METRO BLUE LINE EXTENSION

Bottineau LRT

Final Environmental Impact Statement

JULY 2016

METROPOLITAN COUNCIL

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL TRANSIT ADMINISTRATION

METRO Blue Line Light Rail Transit Extension
Final Environmental Impact Statement

Prepared by:

United States Department of Transportation (USDOT)
Federal Transit Administration (FTA)

and

Metropolitan Council, Minnesota (Council)

In cooperation with:

Federal Aviation Administration (FAA)
United States Department of the Interior (USDOI), National Park Service (NPS)
United States Army Corps of Engineers (USACE)

Submitted pursuant to:

National Environmental Policy Act of 1969 (NEPA), as amended, 42 USC Section 4332 *et seq.*; Council of Environmental Quality (CEQ) regulations, 40 CFR Part 1500 *et seq.*, Implementing NEPA; Federal Transit Laws, 49 USC Chapter 53; Environmental Impact and Related Procedures, 23 CFR Part 771, a joint regulation of the Federal Highway Administration and Federal Transit Administration implementing NEPA and CEQ regulations; Section 106 of the National Historic Preservation Act of 1966, 54 USC Section 306108; Section 4(f) of the Department of Transportation Act of 1966, as amended, 49 USC Section 303; Section 6(f)(3) of the Land and Water Conservation Fund Act of 1965, 16 USC Section 4601 – 4 *et seq.*; Clean Air Act, as amended, 42 USC Section 7401 *et seq.*; Endangered Species Act of 1973 (16 USC 1531–1544, 87 Stat. 884); Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, 42 USC Section 4601 *et seq.*; Executive Order No. 12898 (Federal Actions to Address Environmental Justice in Minority and Low Income Populations); Executive Order No. 13166 (Improving Access to Services for Persons with Limited English Proficiency); Executive Order No. 11988 (Floodplain Management) as amended; other applicable federal laws and procedures; and all relevant laws and procedures of the State of Minnesota.

After publication of the Final Environmental Impact Statement (Final EIS), the Council will issue an Adequacy Determination for the Final EIS in accordance with Minnesota environmental law.

Upon consideration of the comments received on this Final EIS, FTA will issue the Record of Decision, which will document FTA's decision on the project and list the required mitigation commitments to reduce or avoid impacts.

7/6/2016
Date of Approval

Marisol R. Simón
Regional Administrator
Federal Transit Administration
Region V

7.6.16
Date of Approval

Mark Fuhrmann
Program Director, Rail New Starts
Metropolitan Council

Abstract

The Metropolitan Council proposes to construct and operate the 13-mile extension of the METRO Blue Line approximately 13 miles, starting from its terminus in downtown Minneapolis to the northwest area of the Twin Cities, serving north Minneapolis and the suburbs of Golden Valley, Robbinsdale, Crystal, and Brooklyn Park. In this Final Environmental Impact Statement (Final EIS), the project is defined as the METRO Blue Line Light Rail Transit (BLRT) Extension project. In addition to the proposed light rail alignment, LRT stations, park-and-ride lots, and ancillary facilities, including a proposed operations and maintenance facility (OMF), roadway and bicycle/pedestrian improvements and related freight rail modifications are discussed.

This Final EIS includes the project's Purpose and Need Statement and a description of the alternatives currently and previously considered. The following environmental categories are addressed in this Final EIS, including related methods and regulations, agency coordination (where applicable), anticipated direct long-term (operating) and short-term (construction) impacts, indirect impacts and cumulative effects, and committed mitigation measures; freight rail conditions; vehicular traffic; pedestrians and bicyclists; parking; aviation; land use plan compatibility; community facilities/community character and cohesion; displacement of residents and businesses; cultural resources; visual/aesthetics; economic effects; safety and security; utilities; floodplains; wetlands and other aquatic resources; geology, soils, and topography; hazardous materials contamination; noise; vibration; biological environment (wildlife habitat and endangered species); water quality and stormwater; air quality; and energy. This Final EIS also addresses the following: environmental justice compliance; Section 4(f) compliance; finance; evaluation of alternatives; public involvement and agency coordination; and a potential related joint development project.

For additional information concerning this document, contact:

FTA Regional Contact

Marisol Simón
Regional Administrator
Federal Transit Administration
200 West Adams Street, Suite 320
Chicago, IL 60606
312.353.2789

Local Agency Contact

Kathryn O'Brien
Assistant Director, Environmental and Agreements
Metro Transit – BLRT Project Office
5514 West Broadway Avenue, Suite 200
Crystal, MN 55428
612.373.5377

Document Availability

Printed copies of the Final EIS are available for public review at the following locations.

Location	Address
Brookdale Library	6125 Shingle Creek Parkway, Brooklyn Center
Brooklyn Park Library	8600 Zane Avenue North, Brooklyn Park
Golden Valley Library	830 Winnetka Avenue North, Golden Valley
Hennepin County Library – Minneapolis Central	300 Nicollet Mall, Minneapolis
Metropolitan Council Library	390 Robert Street North, St. Paul
Minnesota Department of Transportation Library	395 John Ireland Boulevard, St. Paul
North Regional Library	1315 Lowry Avenue North, Minneapolis
Rockford Road Library	6401 42nd Avenue North, Crystal
Sumner Library	611 Van White Memorial Boulevard, Minneapolis

Electronic-only copies of the Final EIS are available for public review at the following locations.

Location	Address
Legislative Reference Library	100 Reverend Dr. Martin Luther King, Jr. Boulevard, St. Paul
Maple Grove Library	8001 Main Street North, Maple Grove
Osseo Library	415 Central Avenue, Osseo

Printed copies of the project's technical reports are also available for public review at the Blue Line Extension Project Office at 5514 West Broadway Avenue, Suite 200, in Crystal. Electronic versions of the technical reports are available on the project website, www.BlueLineExt.org.

Any person with special needs, such as English language assistance or Braille, should contact Dan Pfeiffer at 612.373.3897 or dan.pfeiffer@metrotransit.org for assistance.

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Glossary and Acronyms

Glossary of Terms

Corridor Community is a community that is adjacent to the proposed BLRT Extension project alignment; specifically, the cities of Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park.

Environmentally preferable alternative. 40 CFR Part 1505.2(b) requires that, in cases where an Environmental Impact Statement is prepared, the agency must specify the alternative or alternatives in the Record of Decision that were considered to be environmentally preferable, which is generally the alternative that causes the least damage to the biological and physical environment and that best protects, preserves, and enhances historic, cultural, and natural resources. However, the identification of the environmentally preferable alternative may involve difficult judgments, particularly when one environmental value must be balanced against another. The Federal Transit Administration has determined that the locally preferred alternative (Alternative B-C-D1) would be the proposed BLRT Extension project's environmental preferable alternative.

Forecast year for this Final Environmental Impact Statement (EIS) is the year 2040 (revised from 2030 for the Draft EIS).

Least Environmentally Damaging Practicable Alternative (LEDPA). Identification of the LEDPA is a requirement of the US Army Corps of Engineers (USACE) wetland permitting process under the Clean Water Act, as defined in 40 CFR Part 230.10(a). The LEDPA is defined as the alternative with the least impacts to the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. USACE made the preliminary determination that the proposed BLRT Extension project LPA is the LEDPA in October 2013. USACE will make a final LEDPA determination as part of its review and approval of the Metropolitan Council's Section 404 wetland permit application, which will occur after publication of this Final EIS.

Locally preferred alternative (LPA) for the proposed BLRT Extension project was adopted by the Metropolitan Council as the B-C-D1 LRT alignment in May 2013.

New Starts and Fixed Guideway Capital Investment Grant (CIG). In this Final EIS, the terms *New Starts* and *Capital Investment Grant* (officially termed *Fixed Guideway Capital Investment Grant*) are used interchangeably. A CIG provides funding for new and expanded rail, bus rapid transit, and ferry systems that reflect local priorities to improve transportation options in key corridors. Those projects include what are termed *New Starts Projects* as well as *Small Starts* and *Core Capacity* projects.

No-Build Alternative is required under the National Environmental Policy Act for all Environmental Impact Statements. The No-Build Alternative represents the existing transportation system with all planned transportation improvements included in the Current Revenue Scenarios (i.e., financially constrained) of the Metropolitan Council's *2040 Transportation Policy Plan* (adopted January 2015), except for the proposed BLRT Extension project.

Project station names. The following table presents the station names for the proposed BLRT Extension project that are used throughout this Final Environmental Impact Statement compared to the official names of those stations.

Final EIS Station Name	Official Station Name*
Target Field Station	Target Field Station
Van White Boulevard Station	Van White Boulevard Station
Penn Avenue Station	Penn Avenue Station
Plymouth Avenue Station	Plymouth Avenue/Theodore Wirth Regional Park Station
Golden Valley Road Station	Golden Valley Road Station
Robbinsdale Station	Robbinsdale Station
Bass Lake Road Station	Bass Lake Road Station
63rd Avenue Station	63rd Avenue Station
Brooklyn Boulevard Station	Brooklyn Boulevard Station
85th Avenue Station	85th Avenue Station
93rd Avenue Station	93rd Avenue Station
Oak Grove Parkway Station	Oak Grove Parkway Station

* Source: Adopted by the Metropolitan Council, February 24, 2016

Acronyms

2030 TPP	*2030 Transportation Policy Plan*
2040 TPP	*2040 Transportation Policy Plan*
a.m.	morning
AA	Alternatives Analysis
AASHTO	American Association of State Highway and Transportation Officials
ACHP	Advisory Council on Historic Preservation
ACS	American Community Survey
ADA	Americans with Disabilities Act
AM	morning
AME	African Methodist Episcopal (church)
ANSI	American National Standards Institute
APE	area of potential effects
ARCC	Advise, Review, and Communicate Committee
AREMA	American Railway Engineering and Maintenance-of-Way Association
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
AUAR	Alternative Urban Areawide Review
Ave	Avenue
BAC	Business Advisory Committee
BCWMC	Bassett Creek Watershed Management Commission
BEA	United States Department of Commerce, Bureau of Economic Analysis
BLRT	Blue Line Light Rail Transit (Extension project)
Blvd	Boulevard
BMP	best management practice
BNSF	BNSF Railway
BPO	BLRT Extension Project Office
BRT	bus rapid transit
BTU	British thermal units
BWSR	Minnesota Board of Water and Soil Resources
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAC	Community Advisory Committee
CEQ	Council on Environmental Quality
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CFR	Code of Federal Regulations
CIG	Capital Investment Grant (Program)
CIP	Capital Improvement Program
CMC	Corridor Management Committee

CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
Council	Metropolitan Council
CP	Canadian Pacific Railway
CR	County Road
CRU	Cultural Resources Unit
CSAH	County State-Aid Highway
CTIB	Counties Transit Improvement Board
CWA	Clean Water Act
dB	decibels
dbA	decibels on an A-weighted scale
DNR	Minnesota Department of Natural Resources
Dr	Drive
Draft EIS	Draft Environmental Impact Statement
E	East
EAW	Environmental Assessment Worksheet
EIS	Environmental Impact Statement
EJ	environmental justice
EO	Executive Order
EPA	United States Environmental Protection Agency
EQB	Minnesota Environmental Quality Board
ESA	Environmental Site Assessment
FAA	Federal Aviation Administration
FAST Act	Fixing America's Surface Transportation Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
Final EIS	Final Environmental Impact Statement
FIRM	Flood Insurance Rate Map
FLSSC	Fire Life Safety and Security Committee
FRA	Federal Railroad Administration
ft	feet
FTA	Federal Transit Administration
GHG	greenhouse gas
GIS	geographic information system
GN	Great Northern Railway
GRHD	Grand Rounds Historic District
HCM	*Highway Capacity Manual*
HCRRA	Hennepin County Regional Railroad Authority
HERC	Hennepin Energy Recovery Center
HIA	Health Impact Assessment

HRHD	Homewood Residential Historic District
HVAC	heating, ventilating, and air conditioning (system)
HVTL	high-voltage transmission line
Hwy	highway
Hz	Hertz
I-35E	Interstate Highway 35E
I-35W	Interstate Highway 35W
I-394	Interstate Highway 394
I-694	Interstate Highway 694
I-94	Interstate Highway 94
ID	identifier
IRT	Issue Resolution Team
JPA	Joint Powers Agreement
KVP	key view point
L_{10}	noise level exceeded 10 percent of the time during a given period
L_{50}	noise level exceeded 50 percent of the time during a given period
L_{dn}	day-night sound level
LEDPA	Least Environmentally Damaging Practicable Alternative
L_{eq}	equivalent sound level
LGU	local government unit
LOD	limits of disturbance
LOS	level of service
LPA	locally preferred alternative
LRT	light rail transit
LRV	light rail vehicle
LSTM	line source transfer mobility
LT	long-term noise-monitoring site
LUAST	leaking underground or aboveground storage tank
LWCF	Land and Water Conservation Fund Act of 1965
M&P	Minneapolis & Pacific Railway
MAC	Metropolitan Airports Commission
MAP-21	Moving Ahead for Progress in the 21st Century Act
MBTA	Migratory Bird Treaty Act of 1918
MCES	Metropolitan Council Environmental Services
MEPA	Minnesota Environmental Protection Act
MERLA	Minnesota Environmental Response and Liability Act
Minn. Stat.	Minnesota Statute
MLCCS	Minnesota Land Cover Classification System
MnDOT	Minnesota Department of Transportation
MnDOT-CRU	Minnesota Department of Transportation, Cultural Resources Unit
MnHPO	Minnesota Historic Preservation Office

MnModel	Minnesota Model
MnOSHA	Minnesota Occupational Safety and Health Administration
MOA	Memorandum of Agreement
MOT	Maintenance of Traffic
MP	Mile Post
MPCA	Minnesota Pollution Control Agency
mph	miles per hour
MPRB	Minneapolis Park and Recreation Board
MSA	Metropolitan Statistical Area
MSAT	mobile-source air toxics
MVST	motor vehicle sales tax
MWMO	Mississippi Watershed Management Organization
N	North
N/A	not applicable
NAAQS	National Ambient Air Quality Standards
NB	northbound
NCHRP	National Cooperative Highway Research Program
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NHIS	Natural Heritage Information System (Database)
NHPA	National Historic Preservation Act of 1966
NLEB	northern long-eared bat
No.	number
NOI	Notice of Intent
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTN	Northside Neighborhood Transportation Network
NURP	National Urban Runoff Program
O&M	Operation and Maintenance
O_3	ozone
OCS	overhead catenary system
OEMP	*Operations Emergency Management Plan*
OMF	Operations and Maintenance Facility
OSHA	Occupational Safety and Health Administration
p.m.	afternoon
PA	Programmatic Agreement
PAC	Policy Advisory Committee
Pb	lead

PBP	Petroleum Brownfields Program
PCB	polychlorinated biphenyls
PD/ESF	Proposal Description and Environmental Screening Form
PFOS	perfluorooctane sufonate
PIP	Public Involvement Plan
PM	afternoon
PM	particulate matter
PMT	passenger-miles traveled
PWI	Public Waters Inventory
RAP	Response Action Plan
Rd	road
re	referenced to
RIMS II	Regional Input-Output Modeling System
RPZ	Runway Protection Zone
RRA	Regional Rail Authority
S	South
SAS	state assessment site
SB	southbound
SCC	Standard Cost Category
SCORP	State Comprehensive Outdoor Recreation Plan
SCWM WMC	Shingle Creek and West Mississippi Watershed Management Commissions
SCWMC	Shingle Creek Watershed Management Commission
sec	seconds
Section 106	Section 106 of the National Historic Preservation Act of 1966
Section 4(f)	Section 4(f) of the Department of Transportation Act of 1966
Section 401	Section 401 of the Clean Water Act
Section 404	Section 404 of the Clean Water Act
Section 6(f)	Section 6(f) of the Land and Water Conservation Fund Act of 1965
Section 7	Section 7 of the Endangered Species Act of 1973
SF	square feet
SIP	State Implementation Plan
SO_2	sulfur dioxide
SOI	United States Secretary of the Interior
SPCC	Spill Prevention, Control, and Countermeasures (Plan)
SRF	SRF Consulting Group, Inc.
SRS	site response section
SSMP	*Safety and Security Management Plan*
ST	short-term noise-monitoring site
Sta	stationing
StPM&M	St. Paul, Minneapolis & Manitoba Railroad
SUE	Subsurface Utility Engineering

SWPPP	Stormwater Pollution Prevention Plan
TAZ	transportation analysis zone
TEP	Technical Evaluation Panel
TH	Trunk Highway
THPO	Tribal Historic Preservation Office
TIP	Transportation Improvement Program
TMDL	total maximum daily load
TOD	transit-oriented development
TPAC	Technical Project Advisory Committee
TPSS	traction power substation
TRPD	Three Rivers Park District
TSM	Transportation Systems Management
TSP	*Transportation Systems Plan*
TSS	total suspended solids
TWRP	Theodore Wirth Regional Park
Uniform Act	Uniform Relocation and Real Property Acquisitions Policies Act of 1970
URA	Uniform Relocation and Real Property Acquisitions Policies Act of 1970
US	United States
US	United States Highway
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USDOI	United States Department of the Interior
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
UST	underground storage tank
var.	botanical variety
VdB	vibration decibels
VHT	vehicle-hours traveled
VIC	Voluntary Investigation and Cleanup (Program)
VMT	vehicle-miles traveled
vpd	vehicles per day
W	West
WBARHD	West Broadway Avenue Residential Historic District
WCA	Wetland Conservation Act
WMC	Watershed Management Commission
WMO	watershed management organization
WMWMC	West Mississippi Watershed Management Commission
YOE	year-of-expenditure (dollars)

Executive Summary

1. What is the proposed METRO Blue Line Light Rail Transit (BLRT) Extension project?

The proposed BLRT Extension project would provide transit improvements in the highly traveled northwest area of the Twin Cities metro area. The proposed BLRT Extension project would be located in Hennepin County, Minnesota, extending approximately 13 miles from downtown Minneapolis to the northwest serving north Minneapolis and the suburbs of Golden Valley, Robbinsdale, Crystal, and Brooklyn Park (see **Figure ES-1**). The proposed alignment includes the following features:

- 11 new stations
- Approximately 1,670 additional park-and-ride spaces at four new lots
- Accommodations for passenger drop-off facilities
- New or restructured local bus routes connecting stations to nearby residential, commercial, and educational land uses
- One Operations and Maintenance Facility (OMF) located in the City of Brooklyn Park, Minnesota

The proposed BLRT Extension project would connect downtown Minneapolis with Theodore Wirth Regional Park, Crystal Airport, North Hennepin Community College, and Target's North Campus. As an extension of the existing METRO Blue Line, the proposed BLRT Extension project would provide a one-seat ride to the Minneapolis–St. Paul International Airport and the Mall of America.

