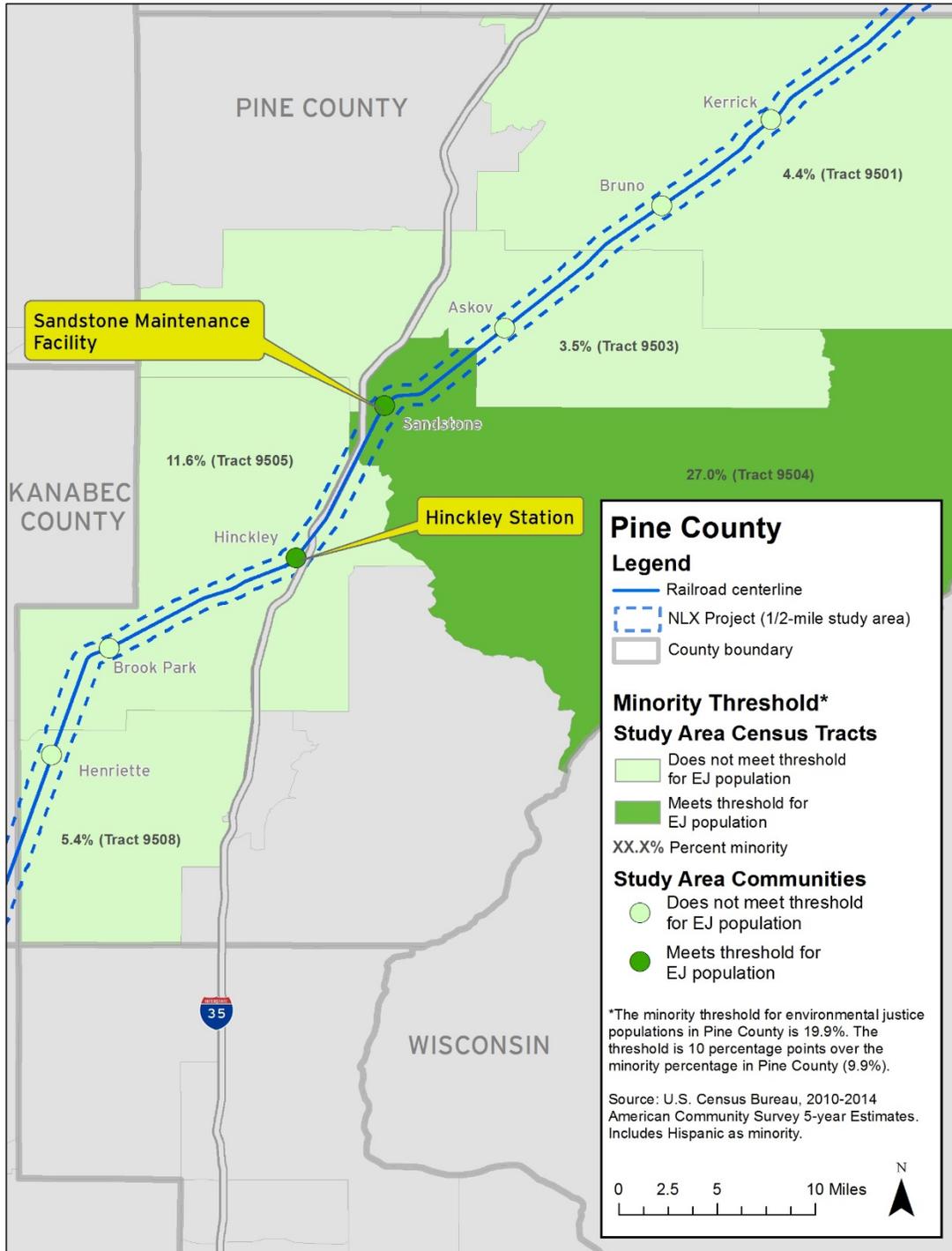


Figure 4-13: Carlton County – Minority Populations

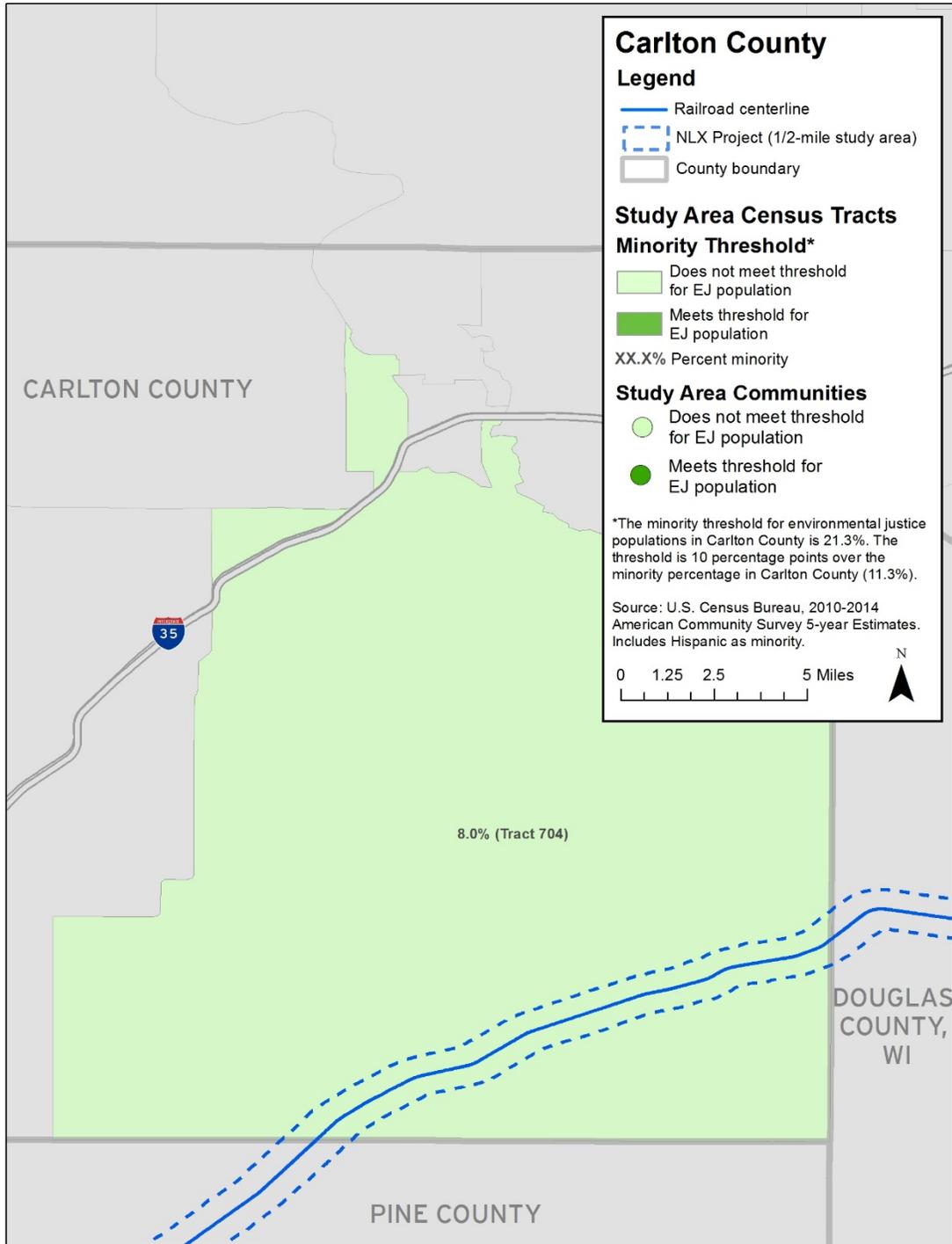


Figure 4-14: Douglas County, Wisconsin – Minority Populations

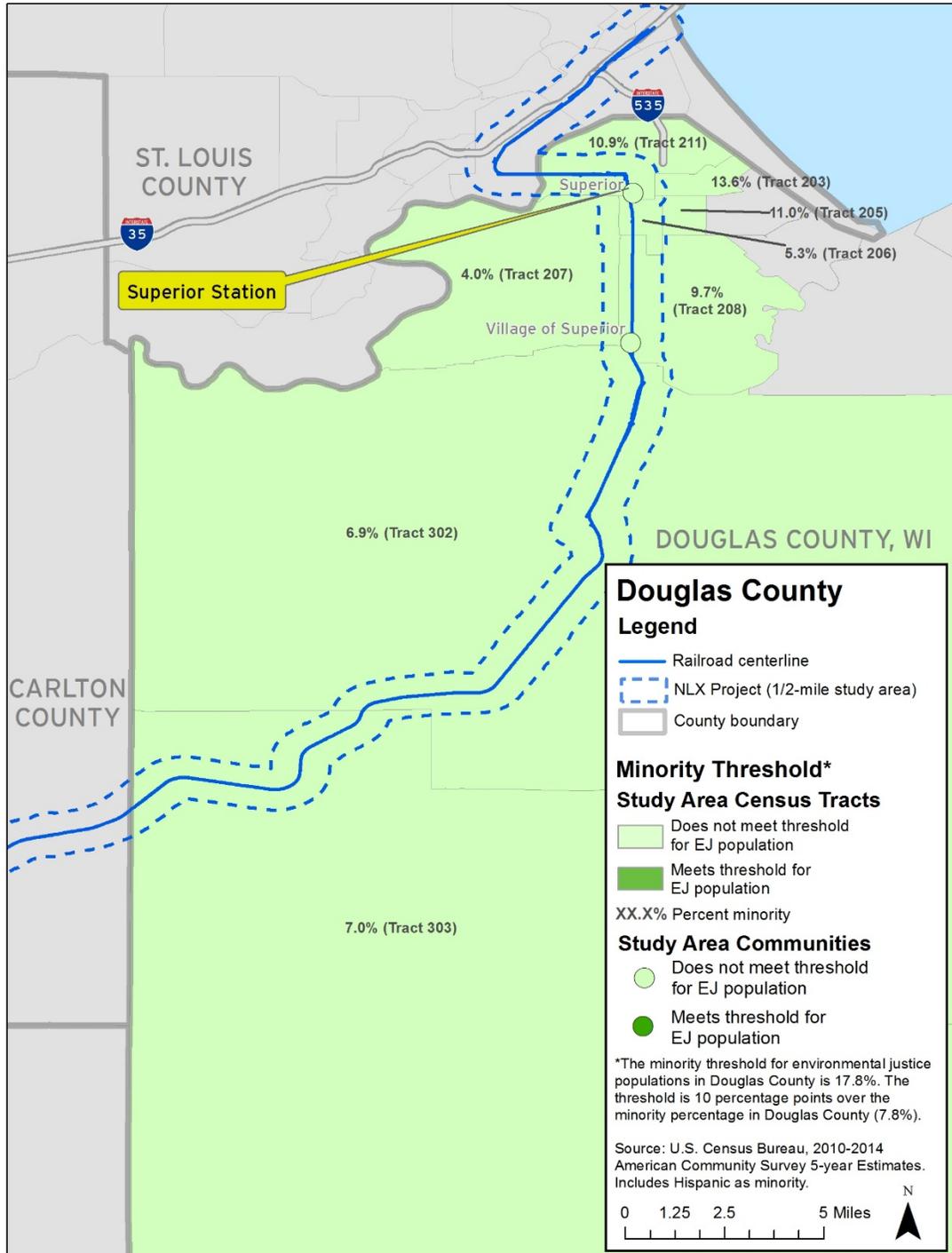
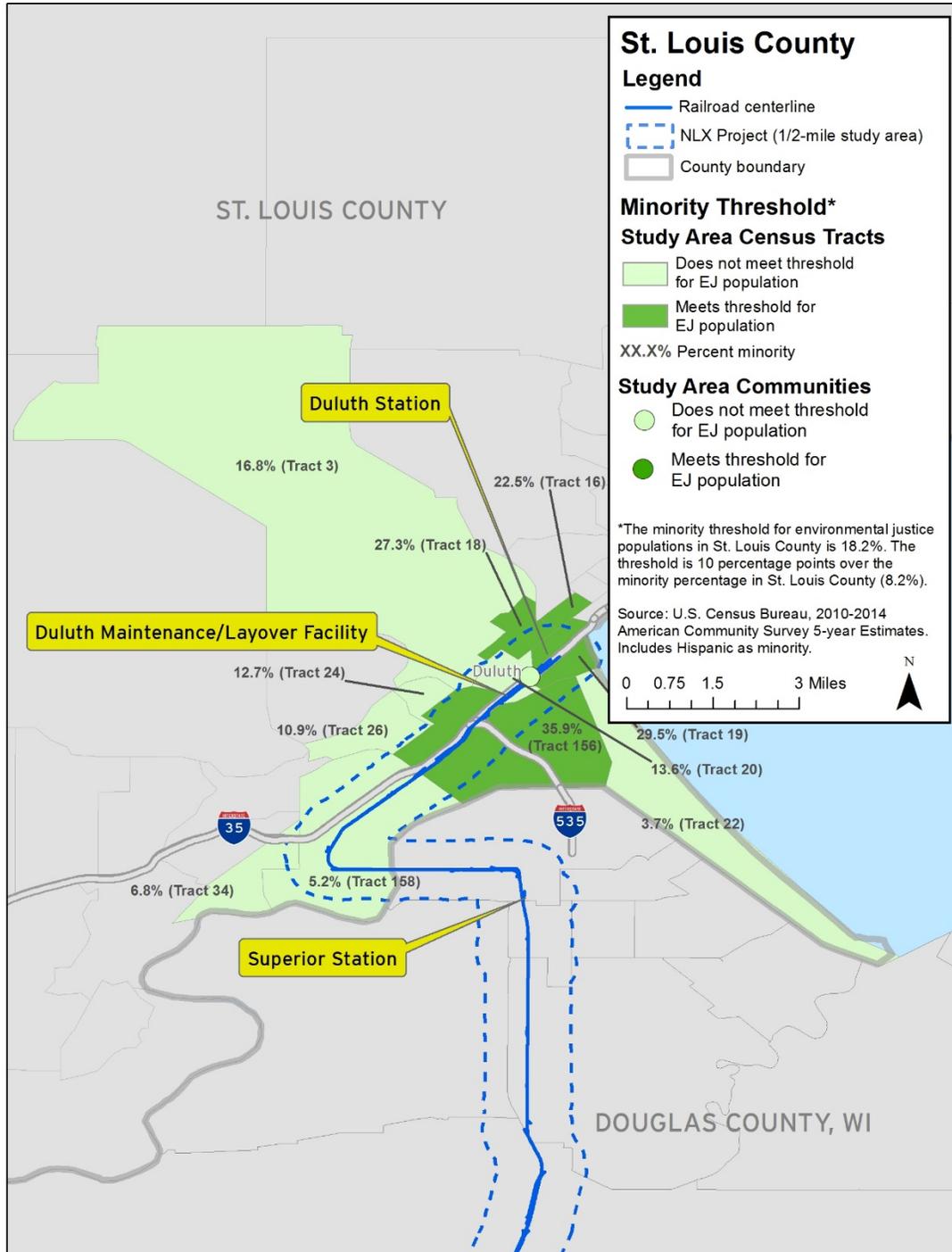


Figure 4-15: St. Louis County – Minority Populations



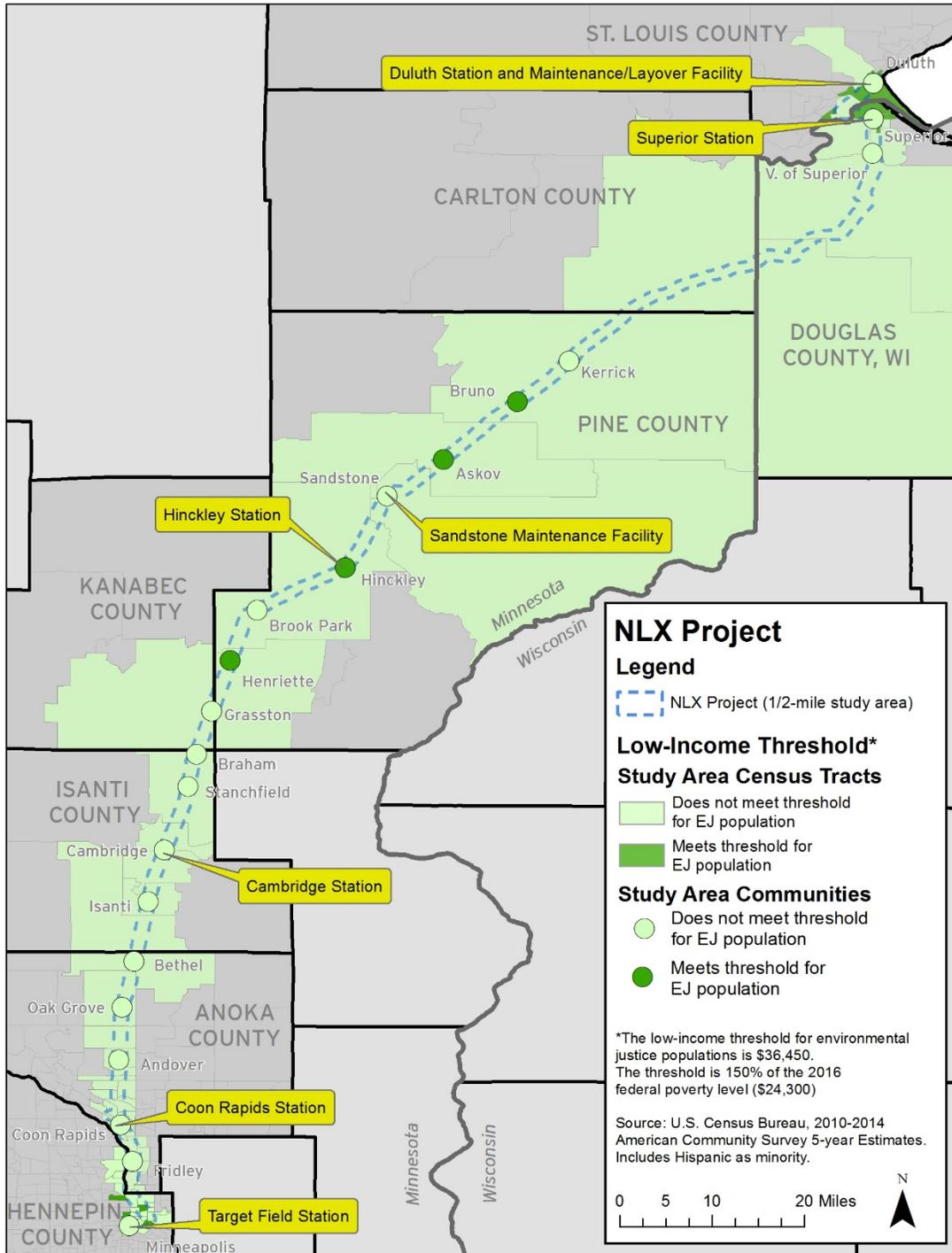
4.16.2.2 Low-Income Populations

Figure 4-16 shows the census tracts and communities along the NLX Project that meet the low-income threshold (\$36,450) established as described in Section 4.16.1.2 for environmental justice populations. Similar to the minority environmental justice areas, there are three general areas within the study area that meet the low-income threshold:

- At the southern end of the NLX Project, in Minneapolis, there are a number of census tracts that meet the threshold for low-income populations.
- In Pine County, no individual census tracts meet the low-income threshold, but the communities of Henriette, Hinckley, Askov and Bruno meet the low-income threshold.
- At the northern end of the NLX Project, a number of census tracts in the Duluth and Superior, Wisconsin, area meet the threshold for low-income populations. The communities of Duluth and Superior, Wisconsin, as a whole do not meet the threshold.

More detailed discussions by county are provided below. Low-income threshold maps for each county are provided at the end of this subsection (see **Figure 4-17** through **Figure 4-24**).

Figure 4-16: NLX Project Low-Income Populations



Hennepin County: The study area in Hennepin County has five census tracts (Tracts 38, 1004, 1018, 1023, 1037) that meet the \$36,450 low-income threshold (out of 26 tracts). Of those five, two tracts, tract 1018 and tract 1037, are adjacent to the NLX Project. The tracts that meet the low-income threshold are generally closer to downtown Minneapolis relative to the rest of the study area in Hennepin County. The city of Minneapolis as a whole does not meet the low-income threshold (**Figure 4-17**).

Anoka County: All census tracts within the study area in Anoka County have median incomes above \$48,000, which do not meet the \$36,450 threshold for low-income populations. No communities in the county along the study area meet the low-income threshold (**Figure 4-18**).

Isanti County: The study area in Isanti County does not contain any census tracts that meet the \$36,450 threshold for low-income populations. No communities in the county along the study area meet the low-income threshold (**Figure 4-19**).

Kanabec County: The study area in Kanabec County does not contain any census tracts that meet the \$36,450 threshold for low-income populations. No communities in the county along the study area meet the low-income threshold (**Figure 4-20**).

Pine County: The study area in Pine County does not contain any census tracts that meet the \$36,450 threshold for low-income populations. However, the median household income for the city of Hinckley is \$31,250, which does not meet the \$36,450 threshold for low-income populations. Additionally, Henriette, Askov and Bruno meet the low-income threshold (**Figure 4-21**).

Carlton County: The study area in Carlton County does not contain any census tracts that meet the \$36,450 threshold for low-income populations. No communities in the county along the study area meet the low-income threshold (**Figure 4-22**).

Douglas County, Wisconsin: The study area in Douglas County, Wisconsin contains three census tracts (Tracts 203, 206, 211) that meet the \$36,450 threshold for low-income populations. The three tracts are near the Superior, Wisconsin Station in downtown Superior, Wisconsin. No communities along the study area meet the low-income threshold (**Figure 4-23**).

St. Louis County: The study area in St. Louis County is made up of 11 census tracts, seven of which (Tracts 16, 18, 19, 22, 26, 34 and 156) meet the \$36,450 threshold for low-income populations. The low-income census tracts are primarily located in the downtown and port areas, including the Duluth Station. No communities along the study area meet the low-income threshold (**Figure 4-24**).