2. What is the purpose of and need for the proposed BLRT Extension project?

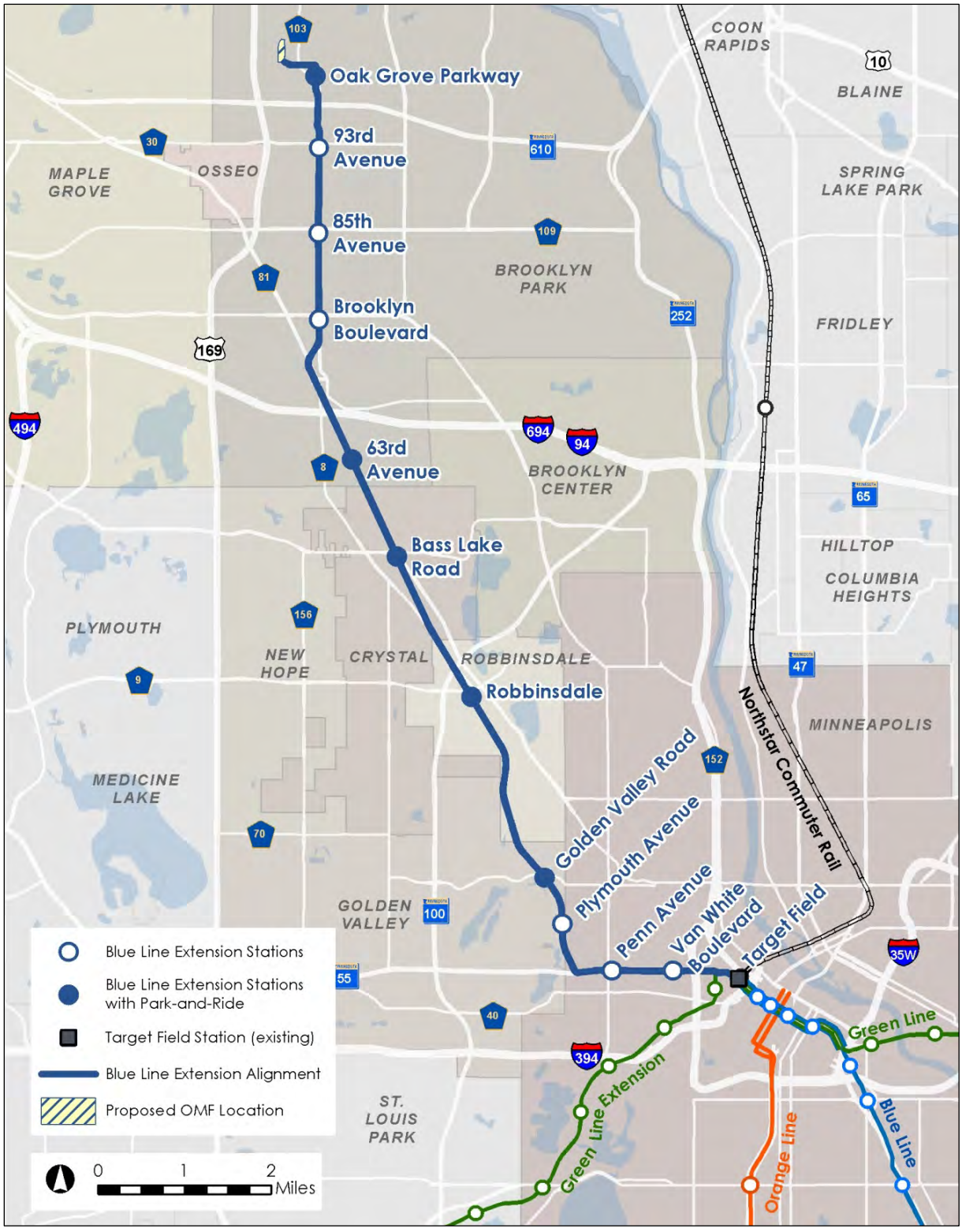
The Purpose and Need provides the foundation for the proposed BLRT Extension project (see **Chapter 1** of the Final Environmental Impact Statement [Final EIS]). The purpose of the proposed BLRT Extension project is summarized below:

- The purpose of the proposed BLRT Extension project is to provide transit service which will satisfy the long-term regional mobility and accessibility needs for businesses and the traveling public.

The need for the proposed BLRT Extension project is summarized as follows:

- The proposed BLRT Extension project is needed to effectively address long-term regional transit mobility and local accessibility needs while providing efficient, travel-time competitive transit service that supports economic development goals and objectives of local, regional, and statewide plans.

Figure ES-1. Proposed BLRT Extension Project



3. Who are the proposed BLRT Extension project's lead agencies and sponsors?

The Federal Transit Administration (FTA) is the Federal Lead Agency for the proposed BLRT Extension project. The Metropolitan Council (Council) is the proposed BLRT Extension project's local lead agency and project sponsor. The Hennepin County Regional Railroad Authority (HCRRA) served as the local lead agency during development of the Draft Environmental Impact Statement (Draft EIS) and its public comment period, which concluded in May 2014.

4. Who are the proposed BLRT Extension project's Cooperating Agencies, and what role does a Cooperating Agency play?

The United States (US) Department of Transportation, Federal Aviation Administration (FAA); the US Army Corps of Engineers (USACE); and the US Department of the Interior's National Park Service (NPS) are the federal Cooperating Agencies for the Final EIS. A Cooperating Agency is a federal agency, other than a lead agency, that has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposed project or project alternative (40 CFR Part 1508.5).

- FAA is responsible for guidance on compatible land uses within Runway Protection Zones (RPZs) such at the RPZ for Crystal Airport.
- USACE is responsible for implementing the National Environmental Policy Act of 1969 (NEPA[1]) and related laws and Section 404 of the Clean Water Act.
- NPS is responsible for implementing the requirements of Section 6(f) of the Land and Water Conservation Fund (LWCF) Act of 1965 (Public Law 88-578), which is codified as 16 United States Code (USC) § 460. Section 6(f) of the LWCF Act contains provisions to protect federal investments in park and recreation resources and ensure the public outdoor recreation benefits achieved through the use of these funds are maintained.

A distinguishing feature of a Cooperating Agency is that the Council on Environmental Quality regulations (40 CFR Part 1506.3) permit a Cooperating Agency to "adopt without recirculation of the environmental impact statement of a lead agency when, after an independent review of the statement, the Cooperating Agency concludes that its comments and suggestions have been satisfied."

During the Draft EIS phase of the project, the Federal Highway Administration (FHWA) was a Cooperating Agency on the project. Since that time, FHWA has requested that it no longer be considered a Cooperating Agency but be considered a Participating Agency. While the proposed BLRT Extension project does not create jurisdictional involvement for FHWA, FHWA is interested in staying involved with the project from a technical expertise standpoint since the proposed BLRT Extension project would cross several major roads: Olson Memorial Highway (Trunk Highway [TH] 55), TH 100, Interstate Highway 94 (I-94), and TH 610. FHWA is interested in the proposed designs implemented at these locations in terms of any potential for impacts associated with roadway operations and safety.

[1] National Environmental Policy Act of 1969 (NEPA), as amended, 42 USC § 4332

5. What jurisdictions are participating in the proposed BLRT Extension project?

Local jurisdictions that are participating in the proposed BLRT Extension project include Hennepin County, the cities of Minneapolis, Golden Valley, Robbinsdale, Crystal and Brooklyn Park, and the State of Minnesota. **Chapter 9** of the Final EIS provides more detail about the proposed BLRT Extension project's Participating Agencies and agency coordination.

6. What does the Scoping report contain, and when was it released?

In January 2012, HCRRA, the Council, and FTA published the proposed BLRT Extension project's federal Notice of Intent to Prepare an EIS (FTA, 2012) and state Notice of EIS Preparation (Minnesota Environmental Quality Board, 2012). HCRRA and the Council began development of NEPA and Minnesota Environmental Policy Act (MEPA[2]) documentation with the proposed BLRT Extension project's Scoping Process, including publication of the Bottineau Transitway Scoping Decision Document, June 2012 (HCRRA, 2012). The Scoping Decision Document describes the proposed BLRT Extension project's Scoping Process, alternatives proposed and evaluated, the public and agency review process, and the outcome of the Scoping Process through the time of its publication. The build alternatives presented for comment during the Scoping Process included:

- LRT A-C-D1 (Maple Grove to Minneapolis via BNSF Railway [BNSF]/Olson Memorial Highway)
- LRT A-C-D2 (Maple Grove to Minneapolis via West Broadway Avenue [County State-Aid Highway 103]/Penn Avenue/Olson Memorial Highway)
- LRT B-C-D1 (Brooklyn Park to Minneapolis via BNSF/Olson Memorial Highway)
- LRT B-C-D2 (Brooklyn Park to Minneapolis via West Broadway Avenue/Penn Avenue/Olson Memorial Highway)
- Enhanced Bus/Transportation Systems Management Alternative

All alternatives were advanced into the Draft EIS for further study. The Scoping Decision Document also describes the source and evaluation of other alternatives that were proposed by others during the Scoping Period, from December 26, 2011, through February 17, 2012, but that were not advanced into the Draft EIS for further study.

On May 8, 2013, prior to the completion of the Draft EIS and based on an extensive alternatives analysis and public involvement process, the Council formally adopted amendments to the *2030 Transportation Policy Plan* (*2030 TPP*)—the region's long-range transportation plan at the time[3]—to include the Bottineau Transitway locally preferred alternative (LPA) as Alternative B-C-D1 as recommended by HCRRA. The identified LPA is light rail transit (LRT) constructed and operating on the Minneapolis to Brooklyn Park via Olson Memorial Highway/BNSF/West Broadway Avenue alignment.

[2] Minnesota Statutes, Section 116D.04 and 116D.045 and the administrative rules adopted by the Minnesota Environmental Quality Board as Minnesota Rules, Chapter 4410, Parts 4410.0200 to 4410.7070

[3] The current regional plan is the *2040 Transportation Policy Plan*, and the Bottineau Transitway LPA is included in that document.

7. What design adjustments were made after publication of the Draft EIS?

Since the completion of the Draft EIS, the proposed BLRT Extension project team developed and evaluated 16 technical segment-specific and system-wide issues that could result in design adjustments, including proposed adjustments to accommodate local goals and objectives, improve the performance of the proposed light rail extension, reduce project costs, and avoid or minimize adverse environmental impacts. Issue Resolution Teams (IRTs) were formed to carry out the issue-resolution process for each of the 16 issues identified. IRTs were composed of representatives of the Council's engineering and environmental project office, and other Metro Transit departments as well as, staff from Hennepin County, the Minnesota Department of Transportation (MnDOT), municipalities along the proposed alignment, and park properties along the corridor. The technical and system-wide issues were examined, and design adjustments to the Draft EIS LPA were analyzed. Results and recommendations from each of the IRTs were documented in a technical issue summary and were incorporated into the proposed BLRT Extension project elements for the Final EIS. **Table ES-1** summarizes the results of the issue resolution process.

8. What alternatives does the Final EIS address?

The Final EIS evaluates the No-Build Alternative and the proposed BLRT Extension project (Preferred Alternative):

- **No-Build Alternative.** The No-Build Alternative represents future transportation conditions without the proposed BLRT Extension project. The No-Build Alternative represents the existing transportation system with all planned transportation improvements included in the Current Revenue Scenarios (i.e., financially constrained) of the regional *2040 Transportation Policy Plan* (*2040 TPP*) (adopted January 2015), except for the proposed BLRT Extension project. The No-Build Alternative represents a possible outcome of the EIS process and functions as a reference point to gauge the benefits, costs, and impacts of the proposed BLRT Extension project. NEPA and MEPA processes also require consideration of the No-Build Alternative.
- **Proposed BLRT Extension project.** The proposed BLRT Extension project is approximately 13 miles of new double track proposed as an extension of the METRO Blue Line that would connect downtown Minneapolis to the cites of Golden Valley, Robbinsdale, Crystal, and Brooklyn Park. The proposed alignment includes 11 new light rail stations, approximately 1,670 additional park-and-ride spaces, accommodations for passenger drop-off, and bicycle and pedestrian access, as well as new or restructured local bus routes connecting LRT stations to nearby residential, commercial, and educational land uses.

Table ES-1. Comparison of Draft EIS LPA and Final EIS for the Proposed BLRT Extension Project

Feature	Draft EIS LPA Description	Final EIS for the Proposed BLRT Extension Project Description
Level of engineering design	1%	15%
Length[1]	13.3 miles	13.49 miles
Capital cost (in millions)[2, 3]	$997 ($2017)	$1.496 (year-of-expenditure $)
Annual operating and maintenance cost (in millions)[2]	$32.5 ($2013)	$50.21($2040)
Ridership (total)	27,000	27,000
Proposed BLRT Extension project stations	■ 10 stations	■ 11 stations
Reconfiguration of roadway network north of TH 610	Not applicable	■ Construct West Broadway Avenue with a wide center median ■ Construct Main Street and intersection to parking ramp ■ Construct road west of parking ramp from Oak Grove Parkway to Main Street ■ Construct a portion of Xylon Avenue to provide access to the OMF
Key bridge structures	■ Four new LRT bridges ■ Eight existing bridges modified	■ Seven new LRT bridges ■ Five reconstructed roadway bridges ■ Modification to two existing bridges ■ Two pedestrian bridges
Operations and maintenance facility site(s)	Two potential sites in Brooklyn Park: 93rd Avenue park-and-ride and 101st Avenue intersection with West Broadway Avenue	In Brooklyn Park at 101st Avenue and new Xylon Avenue North
Traction power substations	19 proposed	17 proposed

[1] The length represents the full end-to-end length of the proposed alternatives.

[2] Cost estimates provided are a snapshot in time and are based on the level of design development completed at the date of publication of Draft EIS (LPA) and the date of publication of the Final EIS (proposed BLRT Extension project).

[3] Draft EIS (LPA) capital cost estimate was updated to $1,002 million for the proposed BLRT Extension project New Starts application filed subsequent to publication of the Draft EIS; the change was due to the addition of finance costs.

9. What would be the construction impacts of the proposed BLRT Extension project?

Construction of the proposed BLRT Extension project has the potential to cause environmental impacts including disruptive noise levels and visual impacts. Potential impacts during construction include temporary detours of trails and roadways, as well as reductions in vehicular access and parking affecting community cohesion, groundwater management impacts (collection, storage, and disposal), and vibration impacts resulting from the operation of heavy equipment (pile driving, hoe rams, vibratory compaction, and loaded trucks). Utility impacts would occur as sewer and water mains, power, gas, and communication lines are relocated. It is reasonable to expect that previously undocumented soil or groundwater contamination may be encountered during construction. Short-term construction impacts to park uses and recreational activities include temporary closures, detours, and temporary facilities built around obstructions. Impacts to identified historic properties from construction have been identified as part of the National Historic Preservation Act of 1966 Section 106 (54 USC § 306108) process (see the corresponding sections of **Chapters 3, 4, and 5** in the Final EIS).

10. How would the proposed BLRT Extension project affect freight rail facilities and operations?

The proposed BLRT Extension project would operate in the eastern half of about 7.8 miles of the BNSF right-of-way within the Monticello Subdivision located between Olson Memorial Highway in the City of Minneapolis and 73rd Avenue in the City of Brooklyn Park. The width of the BNSF-owned right-of-way is generally 100 feet (about 50 feet on either side of the centerline of the existing freight rail track).

The proposed BLRT Extension project would occupy the eastern 50 feet of the existing 100-foot BNSF right-of-way. The BNSF track would be relocated about 15 feet to the west, thereby allowing BNSF to operate within the western 50 feet of the right-of-way while providing at least 25 feet of horizontal clearance from the LRT track centerline. The pond crossings would leave the BNSF track in its existing location and new LRT bridges would be constructed east of the existing freight rail embankment. The proposed BLRT Extension project construction would include a 12-foot-wide access road generally located west of the relocated BNSF track for the majority of the 7.8 miles in the BNSF rail corridor, with the exception of the pond areas and bridges.