Figure 4-17: Hennepin County – Low-Income Populations

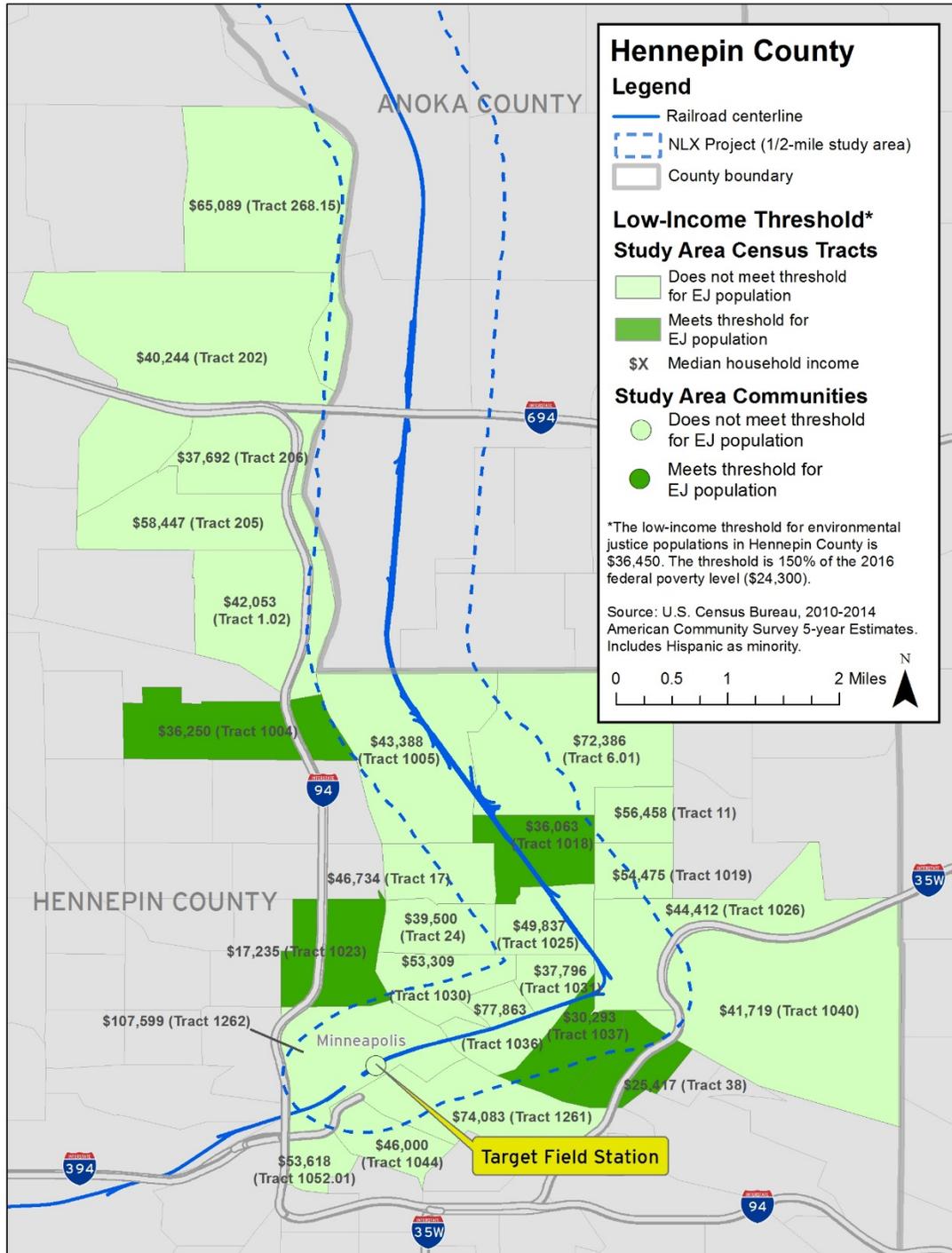


Figure 4-18: Anoka County – Low-Income Populations

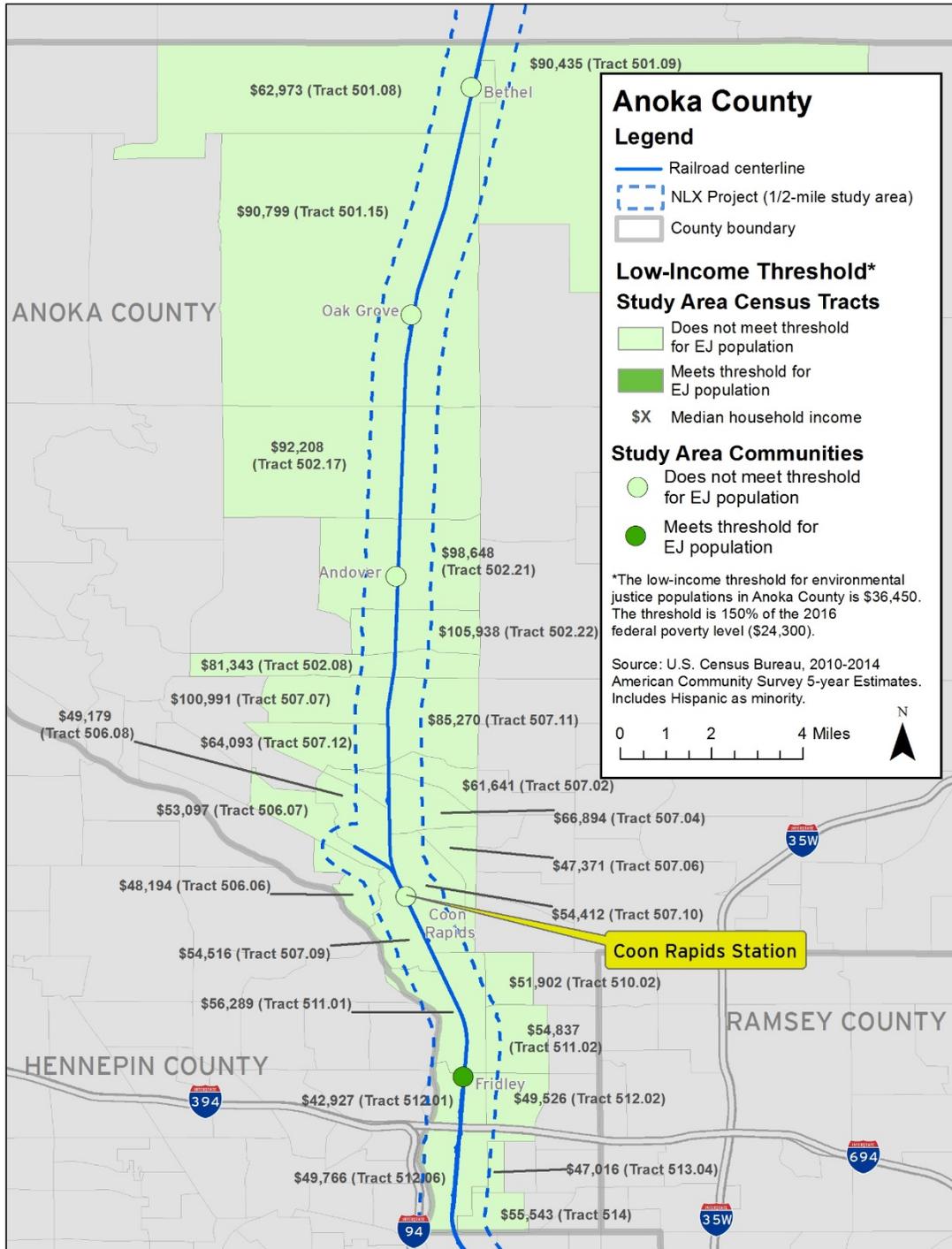


Figure 4-19: Isanti County – Low-Income Populations

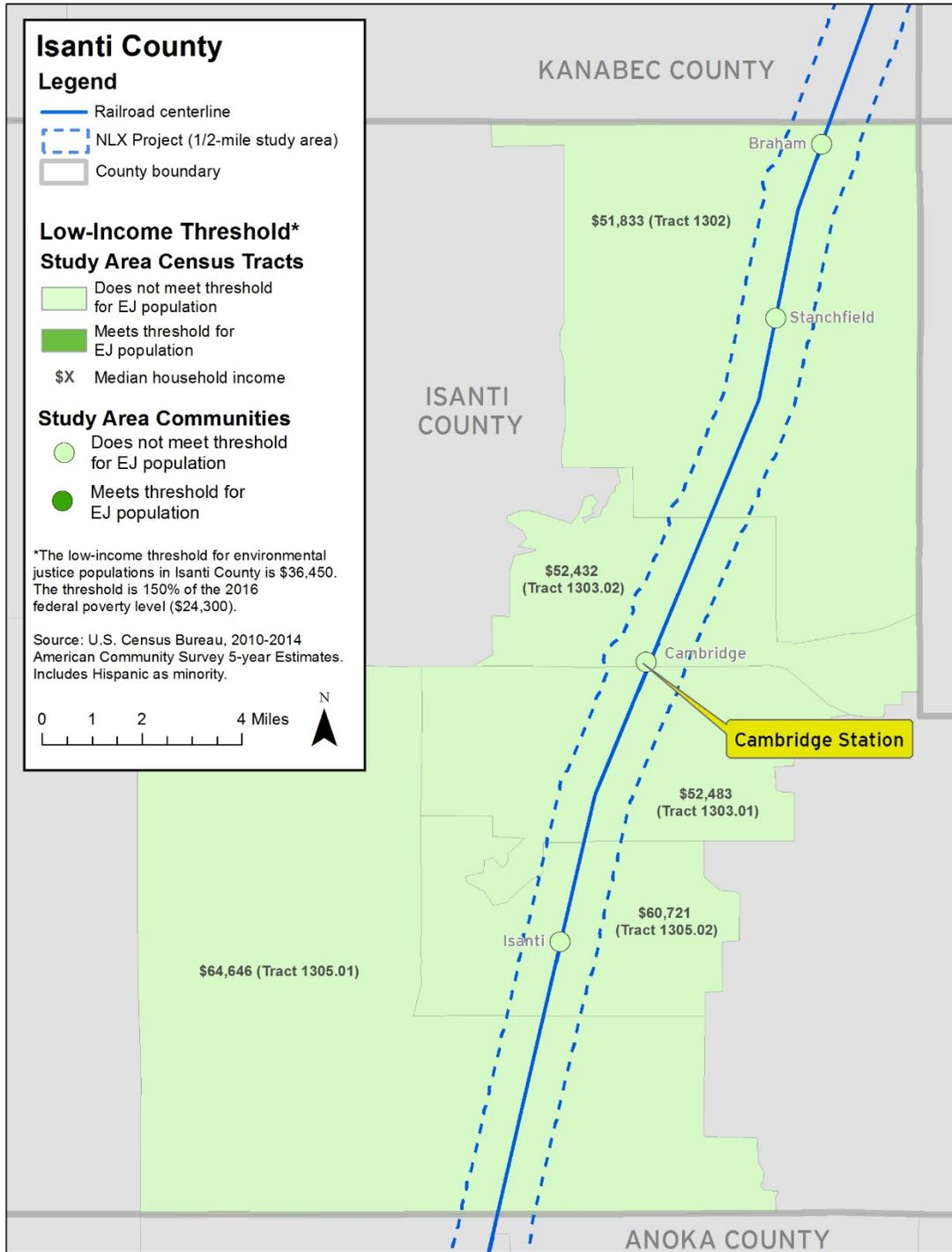


Figure 4-20: Kanabec County – Low-Income Populations

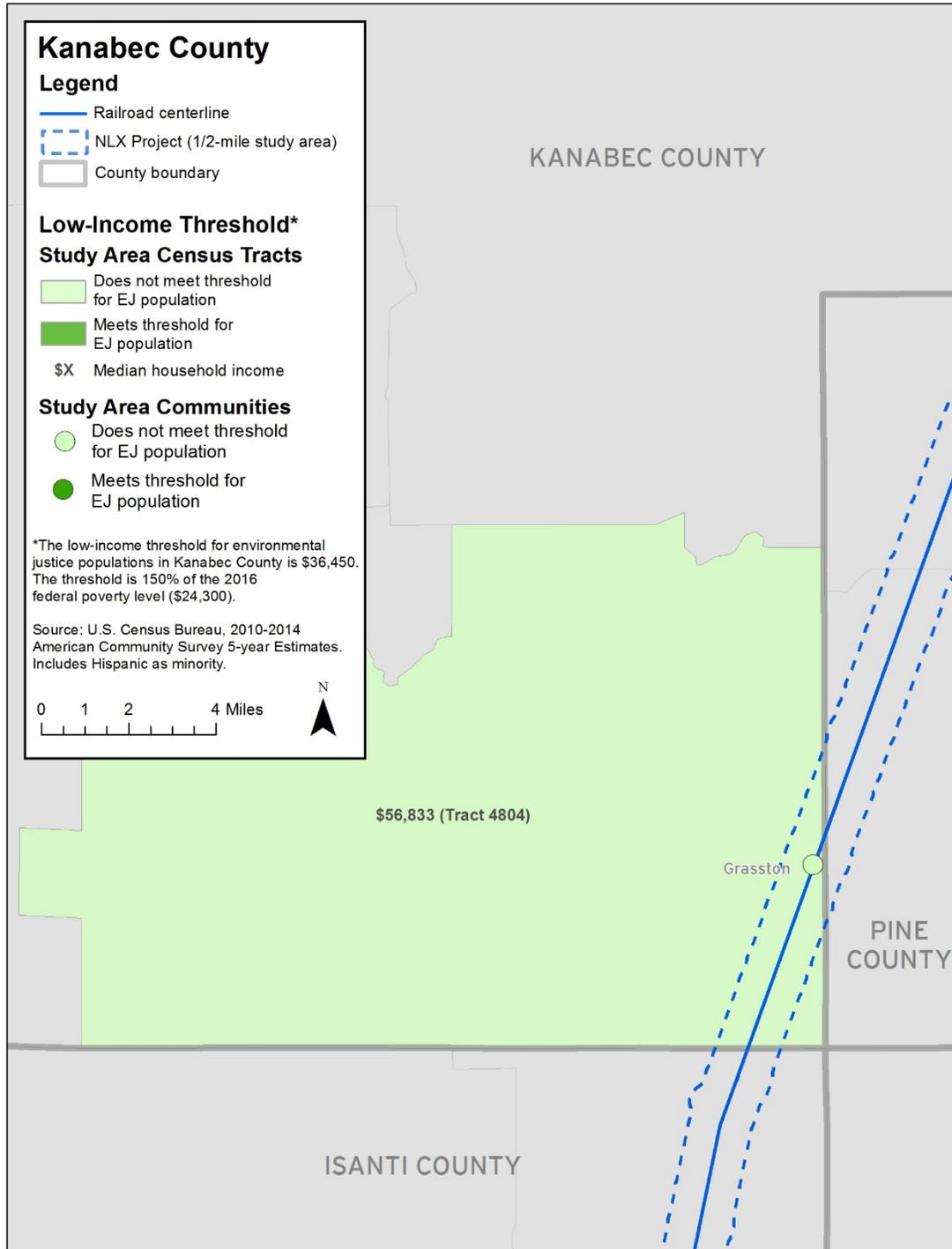


Figure 4-21: Pine County – Low-Income Populations

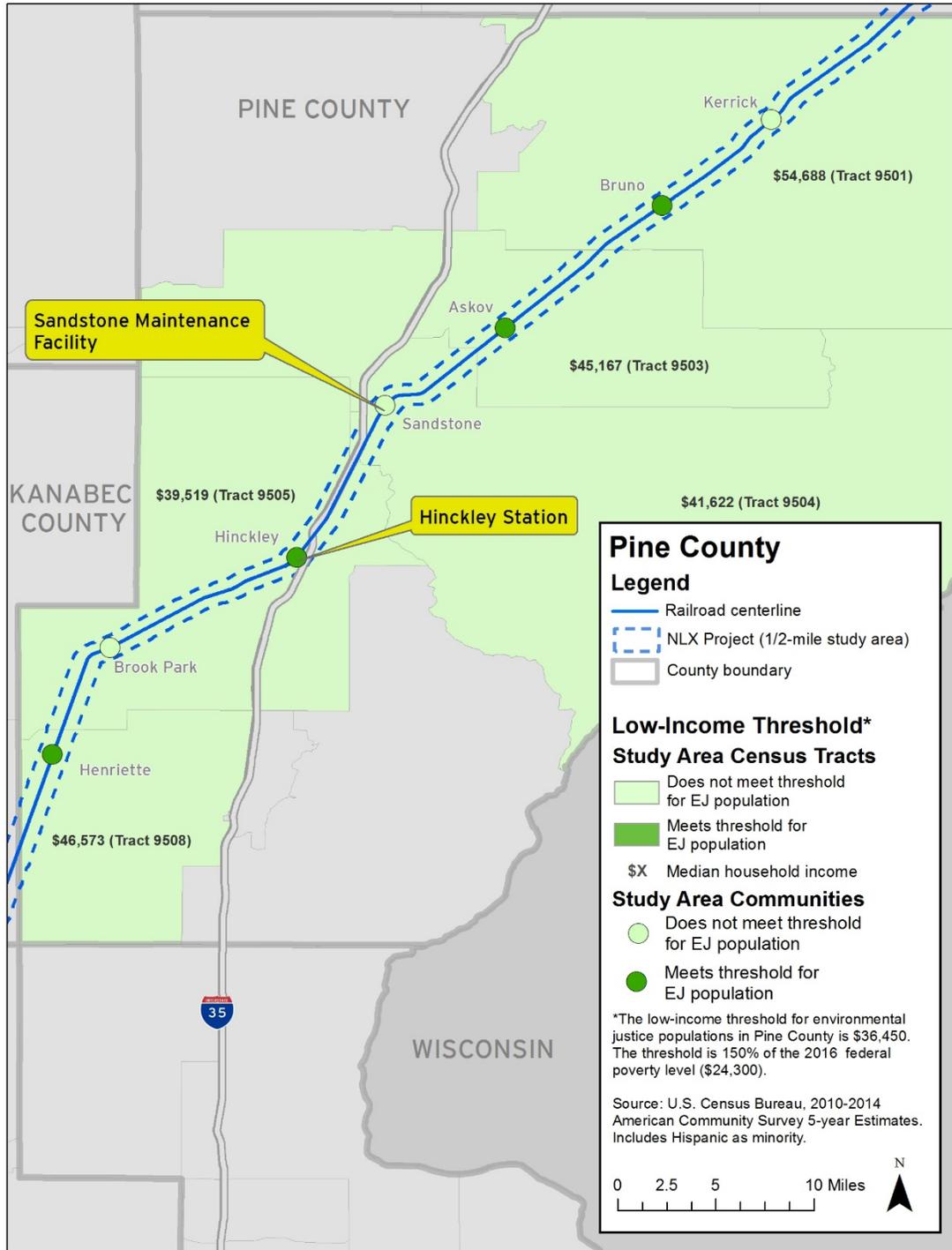


Figure 4-22: Carlton County – Low-Income Populations

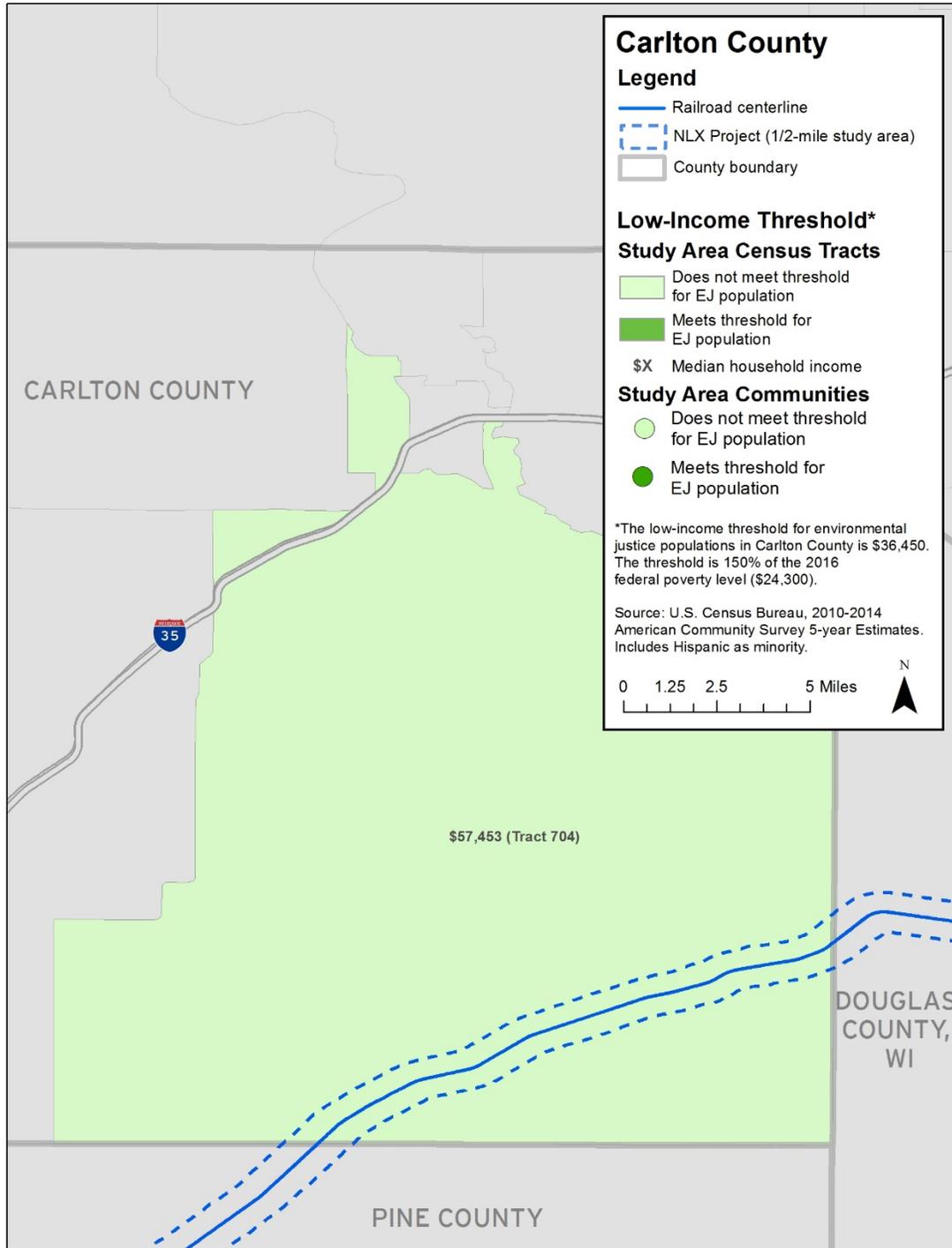


Figure 4-23: Douglas County, Wisconsin – Low-Income Populations

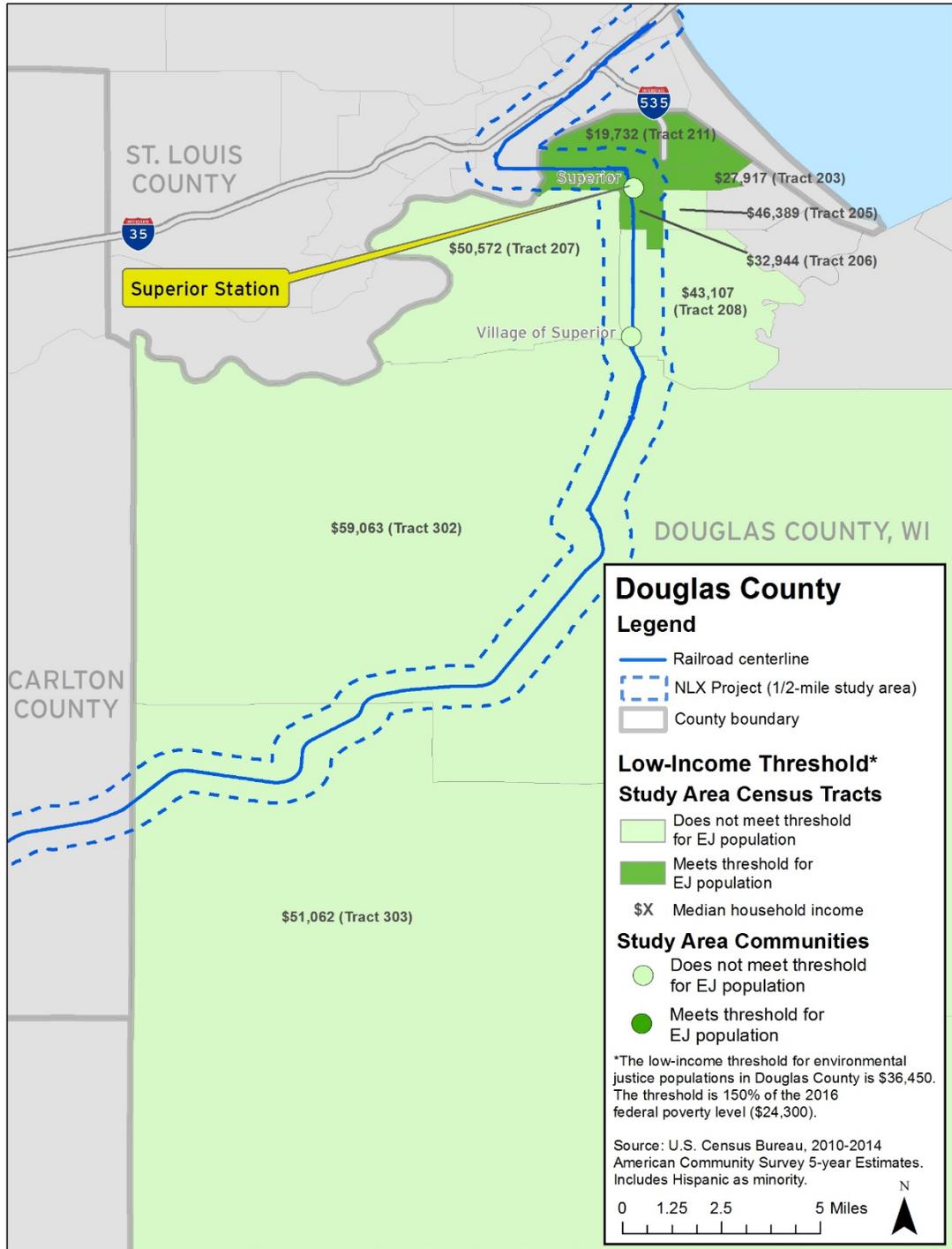
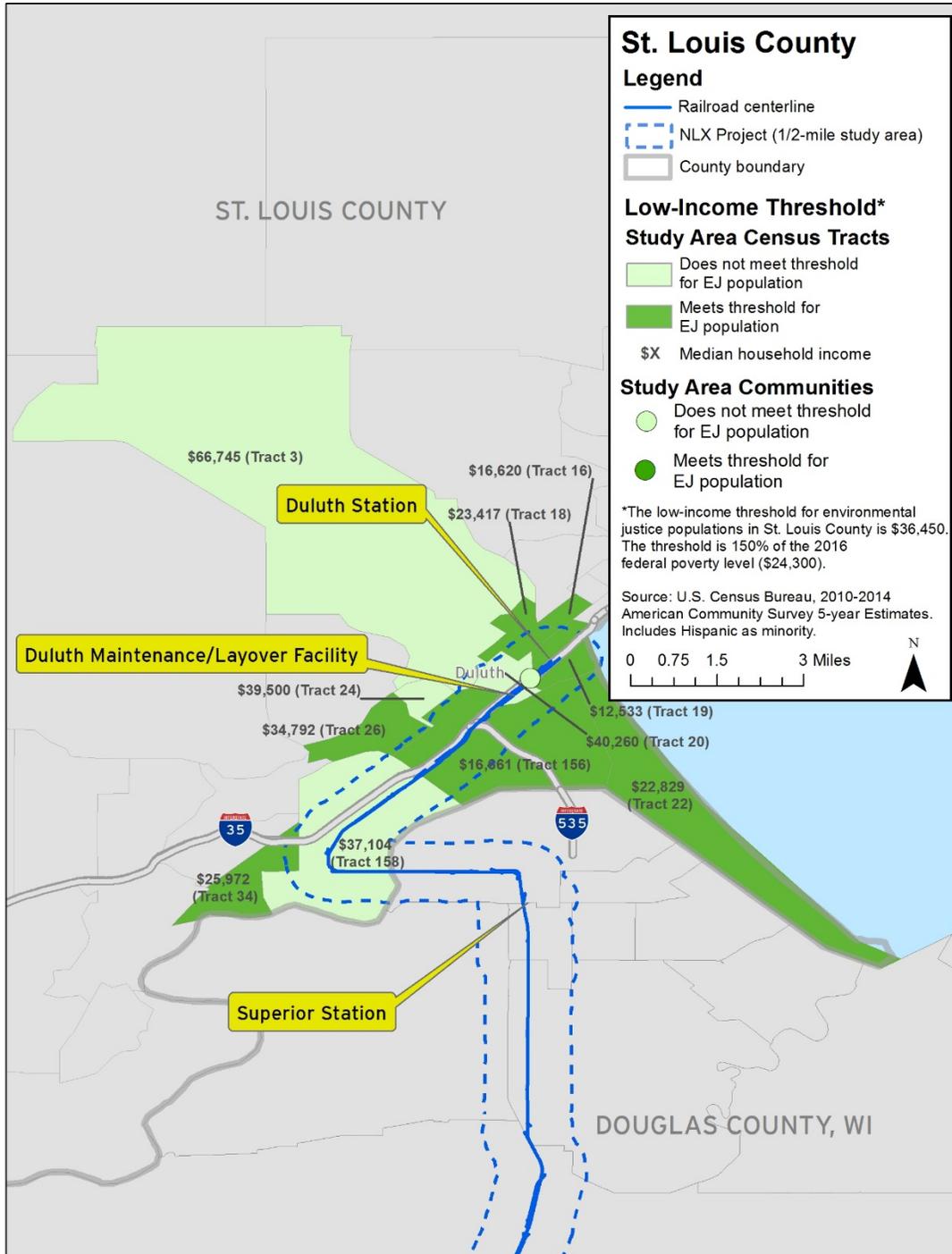


Figure 4-24: St. Louis County – Low-Income Populations



4.16.3 Impacts

The previous section identified the presence of minority and low-income populations in three general areas in the study area: the southern end in Hennepin and Anoka Counties; the central portion in Pine County; and the northern end in Douglas County, Wisconsin, and St. Louis County (see Section 4.16.2 for specific locations). This section uses that information along with public engagement to review the NLX Project's impacts and determine if those impacts would create high or disproportionate impacts on minority and low-income populations.

The following sections discuss the impacts on minority and low-income populations associated with the No Build Alternative and the Build Alternative. Impact analysis considered all track, roadway, bridge, station and maintenance and layover facilities as identified in the beginning of this chapter. The Build Alternative impacts discussion analyzes long-term operations and maintenance impacts and short-term construction impacts as described in the beginning of this chapter. A discussion of potential impacts at station and maintenance and layover facility sites is also presented, as well as a general discussion of the potential impacts within the BNSF right of way. Avoidance, minimization and mitigation measures are described in Section 4.16.4.