The proposed BLRT Extension project includes modifications to active warning devices and signals for at-grade crossings in order to accommodate the relocated BNSF and new LRT tracks. These modifications would include relocating existing active warning devices, such as gate arms, to accommodate the relocated BNSF and LRT tracks and installing new active warning devices, such as gate arms, where they are not currently provided. In addition, combined freight/LRT at-grade crossings would be designed and constructed to meet the requirements for Federal Railroad Administration (FRA) Quiet Zones.[4]

[4] Quiet Zones are locations, at least one-half mile in length, where the routine sounding of horns has been eliminated because of safety improvements at at-grade crossings, including modifications to the streets, raised median barriers, four quadrant gates, and other improvements designed and implemented as a part of the proposed BLRT Extension project and consistent with Quiet Zone readiness. Horns are sounded in emergency situations at these locations. Municipalities must apply to FRA for approval of Quiet Zones.

The Olson Memorial Highway bridge (westbound lanes), Plymouth Avenue bridge, Theodore Wirth Parkway bridge, Golden Valley Road bridge, and 36th Avenue bridge would be reconstructed to accommodate the relocated freight rail track and LRT guideway. In addition, the crossover connection between the BNSF freight rail alignment and the Canadian Pacific Railway (CP) rail spur (just north of the Olson Memorial Highway bridge) would also need to be reconstructed.

Construction activities to relocate the freight rail track required as part of constructing the LRT guideway would have limited effects on existing freight service in the BNSF rail corridor. Construction phasing would likely consist of constructing the new freight rail track adjacent to the existing track, shifting freight rail operations to the new freight rail track, and then removing the existing freight rail track to allow construction of the LRT guideway, thus minimizing disruptions to freight rail operations. Construction work would be done under the guidance of a BNSF flagging crew. At the BNSF/CP diamond crossing, construction would be coordinated with both railroads to limit freight delays.

11. How does the Final EIS address safety where the proposed BLRT Extension project would operate in the BNSF right-of-way parallel to freight rail?

The Final EIS documents the ways that safety would be addressed during operations and construction where freight rail and LRT would be adjacent to each other.

Operations. Throughout the United States, there are numerous examples where LRT and freight rail operate in a shared corridor. These are known as "Common Corridor Operations." The Council collected and documented information on these locations, including mitigation measures in place. Based on this research the following Light Rail Operators have Common Corridor Operations on portions of their lines: Port Authority Transit Corp (PATCO), Charlotte NC LYNX, Greater Cleveland Regional Transit Authority Blue and Green Lines, Dallas DART, Denver RTD, Jersey City NJT Hudson-Bergen LRT, Los Angeles LACMTA Green and Gold Lines, Sacramento CA, Sacramento RTD, St. Louis, Bi-State Development Agency, San Jose, VTA, Maryland Counties, Purple Line and Portland MAX Orange Line.

The Council contacted staff associated with these projects to identify the following common methods in use or planned after system build-out. Some of these projects and methods are still in development, but the following is a summary of these measures:

- Reliance on direct communication by internal radio systems and emergency telephone contact with the adjacent railway's dispatch center and vice-versa for notification of an accident that interferes with the other's operation
- Establish incident response protocols with the adjacent railway and first responders as part of their emergency preparedness programs
- Conduct emergency response exercises and drills as part of their training requirements. Many properties actively support "Operation Lifesaver" to reduce trespasser/transit rail accidents.
- Construct corridor protection walls between freight and light rail
- Install intrusion detection devices in areas between freight and light rail

These methods are also planned to be used and would be incorporated into the construction and management documents, as applicable.

The Metro Transit Light Rail Transit Design Criteria (Council, 2015), which includes design standards and specifications to provide security and/or enhance safety, includes safeguards to prevent LRT operational derailments, including guardrails (i.e., a rail or other structure laid parallel with the running rails of the track to keep derailed wheels adjacent to the running rails of the track). In addition, the proposed BLRT Extension project includes a combination of horizontal separation, vertical separation, and physical means to provide safe operations. Three specific corridor-protection treatments are proposed:

- A ditch (used where the corridor width permits)
- A retained fill option where the LRT tracks would be at a higher grade than freight rail tracks
- A wall

In addition, where clearance between the centerline of the light rail tracks and the centerline of the freight tracks is less than 50 feet, intrusion detection for possible freight derailment would be installed, where appropriate. These corridor-protection treatments were coordinated with BNSF.

Further, the design would include safeguards in the catenary system to help minimize the possibility of sparking occurring in the overhead catenary wires. Electrical sparks, or arcing, occurs when there is a gap between the overhead contact wire and the vehicle's pantograph. Numerous safeguards are included in the design of the proposed BLRT Extension project to address and minimize electrical sparking. Ice cutters would be utilized to maintain positive contact between the contact wire and pantograph during winter weather. Additionally, Metro Transit would regularly inspect pantographs for grooves along the pantograph's carbon strip (as it does on its existing light rail lines), which could cause arcing. Included in the design of the proposed BLRT Extension project to minimize arcing are contact wire gradients, which meet or exceed American Railway Engineering and Maintenance-of-Way Association recommendations, staggering or zig-zags of the contact wire to ensure even wear, and overlaps between power sections. Finally, the design accounts for the Occupational Safety and Health Administration (OSHA) 10-foot zone of influence, and meets or exceeds National Electrical Safety Code requirements along the proposed shared light rail and freight rail corridor.

The Council's *Operations Emergency Management Plan* (*OEMP*) for light rail was developed to assist in identifying, responding to, and resolving emergency situations in an efficient, controlled and coordinated manner, including those related to the location of LRT and freight rail within the same corridor. The *OEMP* establishes the response process and responsibilities for departments and staff within Metro Transit, as well as outside agencies, in the event of a rail emergency.

In addition, the Council maintains an emergency preparedness exercise plan. The emergency preparedness exercise plan identifies emergency preparedness exercises, which would be carried out by the Fire Life Safety and Security Committee (FLSSC). Before beginning revenue operations, a number of drills would be planned, conducted, and documented in the emergency preparedness exercise plan. Emergency preparedness training exercises would be designed to address areas such as rail equipment familiarization, situational awareness, passenger evacuation, coordination of functions, communications, and hands-on instruction. The FLSSC would coordinate training exercises with the Council and the freight railroad owners and operators, as appropriate. During

normal revenue service, the FLSSC would coordinate training exercises to evaluate emergency preparedness. The exact nature of emergency preparedness exercises would be developed in coordination with the FLSSC prior to construction, but could include one tabletop and one full-scale emergency preparedness exercise, annually.

Construction. Construction activities would occur close to an active freight rail corridor. The Council would develop and implement a freight rail construction coordination plan that would be based on and coordinated with the proposed BLRT Extension project's construction documents. During construction, the Council would continue to work closely with the railways concerning railway coordination. The Council would adopt and use the safety and construction specifications and standards of the Class 1 railways: CP and BNSF for the entire proposed BLRT Extension project when construction is adjacent or on railways' rights-of-way, in addition to all applicable OSHA construction and other safety regulations. The railways' safety and construction specifications and standards are very specific and rigorous in their intent and execution. In addition, contractors' personnel, project engineering staff, Metro Transit staff, and all other support staff working on or adjacent to the railways' rights-of-way would be required to have completed and possess valid Federal Railroad Administration Rule 214 Roadway Worker Training Certification, e-RAILSAFE, and BNSF Contractor Orientation Training. Railway flaggers would be used to control freight train movements through construction limits. Qualified inspectors would be used to assess the operational safety condition of the right-of-way prior to the movement of a train through areas of railway trackage that may be disturbed by excavating and excavations, pile driving, crane lifts, and related activities that may affect the safety of the site and rail operations through the construction limits.

12. How would the proposed BLRT Extension project affect traffic operations?

Several roadway and intersection improvements were identified by the Council as part of the proposed BLRT Extension project. These improvements fall into four primary categories: (1) improvements necessary to facilitate LRT alignment transitions, (2) improvements necessary to maintain or improve neighborhood access, (3) improvements necessary to maintain or improve traffic operations (level of service), and (4) improvements to support the necessary transportation framework for the planned development north of TH 610. These proposed improvements were incorporated into the proposed BLRT Extension project (build) conditions traffic analysis. With these improvements being implemented, the Council expects all intersections in the proposed BLRT Extension project study area to operate at an acceptable level of service during the AM and PM peak hours in 2040 with the proposed BLRT Extension project, with the exceptions of the following intersections: Oak Grove Parkway at Xylon Avenue, West Broadway Avenue at Oak Grove Parkway, West Broadway Avenue at Main Street, Golden Valley Road at Theodore Wirth Parkway, Olson Memorial Highway at Thomas Avenue North, Olson Memorial Highway at 7th Street North and 6th Avenue North.

The poor operations (delay and queuing) at the Oak Grove Parkway at Xylon Avenue intersection in the PM peak hour with the No-Build Alternative are due to the large amount of traffic that would be generated by development planned to occur in the City of Brooklyn Park.

The poor operations (delay and queuing) at the West Broadway Avenue at Oak Grove Parkway and West Broadway Avenue at Main Street intersections in the PM peak hour with the proposed BLRT Extension project would be due to the large amount of development-generated traffic accessing the TH 610 interchange. The operational issues with the No-Build Alternative would be greater than with the proposed BLRT Extension project; therefore, no mitigation for these intersections is proposed.

The poor level of service during the PM peak hour at the intersection of Golden Valley Road and Theodore Wirth Parkway is due to the forecasted increase in traffic and the inefficiency of the all-way stop. These conditions are essentially the same as those with the No-Build Alternative. The Council expects the addition of the park-and-ride at the Golden Valley Road Station to contribute 2 percent or less of the PM peak-hour traffic volume in 2040.

The poor level of service at the Olson Memorial Highway at Thomas Avenue North intersection with the proposed BLRT Extension project is due to the high eastbound traffic volumes during the AM peak hour. The operations with the proposed BLRT Extension project are expected to be better than with the No-Build Alternative because of the planned improvements associated with the proposed BLRT Extension project; therefore, no additional improvements are being proposed by the Council.

The poor level of service at the Olson Memorial Highway at 7th Street North and 6th Avenue North intersection in the PM peak hour with the proposed BLRT Extension project are due to increased traffic at the intersection, the LRT alignment through the intersection that results in changes to the traffic signal phasing, and the roadway configurations at the intersection. The proposed BLRT Extension project stakeholders, in evaluating the competing needs of all modes at the intersection, recommended that roadway capacity improvements not be implemented at the intersection because of the corresponding negative impacts on other modes, including pedestrians, bicyclists, and buses.

There would be fewer failing intersections in 2040 with the proposed BLRT Extension project than with the No-Build Alternative because of the planned improvements that would be made as part of the proposed BLRT Extension project. The intersections with a poor level of service were largely due to an issue that would also exist with the No-Build Alternative, or, in the instance of the Olson Memorial Highway/7th Street North/6th Avenue North intersection, the stakeholders determined that the traffic mitigation measures would have negative impacts on other modes.

13. Would the proposed BLRT Extension project affect historic properties? If so, how would those effects be minimized or mitigated?

FTA has determined that the proposed BLRT Extension project would have No Adverse Effect on 11 historic properties and an Adverse Effect on six historic properties. The six adversely affected properties are the Wayman African Methodist Episcopal (AME) Church; Floyd B. Olson Memorial Statue; Osseo Branch Line of the St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District; Grand Rounds Historic District, Theodore Wirth Segment; Homewood Residential Historic District; and the West Broadway Avenue Residential Historic District. Therefore, FTA has determined that the undertaking (the proposed BLRT Extension project) would have an Adverse Effect on historic properties. See **Section 4.4** and **Appendix H** of the Final EIS for additional information regarding the proposed BLRT Extension project's impacts on cultural resources.

Measures to resolve adverse effects, including avoidance, minimization, and mitigation measures, are specified in the Section 106 Memorandum of Agreement (MOA) (see **Appendix H**).

14. Would the proposed BLRT Extension project use any Section 4(f)/6(f) properties? If so, how would the impacts to those properties be minimized?

Table ES-2 summarizes FTA's preliminary determination on the potential for temporary occupancy or *de minimis* or direct use of Section 4(f)/6(f) properties associated with the proposed BLRT Extension project.

Table ES-2. Impacts to Section 4(f)/6(f) Properties in the Amended Draft Section 4(f)/6(f) Evaluation

Property	Impacts to Property	Amended Draft Section 4(f)/6(f) Preliminary Determination
Park Properties		
Theodore Wirth Regional Park	2.1 acres of permanent easement	*De minimis* Use
Theodore Wirth Regional Park	9.2 acres of temporary easement	Temporary Occupancy
Glenview Terrace Park	0.01 acre of permanent easement	*De minimis* Use
Glenview Terrace Park	0.25 acre of temporary easement	Temporary Occupancy
Sochacki Park: Mary Hills Management Unit[1]	0.57 acre of temporary easement	Temporary Occupancy
Sochacki Park: Sochacki Management Unit[1]	5.6 acres of temporary easement	Temporary Occupancy
Sochacki Park: Sochacki Management Unit[1]	Section 6(f) conversion of 5.6 acres	Section 6(f) Conversion
South Halifax Park	0.7 acre of temporary easement	Temporary Occupancy
Becker Park	0.1 acre of temporary easement	Temporary Occupancy
Park Property Adjacent to Rush Creek Regional Trail	1.1 acres of temporary easement	Temporary Occupancy
Historic Properties		
Osseo Branch, St. Paul, Minneapolis & Manitoba Railway Historic District	43 acres of permanent easement	Direct Use
Grand Rounds Historic District	0.7 acre of permanent easement	Direct Use

[1] Park resource name change – Sochacki Park and Mary Hills Nature Area are now operated as a combined park resource under the Sochacki Park name; the former individual parks are considered separate management units under the joint park resource.

Measures to minimize harm include:

- Theodore Wirth Regional Park
  - In consideration of the permanent and temporary uses of Theodore Wirth Regional Park property, the Council has evaluated park-related enhancements as measures to minimize harm to the park resource.
- Glenview Terrace Park
  - As part of the measures to minimize harm to Glenview Terrace Park, the Council would provide public awareness of and access to the park property. Specifically the Council would provide pedestrian and bicycle improvements at the nearby Theodore Wirth Parkway/ Golden Valley Road intersection and incorporate wayfinding signs at the trailhead that would direct people to various park system amenities, including Glenview Terrace Park.
- Osseo Branch
  - The Council would incorporate interpretation of the Osseo Branch Line of the St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway into the design of the segment that would utilize the Osseo Branch Line of the St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District.
- Grand Rounds Historic District
  - The analysis of measures to minimize harm for the Grand Rounds Historic District focuses on the contributing elements to the district. Several options that were developed during the analysis of avoidance alternatives were considered as potential measures to minimize harm to the contributing elements of the district. None of these options were considered viable avoidance alternatives as they still would result in a Section 4(f) use of another resource; the Osseo Branch. However, these options would potentially reduce impacts to the contributing elements of the Grand Rounds Historic District.
  - All of the planned project elements within, and in the vicinity of, the Grand Rounds Historic District would be designed in accordance with the Secretary of the Interior's Standards and NPS's *Guidelines for the Treatment of Cultural Landscapes*.
  - During project design and development (before completion of the 30-percent, 60-percent, and 90-percent plans) FTA would continue to consult with Minnesota Historic Preservation Office (MnHPO), concurring parties, and the public, as appropriate, on the design of elements within, and in the vicinity of, the Grand Rounds Historic District to consider ways to minimize effects on the district and address design concerns.
  - All design plans (30-percent, 60-percent, 90-percent, and 100-percent plans and subsequent modifications) would be subject to FTA review. The purpose of the review is to determine if substantive changes to the proposed BLRT Extension project that have the potential to change the effects or mitigation for historic property have been made, and would need to be addressed. FTA would submit the 60-percent plans to MnHPO for concurrence.

- A Construction Protection Plan would be developed that would detail the measures to be implemented during construction to avoid and minimize adverse effects on the Grand Rounds Historic District from construction activities.
- Interpretation of the Theodore Wirth Segment of the Grand Rounds Historic District would be incorporated into the design of the Plymouth Avenue and Golden Valley Road stations. The park-and-ride lot at the Golden Valley Road Station shall include a trailhead at the intersection of Theodore Wirth Parkway and Golden Valley Road, and this trailhead would also include interpretation of the Grand Rounds Historic District.
- Vegetation and landscaping would be incorporated into the proposed BLRT Extension project design to screen and minimize views of the proposed BLRT Extension project from Theodore Wirth Parkway. Project infrastructure, as well as alterations to the landscape, would be developed in a manner that minimizes the net loss of existing vegetation.
- Preservation and treatment plans would be developed to guide the overall preservation of the Theodore Wirth Segment of the Grand Rounds Historic District and to guide preservation activities for up to 12 different historic features or feature types within this area.

15. What noise and vibration impacts were identified, and how would they be mitigated?

The FTA guidance manual *Transit Noise and Vibration Impact Assessment* (FTA, 2006) is the primary source for the proposed BLRT Extension project's noise assessment methodology and on transit projects throughout the country. The Final EIS used FTA's Detailed Noise Analysis methodology, which is summarized in **Section 5.6** of the Final EIS, included the following steps:

- Identification of noise-sensitive land uses in the corridor using aerial photography, geographic information systems (GIS) data and field surveys, typically within 300 feet of the alignment.
- Measurement of existing noise levels in the corridor near sensitive receptors, including all sources of noise in the area.
- Forecasting future proposed BLRT Extension project noise levels from transit operations, engineering drawings and information on speeds, headways, track type, vehicle type, and grade-crossing operations. The noise level assessment included light rail operations, horns, and bells at grade crossings and stations, associated roadway improvements, and changes and feeder bus operations at select stations. Details regarding the information used to predict future proposed BLRT Extension project noise levels can be found in **Appendix F** of the Final EIS.
- Assessment of the impact of the proposed BLRT Extension project by comparing the projected future noise levels with existing noise levels using the FTA noise impact criteria.
- Identification of mitigation at locations where projected future noise levels exceed the FTA impact criteria.

The proposed BLRT Extension project would cause 366 moderate noise impacts and 618 severe noise impacts at residential noise receptors (homes and apartment buildings) because of LRT horns.

The impacts represent the number of affected units (including those in multi-family buildings), not the number of buildings. The majority of the noise impacts would be because of LRT horns being sounded at FRA-shared at-grade crossings along the proposed BLRT Extension project. If the local municipalities follow the recommendation to implement Quiet Zones[5] at all FRA-shared at-grade crossings, the proposed BLRT Extension project would cause 176 moderate noise impacts and 120 severe noise impacts. **Appendix F** presents a summary of each residential location with a projected noise level that would exceed the FTA criteria.

Additional noise mitigation in the form of noise barriers, wayside devices, and interior testing to determine appropriate mitigation requirements will reduce the residential noise impact to five moderate and two severe noise impacts.

The vibration assessment included the following steps:

- Identification of vibration-sensitive land uses using aerial photography, GIS data, and field surveys, typically within 300 feet of the proposed BLRT Extension project alignment.
- Measurement of vibration-propagation characteristics of the soil in the corridor at sensitive receptors.
- Projected vibration levels from transit operations, using engineering plans and information on speeds, headways, track type, and vehicle vibration characteristics.
- Assessment of the impact from transit by comparing the proposed BLRT Extension project vibration with the FTA vibration impact criteria in Chapter 8 of the FTA guidance manual (FTA, 2006).
- Identification of mitigation measures at locations where proposed BLRT Extension project vibration levels exceed the impact criteria.

The proposed BLRT Extension project would result in 28 vibration impacts, all of which would be at residential land uses. To mitigate for these vibration impacts, ballast mats will be incorporated into the proposed BLRT Extension project at the following locations:

- 36th Avenue North to 38th Avenue North: 700-foot-long ballast mat
- 38th Avenue North to 40½ Avenue North: 300-foot-long ballast mat
- 47th Avenue North to BNSF freight tracks: 300-foot-long ballast mat

[5] Quiet Zones are locations, at least one-half mile in length, where the routine sounding of horns has been eliminated because of safety improvements at at-grade crossings, including modifications to the streets, raised median barriers, four quadrant gates, and other improvements designed and implemented as a part of the proposed BLRT Extension project and consistent with Quiet Zone readiness. Horns are sounded in emergency situations at these locations. Municipalities must apply to FRA for approval of Quiet Zones. If the municipality fails to apply for a Quiet Zone or FRA fails to approve the Quiet Zone, the proposed BLRT Extension project may result in residual noise impacts.

16. Would the proposed BLRT Extension project impact wetlands? If so, how would those impacts be mitigated?

The proposed BLRT Extension project would impact about 13.19 acres of wetlands, about 9.96 acres of permanent impact and about 3.23 acres of temporary impact. About 4.16 acres of impacted wetlands under USACE jurisdiction (pursuant to Section 404 of the Clean Water Act) require compensatory mitigation. About 6.28 acres of the impacted wetlands under Minnesota Water Conservation Act (WCA) jurisdiction require compensatory mitigation.[6]

- Seasonally flooded basin (Type 1)
  - Total wetland impacts: 6.59 acres
  - WCA jurisdictional impacts requiring compensatory mitigation: 4.28 acres
  - USACE jurisdictional impacts requiring compensatory mitigation: 2.52 acres
- Deep marsh (Type 4)
  - Total wetland impacts: 2.49 acres
  - WCA jurisdictional impacts requiring compensatory mitigation: 0.10 acre
  - USACE jurisdictional impacts requiring compensatory mitigation: 1.01 acres
- Open water (Type 5)
  - Total wetland impacts: 3.61 acres
  - WCA jurisdictional impacts requiring compensatory mitigation: 1.69 acres
  - USACE jurisdictional impacts requiring compensatory mitigation: 0.42 acre
- Shrub-carr (Type 6)
  - Total wetland impacts: 0.50 acre
  - WCA jurisdictional impacts requiring compensatory mitigation: 0.21 acre
  - USACE jurisdictional impacts requiring compensatory mitigation: 0.21 acre
- A portion of Bassett Creek, a stream reach of 450 feet total length near the Plymouth Avenue bridge would be relocated to accommodate the proposed BLRT Extension project.

[6] Total wetland impacts include all wetlands in the proposed BLRT Extension project area. Some wetlands are under the jurisdiction of the USACE, other wetlands are under the jurisdiction of the WCA, and certain wetlands are under the jurisdiction of both the USACE and the WCA. Generally, only permanent impacts require compensatory mitigation; temporary impacts that occur during construction only require restoration.

17. Would the proposed BLRT Extension project impact floodplains? If so, how would those impacts be mitigated?

The proposed BLRT Extension project would impact two floodplain areas:

- Bassett Creek: 16,800 cubic yards
- Grimes Pond: 200 cubic yards

Mitigation for the Bassett Creek floodplain will include:

- A floodplain mitigation area has been identified in Theodore Wirth Regional Park between the Bassett Creek main stem and the proposed BLRT Extension project and BNSF rail corridor
- Mitigation will include excavating adjacent ground below the elevation of the Bassett Creek 100-year floodplain to provide compensatory floodplain storage for the fill placed in the floodplain

Mitigation for the Grimes Pond floodplain will include:

- Some excavation of adjacent ground below the Grimes Pond 100-year floodplain elevation will provide compensatory floodplain storage for the fill placed in the floodplain
- Impacts to floodplains associated with Grimes Pond were reduced with a design that elevates the LRT tracks on a structure rather than on an embankment

18. What other environmental effects would the proposed BLRT Extension project have on the environment? How would those impacts be mitigated?

Table ES-3 summarizes the environmental effect of the proposed BLRT Extension project and the minimization and mitigation measures by environmental and transportation category.

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Transit Conditions (Section 3.1)	Operating-Phase (Long-Term) Direct Impacts	■ The proposed BLRT Extension project would result in 27,000 daily boardings in 2040
	Operating-Phase (Long-Term) Indirect Impacts	■ Travel by transit, pedestrian, and bicycle modes would increase, and the number of single-occupant vehicles would decrease, as a result of the proposed BLRT Extension project
	Construction-Phase (Short-Term) Impacts	■ Intermittent impacts to bus operations in construction areas: • Temporary stop relocations or closures • Route detours ■ Suspensions of service on segments of routes
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ No mitigation is required because no long-term adverse impacts would occur. Route modifications to bus service in order to integrate with the proposed BLRT Extension project will be conducted in accordance with Title VI requirements. **Construction-Phase (Short-Term):** ■ Issue construction updates and post them on the BLRT Extension project website ■ Provide advance notice of roadway closures, driveway closures, and utility shutoffs ■ Conduct public meetings ■ Establish a 24-hour construction hotline ■ Prepare materials with information about construction ■ Address property access issues ■ Assign staff to serve as liaisons between the public and contractors during construction ■ Post information at bus stops and regional transit centers indicating temporary stop closures and/or detour details ■ Publish information in advance of bus detours on Metro Transit's website and in its on-board information brochure

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Freight Rail Conditions (Section 3.2)	Operating-Phase (Long-Term) Direct Impacts	■ The proposed BLRT Extension project includes construction of LRT guideway generally in the eastern half of BNSF right-of-way; BNSF track would be relocated about 15 feet to the west
	Operating-Phase (Long-Term) Indirect Impacts	■ No long-term freight rail impacts anticipated; reconstruction of freight rail infrastructure would improve freight rail conditions
	Construction-Phase (Short-Term) Impacts	■ Potential for temporary rail service impacts
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ No mitigation required for operating-phase (long-term) effects because identified avoidance measures (reconstruction of BNSF rail corridor to current standards including continuously welded rail, provision of a service road, corridor protection measures) will prevent any adverse impacts: • Reconstructing BNSF rail corridor including a service road • Continuously welded freight rail track resulting in less noise and vibration impacts associated with freight rail operations **Construction-Phase (Short-Term):** ■ Development and implementation of freight rail operation coordination plans ■ Work with affected freight rail owners/operators to sequence construction to reduce effects on freight traffic ■ Use flaggers to allow freight rail operations to continue

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Vehicular Traffic (Section 3.3)	Operating-Phase (Long-Term) Direct Impacts	■ Seven intersections would operate at level of service (LOS) F with the No-Build Alternative, which would be reduced to one intersection with the proposed BLRT Extension project in 2040 ■ Two intersections would operate at LOS E with the No-Build Alternative which would increase to five intersections with the proposed BLRT Extension project in 2040
	Operating-Phase (Long-Term) Indirect Impacts	■ No adverse impacts identified
	Construction-Phase (Short-Term) Impacts	■ The construction phase of the proposed BLRT Extension project is expected to cause disruptions to traffic operations, including lane closures, short-term intersection and roadway closures, and detours that would cause local, short-term increases in congestion
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ No mitigation required for operating-phase (long-term) effects because the identified avoidance measures (roadway and intersection improvements) will prevent adverse impacts resulting from the proposed BLRT Extension project **Construction-Phase (Short-Term):** ■ Mitigation for construction-phase (short-term) effects will include development and implementation of the Construction Mitigation Plan, which includes a Construction Communication Plan and a construction staging plan ■ Contractors will need to comply with the requirements of MnDOT, Hennepin County, and all municipalities affected by construction activities related to the closing of roads. ■ Contractors will be required to comply with all guidelines in the Minnesota Manual on Uniform Traffic Control Devices and will develop appropriate traffic control plans.

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Pedestrians and Bicyclists (Section 3.4)	Operating-Phase (Long-Term) Direct Impacts	■ No adverse impacts identified
	Operating-Phase (Long-Term) Indirect Impacts	■ No adverse impacts identified
	Construction-Phase (Short-Term) Impacts	■ Temporary closures or detours during construction of the proposed BLRT Extension project would affect existing bicycle and pedestrian facilities
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ Provision of pedestrian and bicycle improvements as part of the proposed BLRT Extension project elements, including: • Improved, signalized at-grade pedestrian crossings along Olson Memorial Highway • Improved pedestrian and bicycle connections and elevators at Plymouth Avenue and Golden Valley Road stations • Improved pedestrian crossings of the proposed BLRT Extension project/freight rail corridor at existing roadway crossings • Improved pedestrian crossings of Bottineau Boulevard (County Road 81) at Bass Lake Road and 63rd Avenue • Improved pedestrian and bicycle facilities on West Broadway Avenue • New pedestrian and bicycle facilities north of TH 610 **Construction-Phase (Short-Term):** ■ Mitigation for construction-phase (short-term) effects will include development and implementation of the Construction Communication Plan; implementation of this plan will provide advance notice of pedestrian and bicycle facility closures and detour options.

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Parking (Section 3.5)	Operating-Phase (Long-Term) Direct Impacts	■ Loss of on-street parking spaces: • About 25 spaces along frontage road on north side of Olson Memorial Highway between Humboldt Avenue and Van White Memorial Boulevard • About 50 spaces along frontage road on south side of Olson Memorial Highway between Knox Avenue North and the cul-de-sac west of Van White Boulevard • About 8 spaces along frontage road on north side of Olson Memorial Highway roughly one-half block east and west of Queen Avenue North • About 3 spaces on west side of Hubbard Avenue immediately south of 42nd Avenue • About 6 spaces on west side of West Broadway Avenue immediately south of 42nd Avenue ■ Loss of off-street parking spaces: • About 50 parking spaces from a parking lot north of Hubbard Marketplace between 41st and 42nd avenues • Eleven diagonal parking spaces would be converted to five parallel parking spaces on the north side of the Hubbard Marketplace building • About 75 parking spaces from a retail center (7316 Lakeland Avenue) surface parking lot • About 100 parking spaces from Target store (7535 West Broadway Avenue) parking lot
	Operating-Phase (Long-Term) Indirect Impacts	■ The proposed BLRT Extension project could lead to "spillover" parking in neighborhoods adjacent to proposed LRT stations ■ The proposed BLRT Extension project could affect the supply of and demand for parking around station areas as a result of transit-oriented development
	Construction-Phase (Short-Term) Impacts	■ On-street parking spaces could be temporarily removed at construction locations
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ Loss of off-street parking spaces will be compensated in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act) ■ Coordinate mitigation for loss of on-street parking spaces with local jurisdictions to identify whether suitable replacement locations are necessary ■ The proposed BLRT Extension project would add 1,670 new park-and-ride spaces ■ The Council will complete an annual Regional Park-and-Ride System Report to survey use of and travel patterns to park-and-ride facilities, including addressing potential spillover parking **Construction-Phase (Short-Term):** ■ Mitigation for construction-phase (short-term) effects will include development and implementation of a Construction Mitigation Plan to address temporary parking loss during construction

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Aviation (Section 3.6)	Operating-Phase (Long-Term) Direct Impacts	■ The two LRT tracks and associated catenary system would be constructed immediately east of the BNSF tracks within the RPZ of Crystal Airport
	Operating-Phase (Long-Term) Indirect Impacts	■ None identified
	Construction-Phase (Short-Term) Impacts	■ Construction of overhead catenary system would occur within the RPZ
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ No additional mitigation beyond the findings of the RPZ Alternatives Analysis (AA) are required ■ Based on decisions rendered by FAA through the RPZ AA and confirmed through FAA's issuance of a letter of no objection (Form 7460 application), the proposed BLRT Extension project will be included in the updated Crystal Airport Layout Plan
Land Use Plan Compatibility (Section 4.1)	Operating-Phase (Long-Term) Direct Impacts	■ No adverse impacts identified
	Operating-Phase (Long-Term) Indirect Impacts	■ Market-driven development could lead to increased density and intensely used spaces along the proposed BLRT Extension project corridor. The cities in the corridor have planned for future growth and development with their individual comprehensive plans. Potential indirect impacts on land use are compatible with these plans and plans for the region, which state the agencies' desire for transit to alleviate traffic and congestion; no mitigation is required
	Construction-Phase (Short-Term) Impacts	■ None anticipated
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ The proposed BLRT Extension project would be compatible with land use planning policy documents; therefore, no mitigation measures would be needed

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Community Facilities/ Community Character and Cohesion (Section 4.2)	Operating-Phase (Long-Term) Direct Impacts	■ Impacts associated with the proposed BLRT Extension project were not severe enough to affect overall community character and cohesion, or the accessibility to and use of community facilities
	Operating-Phase (Long-Term) Indirect Impacts	■ New businesses and residential development could be attracted to station areas, likely leading to denser land-use patterns and increased demand on community services and facilities
	Construction-Phase (Short-Term) Impacts	■ Traffic detours could increase traffic through residential neighborhoods or change access to community facilities ■ Sidewalk closures and detours could affect pedestrian traffic patterns ■ Construction impacts such as increased levels of noise and dust could temporarily affect neighborhood character, primarily in areas that are relatively quiet ■ The presence of large construction equipment could be perceived as visually disruptive, resulting in temporary effects on community character, particularly in residential settings ■ A temporary easement from Theodore Wirth Regional Park would be required to construct the LRT guideway ■ Construction of the proposed BLRT Extension project would require a temporary occupancy of Sochacki Park: Sochacki Management Unit for construction access and staging. ■ Construction of the proposed BLRT Extension project would require a temporary occupancy of Becker Park to reconstruct the sidewalk and trail from the park to the Bass Lake Road Station. ■ Construction of the proposed BLRT Extension project would require a temporary occupancy of Three Rivers Park to construct the OMF.
	Mitigation Measures	**Construction-Phase (Short-Term):** ■ Develop and implement the Construction Mitigation Plan and a Construction Communication Plan. Specific mitigation measures included in the Construction Communication Plan will be site-specific and may include: • Issuing construction updates and posting them to the proposed BLRT Extension project website • Providing advance notice of roadway closures, driveway closures and utility shutoffs • Conducting public meetings • Establishing a 24-hour construction hotline • Preparing materials with applicable construction • Addressing property access issues • Assigning staff to serve as liaisons between the public and contractors during construction ■ Develop and implement a construction staging plan, which will be reviewed with the appropriate jurisdictions and railroads. Components of the staging plan include traffic management plans and a detailed construction timeline ■ Restoration and as applicable, enhancement of affected proposed BLRT Extension project area park facilities