4.16.3.1 No Build Alternative

The No Build Alternative would not result in disproportionately high and adverse effects on minority and low-income populations. Under the No Build Alternative, the NLX Project would not occur, and there would be no changes except planned and programmed actions that are independent of the NLX Project.

4.16.3.2 Build Alternative – Operations

The following resources and their associated NLX Project impacts were evaluated for the environmental justice analysis; these categories were selected because the impacts in these categories tend to be localized and have the potential for high or disproportionate impacts on communities with minority and low-income populations:

- Transportation
- Right of way acquisition
- Noise and vibration impacts
- Socioeconomic
- Economic
- Visual
- Air quality

Transportation

The transportation analysis completed for the Tier 2 EA in Chapter 3 Transportation confirmed no significant impacts on traffic circulation and operations are anticipated at the NLX stations and facilities including areas where minority or low-income populations are present. The analysis also concluded that grade crossing safety would be improved with proposed grade crossing warning devices. This benefit would be provided throughout the NLX Project and in areas with minority and low-income populations.

During the station and facilities planning process, outreach with local communities indicated a desire to select station sites that are in locations accessible to existing community resources and multiple modes of transportation. This objective was considered in the site selection process, and stations were typically selected in accessible downtown areas near existing transit and pedestrian connections. As a result, NLX stations would be accessible to minority and low-income populations who may rely more frequently on transit or walking to reach their destinations. Some local communities indicated that local transit service routes could be modified to serve NLX stations. These changes would be intended to increase connectivity to transportation modes and would not reduce existing transit service.

Right of Way

For the NLX Project, no right of way would be acquired along the railroad or at crossings. A small amount of privately owned property, approximately 4 acres, would be acquired for stations and facilities. Acquisition of private land would only occur at the Cambridge, Hinckley and Superior, Wisconsin station sites and the proposed maintenance facility site at Sandstone (see Section 4.2 for more information about right of way acquisitions). While some of these acquisitions occur in communities or census tracts that have minority or low-income populations, the acquisitions would occur on vacant properties and would not directly affect minority and low-income populations. The land that would be acquired would not require the relocation of any residences or businesses. MnDOT coordinated closely with local communities, including communities with minority and low-income populations present, to locate stations and facilities in areas consistent with local land use and economic development plans, and site plans were designed to minimize and avoid impacts on surrounding neighborhoods and businesses. Through the outreach process, no environmental justice concerns were identified with proposed acquisitions.

Air Quality

No adverse air quality impacts are anticipated for the NLX Project. Because no adverse impacts were identified, there is no potential for any high and adverse impacts to be disproportionately borne by minority or low-income populations.

Noise and Vibration

Noise and vibration impacts were evaluated in Section 4.9. One vibration impact in Nickerson was identified and is not located in an area with identified minority or low-income populations. Noise impacts on residential and institutional uses are anticipated throughout the study area, and in areas that meet the threshold for low-income and minority populations. Nearly all noise impacts in the study area are associated with horn blowing at crossings (in areas without existing quiet zones) and range from moderate to severe impacts. Two areas of noise impacts, one in Minneapolis (multifamily) and one in Braham (park), are associated with uses in proximity to the rail alignment. However, these two areas are not located in census tracts or communities that meet the threshold for minority and low-income populations. No noise impacts are associated with the operation of stations and maintenance and/or layover facility sites.

In Pine County, noise impacts occur in several sparsely populated rural communities in the study area that meet the threshold for low-income and/or minority populations including Henriette (population of 50); Hinckley (population of 1,727); Sandstone (population of 2,786); Askov (population of 371); and Bruno (population of 85). The number of noise impacts would increase along this segment of the corridor if the proposed maintenance facility is located in Sandstone. Impacts are not related to the operation of the facility, but instead are due to horn blowing from an additional nighttime round trip train operation that would be required between Duluth and Sandstone if the maintenance facility is in Sandstone. Due to the prevalence of noise impacts in all areas, noise impacts would not disproportionately impact minority and low-income populations.

Visual

The visual impact analysis summarized in Section 4.14 determined that the NLX Project is not expected to alter the general visual character of the adjacent landscape. A majority of proposed track improvements would occur within the existing BNSF right of way and would not greatly alter the existing visual character of surrounding communities. New signals and gates at grade crossings where there are none today and fencing in developed areas where likely human and train interactions could occur would be noticeable changes to viewers in some locations, but consistent with the existing rail corridor context. Also, the addition of the six NLX stations would be a visual change in some locations, but the new facilities would be consistent with their surroundings and generally would result in minimal visual impacts. The construction of new maintenance and/or layover facilities in locations of existing or former railroad use would similarly result in minimal visual impacts. These visual changes would not present a disproportionately high or adverse effect on minority or low-income populations because these impacts would be of low intensity and would be widely distributed throughout the study area.

Socioeconomics

Section 4.15 discusses the NLX Project's socioeconomic impacts. The NLX Project would not negatively affect community facilities or services in areas with minority and low-income populations, and it would not affect community cohesion or access in areas where minority or low-income populations were identified. The existing tracks and freight traffic already constitute a physical presence within all the communities in the study area. In addition, the NLX Project track infrastructure would be constructed within existing railroad right of way, and all existing public and private crossings would be maintained. Therefore, all local access and connectivity would be maintained.

The NLX Project would provide improved grade crossings and warning devices, which could reduce potential train-vehicle crashes, and improve safety throughout the study area. This benefit would be realized by communities throughout the study area and in areas with minority and low-income populations.

Economics

Section 4.17 discusses the NLX Project's economic impacts and benefits. The economic impact analysis completed for the NLX Project found that the NLX Service would support existing industries and growth of new businesses by improving access between communities, creating more temporary and permanent jobs and fostering tourism (see Section 4.17). Many of the service jobs that could be spurred by increased tourism could be accessible to low-income populations.

The selected NLX station sites, which are in central locations, would help support local economic development efforts by generating more activity around existing business areas. Based on public and local official input, this was particularly important for low-income communities such as Hinckley, which has experienced a loss of local businesses in its downtown area. Also, local officials in Sandstone support a maintenance facility site in their community specifically for its potential to bring jobs to their community. Although the city of Sandstone does not meet the low-income threshold of this analysis, Pine County in general contains a higher percentage of persons in poverty (15.2 percent) in comparison to the state (11.5 percent) (MDH, 2017), and those jobs could benefit low-income populations.

4.16.3.3 Build Alternative – Construction

Temporary and short-term impacts from construction, such as crossing closures, detours and disruption to access would be temporary and would occur throughout the study area. Temporary disruptions to community facilities in Cambridge and Duluth and temporary construction noise, visual and dust impacts would also occur.

The potential for indirect travel related to temporary crossing closures may be a greater inconvenience for low-income populations who may not have access to a vehicle. However, the NLX Project's public engagement activities did not identify any specific construction-related concerns for minority and low-income populations. In addition to obtaining feedback from local officials, MnDOT also hosted three rounds of public meetings (in multiple locations) to present station and maintenance and layover facility concepts and proposed grade crossing improvements. All meeting notices were provided via email to organizations who serve underrepresented groups such as minority populations, low-income populations, veterans and elderly populations.

During construction, temporary easements at park and recreation properties would be required at various locations in the study area. Some of the temporary easements would be in the Fridley area, where minority and low-income populations are present. These temporary easements are not expected to have a disproportionately high or adverse effect on minority and low-income populations because access to parks and recreation sites would remain open and no physical facilities would be affected by a construction easement. In addition, some recreational trails in the study area would be temporarily closed for less than 6 months at existing grade crossings to allow roadway approaches to be rebuilt and signal equipment to be relocated. Due to the prevalence of these trail closures in all areas, these temporary impacts would not disproportionately impact minority and low-income populations. The installation of new warning devices where trails cross at railroad crossings would improve pedestrian safety and would benefit all members of the community who use the trails.

4.16.4 Avoidance, Minimization and Mitigation Measures

The NLX Project would continue efforts to identify ways to avoid, minimize and mitigate impacts as the project advances through construction.

4.16.4.1 Operations

Transportation

The mitigation strategies identified in Chapter 3 Transportation are sufficient to address transportation impacts on minority or low-income populations.

Right of Way

As discussed in Section 4.2, acquisitions procedures would be conducted in accordance with the Uniform Act (49 CFR 24), Minn. Stat. 117 and Wis. Stat. Chapter 32. No additional mitigation would be required for minority or low-income populations.

Air Quality

No disproportionately high or adverse air quality impacts are anticipated on minority or low-income populations; therefore, no mitigation is required.

Noise and Vibration

As discussed in Section 4.9, the projected noise impacts from the NLX Project are primarily due to the sounding of horns near at-grade crossings, rather than due to wheel/rail noise, which results from the steel wheels rolling on steel rails, and power car (locomotive) noise, which results from the engine. Therefore, the most feasible way to mitigate the noise impacts would be with the establishment of quiet zones for all at-grade crossings near noise-sensitive receivers. Municipalities are the lead agencies that must initiate the request to establish quiet zones through application to the FRA.

No disproportionately high or adverse vibration impacts are anticipated on minority or low-income populations; therefore, no mitigation is required beyond what is reported in Section 4.9.4.

Visual

No disproportionately high or adverse visual impacts are anticipated on minority or low-income populations; therefore, no mitigation is required.

Socioeconomics

No socioeconomic impacts are anticipated on minority or low-income populations; therefore, no mitigation is required beyond what is reported in Section 4.15.

Economics

No disproportionately high or adverse economic impacts are anticipated on minority or low-income populations; therefore, no mitigation is required.

4.16.4.2 Construction

BMPs would eliminate or minimize temporary and short-term construction impacts on the communities with minority and low-income populations. Mitigation strategies during construction would include developing traffic management plans to identify alternate access during temporary crossing closures and continuing public outreach to keep local communities informed of construction schedules. Public outreach efforts would include targeted communications to organizations that represent minority and low-income populations.

Measures would be implemented to minimize harm caused by temporary closure of trails during construction, including posting of trail closure signs and working closely with park officials to provide timely public information regarding closures. Potential detours could be developed to maintain trail access and connectivity to the extent practicable. Where trail closures may affect minority or low-income populations, targeted communications to minority and low-income populations would occur.

4.16.5 Environmental Justice Determination

Based on the findings in Section 4.16.3 and the wide distribution and low intensity of identified impacts, and with the application of mitigation measures, there would be no disproportionately high and adverse human health or environmental effects on any minority population or low-income populations. Mitigation and BMPs would eliminate or minimize construction-related impacts on the communities. Overall, the NLX Project would benefit both minority and low-income populations by providing improved accessibility and mobility.

4.16.6 Public Outreach

The NLX Project includes an ongoing public involvement and outreach program to encourage participation by the public across a broad spectrum of populations, including minority and low-income groups. As part of the station and facilities development process, MnDOT met with local officials and staff in each station and facility community in Fall 2014 to identify station and maintenance and/or layover facility sites that best served local preferences. MnDOT also held workshops in Duluth with local stakeholders in December 2014 and May 2015 to review station and maintenance and/or layover facility concepts to ensure consistency with local land uses and the Union Depot functions.

The NLX Project team held a variety of public information meetings throughout the environmental process that included:

- Open House 1: Four open house meetings in December 2014 in Hinckley, Cambridge, Sandstone and Superior, Wisconsin, to present working concepts of station and facility site alternatives

- Open House 2: Four open house meetings in February/March 2016 in Fridley, Hinckley, Cambridge and Duluth to present preferred station and facility sites
- Open House 3: Four open house meetings in October 2016 in Hinckley, Cambridge, Askov and Superior, Wisconsin, to present updated NLX Project information, including proposed grade crossing improvements

Meeting notices were distributed through news releases, the NLX Project email list (3,466 subscribers) and fliers distributed to local municipalities through email. Meeting information was also provided via email to organizations who serve underrepresented groups such as minority populations, low-income populations, veterans and elderly populations. All notices included instructions on how to request the information in an alternative format, including in different languages. All materials, including meeting summaries and collected feedback, are posted on the NLX Project website (www.mndot.gov/nlx) for review.

In addition to MnDOT outreach activities, the Minneapolis-Duluth/Superior Passenger Rail Alliance (a collaboration between several counties, communities and tribes to advance the NLX Project) continues its own outreach, primarily through community events. Since studies for the Tier 2 EA began in late 2014, the Minneapolis-Duluth/Superior Passenger Rail Alliance continued outreach during the following events in 2015 and 2016:

2015

- Duluth/St. Louis County Days at the Capitol, February 25
- Train Day, Duluth, May 9
- Train Day, St. Paul, May 9
- Isanti County Fair, July 22–26
- Pine County Fair, July 31–August 2
- Carlton County Fair, August 13–16
- Minneapolis Farmer's Market, August 22–23

2016

- Duluth/St. Louis County Days at the Capitol, March 23 booth
- East Central Regional Development Commission, February 22 presentation
- Duluth Chamber of Commerce, April 5 presentation
- Train Days at Union Depot in St. Paul, April 30–May 1
- 4th of July Community Celebration in Coon Rapids, July 3
- Isanti County Fair booth, July 20–24, 19,000 attendees, ticketed admission

- Pine County Fair booth, August 4–8, 35,000 attendees, free admission
- Carlton County Fair booth, August 18–21, 35,000 attendees, free admission
- Imagine Duluth, September 21 booth

The Minneapolis-Duluth/Superior Passenger Rail Alliance maintains an email database of roughly 1,400 addresses. Emails have been sent to promote open houses conducted by MnDOT and opportunities to engage with Alliance staff at public events.

MnDOT will continue its public involvement and outreach to surrounding communities and environmental justice populations during further study as the NLX Project advances through the design process.

4.16.7 Summary

The Tier 1 EA evaluated environmental justice impacts of NLX Project operations and proposed infrastructure improvements for eight daily round trips (16 trains per day) at speeds up to 110 mph. The Tier 2 EA addresses changes to the NLX Project, as described in Chapter 2 Alternatives. That is, the Tier 2 EA evaluates environmental justice impacts of operations and proposed infrastructure for four daily round trips (eight trains per day) at speeds up to 90 mph.

The Tier 2 EA evaluated more detailed project level impacts associated with updated NLX operations, infrastructure improvements and conceptual design of stations and facilities. The refined evaluation of the NLX Project found the NLX Project construction and operations would not have disproportionately high and adverse human health or environmental effects on minority population or low-income populations. The results of the Tier 2 EA are consistent with the results of the earlier Tier 1 EA for environmental justice.

4.17 Economics

The Tier 1 EA analysis indicates that the NLX Project would have primarily beneficial effects on the economic environment of the communities along the NLX Project. This section analyzes the NLX Project impacts based on proposed construction limits that have been updated since the Tier 1 EA. **Table 4-91** presents the study area used for economics impact analysis; **Table 4-92** compares the results of the Tier 1 EA and the Tier 2 EA analyses. The revised impacts supersede the results presented in the Tier 1 EA and are summarized at the end of this section.

Table 4-91: Study Area for Economics

| Study Area Definition | Basis for Study Area |
|---|---|
| Construction limit from preliminary engineering plus 0.5-mile buffer. | Describes the context of the surrounding areas at stations and at maintenance and layover facilities. |

Table 4-92: Economic Comparison – NLX Tier 1 Service Level EA and Tier 2 Project Level EA

| Identified Impacts in Tier 1 Service Level EA | Identified Impacts in NLX Tier 2 Project Level EA |
|--|---|
| Benefits include: 13,833 jobs; \$617 million (M) income; \$26M state tax revenue; \$1.778M property value \$21M property tax revenue; \$372M household income. | Benefits include: \$355M in taxes, \$136M in property value increase. |
| Benefits: reduction in energy use; \$210.5M highway fuel savings; up to 47M vehicle miles traveled (VMT) diverted to rail by 2040. | Benefits: 3,100 jobs annually during construction and an average of 380 jobs annually during the first 5 years of operation. |
| Potential for minor negative property value impact due to land conversion. | Benefits: Tourism revenues in the range of \$378 million, which would support about 10,600 total job years and wages in the range of \$233 million over a 40-year period. |

Source: Quandel Consultants, LLC., 2014.

As appropriate and necessary, this Tier 2 EA would be refined through future supplemental NEPA documentation as the final design advances and funding is secured for the NLX Project. Future supplemental environmental documentation is identified as appropriate throughout this Tier 2 EA.

4.17.1 Regulatory Context and Methodology

4.17.1.1 Legal and Regulatory Context

Potential economic impacts of the NLX Project are assessed in accordance with FRA's *Procedures for Considering Environmental Impacts* (64 FR 28545). These procedures indicate that significant changes to economics should be identified during the environmental review process.

No specific laws or executive orders regulate the consideration of economic impacts as part of preparing NEPA review documents. NEPA (41 USC 4321) and MEPA (Minn. Stat. 116D), and WEPA (Wisconsin Administrative Code Chapter Trans 400) form the general basis of consideration for discussing economic issues.

4.17.1.2 Methodology

The discussion of economic impacts below synthesizes the results of an extensive economic analysis that examined the NLX Project impacts on safety, environmental sustainability, economic competitiveness and quality of life (see **Appendix C**).

The economic impact study area includes counties in central Minnesota and northwest Wisconsin through which the NLX Service is planned to operate.

The U.S. Bureau of Economic Analysis' Regional Input-Output Modeling System (RIMS II) multipliers were used to estimate employment and earnings impacts for the counties comprising the NLX study area. RIMS II is a regional modeling system that is used to estimate the economic impact of an event, construction project, or other change in a local economy. RIMS II provides regional input-output multipliers that consider interindustry economic relationships within regions and estimate how regional economies are likely to respond to project-related changes.

4.17.2 Affected Environment

The NLX Project is located in the state of Minnesota and connects the state's largest population and economic center in Minneapolis-St. Paul with the state's fourth largest city of Duluth. As of September 2016, the state's employment was 2.87 million with an unemployment rate of 4 percent (U.S. Bureau of Labor Statistics, 2016). The three largest industry sectors in the state based on employment as of September 2016 were Trade, Transportation and Utilities; Education and Health Services; and Government (U.S. Bureau of Labor Statistics, 2016).

Employment in the Minneapolis-St. Paul region was 1.87 million as of September 2016 with the three largest industries by employment in the Trade, Transportation and Utilities; Education and Health Services; and Professional and Businesses Services industries (U.S. Bureau of Labor Statistics, 2016). The greater Minneapolis-St. Paul region contains several headquarters for Fortune 500 companies including UnitedHealth Group, US Bancorp, 3M, Medtronic, General Mills, Target, Best Buy and others.

The NLX Project also travels through Douglas County, Wisconsin. Douglas County and its largest city, Superior, serve as a major transportation hub for the entire state of Wisconsin with the port and proximity to other forms of ground transportation, such as freight rail and major highways (I-35 and WIS 53). The Port of Duluth-Superior is the largest port of the Great Lakes by tonnage. The largest industries in Douglas County include transportation, manufacturing, wood products, petroleum, and tourism (Northland Connection, 2016b).

The Duluth region's employment was 133,200 as of September 2016 with the three largest industries by employment in Education and Health Services; Trade, Transportation and Utilities; and Government (U.S. Bureau of Labor Statistics, 2016). The shipping industry, centered around the Port of Duluth-Superior, continues to be an important component of the economy, but other sectors such as medical services, higher education and tourism have shifted the region to a more diversified service-based economy.

The travel and tourism industry in Minnesota generated over \$13.6 billion in gross sales in 2014 (Explore Minnesota, 2016). Both the Minneapolis and Duluth regions are tourist destinations. In 2014, tourism related activity generated nearly \$4.7 billion in gross sales in Hennepin County and nearly \$509 million in St. Louis County (Explore Minnesota, 2016).

Economic activity in the study area between Minneapolis and Duluth is based in agriculture and tourism, along with retail, industry and service activities within communities.

For an overview of socioeconomic conditions by county in the study area, see Section 4.14.2.

4.17.3 Impacts

The following sections discuss the impacts on economics associated with the No Build Alternative and the Build Alternative. Impact analysis considered all track, roadway, bridge, station and maintenance and layover facilities as identified in the beginning of this chapter. Where impacts are specific to a type of proposed improvement, they are described below. The Build Alternative impacts discussion analyzes long-term operations and maintenance impacts and short-term construction impacts as described in the beginning of this chapter. A discussion of potential impacts at station and maintenance and layover facility sites is also presented, as well as a general discussion of the potential impacts within the BNSF right of way. Avoidance, minimization and mitigation measures are described in Section 4.17.4.

4.17.3.1 No Build Alternative

Under the No Build Alternative, the NLX Project would not occur and would not alter current conditions. There would be no changes except planned and programmed actions that are independent of the NLX Project.

4.17.3.2 Build Alternative – Operations

The NLX Project is a key component of the current *Minnesota State Rail Plan* (MnDOT, 2015b) and directly supports the *Statewide Multimodal Transportation Plan* objective of Critical Connections to maintain and improve statewide prosperity (MnDOT, 2012). The NLX Project is specifically cited in the state rail plan for continued advancement within the next 4 years to implement the state transportation goals. The plan notes that passenger rail, including implementation of the NLX Project, would support statewide economic development and increase the business marketability of the state. Through NLX infrastructure and service investments, MnDOT would meet its commitment to developing and maintaining a passenger rail system to support the travel needs of citizens, businesses and visitors.

Economic Impact

As part of the ongoing Tier 2 EA studies, MnDOT updated the NLX Project economic analysis, which indicates the service would support existing industries and growth of new business by improving access between communities and creating more temporary and permanent jobs, increase tax revenue and foster tourism (see **Appendix C**).

Some of the key findings from the 2015 analysis include:

- Over a 40-year period, the NLX Project would generate potentially \$355 million in taxes.
- Combined, the first year of construction and the first year of operation would increase state and local tax revenue in the range of \$16 million.
- The NLX Project could foster economic growth around each of the stations due to increased activity from riders and expected tourism spending.
- The new service, along with stations and passenger activity, can potentially increase property values, increased investments and station-related development. The NLX Project could be expected to generate in the range of \$136 million in increased property values.
- Preliminary analysis indicates that construction and operation of the NLX would support an estimated increase in employment in the range of 3,100 jobs annually during construction and an average of 380 jobs annually during the first 5 years of operation throughout the study area.

- The NLX Project would support and encourage existing and new businesses along the study area and provide customers and employees with a reliable and cost-effective way to travel. The NLX Project could broaden the labor market and connect workers to a wider network of employers.
- The NLX Project would foster tourism activity and special event attendance in the study area. The NLX Project could result in tourism revenues in the range of \$378 million, which would support about 10,600 total job years and wages in the range of \$233 million over a 40-year period.

The NLX stations and maintenance and/or layover facilities are sited in areas that local communities and stakeholders have targeted and identified for economic development and multimodal connections. See Chapter 5 Public and Agency Involvement for more discussion of public outreach activities for the NLX Project.

Tax Base

Approximately 3.7²¹ acres of private taxable real estate would be acquired for stations and maintenance and/or layover facility sites, resulting in a minor reduction of local tax revenue from acquired properties. The taxable property value impact of these acquisitions compared to the counties total property value is small, as shown in **Table 4-93**. The NLX Project would require relocating a maintenance building owned and operated by the City of Hinckley. The acquisition of this publicly owned property would not affect the local tax base. The NLX Project would not have a substantial impact on the local tax base.

Table 4-93: Private Land Acquisition Values

| Property | Estimated Value ^a | 2016 County Taxable Land Value | Percent of County Land Value Acquired |
|---|------------------------------|--------------------------------|---------------------------------------|
| Cambridge Station (full acquisition of one parcel) | \$44,900 | \$2,786,253,539 | 0.00161% |
| Sandstone Maintenance Facility (partial acquisition of one parcel) | \$3,859 | \$2,384,122,550 | 0.00016% |
| Superior, Wisconsin Station (partial acquisition of two parcels) | \$59,118 | \$3,206,041,600 | 0.00184% |

Sources: Beacon, 2016a and 2016b; WGExtreme, 2016.

^a Estimated value represents proportional value based on size of acquisition and size of full parcel.

Total county property value from Minnesota Department of Revenue, 2016 and Wisconsin Department of Revenue, 2016.

²¹ Approximately 0.3 acre of additional acquisition from non-taxable church property.

4.17.3.3 Build Alternative – Construction

Potential temporary impacts associated with access disruptions to businesses and services could occur during construction where crossings are closed for short durations to reconstruct crossings and install new warning devices.

4.17.4 Avoidance, Minimization and Mitigation Measures

Because the NLX Project would not have adverse long-term economic impacts, no mitigation is required. Mitigation strategies during construction to minimize disruption to businesses and economic activity would include developing traffic management plans to identify alternate access during potential roadway crossing closures and continuing public outreach to keep local communities and businesses informed of construction schedules and activities. If an impact is identified as the NLX Project progresses, the NLX Project would continue efforts to avoid, minimize and mitigate impacts as the project advances through construction.

4.17.5 Summary

The Tier 1 EA evaluated economic impacts of NLX Project operations and proposed infrastructure improvements for eight daily round trips (16 trains per day) at speeds up to 110 mph. The Tier 2 EA addresses changes to the NLX Project, as described in Chapter 2 Alternatives. That is, the Tier 2 EA evaluates economic impacts of operations and proposed infrastructure for four daily round trips (eight trains per day) at speeds up to 90 mph.

The results of the economic analysis in this Tier 2 EA are generally consistent with the results of the earlier Tier 1 EA. Both the Tier 1 and Tier 2 EA analyses determined that the proposed NLX Project would provide positive economic benefits in terms of creating jobs, increasing property values, generating tax revenues, providing travel time savings, and fostering tourism. The Tier 2 EA found that the NLX Project would have a minor impact on taxable property because of acquisition of private, taxable property that would be required for some station and facility sites.

4.18 Indirect and Cumulative Effects

This section addresses the potential indirect impacts and cumulative effects of the proposed NLX Project.

Indirect impacts are those that are caused by the proposed NLX Project but occur later in time and/or proximity while being reasonably foreseeable. Indirect impacts can include growth-inducing effects and other effects related to changes in land-use patterns, population density, or growth rate and related effects on air, water and other natural systems and the built environment.

Cumulative effects result from “the incremental impact of the [proposed] action when added to other past, present, and reasonably foreseeable future actions, regardless of the agency (federal or non-federal) or person undertaking them. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.7). The purpose of a cumulative effects analysis is “to ensure that federal decisions consider the full range of consequences of actions” (CEQ, 1997b). Cumulative effects could occur through the combination of the proposed NLX Project’s direct and indirect impacts combined with other actions not directly related to the proposed NLX Project.

The Tier 1 EA analysis indicated that the NLX Project would have potential indirect effects on land use and development patterns in station communities and potential cumulative effects. This section analyzes the NLX Project impacts based on proposed construction limits that have been updated since the Tier 1 EA. **Table 4-94** presents the NLX study area used for the indirect and cumulative effects analysis; **Table 4-95** compares the results of the Tier 1 EA and the Tier 2 EA analyses. The revised impacts supersede the results presented in the Tier 1 EA and are summarized at the end of this section.

Table 4-94: NLX Study Area for Indirect and Cumulative Effects

| NLX Study Area Definition | Basis for NLX Study Area |
|--|---|
| Indirect: 0.5-mile radius around each of the proposed NLX station and maintenance and layover facility locations. | Follows guidance in <i>National Cooperative Highway Research Program Report 466: Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects</i> (Transportation Research Board, National Research Council, 2002). |
| Cumulative: 1-mile on each side of the proposed NLX study area. | Study area encompasses resources, primarily natural resources, that could be affected by multiple projects considered in aggregate. |

Table 4-95: Indirect and Cumulative Effects Comparison – NLX Tier 1 Service Level EA and Tier 2 Project Level EA

| Identified Impacts in Tier 1 Service Level EA | Identified Impacts in NLX Tier 2 Project Level EA |
|---|---|
| <p>Indirect: change in land use patterns in station communities has potential for development-related impacts.</p> | <p>The Potential indirect impacts are largely attributed to induced development that may occur at station locations. Following is a summary of potential impacts related to in the resource areas:</p> <ul style="list-style-type: none"> • Transportation – There are no anticipated substantial indirect impacts at the station locations with the exception of the Duluth station where temporary construction impacts will occur to reconstruct the public access. • Land Use – Potential indirect impacts could occur as a result of induced development around station locations. • Right of Way – Potential indirect impacts could occur because of induced development around station locations that could indirectly lead to property acquisitions and displacements. • Wetlands – Potential indirect impacts could occur as a result of filling or diminishing wetland function due to induced development. • Surface Water – Potential indirect impacts could occur because of induced development at station locations. This could indirectly lead to increased export of pollutants and decreased pollutant filtration. • Noise and Vibration – Potential indirect impacts could occur because of induced development around the station locations. Increased exposure to noise produced by train horn blowing, rail equipment and park and ride facilities is likely to occur. There could be more exposure to ground-borne vibration from the potential induced development. • Contaminated Properties and Regulated Waste – Potential indirect impacts could occur because of induced development at station locations. There are high risk properties located at Target Field, Sandstone Maintenance Facility, Superior Station, Duluth Station and Duluth Maintenance and/or Layover Facility. These properties could lead to greater environmental risk to surrounding properties undergoing redevelopment. • Cultural Resources – Potential indirect impacts could occur because of induced development at station locations. Impacts on historic properties could occur if redevelopment changes the character of the property’s use or setting. • Visual – Potential indirect impacts could occur because of induced development at station locations. Long term impacts due to improved accessibility to areas around the stations may create increased demand for new development. • Socioeconomics – Potential indirect impacts could occur because of |

Identified Impacts in Tier 1 Service Level EA

Identified Impacts in NLX Tier 2 Project Level EA

induced development around station locations. Impacts related to redevelopment around station locations could affect community facilities, community character and community cohesion.

- **Environmental Justice** – Potential indirect impacts could occur because of induced development at station locations.
- **Economics** – Potential indirect impacts could occur because of induced development around station locations. This could increase property taxes for the affected local jurisdictions.

Cumulative: Project impacts plus direct and indirect impacts from other actions would not result in significant potential for cumulative effects.

Potential cumulative impacts in the resources areas of:

- **Transportation** – The indirect impact of rider diversion in combination with the reasonably foreseeable future actions could place increased demand on all transportation modes.
- **Land Use** – Cumulative Impacts could occur to land use over time around station locations due to induced development.
- **Right of Way** – Cumulative impacts could occur as a result of redevelopment around station locations. This could lead to acquisitions and relocation of residents.
- **Wetlands** – Cumulative impacts on wetlands could occur as a result of new development.
- **Surface Water** – Increased sediment and pollutant loading to surface waters could occur as a result of new development.
- **Noise and Vibration** – Cumulative impacts could occur as a result of induced development that would expose more people to traffic in the area.
- **Contaminated Properties and Regulated Waste** – Positive cumulative impacts are anticipated due to the remediation of hazardous waste sites.
- **Cultural Resources** – Cumulative impacts could occur as a result of induced development. Impacts on historic properties could occur if redevelopment changes the character of the property's use or setting.
- **Visual** – Induced development could cumulatively change views that could become more urbanized over time.
- **Socioeconomics** – Cumulative impacts are not anticipated on socioeconomic conditions because the infrastructure improvements would be largely located in the BNSF right of way.
- **Environmental Justice** – Cumulative impacts are not anticipated on EJ populations.
- **Economics** – Positive cumulative impacts are anticipated because the Project could strengthen the business climate by providing improved transportation options.

4.18.1 Regulatory Context and Methodology

4.18.1.1 Indirect Impacts

The methodology for conducting the review and evaluation of indirect impacts is in accordance with federal regulations and guidelines, including NEPA and CEQ guidelines. The methodology includes guidance from the Minnesota Environmental Quality Board (MEQB) to address the State environmental process. Indirect effects were evaluated in accordance with 40 CFR 1508.8(b) and FRA's *Procedures for Considering Environmental Impacts* (64 FR 28545).

Data from the following sources were used during review of the potential indirect impacts on the human and natural environment as a result of the NLX Project:

- Land use information
- Direct calls with staff from the cities and counties along the NLX study area
- Internet sources, such as agency or news websites

Indirect impacts were assessed based on the potential for induced land development or other changes to the existing land use or the environment resulting from the implementation of the NLX Project. This includes further development of land, or changes in traffic circulation that could require modification or construction of transportation infrastructure that could generate indirect reasonably foreseeable effects on the human and natural environment at the station locations. The direct impacts on each resource were considered, and the likelihood of the NLX Project to induce additional indirect changes was considered.

The analysis for indirect impacts focuses on a 0.5-mile radius around each of the proposed station and maintenance and layover facility locations (see **Figure 4-25**, **Figure 4-26** and **Figure 4-27**). This approach is supported by *National Cooperative Highway Research Program Report 466: Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects*, which states that "development effects are most often found up to one-half mile around a transit station" (Transportation Research Board, National Research Council, 2002).