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Displacement of Residents and Businesses (Section 4.3)	Operating-Phase (Long-Term) Direct Impacts	■ Acquisitions of 292 parcels • 14 total acquisitions, 278 partial acquisitions • About 46.7 acres of permanent easement, and 28.9 acres of temporary easement ■ Displacement of 10 businesses; no displacements of residential, industrial, or public land uses
	Operating-Phase (Long-Term) Indirect Impacts	■ New station-area development could result in displacements of existing uses, limited by zoning and comprehensive plans
	Construction-Phase (Short-Term) Impacts	■ 28.9 acres of temporary easements
	Mitigation Measures	■ Non-residential displacements (to be conducted in accordance with the provisions of the Uniform Relocation Act and Minnesota Statute 117): • Relocation advisory services • Minimum 90 days written notice to vacate prior to requiring possession ■ Reimbursement for moving and reestablishment expenses
Cultural Resources (Section 4.4)	Adverse Effects	■ Adverse effect on the Wayman AME Church, Floyd B. Olson Memorial Statue, Osseo Branch Historic District, Homewood Historic District, Theodore Wirth Segment of the Grand Rounds Historic District, and the West Broadway Avenue Residential Historic District ■ No adverse effect (with implementation of mitigation measures) on Sumner Branch Library, Labor Lyceum, Sacred Heart Catholic Church, Robbinsdale Waterworks, and Hennepin County Library – Robbinsdale Branch
	Mitigation Measures	■ Implement Section 106 Memorandum of Agreement measures that will include the following mitigation measures: • Design the proposed BLRT Extension project to the Secretary of the Interior's Standard for the Treatment of Historic Properties for the Minneapolis-Golden Valley segment, and the Robbinsdale segment • Consult with MnHPO and the MOA concurring parties on the proposed BLRT Extension project design in the segments listed above • Pre-construction design review at the 30-percent, 60-percent, 90-percent, and 100-percent phases • Development of a Construction Protection Plan • Implementation of noise mitigation measures for the Sacred Heart Catholic Church, Hennepin County Library-Robbinsdale Branch, and West Broadway Avenue Residential Historic District • National Register of Historic Places nomination forms for Floyd B. Olson Memorial Statue and Wayman AME Church • Interpretation of historic properties • Historic property treatment plans

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Visual/Aesthetics (Section 4.5)	Operating-Phase (Long-Term) Direct Impacts	■ Adverse impacts to higher-quality visual features in the following settings: • View to west toward Penn Avenue, from center Olson Memorial Highway median • View to east-southeast toward Olson Memorial Highway bridge over the BNSF rail corridor, from Wirth Park Trail • Boulevard and median trees along Olson Memorial Highway west of I-94 • View to west toward proposed Plymouth Avenue Station and bridge, from Plymouth Avenue North and Washburn Avenue North • View to south toward existing BNSF tracks and proposed LRT tracks, from Plymouth Avenue North bridge • View to north toward proposed Plymouth Avenue Station, from Plymouth Avenue bridge • View to southeast toward proposed Plymouth Avenue Station and bridge, from Theodore Wirth Regional Park Chalet • View to northeast toward Bassett Creek and proposed Golden Valley Road Station, from Theodore Wirth Regional Park Golf Course • View to west toward proposed Golden Valley Road Station, from Golden Valley Road and Theodore Wirth Parkway • View to west toward proposed Golden Valley Road Station, from Theodore Wirth Parkway at Golden Valley Road • Theodore Wirth Regional Park and Golf Course • Bassett Creek and Bassett Creek Lagoons • Sochacki Park and South Halifax Park • View to east toward proposed Robbinsdale Station, from 42nd Avenue • View to southeast toward proposed wall and fence, from adjacent residential alley • View to southeast toward proposed Bass Lake Road Station and pedestrian bridge, from Bottineau Boulevard • View to northwest toward proposed Bass Lake Road Station and pedestrian bridge, from southeast quadrant of the Bass Lake Road/Bottineau Boulevard intersection • View to northeast toward proposed Bass Lake Road pedestrian bridge, from southwest quadrant of the Bass Lake Road/Bottineau Boulevard intersection • Bass Lake Road pedestrian overpass • Green boulevard on west side of West Broadway Avenue between 47th Avenue and TH 100 • Residential neighborhood between Bass Lake Road and 63rd Avenue • View to south toward proposed 63rd Avenue Station, from trail adjacent to Bottineau Boulevard • View to southeast toward proposed 63rd Avenue Station, from adjacent neighborhood west of 63rd Avenue • View to north toward proposed 73rd Avenue/Bottineau Boulevard bridge, from Bottineau Boulevard at 71st Avenue • View to north toward proposed 73rd Avenue/Bottineau Boulevard bridge, from southeast corner of Bottineau Boulevard and 71st Avenue • View to south toward proposed 73rd Avenue/Bottineau Boulevard bridge, from Bottineau Boulevard at 73rd Avenue • View to southwest toward proposed OMF, from Rush Creek Regional Trail • 63rd Avenue park-and-ride • 73rd Avenue/Bottineau Boulevard bridge

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
		• OMF • Rush Creek Regional Trail
	Operating-Phase (Long-Term) Indirect Impacts	■ Induced development around the transit stations would likely change the views of the area; a new building that does not fit in with the existing character could be seen as a negative impact
	Construction-Phase (Short-Term) Impacts	■ Construction-phase (short-term) impacts would be associated with construction staging areas, concrete and form installation, removal of some of the existing vegetation, lights and glare from construction areas, and generation of dust and debris in the proposed BLRT Extension project area
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ Follow design guidelines for key proposed BLRT Extension project elements ■ Design and implement landscaping at appropriate locations throughout the proposed BLRT Extension project corridor ■ Minimize operational lighting at night (while maintaining safety/security of LRT facilities) ■ Provide visual screening as appropriate for certain proposed BLRT Extension project facilities **Construction-Phase (Short-Term):** ■ Minimize visual disruption from construction activities, including minimizing light disturbance ■ Restore areas disturbed during construction
Economic Effects (Section 4.6)	Operating-Phase (Long-Term) Direct Impacts	■ Loss of tax revenues caused by right-of-way acquisition would be a recurring loss on an annual basis, partially offset by increases in other tax revenues
	Operating-Phase (Long-Term) Indirect Impacts	■ None identified
	Construction-Phase (Short-Term) Impacts	■ None identified
	Mitigation Measures	■ No mitigation required

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Safety and Security (Section 4.7)	Operating-Phase (Long-Term) Direct Impacts	■ Adherence to transitway design guidelines and the oversight of security personnel would result in no adverse impacts related to safety and security
	Operating-Phase (Long-Term) Indirect Impacts	■ Increased development densities around transit stations could place greater demands on safety and security personnel and systems
	Construction-Phase (Short-Term) Impacts	■ Construction activities would result in temporary increased congestion along adjacent roads as a result of temporary lane and road closures, shifts in roadway alignments, and detours that could affect access and response times for emergency service providers
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ Metro Transit will provide security at and around the transit stations ■ Transit rider, pedestrian, and bicycle safety features will be incorporated into design and maintained and enforced over time ■ Conform to FTA's Rail Fixed Guideway Systems; State Safety Oversight Program for Safety and Security Guidance for Recipients with Major Capital Projects (Circular C 5800.1), covered under 49 CFR Part 633 – Project Management Oversight ■ Conform to the State of Minnesota rail safety regulations that went into effect in July 2014 as part of MN Chapter 312 ■ Implement the proposed BLRT Extension project's *Safety and Security Management Plan* (*SSMP*) and the Metro Light Rail Transit Design Criteria to avoid potential safety issues at new light rail stations, including emergency equipment and appropriate lighting for public areas ■ Install fencing where substantial grade changes exist adjacent to sidewalks, trails, and side platform areas, and between the light rail alignment or freight rail alignment when adjacent to a trail or sidewalk, to prevent pedestrian and bicycle encroachment on light rail tracks and accidental falls from station platforms ■ Design at-grade LRT crossings of sidewalks and trails per the Metro Light Rail Transit Design Criteria to include flashing light signals with an audible warning to notify pedestrians of a train's arrival and detectable warnings and signs ■ Design shared freight rail and light rail crossings to meet FRA requirements for at-grade crossings, including requirements for train horn Quiet Zones as described in the Train Horn Quiet Zone Final Rule (49 CFR Part 222), where applicable ■ Maintain emergency vehicle access to areas within the vicinity of the proposed BLRT Extension project ■ Coordinate with affected emergency service providers providing the light rail operating schedule and identification of alternative crossing routes ■ Design LRT facilities within the vicinity of freight rail facilities in accordance with the Metro Light Rail Transit Design Criteria which includes design standards and specifications to provide security and/or enhance safety, such as safeguards to prevent derailments, emergency guardrails, and corridor protection barriers

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
		■ Install intrusion detection for possible freight derailment, and corridor protection, where LRT is jointly operating with freight rail ■ Include safeguards in the catenary system for the proposed BLRT Extension project to help minimize the possibility of sparking occurring in the overhead catenary wires ■ Metro Transit will regularly inspect pantographs for grooves along the pantograph's carbon strip (as it does on its existing light rail lines), which could cause arcing ■ Where the light rail alignment is adjacent to a freight rail alignment, the light rail alignment will be primarily on segregated right-of-way, in accordance with the National Electric Safety guidelines ■ Plan, schedule, conduct, and evaluate at least one tabletop and one full-scale emergency preparedness exercise annually ■ In advance of operation of the proposed BLRT Extension project, a number of drills will be planned, conducted, and documented in an emergency preparedness exercise plan
		Construction-Phase (Short-Term): ■ Develop and implement a Construction Mitigation Plan, which includes a construction staging plan and a Construction Communications Plan Coordinate with emergency service providers on required detour routes and lane closures to minimize increases in travel and response times; maintain required access during established periods or keep one lane of traffic open on main arterials as described in the Construction Mitigation Plan ■ Maintain federal OSHA and Minnesota OSHA standards for safety of construction site personnel to minimize and/or avoid injury to construction workers ■ Contractors will prepare a proposed BLRT Extension project safety and health program along with a site-specific safety plan to ensure that, while on the work site and construction activities, contractor and subcontractor personnel comply with the specified safety practices, codes, and regulations as described in the proposed BLRT Extension project's *SSMP* ■ Develop and implement freight rail operation coordination plans to facilitate coordination between the proposed BLRT Extension project and the affected freight railroads during construction activities affecting freight rail operations

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Utilities (Section 5.1)	Operating-Phase (Long-Term) Direct Impacts	■ Protective measures from stray current might be needed for some underground utilities; no other long-term impacts identified
	Operating-Phase (Long-Term) Indirect Impacts	■ None identified
	Construction-Phase (Short-Term) Impacts	■ Minor utility service disruptions would occur throughout construction to facilitate utility relocations ■ Potential unintentional damage causing service disruptions could occur during construction
	Mitigation Measures	**Construction-Phase (Short-Term):** ■ Relocate all conflicting utilities to avoid utility impacts to and to maintain utility service, in accordance with the proposed BLRT Extension project Utility Relocation and Management Plan ■ Include measures to minimize stray current and reduce amount of corrosion due to stray current ■ Prior to construction, determine necessary improvements to the electrical transmission systems along the corridor through consultation with Xcel Energy; necessary improvements would likely involve upgrading existing transmission facilities ■ Utility location excavations and pre-construction surveys will be performed ■ Utility contractors will be required to notify affected businesses and residences of any planned disruption of service due to construction activities; temporary service will be provided as appropriate ■ If previously unidentified lines are encountered, work will be discontinued, and appropriate utility companies and agencies will be contacted to identify the line(s); businesses and residents will be notified before line(s) are disturbed ■ Any wells, known or discovered during construction, within the proposed permanent right-of-way will be abandoned and sealed according to state and local regulations ■ Wells outside, but near, the proposed BLRT Extension project right-of-way will be avoided ■ For those locations where impacts to wells would interfere with the necessary supply of potable water or with monitoring groundwater conditions at a site, well replacement or other water supply provisions will be considered ■ Minnesota Department of Health guidance will be used to evaluate the feasibility of stormwater infiltration practices located in vulnerable Wellhead Protection Areas ■ Temporary dewatering during construction could require Minnesota Department of Natural Resources (DNR) groundwater appropriation permits

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Floodplains (Section 5.2)	Operating-Phase (Long-Term) Direct Impacts	■ Two floodplain areas would be affected by the construction of the proposed BLRT Extension project: • Bassett Creek: 16,800 cubic yards • Grimes Pond: 200 cubic yards
	Operating-Phase (Long-Term) Indirect Impacts	■ None identified
	Construction-Phase (Short-Term) Impacts	■ No temporary construction-phase (short-term) impacts to floodways or floodplains are anticipated since long-term floodplain mitigation sites would be constructed in advance of any filling in existing floodplains
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ Develop appropriate plans and obtain applicable permits for floodplains, as well as implement best management practices (BMPs) ■ Bassett Creek Floodplain: • A floodplain mitigation area has been identified in Theodore Wirth Regional Park between the Bassett Creek main stem and the proposed BLRT and BNSF rail corridor • Mitigation will include excavating adjacent ground below the elevation of the Bassett Creek 100-year floodplain to provide compensatory floodplain storage for the fill placed in the floodplain ■ Grimes Pond Floodplain: • Some excavation of adjacent ground below the Grimes Pond 100-year floodplain elevation will provide compensatory floodplain storage for the fill placed in the floodplain • Impacts to floodplains associated with Grimes Pond were reduced with a design that elevates the LRT tracks on a structure rather than on an embankment
Wetlands and Other Aquatic Resources (Section 5.3)	Operating-Phase (Long-Term) Direct Impacts	■ The proposed BLRT Extension project would impact about 13.19 acres of wetlands, about 9.96 acres of permanent impact and about 3.23 acres of temporary impact. About 4.16 acres of impacted wetlands under USACE jurisdiction (pursuant to Section 404 of the Clean Water Act) require compensatory mitigation. About 6.28 acres of the impacted wetlands under WCA jurisdiction require compensatory mitigation (note that some of the impacted wetlands are under both USACE and WCA jurisdiction). • Seasonally flooded basin (Type 1) ○ Total wetland impacts: 6.59 acres ○ WCA jurisdictional impacts requiring compensatory mitigation: 4.28 acres ○ USACE jurisdictional impacts requiring compensatory mitigation: 2.52 acres • Deep marsh (Type 4) ○ Total wetland impacts: 2.49 acres ○ WCA jurisdictional impacts requiring compensatory mitigation: 0.1 acre ○ USACE jurisdictional impacts requiring compensatory mitigation: 1.01 acres

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations

		• Open water (Type 5)
		  ○ Total wetland impacts: 3.61 acres
		  ○ WCA jurisdictional impacts requiring compensatory mitigation: 1.69 acres
		  ○ USACE jurisdictional impacts requiring compensatory mitigation: 0.42 acre
		• Shrub-carr (Type 6)
		  ○ Total wetland impacts: 0.50 acre
		  ○ WCA jurisdictional impacts requiring compensatory mitigation: 0.21 acre
		  ○ USACE jurisdictional impacts requiring compensatory mitigation: 0.21 acre
		■ A portion of Bassett Creek, a stream reach of 450 feet total length near the Plymouth Avenue bridge would be relocated to accommodate the proposed BLRT Extension project.

	Operating-Phase (Long-Term) Indirect Impacts	■ None identified
	Construction-Phase (Short-Term) Impacts	■ Construction-related wetland impacts typically associated with access roads needed to construct portions of the proposed BLRT Extension project are anticipated to be less than 2.5 acres
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ The OMF was designed to avoid wetland impacts ■ The proposed BLRT Extension project design accommodates the trackage on an elevated structure in the segment that bisects Grimes Pond/North Rice Pond ■ Compensatory wetland mitigation will be accomplished through a combination of on-site wetland mitigation and purchases of private wetland credits from existing mitigation banks in suitable major watersheds and bank service areas. An estimated 12 to 14 acres of compensatory wetland mitigation credit will be required. **Construction-Phase (Short-Term):** ■ Appropriate BMPs will be implemented to protect wetlands and other aquatic resources that are downslope or downstream from areas disturbed as a result of earthmoving ■ Minimization of impact through use of BMPs followed by restoration to pre-construction conditions will be required for wetland areas disturbed during construction ■ Temporary disturbance of WCA-jurisdictional wetlands for longer than 180 days may require additional mitigation

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Geology, Soils, and Topography (Section 5.4)	Operating-Phase (Long-Term) Direct Impacts	■ No operating-phase (long-term) impacts are anticipated as a result of the proposed BLRT Extension project
	Operating-Phase (Long-Term) Indirect Impacts	■ None identified
	Construction-Phase (Short-Term) Impacts	■ Extensive soil correction would be required in areas of poor soils; primarily between Olson Memorial Highway and 36th Avenue ■ Short-term dewatering would be needed for open-trench subsurface work in areas of high groundwater
	Mitigation Measures	**Construction-Phase (Short-Term):** ■ Construction activity will follow appropriate standards and applicable permitting requirements of the Minnesota Pollution Control Agency (MPCA), MnDOT, and Hennepin County for grading and erosion control ■ Dewatering permits, if required, will be obtained from DNR ■ A Spill Prevention, Control and Countermeasures plan developed for the proposed BLRT Extension project by the construction contractor will include measures to avoid impacts to potential karst features ■ For areas of poor soils, the proposed BLRT Extension project design will incorporate geotechnical elements (load transfer platforms and lightweight fill) to provide a stable base for project components and to avoid differential settlement of soils

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Hazardous Materials Contamination (Section 5.5)	Operating-Phase (Long-Term) Direct Impacts	■ None identified
	Operating-Phase (Long-Term) Indirect Impacts	■ Potential for known contaminated sites to be encountered as development/redevelopment occurs
	Construction-Phase (Short-Term) Impacts	■ The Modified Phase I Environmental Site Assessment (ESA) identified 271 parcels, 24 of which have a high potential for contamination and 135 of which have a medium potential in the proposed BLRT Extension project corridor; construction activities in these areas may encounter contaminated soil and/or groundwater ■ Potential spills of regulated materials during construction
	Mitigation Measures	**Construction-Phase (Short-Term):** ■ Conduct a Phase II ESA, in which a subsurface investigation will be conducted and soil and groundwater samples will be collected and then analyzed by a certified laboratory ■ Develop a Response Action Plan (RAP) to address proper handling of contaminated soil and groundwater encountered during construction ■ A Construction Contingency Plan will be developed as part of the RAP that will include proper handling and treating of contaminated soil and/or groundwater that could not be avoided during construction ■ The construction contractor will develop a Spill Prevention, Control and Countermeasures Plan to minimize the impact to surface water or groundwater in the event of a spill ■ Perform assessments for asbestos and other regulated materials prior to demolition of structures; develop a plan for management of asbestos and regulated materials

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Noise (Section 5.6)	Operating-Phase (Long-Term) Direct Impacts	■ Without mitigation: • 366 moderate and 618 severe noise impacts ■ With implementation of Quiet Zones: • 176 moderate and 120 severe noise impacts ■ With mitigation, the residual impacts would be: • 5 moderate and 2 severe noise impacts
	Operating-Phase (Long-Term) Indirect Impacts	■ None identified
	Construction-Phase (Short-Term) Impacts	■ Elevated noise levels from construction equipment ■ For residential land use, at-grade track construction noise impacts can extend 120 feet from the construction site ■ If nighttime construction is conducted, noise impacts from at-grade construction can extend 380 feet from the construction site
	Mitigation Measures	**Operation-Phase (Long-Term):** ■ The proposed BLRT Extension project will include the infrastructure required to make all at-grade freight rail and LRT crossings Quiet Zone ready ■ Interior testing to determine appropriate mitigation: • Olson Memorial Highway to Oak Park Avenue North (northbound [NB]) • Oak Park Avenue North to Plymouth Avenue North (NB) • Plymouth Avenue North to 16th Avenue North (NB) • 16th Avenue North to Golden Valley Road (NB) • 34th Avenue North to 36th Avenue North (southbound [SB]) • 42nd Avenue North to MN-100 (NB) ■ Noise barrier: • Golden Valley Road to 26th Avenue North (NB) • 26th Avenue North to 31½ Avenue North (NB) • 31½ Avenue North to 34th Avenue North (NB) • 34th Avenue North to 36th Avenue North (SB) • 36th Avenue North to 38th Avenue North (NB) • 36th Avenue North to 38th Avenue North (SB) • 38th Avenue North to 40½ Avenue North (NB) ■ Noise Barrier and interior testing to determine appropriate mitigation: • 38th Avenue North to 40th Avenue North (SB) ■ Wayside device and noise barrier: • 40½ Avenue North to 42nd Avenue North (NB)

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
		■ Wayside device and interior testing to determine appropriate testing: • 40th Avenue North to 42nd Avenue North (SB) • MN-100 to 47th Avenue North (SB) ■ Wayside device, noise barrier, and interior testing to determine appropriate testing: • MN-100 to 47th Avenue North (NB) • 47th Avenue North to freight tracks (NB) **Construction-Phase (Short-Term):** ■ Contractors will prepare a detailed Noise Control Plan for the proposed BLRT Extension project's construction duration. A noise control engineer or acoustician will work with the contractor to prepare a Noise Control Plan in conjunction with the contractor's specific equipment and methods of construction. Key elements of this plan will include: • Contractor's specific equipment types • Schedule and methods of construction • Maximum noise limits for each piece of equipment with certification testing • Prohibitions on certain types of equipment and processes during the nighttime hours without local agency coordination and approved variances • Identification of specific sensitive sites where near construction sites • Methods for determining construction noise levels • Implementation of noise control measures where appropriate • Include a 24-hour construction hotline

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Vibration (Section 5.7)	Operating-Phase (Long-Term) Direct Impacts	■ The proposed BLRT Extension project would cause 28 vibration impacts at residential land uses
	Operating-Phase (Long-Term) Indirect Impacts	■ None identified
	Construction-Phase (Short-Term) Impacts	■ With the exception of impact pile driving, the potential for damage would be limited to buildings within 20 feet of construction activities ■ The distance for the potential for damage to buildings from impact pile driving is up to 40 feet.
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ 36th Avenue North to 38th Avenue North: 700-foot-long ballast mat ■ 38th Avenue North to 40½ Avenue North: 300-foot-long ballast mat ■ 47th Avenue North to BNSF freight tracks: 300-foot-long ballast mat **Construction-Phase (Short-Term):** ■ To mitigate vibration impacts from construction activities, the following measures will be applied, where feasible: • Limit high-vibration activities at night • Include limits on vibration in the construction specifications, especially at locations where high-vibration activities would occur • Minimize the use of impact and vibratory equipment, where possible and appropriate • Use truck haul routes that minimize exposure to sensitive receptors and minimize damage to roadway surfaces, where appropriate • Perform pre-construction surveys to document the existing conditions of the structures in the vicinity of sites where high-vibration construction activities would be performed • If a construction activity could exceed the damage criteria at any building, the contractor will be required to conduct vibration monitoring, and, if the vibration exceeds the limit, the activity must be modified or terminated

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Biological Environment (Wildlife Habitat and Endangered Species) (Section 5.8)	Operating-Phase (Long-Term) Direct Impacts	**Threatened and Endangered Species:** ■ "No Effect" on the Higgins eye pearlymussel and the Snuffbox mussel ■ "May Affect, Incidental Take Not Prohibited" on the northern long-eared bat (NLEB) ■ With adherence to DNR guidelines, no impacts to the Blanding's turtle are anticipated **Migratory Birds:** ■ With implementation of acceptable measures to minimize impacts, no impacts are anticipated from the proposed BLRT Extension project to species covered under the Migratory Bird Treaty Act (MBTA) **Habitat:** ■ The proposed BLRT Extension project would involve constructing physical barriers that could restrict the crossing of portions of the corridor by wildlife ■ Disturbed soils within the limits of disturbance could create conditions where infestation of noxious and invasive species can increase ■ Clearing of approximately 28 acres of forested lands
	Operating-Phase (Long-Term) Indirect Impacts	■ None identified
	Construction-Phase (Short-Term) Impacts	■ Construction-related physical and noise disturbances could temporarily disrupt wildlife habitat use; no effects on threatened and endangered species or migratory birds anticipated
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ Identify opportunities, where practicable, to facilitate wildlife crossings of the corridor through enhanced culvert crossings or other appropriate designs ■ Threatened and Endangered Species, Migratory Birds: • None required ■ Habitat: • Infestations of noxious and invasive species can be controlled throughout the operating phase of the proposed BLRT Extension project through spot-spraying appropriate herbicides and the development and adherence to a vegetation management plan • Mitigation for tree impacts within the limits of disturbance (LOD) of the proposed BLRT Extension project will be based on relevant city ordinances • Mitigation for unavoidable impacts to aquatic habitat will be accomplished through a combination of on-site wetland mitigation and purchasing suitable wetland credits from an established wetland mitigation bank • Mitigation for unavoidable impacts to notable terrestrial habitat will be accomplished through tree plantings in and around Theodore Wirth Regional Park and a few selected areas throughout the LOD of the proposed BLRT Extension project, as well as vegetation restoration in temporarily disturbed areas

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
		• Where effective and feasible, suitable wildlife crossings will be accommodated within proposed culverts to allow some wildlife species to cross from one side of the proposed BLRT Extension project/freight rail tracks to the other **Construction-Phase (Short-Term):** ■ To minimize wildlife habitat impacts, the proposed BLRT Extension project will use a bridge to cross Grimes Pond and ponds north of Golden Valley Road; pre-treat storm BMPs; on-site mitigation areas will be designed that will minimize impacts to forested areas and existing aquatic resources ■ Threatened and Endangered Species • Seasonal restrictions are placed on tree removal that is less than 0.25 mile from a known hibernacula entrance or less than 150 feet from a known maternity roost tree. • Implement DNR recommendations to avoid direct impacts to the Blanding's turtle ■ Migratory birds: • Bald eagle nest surveys will be conducted during the final design of the proposed BLRT Extension project to determine whether any nests are present at that time; if so, the standard guidelines will be followed, which include limiting construction activity within at least 330 feet from the nesting site, and limiting clearing of vegetation within 660 feet of the nest site during the nesting season (late January to July) • In compliance with the MBTA, perform bridge work before May 15 or after September 1 ■ Habitat: • Temporary construction access roads and construction staging areas will be restored to the pre-construction grade and replanted with suitable vegetation • Tree impacts in the proposed BLRT Extension project LOD will be minimized to the extent practicable

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Water Quality and Stormwater (Section 5.9)	Operating-Phase (Long-Term) Direct Impacts	■ The proposed BLRT Extension project would cause an 83-percent increase in the impervious area within the LOD of the proposed BLRT Extension project
	Operating-Phase (Long-Term) Indirect Impacts	■ New development may increase impervious surface area adjacent to the proposed BLRT Extension project
	Construction-Phase (Short-Term) Impacts	■ Construction activities would disturb soils and cause runoff that could erode slopes and drainageways, form gullies, and deposit sediment in storm drain systems and receiving waterbodies; these effects could destabilize slopes and reduce water quality if temporary BMPs, required through the permitting process, are not in place prior to a storm event
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ Long-term mitigation measures will include designing and constructing permanent BMPs, such as detention and infiltration facilities, which will control and treat stormwater runoff caused by an increase in impervious surfaces as a result of the proposed BLRT Extension project **Construction-Phase (Short-Term):** ■ A National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Permit from MPCA will be required, and the NPDES Construction Stormwater Permit application must be submitted to MPCA at least 30 days prior to the start of construction ■ A Stormwater Pollution Prevention Plan, which must be submitted at the time of the permit application, will be developed and implemented during construction ■ Short-term mitigation measures will include developing erosion- and sediment-control plans to control runoff and reduce erosion and sedimentation during construction, and limiting the amount of sediment carried into lakes, streams, wetlands, and rivers by stormwater runoff

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Air Quality/ Greenhouse Gas Emissions (Section 5.10)	Operating-Phase (Long-Term) Direct Impacts	■ No impacts anticipated; annual regional vehicle-miles traveled with the proposed BLRT Extension project would be essentially the same as with the No-Build Alternative ■ No violations of air quality standards are predicted
	Operating-Phase (Long-Term) Indirect Impacts	■ None identified
	Construction-Phase (Short-Term) Impacts	■ During construction, traffic volumes and operations on roads in the proposed BLRT Extension project would be impacted resulting in traffic detours to parallel roads and temporarily increase in emissions and concentrations of air pollutants near homes and businesses ■ Construction equipment powered by fossil fuels emits the same air pollutants as highway vehicles ■ Exposed earthen materials can also produce increased particulate matter when they are moved or disturbed by wind ■ Construction-phase greenhouse gas emissions estimated at 21,191 metric tons of carbon dioxide (CO_2) equivalents per year over a three year period
	Mitigation Measures	**Construction-Phase (Short-Term):** ■ Where applicable and prudent, implement US Environmental Protection Agency (EPA)-recommended measures to reduce short-term construction impacts to air quality ■ BMPs will be implemented during construction to control dust, including: • Minimize land disturbance during site preparation • Use watering trucks to minimize dust • Cover trucks while hauling soil/debris off site or transferring materials. • Stabilize dirt piles if they are not removed immediately • Use dust suppressants on unpaved areas • Minimize unnecessary vehicle and machinery idling • Revegetate any disturbed land post-construction ■ Traffic-control measures will be developed in subsequent stages of the proposed BLRT Extension project to address detours and the flow of traffic
Energy (Section 5.11)	Operating-Phase (Long-Term) Direct Impacts	■ None identified
	Operating-Phase (Long-Term) Indirect Impacts	■ None identified
	Construction-Phase (Short-Term) Impacts	■ Compared to the energy consumption of the entire Twin Cities Metropolitan Area, the construction of the proposed BLRT Extension project would not have a substantial impact on regional energy consumption
	Mitigation Measures	■ No mitigation has been identified or recommended

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Cumulative Effects Assessment (Section 6.3)	Operating-Phase (Long-Term) Direct Impacts	■ The proposed BLRT Extension project in combination with the reasonably foreseeable future actions, including the West Broadway Avenue Reconstruction project, would increase overall transportation demand. ■ The combination of the roadway improvements and the proposed BLRT Extension project would draw additional vehicle traffic associated with passengers accessing the proposed BLRT Extension project stations ■ Reasonably foreseeable future actions would likely increase the density and intensity of development in the proposed BLRT Extension project corridor ■ The proposed BLRT Extension project in combination with the reasonably foreseeable future actions could change the character of neighborhoods by increasing mixed use development in the form of increased residential and commercial densities consistent with transit-oriented development in the cumulative effects study area ■ Additional transportation investments in the proposed BLRT Extension corridor to service 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 ■ Induced development associated with the proposed BLRT Extension project, in combination with the reasonably foreseeable future actions, could cumulatively diminish the integrity of a historic property's or district's location, feeling, or association ■ Induced development associated with the proposed BLRT Extension project and additional transportation facilities in combination with the reasonably foreseeable future actions could change the views in neighborhoods ■ Induced development associated with the proposed BLRT Extension project in combination with the reasonably foreseeable future actions and natural population growth would likely place a greater demand on parks and open spaces and result in a cumulative effect ■ Increased development associated with the proposed BLRT Extension project in combination with the reasonably foreseeable future actions could require more service personnel and could cumulatively strain local providers' capacity to deliver services ■ The continued development of transit and transportation facilities in the proposed BLRT Extension project area over time, combined with future actions and natural population growth, could cumulatively add to the demands on law enforcement and security providers, potentially affecting staffing levels and budgets over the long term ■ Continued development of transit and transportation facilities in the proposed BLRT Extension project area over time, could cumulatively affect hydrology, floodplains, and wetlands if BMPs are not implemented. ■ Continued development of transit and transportation facilities in the proposed BLRT Extension project area over time, will contribute to the remediation of hazardous materials sites ■ Future actions other than the proposed BLRT Extension project have the potential to adversely affect noise in the cumulative effects study area ■ Future actions other than the proposed BLRT Extension project have the potential to adversely affect parks, recreation and open space in the cumulative effects study area

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
	Operating-Phase (Long-Term) Indirect Impacts	■ None identified
	Construction-Phase (Short-Term) Impacts	■ None anticipated
	Mitigation Measures	■ Cumulative transportation effects identified are consistent with the comprehensive plans of the communities affected, as well as with county and regional plans; no mitigation is required ■ Potential cumulative effects on land use are compatible with the corridor cities' comprehensive plans and plans for the region, which state the agencies' desire for transit to alleviate traffic and congestion; no mitigation is required ■ The types of community character, services, and facility cumulative effects identified are typically consistent with and governed by applicable land-use plans; no mitigation is required ■ Although cumulative effects could occur from the acquisition and displacement of residents and businesses, induced development, along with available housing in the proposed BLRT Extension project corridor, would likely create more jobs and housing opportunities than what would be lost; no mitigation is required ■ All cumulative effects on cultural resources are subject to the protections and regulations of Section 106; committed mitigation has been documented in the Section 106 Memorandum of Agreement ■ Induced development and resulting visual impacts would be regulated through applicable municipal codes; no additional mitigation is required ■ The Council and the municipalities in the proposed BLRT Extension project corridor have plans to expand and enhance parks and open spaces in the area to meet the demands of population growth; no additional mitigation is required

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Environmental Justice Finding (Section 7.5)	Operating-Phase (Long-Term) Direct Impacts	■ No disproportionately high and adverse impacts on environmental justice (EJ) populations: • Transit • Parks and Recreation • Visual/Aesthetics • Noise • Indirect Economic Impacts ■ The result of the displacements of the five businesses listed below would have the potential for disproportionately high and adverse effects on EJ populations in the communities currently served by the businesses: • Northside Oriental Market • American Furniture Mart • Unified Staffing, Inc. (tenant of Schrader Building) • Hart Custom Homes (owner and tenant of Schrader Building) • Brianna's Hair Studio (tenant of Schrader Building)
	Operating-Phase (Long-Term) Indirect Impacts	■ None anticipated
	Construction-Phase (Short-Term) Impacts	■ No disproportionately high and adverse impacts on EJ populations
	Mitigation Measures	■ The Council will identify relocation sites by working with the business owners through the right-of-way acquisition process ■ Relocation sites shall be considered based on the business owners' preferences to retain their client base and/or continue to serve a similar population ■ Relocation expenses shall be provided consistent with state and federal requirements ■ Continue outreach efforts to EJ populations during the engineering, construction, and start of operations for the proposed BLRT Extension project

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Section 4(f)/6(f) Evaluation (Chapter 8)	Operating-Phase (Long-Term) Direct Impacts	■ 2.1 acres of permanent easement from Theodore Wirth Regional Park ■ 0.01 acre of permanent easement from Glenview Terrace Park ■ 0.7 acre of permanent easement from Theodore Wirth Parkway; a contributing element of the Grand Rounds Historic District. ■ 43 acres of permanent easement from the Osseo Branch, St. Paul, Minneapolis & Manitoba Railway Historic District ■ Section 6(f) conversion of 5.6 acres of Sochacki Park: Sochacki Management Unit
	Operating-Phase (Long-Term) Indirect Impacts	■ Introduction of the Plymouth Avenue and Golden Valley Road stations may increase visits to Theodore Wirth Regional Park ■ Addition of new trail connections may increase bicycle and pedestrian traffic in the Theodore Wirth Regional Park/Sochacki Park area
	Construction-Phase (Short-Term) Impacts	■ 9.2 acres of temporary easement from Theodore Wirth Regional Park ■ 0.25 acre of temporary easement from Glenview Terrace Park ■ 0.57 acre of temporary easement from Sochacki Park: Mary Hills Management Unit ■ 5.6 acres of temporary easement from Sochacki Park: Sochacki Management Unit ■ 0.7 acre of temporary easement from South Halifax Park ■ 0.1 acre of temporary easement from Becker Park ■ 1.1 acres of temporary easement from the park property adjacent to Rush Creek Regional Trail
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ Provision of replacement Section 6(f) property of equal value and recreational usefulness ■ Enhancements to Theodore Wirth Regional Park • Relocation of the trail adjacent to Bassett Creek to a location outside of BNSF right-of-way • Construction of a stair from Plymouth Avenue down to a new bridge over Bassett Creek to enhance trail connections • Construction of a new trail connection between Theodore Wirth Parkway and the trail in Sochacki Park: Mary Hills Management Unit • Construction of a trailhead incorporated into the Golden Valley Road Station park-and-ride • Reconstruction of the Theodore Wirth Parkway bridge over the BNSF rail corridor (bridge is owned by the Minneapolis Park and Recreation Board) • Reconstruction of the Theodore Wirth Parkway/Golden Valley Road intersection in a manner that will enhance pedestrian and bicycle traffic safety • Coordination on design elements (stations, retaining walls) to minimize visual effects