Figure 4-25: NLX Study Area for Indirect and Cumulative Effects: Southern Portion of the NLX Study Area

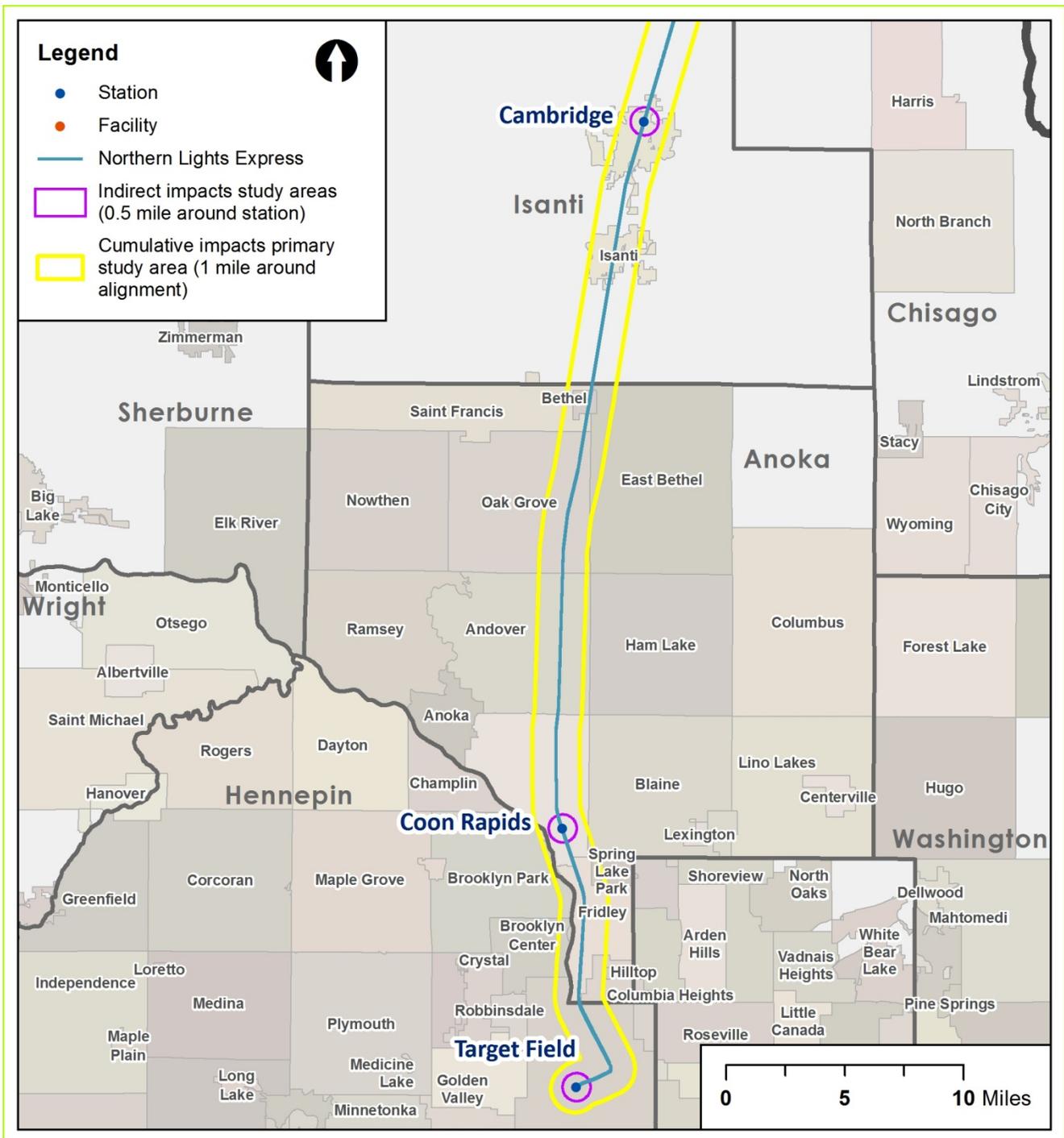


Figure 4-26: NLX Study Area for Indirect and Cumulative Effects: Central Portion of the NLX Study Area

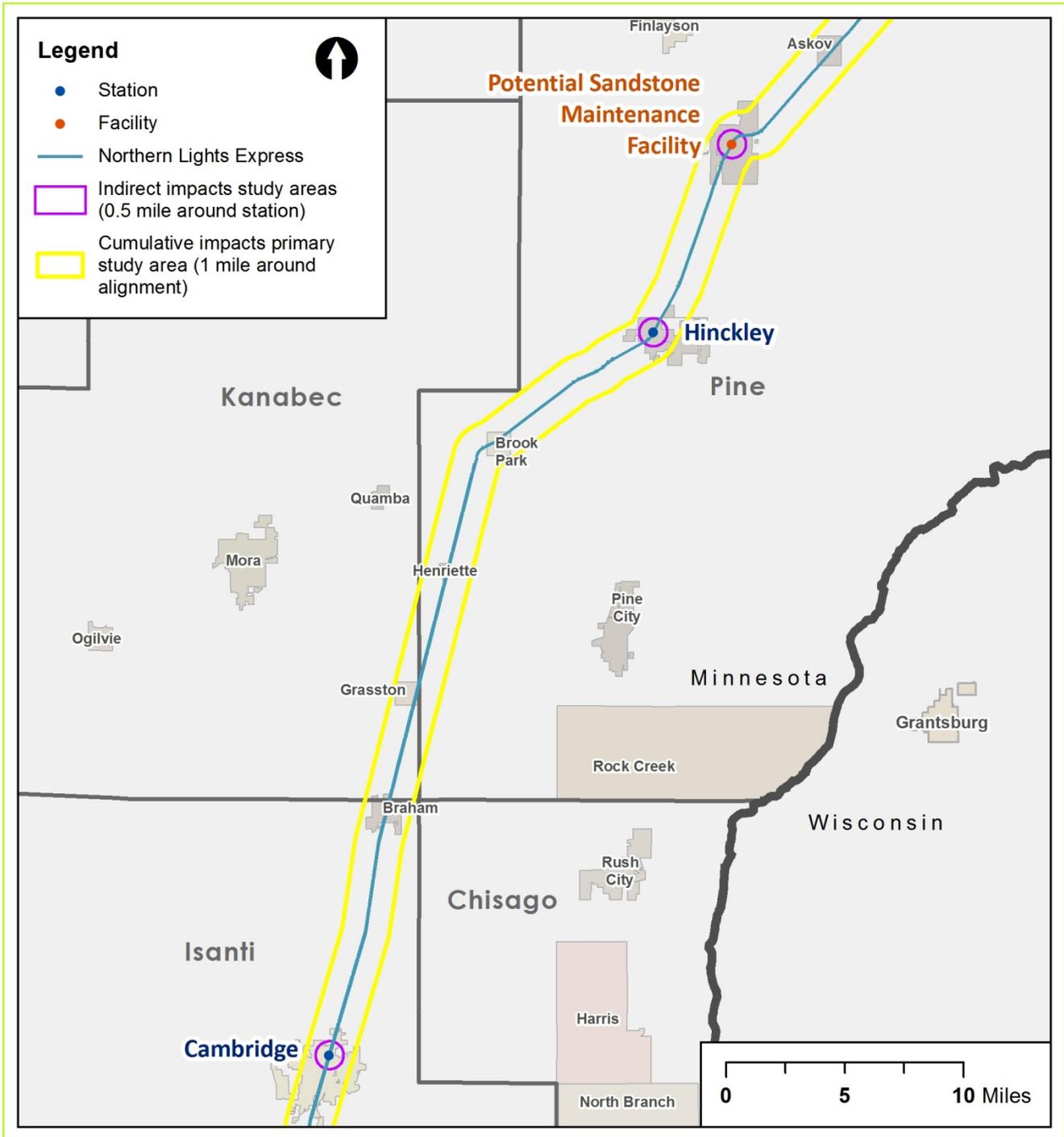
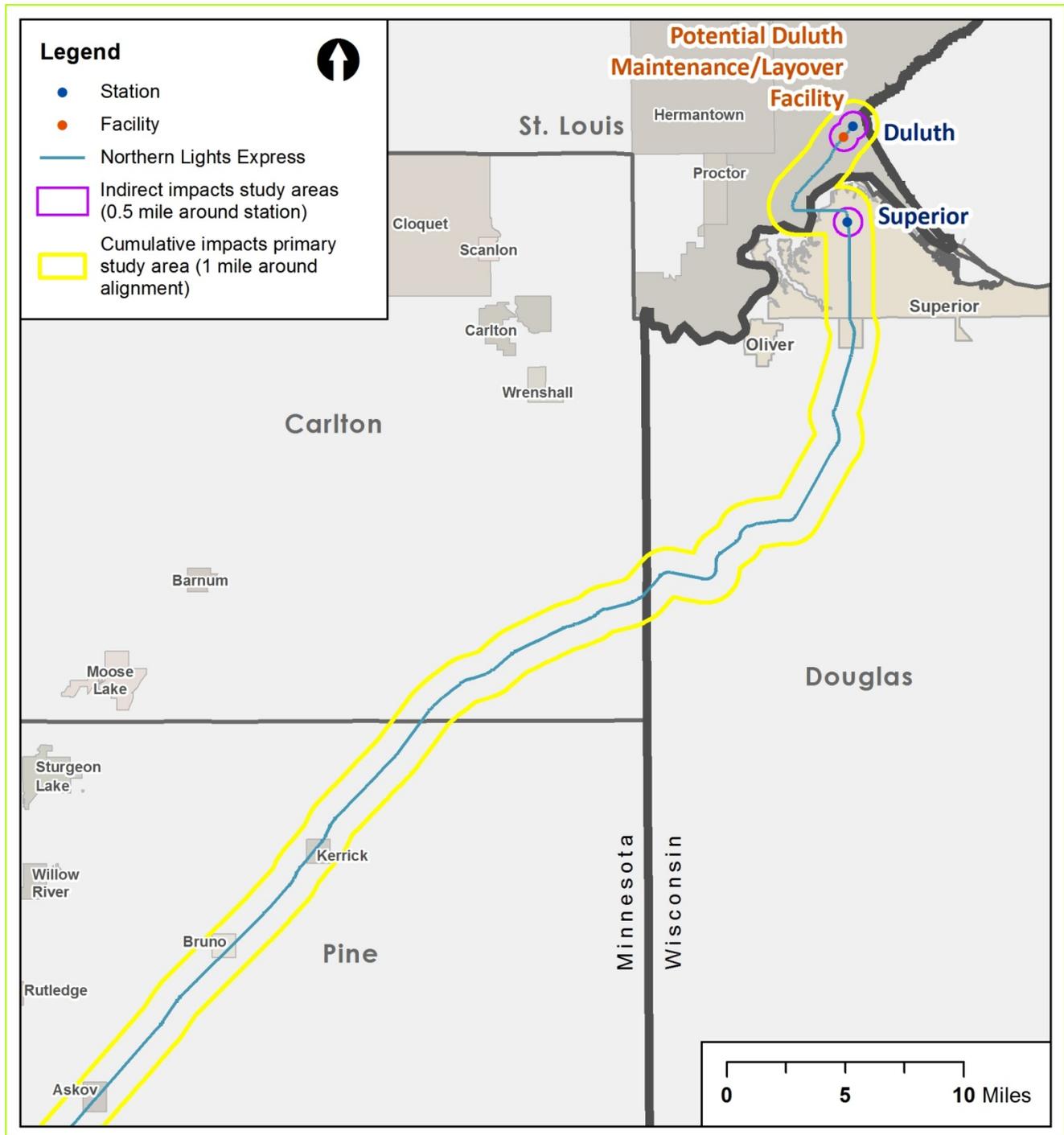


Figure 4-27: NLX Study Area for Indirect and Cumulative Effects: Northern Portion of the NLX Study Area



The indirect impacts (such as induced development) from the proposed NLX Project are most likely to occur in the areas around the station locations. Beyond 0.5 mile, new development potentially induced by the proposed NLX Project is less likely. However, secondary development impacts are possible beyond a 0.5-mile radius from the station locations. For example, new development in a station area could cause natural resource impacts that follow the extent of the resource itself rather than stopping at the 0.5-mile boundary relevant to the built environment. To address this, the analysis included potential impacts on natural resources by following the boundaries of those resources (for example, wetland complexes, waterways, floodplains and habitat).

4.18.1.2 Cumulative Effects

The methodology for conducting the review and evaluation of cumulative effects is in accordance with federal regulations and guidelines, including NEPA and CEQ guidelines. The methodology includes guidance from the Minnesota Environmental Quality Board to address the State environmental process. The cumulative effects with respect to the NLX Project were evaluated in accordance with 40 CFR 1508.7, CEQ guidance on assessing cumulative effects (CEQ, 1997) and FRA's *Procedures for Considering Environmental Impacts* (64 FR 28545).

Data from the following sources was used during review of the potential cumulative effects on the human and natural environment as a result of the NLX Project:

- Identification of other major transportation projects in the vicinity of the NLX Project through planning documents, including County and City comprehensive plans
- Land use information
- Direct calls with staff from the cities and counties along the NLX study area
- Internet sources, such as agency or news websites

The effects of past actions were addressed as part of the existing or baseline condition for each resource relevant to the analysis. Any present or reasonably foreseeable future development identified within the NLX study area was considered.

Resources on which the NLX Project would have no direct or indirect effect were not considered in the cumulative effects analysis.

The NLX study area for the analysis of cumulative effects is a 1-mile area on each side of the proposed construction limits (see **Figure 4-25**, **Figure 4-26** and **Figure 4-27**). The NLX study area for cumulative effects is a larger geographic area than the NLX study area for indirect impacts because it encompasses resources, primarily natural resources, that could be affected by multiple projects considered in aggregate.

The NLX study area for cumulative effects was selected based on guidance documents and the resource-specific study areas used in this Tier 2 EA. However, the boundary of the NLX study area for cumulative effects varies by the resource being considered. For example, effects on water resources (stormwater, floodplains and wetlands) and habitat could be greater depending on the location of the resource and the degree of effect.

For this analysis, the focus on past actions is limited to approximately the last 20 years. The time frame for future actions considered is commensurate with the time frame of full implementation, estimated to be the year 2040, or information available in current long-range transportation and development plans from the County and City planning and zoning offices along the NLX study area.

Direct and indirect effects of the NLX Project, as well as other past, current, or reasonably foreseeable regional and statewide projects, are relevant for review of cumulative effects. Major local projects could also contribute to cumulative effects on a resource.

Past Projects

The passage of the Federal Aid Highway Act of 1956 strongly influenced the pace and location of growth that transformed the country, the states of Minnesota and Wisconsin, and the NLX Project area (specifically the I-35 corridor between the Twin Cities and Duluth). In addition, land use policies and other transportation connections have influenced land use developments in both the metropolitan areas and the smaller intervening communities. According to *Politics and Freeways: Building the Twin Cities Interstate System* (University of Minnesota, 2006), the years of interstate construction can be grouped into three periods: megaprojects (from 1956 to the late 1960s), the era of expanding the debate (from 1970 to 1990), and the era of falling behind (1990s). Accompanying the expansion of the interstate system in the Twin Cities region was the expansion of U.S. Highways and Trunk Highways that provided access to the interstate system. The beginning of the past actions period is 1960, and the end of the period is 2016.

Similar patterns can be seen in Duluth, where the connection of I-35 to downtown Duluth in 1971 increased mobility between major population centers and expanded commerce and tourism. In 1992, the completion of the expansion of I-35 northeast along Lake Superior with a connection to MN 61 and the recreational resources of the North Shore of Lake Superior ushered in a new era of commercial and recreational development from downtown Duluth to the city's northern boundary.

The following major transportation projects, land use policies and events contributed to the changes in land use patterns and resource context in the NLX study area between 1934 and 2016:

- Freight rail development
 - 1870 – Lake Superior and Mississippi Railroad connects St. Paul and Duluth
 - 1872 – Northern Pacific Railroad leases the LS&M line to Duluth
 - 1888–1889 – Eastern Railway Company of Minnesota built from Duluth, via Superior, Wisconsin, to Hinckley
 - 1890 – Great Northern Railway leased Eastern Railway
 - 1898 – Eastern Railway Company of Minnesota built from Hinckley to Coon Creek Junction
 - 1907 – Great Northern Railway purchased Eastern Railway
 - 1970 – With the formation of Burlington Northern, Great Northern Railway became part of Burlington Northern
- Passenger rail development
 - 1975 – Amtrak Arrowhead service begins, running between Minneapolis and Superior, Wisconsin
 - 1977 – Amtrak Arrowhead service extended to Duluth
 - 1978 – Amtrak Arrowhead service absorbed into Amtrak Northstar service – Chicago to Minneapolis to Duluth
 - 1985 – Amtrak Northstar service terminated
 - 2009 – Northstar Commuter Rail Line completed
- Roadway development
 - 1927 – U.S. 61 between St. Paul and Duluth completed
 - 1956 – Passage of the Federal Aid Highway Act
 - 1963 – MN 23 to Duluth completed
 - 1968 – I-94 completed
 - 1971 – I-35 to Duluth completed
 - 1976 – I-35W completed in metropolitan area
 - 1990 – I-35E completed in metropolitan area
 - 1991 – I-394 completed in metropolitan area
- 2014 – Thrive MSP 2040: Major land-use policies (Metropolitan Council, 2016)

Present Actions and Reasonably Foreseeable Future Actions

Present projects as well as other public actions planned to be completed by 2040 in the NLX study areas for indirect impacts and cumulative effects are included in **Table 4-96**. The table identifies projects and developments currently listed in state and local plans, known private development actions, and planned and funded roadway and other infrastructure projects generally within the NLX study areas for indirect impacts and cumulative effects.

Table 4-96: Present and Reasonably Foreseeable Future Actions

| Project Developer | Action (Project) | Estimated Construction Timing | Description | Potential Environmental Impacts of the Action |
|---------------------------------|---|-------------------------------|---|---|
| City of Minneapolis and private | Public and private development in downtown Minneapolis near NLX Target Field Station | Ongoing | Multiple office, residential, and mixed-use development projects in North Loop and adjacent neighborhoods in downtown Minneapolis | Construction, stormwater, business impacts, traffic, transportation, noise |
| Metropolitan Council | Green Line (Southwest) light rail transit (LRT) Extension near NLX Target Field Station | 2021 opening | 15-mile LRT line between Minneapolis and Eden Prairie | Stormwater, right of way, visual, construction, land use, business impacts, transportation (transit use, traffic patterns, freight rail traffic), noise |
| Metropolitan Council | Blue Line LRT Extension near NLX Target Field Station | 2021 opening | 14-mile LRT line between Minneapolis and Brooklyn Park | Stormwater, right of way, visual, construction, land use, business impacts, transportation (transit use, traffic patterns, freight rail traffic), noise |
| MnDOT | Midwest High Speed Rail connection to NLX Target Field Station | To be determined | High speed rail service between Minneapolis and Chicago | Stormwater, right of way, visual, construction, land use, business impacts, transportation (transit use, traffic patterns), noise |

| Project Developer | Action (Project) | Estimated Construction Timing | Description | Potential Environmental Impacts of the Action |
|---|---|-------------------------------|---|---|
| Hyde Development/ Colliers International/ Mortenson | Public and private expansion of the Northern Pump/FMC/BAE building near NLX Coon Rapids Station | Ongoing | Master plan for a 122 acre development which would create space for industrial use, data center, office space and a tap room/brewery | Construction, business impacts, traffic, stormwater, transportation, right of way, visual, noise |
| Lyon Contracting Inc. | Apartment Building near NLX Coon Rapids Station | Ongoing | Construction of three apartment buildings. | Construction, stormwater, business impacts, traffic, transportation, right of way, visual, noise |
| Potential Developer | Northstar Transit-Oriented Development Master Plan near NLX Coon Rapids Station | To be determined | Redevelopment of pedestrian/cycling/ other transit connections along Main Street west to the River and 62nd Way south to I-694 | Transportation (transit use, traffic patterns), right of way, visual, construction, business impacts, noise |
| Minnesota State Rail Plan ^a Phase I Corridors in Advanced Planning (0-20 year Plan) | Intercity and High Speed Rail Study | To be determined | Studies underway for new rail construction for the Twin Cities to Chicago corridor; Private developer studies underway for the Twin Cities to Rochester corridor | Construction, transportation (travel patterns, freight rail operations), traffic, noise, stormwater |
| Minnesota State Rail Plan ^a Phase I Corridors (0-20 year Plan) | Intercity Rail Study | To be determined | Future evaluation of new rail construction for the Twin Cities to Albert Lea, Twin Cities to Eau Claire, WI, Twin Cities to Fargo/Moorhead, Twin Cities to Mankato and Twin Cities to St. Cloud corridors | Construction, transportation (travel patterns, freight rail operations), traffic, noise, stormwater |
| Minnesota State Rail Plan ^a Phase II Corridors (20+ year Plan) | Intercity Rail Study | To be determined | Future evaluation of new rail construction for the Twin Cities to Sioux Falls, SD via Willmar, Fargo, ND to Winnipeg and Mankato to Sioux City, IA corridors | Construction, transportation (travel patterns, freight rail operations), traffic, noise, stormwater |

| Project Developer | Action (Project) | Estimated Construction Timing | Description | Potential Environmental Impacts of the Action |
|--------------------|-------------------------------------|-------------------------------|--|---|
| Saint Louis County | Union Depot Passenger Rail Terminal | To be determined | Future evaluation of extending the multimodal nature of the Union Depot area to buses, boats, bicycles and other forms of transportation | Transportation (transit use, traffic patterns), right of way, visual, construction, business impacts, noise |

Sources: City of Andover, 2016; City of Cambridge, 2016; City of Coon Rapids, 2016; City of Fridley, 2015, 2016b, and 2016c; City of Oak Grove, 2016; City of Sandstone, 2016; Federal Transit Administration and the Metropolitan Council, 2016; Isanti County, 2016b; MnDOT, 2015b and 2016d; Northern Stacks, 2016.