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
		■ Enhancements to Sochacki Park: Sochacki Management Unit • Removal of existing vegetation • Removal and disposal of surface rubble in the restoration zone • Addition of clean fill and topsoil in the restoration zone • Development and implementation of a revegetation plan; includes potential thickening of vegetative buffer between the proposed BLRT Extension project and the main park area • Shore restoration and plantings at south edge of North Rice Lake • Restoration of paved interior road • Removal/replacement of northern parking lot • Reconstruction/expansion of the interior paved parking lot • Clearing, revegetation, and fencing of an area to be used as an off-leash dog area • Providing utility services to a site adjacent to interior parking lot for future development of a bathroom/storm shelter/drinking fountain • Ground preparation for a future education shelter • Construction of a water education platform on North Rice Lake • Redevelopment of a 10-foot paved trail through the length of the park ■ Construction of an off-road trail connection from the southern terminus of Sochacki Park; Mary Hills Management Unit to Theodore Wirth Regional Park, passing under Golden Valley Road **Construction-Phase (Short-Term):** ■ Restoration of temporarily disturbed park property to pre-construction or better condition

Table ES-3. Summary of Impacts and Mitigation Measures by Environmental and Transportation Category

Category		Summary of Impacts and Mitigations
Joint Development (Chapter 11)	Operating-Phase (Long-Term) Direct Impacts	■ Transit • Anticipated additional increase in transit use as a result of commercial, office, and residential use ■ Parking • Additional 79 spaces for the retail, medical clinic, and residential mixed-use space ■ Community Facilities and Community Cohesion • Minimal change in the neighborhood's visual character with the addition of the multi-story development ■ Visual Quality and Aesthetics • Addition of the multi-story buildings would affect the visual environment around the Robbinsdale Station area ■ Utilities • Additional changes to utilities are anticipated within and connecting to the Robbinsdale Station Joint Development site
	Operating-Phase (Long-Term) Indirect Impacts	■ None identified
	Construction-Phase (Short-Term) Impacts	■ Utilities: • Additional changes to utilities are anticipated within and connecting to the Robbinsdale Station Joint Development site ■ Construction-related impacts to traffic, parking, and businesses would be anticipated
	Mitigation Measures	■ Mitigation for Construction-Phase effects will include development and implementation of the Construction Mitigation Plan, which includes a Construction Communication Plan and a construction staging plan

19. How does the Final EIS address environmental justice compliance?

The environmental justice (EJ) analysis presented in **Chapter 7** of the Final EIS was prepared in compliance with the Presidential Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994). The guiding principles of environmental justice are to (1) avoid, minimize, or mitigate disproportionately high and adverse impacts on minority and low-income populations; (2) ensure the full and fair participation by all potentially affected communities in decision-making processes; and (3) prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority or low-income populations (collectively referred to as EJ populations).

Chapter 7 of the Final EIS first includes the identification and mapping of minority (by race and ethnicity) populations and low-income populations within the proposed BLRT Extension project area. Second, the Final EIS describes the Council's ongoing efforts to communicate with EJ populations and to help ensure their participation in the decision-making processes. Third, the Final EIS summarizes the analysis of adverse impacts that would result from the proposed BLRT Extension project, determining if those adverse impacts would affect EJ populations, and assessing whether the proposed BLRT Extension project would result in disproportionate and high adverse impacts to EJ populations. Taking into account the adverse impacts on EJ populations, committed mitigation measures, and benefits to EJ populations, FTA and the Council have concluded that the proposed BLRT Extension project as a whole would not result in disproportionately high and adverse impacts to EJ populations.

20. Does the Final EIS include a discussion of potential joint development opportunities?

The Final EIS assesses one potential joint development project that may be implemented with the proposed BLRT Extension project, which is the Robbinsdale Station Joint Development project. That assessment, in **Chapter 11** of the Final EIS, describes the proposed joint development project and how the overall proposed BLRT Extension project's environmental impacts would be different with and without the joint development project.

Under the proposed BLRT Extension project without the Robbinsdale Station Joint Development project, the Robbinsdale Station site would include construction of a 550-space structured park-and-ride facility, a bus stop/layover, and a passenger drop-off area. Under the proposed BLRT Extension project with the Robbinsdale Station Joint Development project, the same features associated with the proposed BLRT Extension project would be developed, but include an additional 79 parking spaces. The additional parking spaces would be located below the mixed-use building, and would be available for medical, residential, and retail users. The proposed Robbinsdale Station Joint Development project would add a multi-story mixed-use retail, medical clinic, and residential space in a liner building surrounding the 550-space park-and-ride. If implemented, the Robbinsdale Station Joint Development project would generate revenue for Metro Transit through legal agreements with private parties.

Additional impacts that would be associated with the proposed BLRT Extension project with the Robbinsdale Station Joint Development project are shown in **Table ES-4**.

Table ES-4. Summary of Impacts from Robbinsdale Station Joint Development Project

Environmental Category[1]	Summary of Impacts[2]
Transit Conditions	Anticipated additional increase in transit use as a result of commercial, office, and residential use.
Freight Rail Conditions	None.
Vehicular Traffic	About 860 new development-generated daily trips were assumed by the station under the proposed BLRT Extension project without the Robbinsdale Station Joint Development project. Since the trips estimated to be generated by the Robbinsdale Station Joint Development project land uses are fewer than the 860 daily trips already included in the proposed BLRT Extension project traffic analysis, no additional trips and no additional infrastructure improvements are expected. A short-term increase in construction traffic and congestion is anticipated with the construction of the Robbinsdale Station Joint Development project.
Pedestrians and Bicyclists	None.
Parking	Additional 79 spaces for the retail, medical clinic, and residential mixed-use space.
Aviation	None.
Land Use Plan Compatibility	None.
Community Facilities/ Community Character and Cohesion	No effect on access to community facilities. A minimal change would occur in the neighborhood's visual character with the addition of the multi-story development. The impact is not anticipated to be substantial.
Displacement of Residences and Businesses	None.
Cultural Resources	None.
Visual/Aesthetics	Addition of the multi-story buildings would affect the visual environment around the Robbinsdale Station area by adding taller and larger structures, though this impact would not be substantial. The impact of the Joint Development facility would be positive, since it would help blend the parking ramp into the visual and architectural scale of Robbinsdale's downtown.
Economic Effects	None.
Safety and Security	None.
Utilities	Additional changes to utilities are anticipated within and connecting to the Robbinsdale Station Joint Development site. No adverse electromagnetic interference impacts are anticipated.
Floodplains	None.
Wetlands and Other Aquatic resources	None.
Geology, Soils, and Topography	None.
Hazardous Materials Contamination	None.
Noise	None.
Vibration	None.

Table ES-4. Summary of Impacts from Robbinsdale Station Joint Development Project

Environmental Category[1]	Summary of Impacts[2]
Biological Environment	None.
Water Quality and Stormwater	None.
Air Quality/Greenhouse Gas Emissions	None.
Energy	None.
Parklands, Recreation Areas, and Open Spaces	None.
Environmental Justice Compliance	No change in the finding for the proposed BLRT Extension project that the proposed BLRT Extension project would not result in disproportionately high and adverse impacts to EJ populations.

[1] The environmental categories are those assessed in **Chapters 3, 4, 5, 7, and 8** of the Final EIS.
[2] Impacts are from the proposed BLRT Extension project with the proposed Robbinsdale Station Joint Development project compared to the proposed BLRT Extension project without the proposed Robbinsdale Station Joint Development project.

21. What is the estimated cost of the proposed BLRT Extension project, and how would it be funded?

The capital cost to fund the proposed BLRT Extension project would be approximately $1,496 million (in year-of-expenditure dollars). The Council anticipates securing federal New Starts funds for 49 percent of the cost of the proposed BLRT Extension project. The remaining 51 percent of the proposed BLRT Extension project cost is proposed to be funded from the following sources: 10 percent from the State of Minnesota; 31 percent from the Counties Transit Improvement Board; and 10 percent from HCRRA.

22. How has the public been involved in the process?

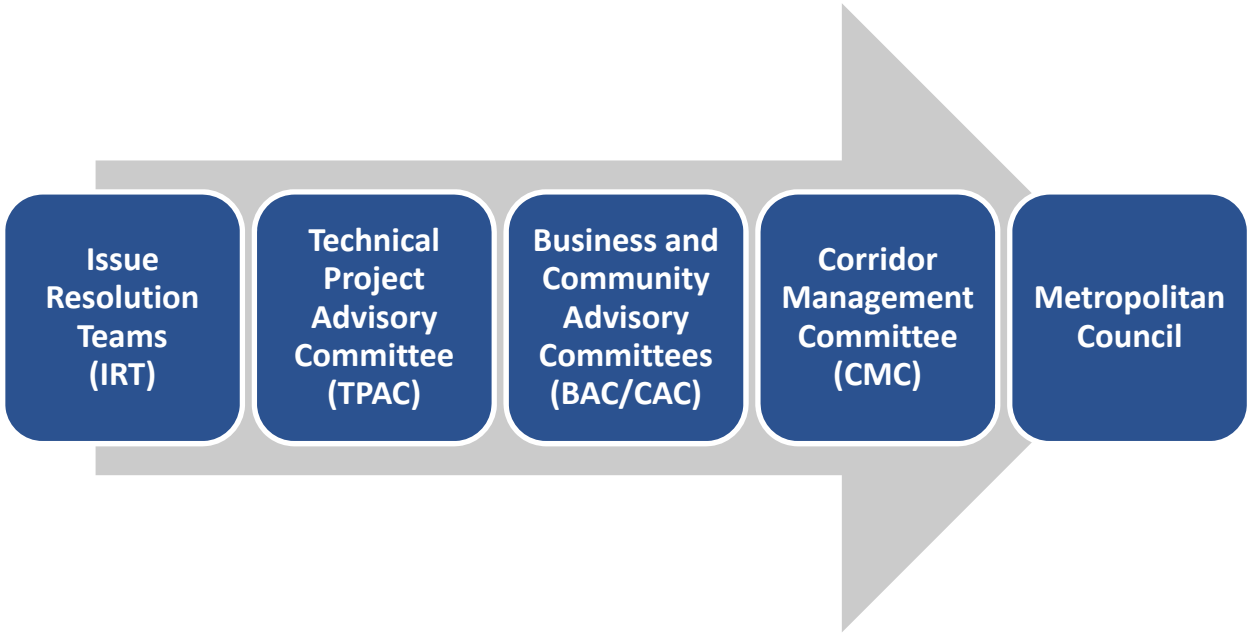
Through the development of the Alternatives Analysis and the Draft EIS, HCRRA led the public involvement efforts. HCRRA maintained a website during development of the Draft EIS and utilized three advisory committees, as well as holding informational meetings and open houses.

For the Final EIS, public involvement activities became the responsibility of the Council.

After publication of the Draft EIS, the Council led the proposed BLRT Extension project's advisory committee process. The Business Advisory Committee, Community Advisory Committee, Corridor Management Committee, and Council meetings were all open to the public. Each community in the corridor had representation on the advisory committees.

Figure ES-2 illustrates the advisory committee process that was used to seek input from project partners, local municipalities, park agencies, and the public. Staff-level technical teams and four advisory committees provided input during key steps in the NEPA process.

Figure ES-2. Advisory Committee Decision-Making Process



The Council developed a website for the proposed BLRT Extension project (www.BlueLineExt.org) as part of the Council website. The website serves as a communications forum and resource to the public, allowing stakeholders to keep informed about the proposed BLRT Extension project history, current activities and data, and upcoming milestones.

The ability to sign up for email updates was made available at public meetings held as part of the outreach process and on the website. The outreach program implemented strategies and techniques to involve low-income and minority citizens and stakeholders. Council staff hosted public events in locations throughout the proposed BLRT Extension project corridor to give the public opportunities to provide input on design efforts and to receive updates and information about proposed BLRT Extension project activities.

In summary, the public outreach program during the NEPA process included a wide range of outreach techniques, including public meetings; open houses; community and business advisory committee meetings; stakeholder and neighborhood meetings; individual and small group briefings; newsletters; a website; development of an "e-list" used to send out newsletters, press releases, and meeting information; social media; print material specific to the proposed BLRT Extension project; door-to-door outreach; and Council staff attendance at community events.

23. How many comments were received on the Draft EIS, and what were the main topics?

A total of 1,252 comments were submitted in the form of letters, emails, public testimony at the public hearings, and comment cards received at the public open houses and public hearings. Comments were received from individuals, businesses, public interest groups, and public agencies, including local communities and regulatory agencies.

The Council summarized the comments and responses as follows:

- Related to the purpose of and need for the proposed BLRT Extension project
  - Several commenters questioned the need for the proposed BLRT Extension project. The Council responded to these types of comments by noting that the purpose and need for the proposed BLRT Extension project had been studied extensively, and that the proposed BLRT Extension project best meets the transportation goals and objectives of the area (e.g., more travel choices, faster travel times, connections to activity centers, supporting economic development) while minimizing project impacts.
- Related to the fiscal effects and schedule
  - Several commenters questioned the cost of the proposed BLRT Extension project, especially when compared to other transportation options such as highways. The Council responded to these types of comments by informing the commenter of the location of cost information in the Draft EIS, demonstrating that the proposed BLRT Extension project meets federal cost criteria for these types of projects, and that one of the key purposes of the proposed BLRT Extension project is to provide a transportation option that is viable for transit-dependent populations.
- Related to NEPA process and public involvement
  - Several commenters stated that not enough time was provided to review the Draft EIS. The Council responded to these types of comments by confirming that the Draft EIS notification of availability and comment period followed the legal requirements.
  - Several commenters stated that they felt public opinion was being ignored. The Council responded to these types of comments by directing commenters to **Chapter 9** of the Draft and Final EIS documents and the website for the proposed BLRT Extension project where a summary of the public outreach events is provided. The Council also noted the community representation on the project committees (Community Advisory Committee, Business Advisory Committee, and Corridor Management Committee), and how public comments were brought forth by community representatives for consideration in the project development process.
- Related to social and economic effects, including economic and business impacts, right-of-way, and safety and security
  - Several comments were received regarding property values; many were concerned that the proposed BLRT Extension project would reduce the value of their homes. The Council responded to these types of comments by noting that a variety of market conditions affect

property values, and that the impacts of a specific LRT project on property values are difficult to conclusively assess. However, a study of property values along the existing METRO Blue Line LRT (formerly known as the Hiawatha LRT) corridor indicated that a general increase in property values occurred beyond that attributable to broader market forces.

- Several comments were received regarding the potential for the proposed BLRT Extension project to split connections within and between communities. The Council responded to these types of comments by directing people to review **Section 4.2** of the Final EIS, which discusses community cohesion. The Council also noted that the pedestrian crossing improvements and trail enhancements that are part of the proposed BLRT Extension project would result in better connections across the corridor and between neighboring communities.
- Several comments were received indicating concern about the loss of homes and/or businesses. The Council responded to these types of comments by indicating that preliminary design efforts have resulted in a significant reduction in acquisitions. The Final EIS documents 14 total acquisitions; 1 residential property and 13 commercial/industrial properties.
- Several comments were received regarding concerns about crime, safety, and security. The Council responded to these types of comments by indicating that **Section 4.7** of the Final EIS addresses safety and security. Safety for rail users, area residents, local pedestrians and bicyclists, operators and vehicle occupants is an important consideration for the proposed BLRT Extension project. The framework for ensuring the safety to these groups would be established through conformance with the Council's Safety and Security Management Plan and the Met Transit Security and Emergency Preparedness plan. The proposed BLRT Extension project operations in conformance with these plans would necessarily be closely coordinated with local area law enforcement, medical, fire, transportation and other organizations with related emergency responsibilities within the corridor.
- Comments were received regarding impacts to and benefits for EJ communities (minority and low income populations); many of these focused on a perceived lack of transit service to North Minneapolis. The Council responded to these types of comments by noting how the Van White Memorial Boulevard, Penn Avenue, and Plymouth Avenue stations would serve North Minneapolis communities without the extensive residential and business acquisitions, parking, and traffic impacts of the D2 (Penn Avenue) alignment. The Council also noted that a Bus Rapid Transit line is being developed that would provide additional service to North Minneapolis residents without the extensive social, economic, and environmental impacts of the D2 alignment.