^a The purpose of the Minnesota State Rail Plan is to direct the future of passenger (intercity) and freight rail systems and rail services in the state.

None of these future actions would occur because of the proposed NLX Project. These actions are reasonably foreseeable and are likely to occur if funding is obtained, approved, or part of an officially adopted planning document. Note that future station-area planning and other future planning initiatives could identify additional actions that are not included in the reasonably foreseeable future actions identified at this time because they have not been funded, approved, or a part of an officially adopted planning document.

The analysis did not find any imminent or reasonably foreseeable development plans within the NLX study areas for indirect impacts and cumulative effects.

4.18.2 Select Resources of Interest

The resources of interest for this analysis that are particularly susceptible to indirect impacts and cumulative effects and that would be affected directly or indirectly by the proposed NLX Project are listed below. These resources were selected because they were identified as the most likely to have potential impacts.

- Transportation
- Land Use
- Right of Way
- Vegetation and Wildlife
- Threatened and Endangered Species
- Wetlands

- Surface Water
- Groundwater
- Noise and Vibration
- Contaminated Properties and Regulated Waste
- Cultural Resources
- Visual
- Socioeconomics
- Environmental Justice
- Economics

Resources listed below were not carried forward in the indirect and cumulative analysis because no direct or indirect effects were identified.

- Air Quality
- Farmland and Soils
- Section 4(f) and Section 6(f)

4.18.3 Indirect Impacts Assessment

This section describes the potential for indirect impacts from the proposed NLX Project. Indirect impacts are those that are caused by the proposed NLX Project but occur later in time and/or proximity while being reasonably foreseeable.

4.18.3.1 Transportation

The areas of indirect benefit on public transportation include ridership forecasts and operational changes, including increased public transportation services. While the intent of implementing higher speed passenger rail is to attract new riders, this would nevertheless be an indirect impact on other transportation modes because people may choose to use the new higher speed passenger rail service once it is constructed based on its benefits in relation to their transportation needs.

Minimal construction-related impacts on bus service are anticipated. Depending on service routes, temporary disruptions or detours may occur where grade crossings are closed for reconstruction or installation of new crossing warning devices.

The following describes the traffic and parking implications, as a result of induced development, at the station locations and maintenance and layover facilities.

- **Minneapolis** – The existing high-capacity, multimodal urban transportation network would accommodate the potential increase in traffic and parking requirements associated with induced development in the NLX study area.
- **Coon Rapids** – Foley Boulevard, with its four- and five-lane cross sections, would have capacity to accommodate the additional traffic associated with potential induced development.
- **Cambridge** – The Cambridge Station, which would occur in the City Center Mall area, could affect local street traffic operations if induced development occurs.
- **Hinckley** – The Hinckley Station could affect local street traffic operations if induced development occurs.
- **Superior, Wisconsin** – The Superior, Wisconsin Station could affect local street traffic operations if induced development occurs.
- **Duluth** – The Duluth Station could affect local street traffic operations if induced development occurs.
- **Sandstone Maintenance Facility and Duluth Maintenance and/or Layover Facility** – It is anticipated that relatively few additional trips would occur as a result of the small numbers of employees who would be located at these facilities. Most activities, such as maintenance and/or layover activities, would likely occur outside of the normal peak traffic periods because the trains would be in service during those times. The NLX Project would operate within the existing BNSF right of way, which is actively used for freight operations. Temporary impacts on BNSF operations would occur during NLX Project construction.

Target Field, Coon Rapids, Cambridge, Hinckley and Superior, Wisconsin stations are not anticipated to have significant indirect impacts on transportation. At the Duluth Station, there would be temporary construction to reconstruct a public access to the station, but indirect effects on transportation are not anticipated as part of the NLX Project. Pedestrian crossings, bike parking and warming shelters would be positive transportation impacts at each station.

4.18.3.2 Land Use

While the development and redevelopment in the NLX study area is regulated by the affected local jurisdictions and is driven by regional and local economic conditions, higher speed passenger rail lines can advance the timing and increase the intensity of development, within the limits allowed by local comprehensive plans, particularly in areas surrounding proposed stations.

To leverage this development potential and to support local land use goals, MnDOT developed station site and maintenance facility plans to help coordinate the proposed NLX Project with the plans and decisions of local jurisdictions and adjacent property owners. These plans are part of an ongoing process that would continue through the design process and into construction and operation. The NLX Project includes a public involvement

and outreach program to obtain participation by the public across a broad spectrum of the NLX study area. The meetings presented station site and maintenance facility analyses and site plans to ensure compatibility with local plans. As the proposed NLX Project continues toward construction, similar outreach and community involvement effort is anticipated.

Because future potential developments would require the actions of others and are influenced by market forces, they are considered potential indirect impacts on land use and not necessarily probable. The expected increase in development density around the NLX stations resulting from the construction of the NLX Project is consistent with regional and local plans. These plans acknowledge the value of public transportation in supporting efficient land use development and the value of public transportation-oriented development around higher speed rail stations.

4.18.3.3 Right of Way

Parallel to the existing freight rail track, new track dedicated for passenger train use would be approximately 5 miles of the total 152-mile-long NLX Project. New or extended freight rail sidings needed for operational efficiency would be approximately 27 miles of the 152-mile-long NLX Project. Impacts on right of way because of the construction of new tracks would be minimal, with all improvements located primarily within existing BNSF right of way. The reasonably foreseeable future projects identified in the analysis are not anticipated to cause indirect impacts on right of way along new track sections.

There is potential for increased development and redevelopment in areas surrounding proposed NLX stations because of improved public transportation access. While development and redevelopment is regulated by the affected local jurisdictions and is driven by regional and local economic conditions, higher speed passenger rail lines can advance the timing and increase the intensity of development, within the limits allowed by local comprehensive plans, particularly surrounding proposed station areas. This increased redevelopment could indirectly lead to acquisitions and displacements in situations where property ownership is transferred from one party to another.

4.18.3.4 Vegetation and Wildlife

The proposed NLX Project could cause indirect impacts on vegetation and wildlife. The project will follow all applicable BMPs to avoid direct impacts and minimize indirect impacts to the extent practicable. Indirect impacts could occur if development induced around the station areas were to cause direct impacts on natural habitat. However, the amount of these habitat effects would be limited, since the station areas are located in urban and suburban areas, and the species present tend to be generalized species that are adapted to urban conditions. In addition, new development would be required to follow applicable permitting and other regulatory requirements related to protecting natural resources.

4.18.3.5 Threatened and Endangered Species

The FRA has requested concurrence from the USFWS on a determination of “may affect, but not likely to adversely affect,” the Canada lynx and gray wolf. The FRA has made a “no jeopardy” determination for the rusty patched bumble bee, and a “may affect, but will not cause prohibited incidental take” determination for the northern long-eared bat. No effect determinations have been made for all other threatened and endangered species and critical habitat.

The proposed NLX Project could cause indirect impacts on threatened and endangered species as part of the development induced by the project. The Project will follow the applicable BMPs to avoid direct impacts and minimize indirect impacts to the extent practicable. Indirect impacts could occur if development induced around the station areas were to cause direct impacts on habitat for threatened and endangered species. However, the amount of these habitat effects would be limited, since the station areas are located in urban and suburban areas, and threatened and endangered species are generally not present. In addition, new development would be required to follow applicable permitting and other regulatory requirements related to protecting threatened and endangered species.

4.18.3.6 Wetlands

Approximately 92 acres (56 acres in Minnesota and 36 acres in Wisconsin) of potential wetland impacts were identified within the construction limits. Aside from the Coon Rapids and the Cambridge stations, no wetlands were mapped at the other four station locations and maintenance and/or layover facility sites. These sites were urban with impervious surfaces or had sloped topography with no wetland indicators present.

The proposed NLX Project could cause indirect wetland impacts as a result of development induced by the Project. These impacts could include filling for development or diminished wetland function and value because of increased pollutant loading from runoff. Impacts are less likely if avoidance and minimization efforts are used, and typical BMPs are followed.

4.18.3.7 Surface Water

There is potential for increased development and redevelopment in areas surrounding proposed NLX stations because of improved public transportation access. If long-term indirect impacts should occur as a result of future development activities in the NLX study area, an impact on water quality later could include:

- Increased export of pollutants from impervious surfaces and compacted soil
- Decreased pollutant filtration

- Increased water temperatures as a result of riparian vegetation removal
- Export of pollutants from motor vehicles using park and ride lots and other associated infrastructure

Future projects that may occur would be subject to current water quality regulations, and installation of required BMPs would protect water quality.

4.18.3.8 Groundwater

There is potential for increased development and redevelopment in areas surrounding proposed NLX stations because of improved public transportation access. If long-term indirect impacts should occur as a result of future development activities in the NLX study area, an impact on groundwater could include:

- Increased urban land uses with a greater potential for leaks and/or spills of regulated materials that could reach surface aquifers
- Decreased recharge of local aquifers because of increases in impervious surfaces

Future projects that may occur would be subject to current groundwater regulations, and installation of required BMPs would help protect groundwater resources.

4.18.3.9 Noise and Vibration

Noise

Some indirect noise impacts are likely to occur in the long term because of the potential increase in development density anticipated around the higher speed rail stations. Local jurisdictions would likely take advantage of better transportation and access following completion of the NLX Project by encouraging public transportation-oriented development or redevelopment of land around the stations, which could result in new receptors exposed to noise produced by train horn blowing, passenger and freight rail equipment, and park and ride facilities. Automobile-related noise levels could change with traffic increases from induced land use changes.

Vibration

Some indirect vibration impacts on new receptors are likely in the long term with the proposed NLX Project due to the potential increase in development density around higher speed rail stations. Local jurisdictions would likely take advantage of better transportation and access following completion of the proposed NLX Project by encouraging public transportation-oriented development or redevelopment of land around the stations, which would result in exposure to vibrations produced by higher speed passenger and freight rail. The

anticipated new development induced by the proposed NLX Project around stations that would expose more people to ground-borne vibration from higher speed passenger service would be minimal.

4.18.3.10 Contaminated Properties and Regulated Waste

The potential development and redevelopment induced by the proposed NLX Project around stations could be effected by, or affect, hazardous materials sites if proper BMPs are not implemented. Redevelopment of urban or industrial sites could present higher risk of hazardous materials that would require remediation.

Contaminated sites would require cleanup as development occurs. High risk properties include Target Field Station; Sandstone Maintenance Facility; Superior, Wisconsin Station; Duluth Station; and Duluth Maintenance and/or Layover Facility. These properties have a history of known contamination associated with them or directly adjacent properties, which could lead to greater environmental risk to surrounding properties undergoing redevelopment.

A potential beneficial long-term indirect impact of properties located on or near the proposed NLX stations and maintenance and/or layover facility sites is that known and unknown hazardous and contaminated properties may be cleaned up as redevelopment occurs. Areas encountered during construction of the proposed NLX Project that contain hazardous and contaminated materials that are within the limits of disturbance would be cleaned up as part of the proposed NLX Project. The Limited Phase I ESA report can be found in **Appendix K**.

4.18.3.11 Cultural Resources

Indirect effects on historic properties could occur if development caused by track improvements, station or layover and maintenance facilities change the character of the property's use or setting, or introduce visual, atmospheric or auditory elements that diminish the integrity of the historic features of properties listed on or eligible for the NRHP. Historic properties are identified in Section 4.11. Indirect effects on historic properties would be identified and addressed in accordance with the procedures established in the PA for the NLX Project.

4.18.3.12 Visual

Some indirect visual impacts are possible in the long term because the improved accessibility of the areas around the NLX stations may create increased demand for new development, including higher residential densities and, in some cases, new or expanded commercial activities. In areas where this occurs, the built environment is likely to appear more intensively developed and possibly more urbanized in character than what exists at present. However, the extent to which this development would occur or would have visual

effects depends on market demand and on the effectiveness of planning, development control, and urban design policies and regulations of the communities in which the stations are located. Further new development would also be subject to a zoning/permitting process before proceeding.

4.18.3.13 Socioeconomics

Indirect impacts related to the NLX Project could affect access to community facilities, community character and community cohesion if property conversion related to station-area development occurs.

The NLX Project has the potential to result in indirect impacts related to property conversion in the areas surrounding proposed stations. In particular, higher speed rail lines can advance the timing and increase the intensity of private and public development surrounding proposed station areas. Any development or redevelopment would be in accordance with applicable City plans and policies, which were developed, in part, based on the desires of neighborhood and community residents. As a result, potential property conversion surrounding proposed stations are not anticipated to have a substantial effect on community facilities, community character, or community cohesion.

The NLX Project could also affect the supply of and demand for off-street and on-street parking in the areas surrounding the proposed stations could be affected as a result of station-area development or redevelopment. However, any development would be required to comply with the parking requirements of the local jurisdiction.

In addition, planned park and ride lots under the NLX Project have been sized to cumulatively meet forecast (2040) demand for park and ride spaces, which would help to minimize spillover, or unwanted parking in neighborhoods adjacent to proposed light rail stations. Therefore, no effects on community facilities, community character or community cohesion related to changes in the supply of vehicle parking are expected.

4.18.3.14 Environmental Justice

Overall, the proposed NLX Project would not have disproportionately high and adverse human health or environmental effects on any minority population or low income population.

Potential indirect impacts on environmental justice populations could result from increased development and redevelopment in the station areas. While not every NLX station area is likely to see substantial change in the short-term, those where demand for new development is stronger would be likely to experience increased property values and corresponding increases in rents and real estate taxes. While these impacts would be experienced by all populations in the NLX study area, low-income persons may experience them to a greater extent and, particularly if they rent rather than own property, could be displaced.

4.18.3.15 Economics

As part of the ongoing Tier 2 EA studies, MnDOT updated the NLX Project economic analysis, which indicates the service would support existing industries and growth of new business by improving access between communities and creating more temporary and permanent jobs, increase tax revenue and foster tourism. The NLX stations and maintenance and/or layover facilities are sited in areas that local communities and stakeholders have targeted and identified for economic development and multimodal connections.

The NLX Project can have the long-term indirect impact of potentially increased development and redevelopment in the areas surrounding NLX stations.²²

Because future potential developments would require the actions of others and are influenced by market forces, they are understood to be indirect impacts on land use. Development that is consistent with local land use plans and policies would not result in substantial long-term impacts.

The NLX Project may indirectly lead to new development and/or redevelopment of land surrounding some of the proposed NLX stations, which could have the effect of increasing property tax revenues for the affected local jurisdictions. While development is regulated by the affected jurisdictions and is driven by regional and local economic conditions, higher speed passenger rail lines can advance the timing and increase the intensity of development, within the limits allowed by local zoning, particularly surrounding proposed station areas.

To the extent the proposed NLX Project leads to new private development around stations, new jobs could be created in the region as employees gain easier access to businesses, residential housing units and other facilities. The creation of these jobs would provide a net benefit to the local economy.

4.18.4 Cumulative Effects Assessment

Direct effects are impacts that will occur on each resource as a result of the NLX Project construction. The analysis for the direct effects is located in Chapter 3 Transportation and Sections 4.1 through 4.17. Indirect impacts are those that are caused by the proposed NLX Project but occur later in time and/or proximity while being reasonably foreseeable. The indirect impact analysis is located in Section 4.18.3.

²² *Research on the impacts associated with light rail systems indicates that passenger rail is one of many factors that can influence development. In a 2014 study titled "Public Transportation: Multiple Factors Influence Extent of Transit-Oriented Development," the U.S. Government Accountability Office reviewed six federally funded transit projects and found a wide range in the amount of transit-oriented development near transit stations since transit operations began. The findings of the U.S. Government Accountability Office study are consistent with a study conducted by the Center for Transit-Oriented Development (2011) that reviewed the development patterns along three light rail transit projects in the United States.*

Cumulative effects result from “the incremental impact of the [proposed] action when added to other past, present, and reasonably foreseeable future actions. The cumulative effects analysis is included in this chapter.

This section describes the potential for cumulative effects from the proposed NLX Project in combination with past and the reasonably foreseeable future actions described included in **Table 4-96**.

Planned transportation and private development in the NLX study area would occur independently of the proposed NLX Project. These developments are primarily located in the NLX station location areas.

The proposed NLX Project would have an incremental effect on resources of interest in the context of other past, present, and reasonably foreseeable actions in the NLX study area. In general, the substantial direct and indirect impacts of the proposed NLX Project would be localized around station locations and indirect impacts are not anticipated. The assessment of the cumulative effects of the proposed NLX Project and other past, present and reasonably foreseeable actions is presented by each resource of interest in the following sections.

4.18.4.1 Transportation

Over time, continued development of transit and transportation facilities in the vicinity of the NLX Project, combined with future actions and the direct and indirect impacts of the NLX Project, would potentially place increased demands on transportation. The NLX Project would increase the capacity to move people along the NLX study area by introducing higher speed rail service. The indirect impact of rider diversion could cumulatively affect the regional bus service over time, but there is potential for an increased number of people using public transportation due to development and redevelopment around the proposed NLX stations, which would be a positive cumulative effect.

4.18.4.2 Land Use

Redevelopment, over time, could result in land use changes around the station locations. Although future actions are anticipated to have minor effects on development surrounding the stations and on the mode of transportation, no substantial cumulative effects are anticipated. The changes to the land use would be regulated by the affected local jurisdictions; changes are driven by regional and local economic conditions.

4.18.4.3 Right of Way

Impacts along the right of way because of the construction of new tracks would be minimal, with all improvements located within the BNSF right of way or immediately adjacent to the BNSF right of way. No cumulative effects are anticipated.

Because the proposed NLX Project and other transportation projects that use federal funds are required by law to compensate property owners and renters for residences and businesses acquired by transportation improvements, the proposed NLX Project and similar federal actions would not contribute to cumulative acquisition impacts after mitigation.

However, non-federally funded transportation facilities in the proposed NLX study area over time, combined with future actions and the direct and indirect impacts of the proposed NLX Project, could cumulatively result in displacements of residents and/or businesses. Additionally, the need for new transportation infrastructure to support new development could result in additional displacements.

4.18.4.4 Vegetation and Wildlife

Past public and private actions, particularly during the first period of interstate construction (1956–1969) with associated expansion of the U.S. Highway and Trunk Highway and early residential and commercial suburban development, generally would have had a greater impact on ecosystems because the projects would have affected better quality habitat in more rural areas. Because the concept of protecting wildlife and wildlife habitat was in its very early days between 1956 and 1969, it is difficult to speculate on public transportation and private development projects' impact on habitat during that period. Public transportation and private development projects after 1969 continued to adversely affect ecosystems, but in general as habitat areas became smaller and more disturbed, the projects' impacts on the function and value of the ecosystems have been less pronounced. In addition, the enactment of environmental protection laws has reduced impacts on ecosystems, and would continue to do so in the future.

The proposed NLX Project station locations would be located mostly in areas that have been previously disturbed or developed with impervious surfaces and buildings. Portions of the proposed NLX study area would be near natural or open areas with vegetative cover that may provide foraging, migrating or nesting habitat for wildlife. Long-term impacts on habitat include removal, conversion, degradation or fragmentation of existing habitat. If future development does occur, it would be subject to current regulations, and installation of required BMPs, which would minimize potential substantial cumulative effects.

4.18.4.5 Threatened and Endangered Species

As noted in the previous section, past public and private actions associated with expansion of the U.S. Highway and Trunk Highway and early residential and commercial suburban development generally would have had a greater impact on ecosystems. Because the concept of protecting threatened and endangered species was in its very early days between 1956 and 1969, the Endangered Species Preservation Act of 1966 was the predecessor to the Endangered Species Act of 1973, and it is difficult to speculate on public transportation and private development projects' impact on threatened and endangered species during that period. Public

transportation and private development projects after 1969 continued to adversely affect threatened and endangered species, but in general as habitat areas became smaller and more disturbed, the projects' impacts on these species and associated habitat have been less pronounced. In addition, the enactment of environmental protection laws has reduced impacts on habitats, and would continue to do so in the future.

The proposed NLX Project station locations would be located mostly in areas that have been previously disturbed or developed with impervious surfaces and buildings. Long-term impacts on habitat include removal, conversion, degradation or fragmentation of existing habitat. Implementation of BMPs would minimize cumulative impacts on state or federal protected threatened and endangered species. No cumulative effects are anticipated.

4.18.4.6 Wetlands

Prior to the start of interstate highway construction in the proposed NLX study area, wetlands were being substantially affected by development activities, particularly in Hennepin County, the most populous county in the state. The incomplete understanding of the inherent value of wetlands and the lack of comprehensive environmental regulations at the local, state and federal levels resulted in a generally degraded condition of surface water resources through the first period of interstate construction in the proposed NLX study area. As an example of past actions on water resources, it has been estimated that Minnesota has lost approximately half of its original pre-settlement wetlands due to draining and filling for agriculture and development. A similar level of impact would be expected to have occurred in the proposed NLX study area. The passage of legislation, such as the 1972 CWA and the 1991 Minnesota Wetland Conservation Act, increased protection of wetlands.

As a result of the proposed NLX Project, 92 acres of natural wetlands would be affected and would require replacement. Continued development of transit and transportation facilities in the proposed NLX study area over time, combined with future actions and the direct and indirect impacts of the proposed NLX Project, could cumulatively affect wetlands. If future development does occur, it would be subject to wetland replacement, current water quality regulations, and installation of required BMPs, which would minimize potential cumulative effects.

4.18.4.7 Surface Water

Before the start of interstate highway construction in the proposed NLX study area, water quality and floodplains were being substantially affected by agricultural and urban development activities. The incomplete understanding of the inherent value of water quality and the lack of comprehensive environmental regulations at the local, state and federal levels resulted in a generally degraded condition of water quality through the

first period of interstate construction in the proposed NLX study area. The passage of legislation, such as the 1972 CWA and the 1991 Minnesota Wetland Conservation Act, increased protection of floodplains.

If future development does occur, it would be subject to current water quality regulations, and installation of required BMPs, which would minimize potential cumulative effects.

4.18.4.8 Groundwater

Similar to surface water resources, groundwater was being substantially affected by development well before the start of interstate construction in the proposed NLX study area. The incomplete understanding of connectivity of groundwater and surface water resources, the lack of knowledge regarding the potential for contamination or overdevelopment of aquifers, and the lack of comprehensive environmental regulations at the local, state and federal levels resulted in degraded groundwater resources in developed areas, especially areas of industrial development. The passage of legislation, such as the 1976 Resource Conservation and Recovery Act and the 1980 Comprehensive Environmental Response, Compensation, and Liability Act, as well as similar state regulations, increased protection of groundwater resources.

If future development does occur, it would be subject to current groundwater regulations, and installation of required BMPs, which would minimize potential cumulative effects.

4.18.4.9 Noise and Vibration

Noise

Although noise data for past transportation projects is not readily available, it is expected that past transportation actions such as the early construction of the interstate system and associated expansion of the U.S. Highway and Trunk Highway systems resulted in noise levels approaching or exceeding the Federal Highway Association Noise Abatement Criteria for sensitive receptors adjacent to the transportation improvements.

Cumulative noise effects could occur as a result of direct, indirect and other future actions in addition to the NLX Project.

Vibration

The proposed NLX Project would contribute to minor increases in ground-borne vibration events along its alignment, and cumulative effects could occur where this transit way is near other public transportation

vibration sources in downtown Minneapolis, sources such as at the Target Field multimodal transportation hub where other light rail transit and commuter rail lines are planned to converge.

4.18.4.10 Contaminated Properties and Regulated Waste

The high risk properties along the NLX study area that have potential for contamination over time are Target Field Station; Sandstone Maintenance Facility; Superior, Wisconsin Station; Duluth Station and Duluth Maintenance and/or Layover Facility. These locations have numerous sources of contamination and contaminants of concern documented. Areas of residual contamination due to historic spills and releases along the entire length of the track and right of way are likely, based on its continual use over the past century.

Continued development of transit and transportation facilities in the NLX study area over time, combined with future actions and the direct and indirect impacts of the NLX Project, would contribute to the remediation of hazardous materials sites. Because such sites would be required to be cleaned up as a condition of development or redevelopment, minimal potential for cumulative effects is anticipated.

4.18.4.11 Cultural Resources

Historic properties that are listed or eligible for the NRHP could experience long-term effects from the NLX Project if development caused by track improvements, station or layover and maintenance facilities change the character of the property's use or setting, or introduce visual, atmospheric or auditory elements that diminish the integrity of the historic features of properties listed on or eligible for the NRHP. Historic properties are identified in Section 4.11. Cumulative effects on historic properties would be identified and addressed in accordance with the procedures established in the PA for the NLX Project.

4.18.4.12 Visual

The visual landscape of the NLX study area consists of agricultural, residential, institutional, commercial, industrial, transportation and recreational uses. Because much of the NLX Project would occur within an existing rail corridor, the discussion of visual impacts focuses more on the built environment where stations and related facilities would be added. Continued development of transit and transportation facilities in the proposed NLX study area over time, combined with future actions and the direct and indirect impacts of the proposed NLX Project, could cumulatively change views in the proposed NLX study area over time. Specifically, views could become more urbanized, and wide-open views could in some cases become more closed. These changes are consistent with adopted comprehensive plans for the communities in the NLX study area. In addition, local communities were consulted to ensure station and facility sites would be located to serve local development plans, which can minimize potential cumulative visual impact.

4.18.4.13 Socioeconomics

The NLX Project operations are not anticipated to have negative cumulative effects on socioeconomic conditions in the NLX study area because the infrastructure improvements and maintenance and layover facilities would be located largely within existing railroad right of way or publicly owned properties that are located in areas that either previously or currently serve railroad operations. Cumulative effects on socioeconomics are not anticipated as a result of the NLX Project.

4.18.4.14 Environmental Justice

The NLX Project operations are not anticipated to have negative cumulative effects on EJ population conditions in the NLX study area. The NLX Project is not expected to have a high or disproportionate impacts on EJ populations. The NLX Project is predicted to support existing industries and growth of new business by improving access between communities and creating more temporary and permanent jobs, increase tax revenue and foster tourism. The NLX stations and maintenance and layover facilities are sited in areas that local communities and stakeholders have targeted and identified for economic development and multimodal connections which would result in a positive cumulative effect.

4.18.4.15 Economics

Continued development of transit and transportation facilities in the proposed NLX Project area over time, combined with future actions and the direct and indirect impacts of the proposed NLX Project, could cumulatively strengthen the business climate by providing improved transportation access to customers and employees. Although individual businesses could be temporarily affected negatively during construction, the overall (cumulative) result is expected to have an economic benefit.

4.18.5 Avoidance, Minimization and Mitigation Measures, and Summary of Effects

Anticipated indirect impacts and cumulative effects, as well as potential mitigation measures, are summarized in **Table 4-97**.

Table 4-97: Summary of Indirect Impacts, Cumulative Effects and Associated Mitigation

| Resource | Induced Development | Cumulative Effects | Mitigation |
|-------------------------|---|---|--|
| Transportation | <p>The areas of indirect benefit on transit include ridership forecasts and operational changes including increased transit services.</p> <p>Indirect impacts on the transportation system are not anticipated as a result of induced development at station locations.</p> | <p>The indirect impact of rider diversion in combination with the reasonably foreseeable future actions could affect the regional bus service over time. There is potential for an increased number of people using public transportation due to development and redevelopment around the proposed NLX stations.</p> | <p>No additional mitigation is required.</p> |
| Land Use | <p>Indirect effects related to the proposed NLX Project include property conversion related to station-area development.</p> | <p>The NLX study area in combination with the reasonably foreseeable future actions, could result in land use changes around the station locations. Although future actions are anticipated to have minor effects on development surrounding the stations and on the mode of transportation, no substantial cumulative effects are anticipated.</p> | <p>Development and redevelopment is regulated by the affected local jurisdictions in the NLX study area. No additional mitigation is required.</p> |
| Right of Way | <p>New station-area development could result in displacements of existing uses, limited by zoning, comprehensive plans and local economic conditions.</p> | <p>Additional transportation investments in the proposed NLX study area to serve induced development, in combination with the reasonably foreseeable future actions, could lead to the acquisition of right of way and the relocation of residents and businesses.</p> | <p>Although there could be cumulative effects from the acquisition and displacement of residents and businesses, induced development, along with available housing in the proposed NLX study area, would likely create more jobs and housing opportunities than what would be lost. No mitigation is required.</p> |
| Vegetation and Wildlife | <p>New development induced by the NLX Project, with implementation of proper BMPs, is unlikely to result in impacts on habitat and wildlife.</p> | <p>Induced development associated with the proposed NLX Project in combination with the reasonably foreseeable future actions would not likely have a cumulative effect on habitat or wildlife because of the urbanized nature of the proposed NLX Project station sites.</p> | <p>No additional mitigation is required. The NLX Project assumes that BMPs would be followed for any new development and would comply with applicable environmental protection law.</p> |

| Resource | Induced Development | Cumulative Effects | Mitigation |
|-----------------------------------|--|--|--|
| Threatened and Endangered Species | New development induced by the NLX Project may cause indirect impacts on threatened and endangered species. The project will implement BMPs to avoid direct impacts and minimize indirect impacts to the extent practicable. | Induced development associated with the proposed NLX Project in combination with the reasonably foreseeable future actions would not likely have a cumulative effect on endangered species and associated habitat because of the urbanized nature of the proposed NLX Project station sites. | No additional mitigation is required for indirect and cumulative effects. The NLX Project assumes that BMPs would be followed for any new development and would comply with applicable environmental protection law. |
| Wetlands | Induced development could substantially affect wetlands if new developments were to cause wetland impacts and BMPs are not implemented. No indirect impacts are anticipated if BMPs are implemented. | Induced development associated with the proposed NLX Project in combination with the reasonably foreseeable future actions could have a cumulative effect if new developments were to cause wetland impacts and BMPs are not implemented. | All permanent impacts on wetlands caused by induced development and future actions would be mitigated according to applicable regulations and BMPs. No additional mitigation is required. |
| Surface Water | Induced development could substantially affect water quality and increase impervious surface if BMPs are not implemented during the development process. No indirect impacts are anticipated if BMPs are implemented. | Induced development associated with the proposed NLX Project in combination with the reasonably foreseeable future actions could have a cumulative effect on increased sediment and pollutant load if BMPs are not implemented. | All permanent impacts on water quality caused by induced development and future actions would be mitigated according to applicable regulations and BMPs. No additional mitigation is required. |
| Groundwater | Induced development could substantially affect groundwater resources if BMPs are not implemented during the development process. No indirect impacts are anticipated if BMPs are implemented. | Induced development associated with the proposed NLX Project in combination with the reasonably foreseeable future actions could have a cumulative effect on groundwater quality and availability if BMPs are not implemented. | All permanent impacts on groundwater resources caused by induced development and future actions would be mitigated according to applicable regulations and using BMPs. No additional mitigation is required. |

| Resource | Induced Development | Cumulative Effects | Mitigation |
|---|--|--|---|
| Noise and Vibration | Some indirect noise impacts are likely to occur in the long term because of the potential increase in development density anticipated around the NLX stations. Changes in development density and intensity would bring more people into contact with noise produced by the NLX Project. | Induced development associated with the proposed NLX Project in combination with the reasonably foreseeable future actions would likely result in increased noise impacts associated with more people and traffic in the area. | Noise impacts caused by development or other future actions would be assessed for mitigation on a project-by-project basis. No additional mitigation is required. |
| Contaminated Properties and Regulated Waste | If BMPs are followed, no substantial indirect impacts should occur; beneficial impacts would occur through remediation. | Induced development associated with the proposed NLX Project in combination with the reasonably foreseeable future actions would have a positive effect by contributing to the remediation of hazardous materials sites, because such sites would be required to be cleaned up as a condition of development or redevelopment. | Parties involved would be required to follow all state and federal laws concerning hazardous materials. No additional mitigation is required. |
| Cultural Resources | Potential indirect impacts could occur because of induced development at station locations. Impacts on historic properties could occur if redevelopment changes the character of the property's use or setting. | Cumulative impacts could occur as a result of induced development. Historic properties could be impacted if redevelopment changes the character of the property's use or setting. | Effects on historic properties would be identified and addressed in accordance with procedures in the PA for the NLX Project. |
| Visual | Some indirect visual impacts are possible in the long term because the improved accessibility of the areas around the NLX stations may create increased demand for new development, including higher residential densities and, in some cases, new or expanded commercial activities. | Continued development of transit and transportation facilities, in combination with reasonably foreseeable future actions, could cumulatively change views in the proposed NLX Project area over time. Specifically, views could become more urbanized, and wide-open views could in some cases become more closed. | No additional mitigation is required. |

| Resource | Induced Development | Cumulative Effects | Mitigation |
|-----------------------|--|--|---|
| Socioeconomics | Long-term indirect impacts related to the NLX Project that could affect access to community facilities, community character, and community cohesion if property conversion related to station-area development occurs. | The NLX Project operations are not anticipated to have negative cumulative effects on socioeconomic conditions in the NLX study area because the infrastructure improvements and maintenance and layover facilities would be located largely within existing railroad right of way or publicly owned properties that are located in areas that either previously or currently serve railroad operations. | The type of indirect impacts effects identified are typically consistent with and governed by applicable land-use plans. No mitigation is required. |
| Environmental Justice | Potential displacement of Environmental Justice populations could result from increased development and redevelopment in the station areas. | The NLX Project operations are not anticipated to have negative cumulative effects on EJ population conditions but anticipate a positive effect over time related to community investment and increased access to transportation options. | Local regulations and policies could minimize potential negative indirect or cumulative effects. |
| Economics | The NLX Project may indirectly lead to new development and/or redevelopment of land surrounding some of the proposed NLX stations, which could have the effect of increasing property tax revenues for the affected local jurisdictions. | Continued development of transit and transportation facilities in the proposed NLX Project area over time, in combination with the reasonably foreseeable future actions could cumulatively strengthen the business climate by providing improved transportation access to customers and employees. | No mitigation is required. |