- Related to environmental effects including water resources, wetlands, species and habitat, air quality, and Section 4(f) properties
  - Several comments were received regarding concerns about impacts to wetland and water resources. The Council responded to these types of comments by indicating that water resource impacts associated with the proposed BLRT Extension project were considered in relation to the extensive residential and business impacts along the D2 (Penn Avenue) alignment. While the proposed BLRT Extension project has greater water resource impacts than the D2 alignment, the proposed BLRT Extension project had fewer overall social, economic, and environmental impacts. In addition, preliminary design efforts on the proposed BLRT Extension project have reduced the amount of water resource impacts from what was reported in the Draft EIS.
  - Several comments were received regarding impacts to wildlife and wildlife habitat. The Council responded to these types of comments by indicating that the proposed BLRT Extension project includes mitigation commitments to address impacts to terrestrial and aquatic habitat. Terrestrial habitat mitigation would be accomplished through revegetation of areas not permanently incorporated into the proposed BLRT Extension project. Aquatic habitat would be mitigated through the creation of wetland mitigation sites and purchase of wetland credits. Wetland mitigation is anticipated to be completed at a 2 (mitigation acreage) to 1 (impact acreage) ratio, so that no net loss of aquatic habitat would occur.
  - Several comments expressed concerns about air quality during LRT construction and operation. The Council responded to these types of comments by noting the construction-phase air quality mitigation measures (avoiding idling of construction equipment, use of water trucks to reduce particulate matter, and similar methods). No operational phase air quality impacts are anticipated.
  - Several comments expressed concerns about impacts to park property adjacent to the proposed BLRT Extension project, especially Theodore Wirth Regional Park and Sochacki Park. The Council responded to these comments by noting how Council staff coordinated closely with staff from the Minneapolis Park and Recreation Board, the Three Rivers Park District, the National Park Service, and the cities along the proposed BLRT Extension project corridor to develop designs that minimized impacts to park property, and to identify opportunities to mitigate impacts to park features or enhance park features. Revegetation, aesthetic design details, and new or improved trail connections were highlighted as examples of mitigation and/or enhancements. In addition, the Section 6(f) conversion of Sochacki Park: Sochacki Management Unit will be further mitigated by finding suitable replacement property, consistent with applicable regulations.
- Related to noise and vibration
  - Several commenters were concerned about the impacts of noise and vibration on homes and other resources along the proposed BLRT Extension project corridor. The Council responded to these types of comments by providing the results of noise and vibration analyses, and the potential mitigation options that would be implemented in specific areas of impact.

- On various alternatives, engineering, and design elements including alignments, the OMF, and station(s)
  - Several comments were received indicating a preference for the D2 (Penn Avenue) alignment over the proposed BLRT Extension project. The Council responded to these comments by highlighting the key factors that were used to make the decision on the proposed BLRT Extension project. These factors were primarily the extent of impacts to homes, businesses, parking, and traffic along Penn Avenue, and the fact that these impacts would be borne primarily by EJ populations.
  - Several comments were received regarding the location of the OMF. The Council responded to these types of comments by reviewing the process by which the OMF alternatives were originally selected, and by highlighting the process by which the current OMF location (101st Avenue) was refined to avoid park and wetland impacts.
  - Several comments were received regarding the need for stations at Plymouth Avenue and/or Golden Valley Road. The Council responded to these types of comments by summarizing the process by which both station locations were evaluated in coordination with project stakeholders, especially the cities of Golden Valley and Minneapolis, and the Minneapolis Park and Recreation Board. The Council noted that the result of this process was the inclusion of both stations in the proposed BLRT Extension project scope by the Corridor Management Committee.
- On transportation system effects
  - Several comments were received regarding the impacts to pedestrian and bicycle traffic, especially along Olson Memorial Highway. The Council responded to these types of comments by highlighting the focused effort of the Council and project stakeholders on developing safe pedestrian and bicycle facilities at and near stations and crossings. Specific to Olson Memorial Highway, the Council indicated that **Chapter 2** of the Final EIS summarizes the process that the Council conducted with the city of Minneapolis on the design of Olson Memorial Highway. While a six-lane roadway would be maintained, the lane widths would be reduced to 11 feet to accommodate pedestrian crossing length. The design speed and posted speed limit would be reduced to 35 mph. Existing sidewalks would be replaced with 6-foot-wide sidewalks on the north and south sides of the highway. Pedestrian refuges would be added in the median of the highway. Americans with Disabilities Act (ADA)-compliant pedestrian crossings of Olson Memorial Highway would be facilitated by proposed signalized intersections at Bryant Avenue North, Van White Boulevard, Humboldt Avenue, James Avenue, Morgan Avenue, and midblock crossings between Newton Avenue and Oliver Avenue, Penn Avenue, Russell Avenue, and Thomas Avenue. The proposed BLRT Extension project would provide space on the north side of Olson Memorial Highway for a 10-foot two-way cycle track (to be constructed by others) between Thomas Avenue and Van White Memorial Boulevard. The proposed BLRT Extension project would construct a multi-use trail on the north side of the reconstructed westbound Olson Memorial Highway bridge.

- Several comments were received regarding concerns about impacts to vehicular traffic at intersections along and adjacent to the proposed LRT corridor. The Council responded to these types of comments by referring to the traffic analysis presented in **Section 3.3** of the Final EIS, and noting that impacts to traffic operations would be mitigated through intersection improvements, and the results were that degradation of traffic operations was not anticipated.

All substantive comments received during the Draft EIS comment period and responses to the comments are provided in **Appendix G** of the Final EIS.

24. Where can I read the Final EIS?

The Final EIS and supporting documentation are available on the Council's website at www.BlueLineExt.org. A printed copy of the Final EIS and supporting documents is available for review during regular business hours at the BLRT Extension Project Office (5514 West Broadway Avenue, Suite 200, Crystal, MN 55428). Printed copies and/or electronic copies will also be available at city halls and libraries in Minneapolis, Golden Valley, Robbinsdale, Crystal and Brooklyn Park. CDs of the Final EIS will also be sent to interested businesses, individuals, and organizations, when requested.

For additional information on the Final EIS or to request a copy, contact:

Mail: Kathryn O'Brien, Assistant Director, Environmental and Agreements
Metro Transit – BLRT Extension Project Office
5514 West Broadway Avenue, Suite 200
Crystal, MN 55428

OR

Marisol Simon
Regional Administrator
Federal Transit Administration
200 West Adams Street, Suite 320
Chicago, IL 60606

Email: BlueLineExt@metrotransit.org

25. When did the circulation period for the Final EIS start, and when will it end?

The Notice of Availability for the Final EIS was published in the Federal Register on July 15, 2016, and in the Minnesota Environmental Quality Board (EQB) *Monitor* on July 18, 2016. Under MEPA, the Notice of Availability provides for submittal of written comments on the adequacy of the Final EIS for a period of not less than 10 days. The comment period commenced with the Notice of Availably published in the EQB *Monitor* and expires on August 15, 2016. Comments on the adequacy of the Final EIS may be submitted through:

Mail: Kathryn O'Brien, Assistant Director, Environmental and Agreements
Metro Transit – BLRT Extension Project Office
5514 West Broadway Avenue, Suite 200
Crystal, MN 55428

Email: BlueLineExt@metrotransit.org

26. What happens after the close of the Final EIS circulation period?

Following publication of the Final EIS and the circulation period, FTA will prepare and issue the proposed BLRT Extension project's Record of Decision (ROD). The ROD will state FTA's project decision, identify the alternatives considered and selected (including specification of the alternative or alternatives considered to be environmentally preferable), and itemize mitigation commitments. FTA must issue the ROD before federal funding and permits can be approved. All comments will be published on the BLRT Extension project website (www.BlueLineExt.org) and substantive comments and issues will be responded to in the ROD. After publication of the Final EIS, the Council will also issue an Adequacy Determination for the Final EIS in accordance with Minnesota environmental rules (Minn. Administrative Rules 4410.2800). The Council will notify all persons who received a copy of the Final EIS (see **Appendix A** of the Final EIS for the list of recipients) of its adequacy decision within 5 days of the decision, and public notice of the decision will be published in the EQB *Monitor*.

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1 Purpose and Need

This chapter gives an overview of the proposed METRO Blue Line Light Rail Transit (BLRT) Extension project, including its location and setting within the local communities and the region, and the context of previous planning studies. It also describes the purpose and the need for the project. The Alternatives Analysis, *Bottineau Transitway Alternatives Analysis Study Final Report* (Hennepin County Regional Railroad Authority [HCRRA], 2010), was completed in 2010 and the *Bottineau Transitway* Draft Environmental Impact Statement (Draft EIS) (Federal Transit Administration [FTA], HCRRA, and Metropolitan Council [Council], 2014) was completed in 2014. This Final Environmental Impact Statement (Final EIS) updates the purpose and need in light of currently available data.

Changes to This Chapter since the Alternatives Analysis and Draft EIS

This chapter follows the general format of Chapter 1 of the Draft EIS.[1] The Final EIS updates population, employment, and travel demand to 2040, consistent with the Metropolitan Council's (Council's) updated regional plans, including *Thrive MSP 2040* (Council, 2014a) and the *2040 Transportation Policy Plan* (*2040 TPP*) (Council, 2015a). The Draft EIS had used a 2030 horizon year, which was consistent with regional planning documents available at that time.

In addition, in March 2014 the Council completed a Fair Housing and Equity Assessment (FHEA) in accordance with the requirements of the Sustainable Communities Regional Planning Grant provided by the US Department of Housing and Urban Development. The FHEA is titled *Choice, Place and Opportunity: An Equity Assessment of the Twin Cities Region* (www.metrocouncil.org/Planning/Projects/Thrive-2040/Choice-Place-and-Opportunity.aspx). The FHEA analyzed Areas of Concentrated Poverty (ACPs) within the Twin Cities Metropolitan Area, looking at the level of public investment, policies, and affordable housing availability. By providing a more complete picture of equity and access to opportunity in the Twin Cities Metropolitan Area, the FHEA provides input into key public planning policies, including the availability of transit in ACPs. The FHEA's information regarding the locations of ACPs supports the purpose and need for the proposed BLRT Extension project's Final EIS. The information presented in the FHEA is also used as a component of the evaluation of alternatives (**Chapter 12**) of this Final EIS.

1.1 Project Description

1.1.1 Project Location

The proposed BLRT Extension project would provide transit improvements in the highly traveled northwest area of the Twin Cities Metropolitan Area. The proposed BLRT Extension project would be located in Hennepin County, Minnesota, extending approximately 13 miles from downtown Minneapolis to the northwest, serving north Minneapolis and the suburbs of Golden Valley, Robbinsdale, Crystal, and Brooklyn Park. The light rail transit (LRT) is anticipated to serve a

[1] A discussion of goals and objectives was included in the Draft EIS and is not included in this Final EIS chapter. Consideration of the goals and objectives was primarily used and presented in the Alternatives Analysis and the Draft EIS to support the identification of the locally preferred alternative (LPA) and to compare the LPA with other alternatives being evaluated.

broader area to the northwest, including the communities of New Hope, Brooklyn Center, Maple Grove, Osseo, Champlin, and Dayton.

Figure 1.1-1 illustrates the proposed BLRT Extension project area. Key transportation facilities within the proposed BLRT Extension project area include the highways shown as well as the BNSF Railway (BNSF), Canadian Pacific Railway (CP), Crystal Airport, Bottineau Boulevard (County Road 81), West Broadway Avenue (County State-Aid Highway 103), and Penn Avenue.

1.1.2 Project Setting

The character of the area surrounding the proposed BLRT Extension project transitions from a moderately dense urban setting in north Minneapolis to a less dense suburban setting starting in Golden Valley, Robbinsdale, and Crystal, and extending through Brooklyn Park at the north end of the corridor. The proposed BLRT Extension project area includes a variety of land use patterns that have been influenced by the transportation-oriented history of the corridor. Low-density, auto-oriented land uses have heavily influenced existing development patterns in the corridor, which primarily reflect highway-oriented regulations and traditional suburban development forms. Additionally, the presence of the existing railway lines influenced the development patterns and settings in the proposed BLRT Extension project corridor (e.g., development set back from the rail right-of-way).

Development in north Minneapolis and Robbinsdale reflects the history of West Broadway Avenue as a commercial streetcar corridor, with strips of auto-oriented commercial activity developed more recently. Residential neighborhoods are located along the proposed BLRT Extension project in Minneapolis, Robbinsdale, Crystal, and Brooklyn Park. In Brooklyn Park, south of 73rd Avenue and in northern Crystal, development adjacent to the proposed BLRT Extension project includes highway-oriented commercial activity and the Crystal Airport. In Brooklyn Park, north of 73rd Avenue, development adjacent to West Broadway Avenue includes mixed commercial and retail, commercial office/corporate campus (Target North Campus), residential, and institutional use (North Hennepin Community College and Hennepin County Library under construction).

As illustrated in **Figure 1.1-2**, several activity centers are located along the proposed corridor, including downtown Minneapolis, Theodore Wirth Regional Park, downtown Robbinsdale, the Crystal Shopping Center, the Brooklyn Park commercial strip, and North Hennepin Community College. In addition, large commercial developments with substantial employment concentrations are anticipated by 2040 in Brooklyn Park (surrounding the Target North Campus north of Trunk Highway [TH] 610).

1.1.3 Regional Transit System

The proposed BLRT Extension project area is presently served by a mix of express and local bus service provided by Metro Transit, the region's largest transit provider. Key existing transit facilities within the corridor, illustrated in **Figure 1.1-3**, include the Starlite Transit Center in Brooklyn Park, the 63rd Avenue Park-and-Ride in Brooklyn Park, and the Robbinsdale Transit Center at Hubbard Market-place in Robbinsdale. Additional transportation infrastructure in the proposed BLRT Extension project area includes bus-only shoulders on most of Interstate Highway 94 (I-94) in both directions between Minneapolis and northern Maple Grove.

Figure 1.1-1. Proposed BLRT Extension Project Area

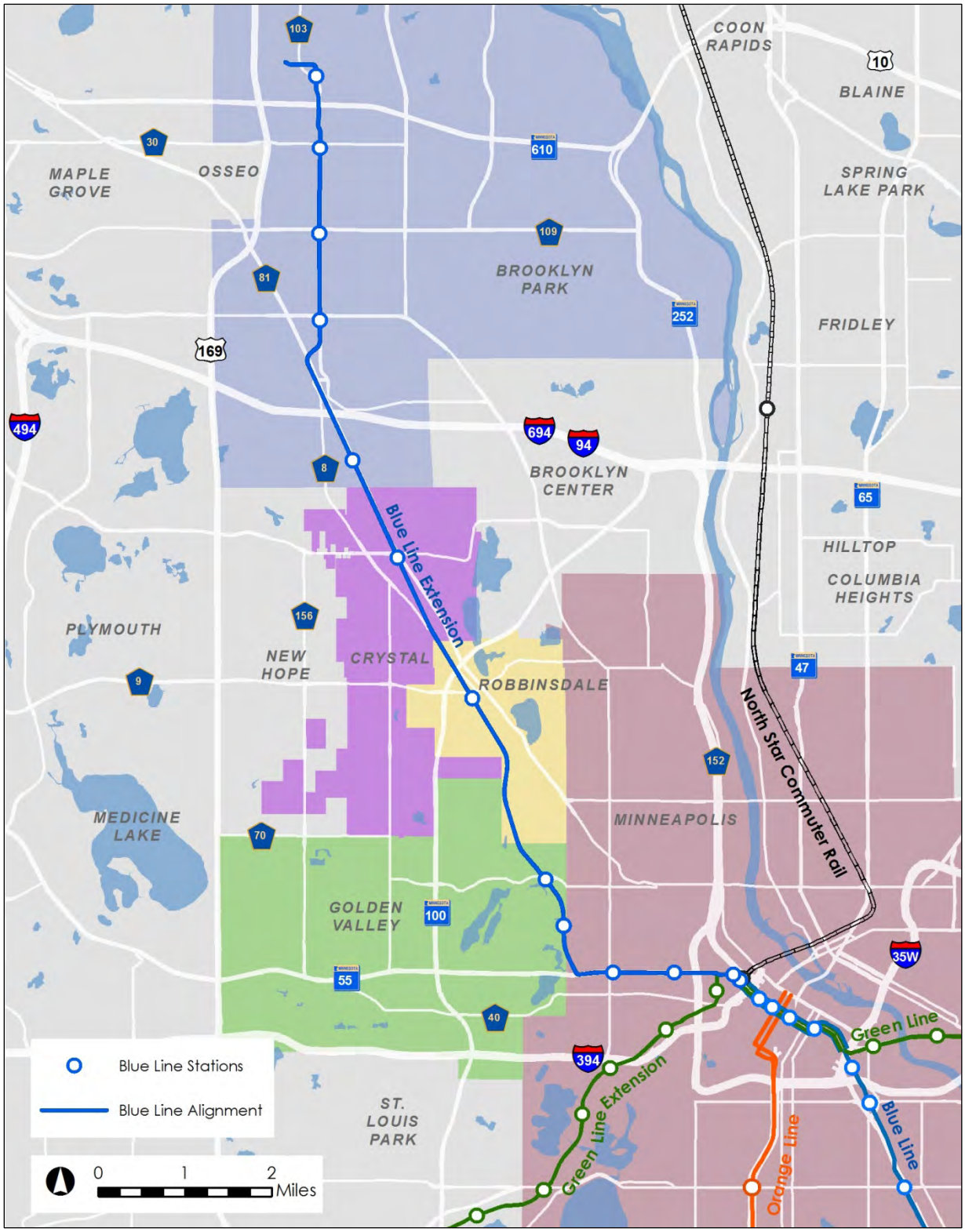


Figure 1.1-2. Proposed BLRT Extension Project Area Activity Centers

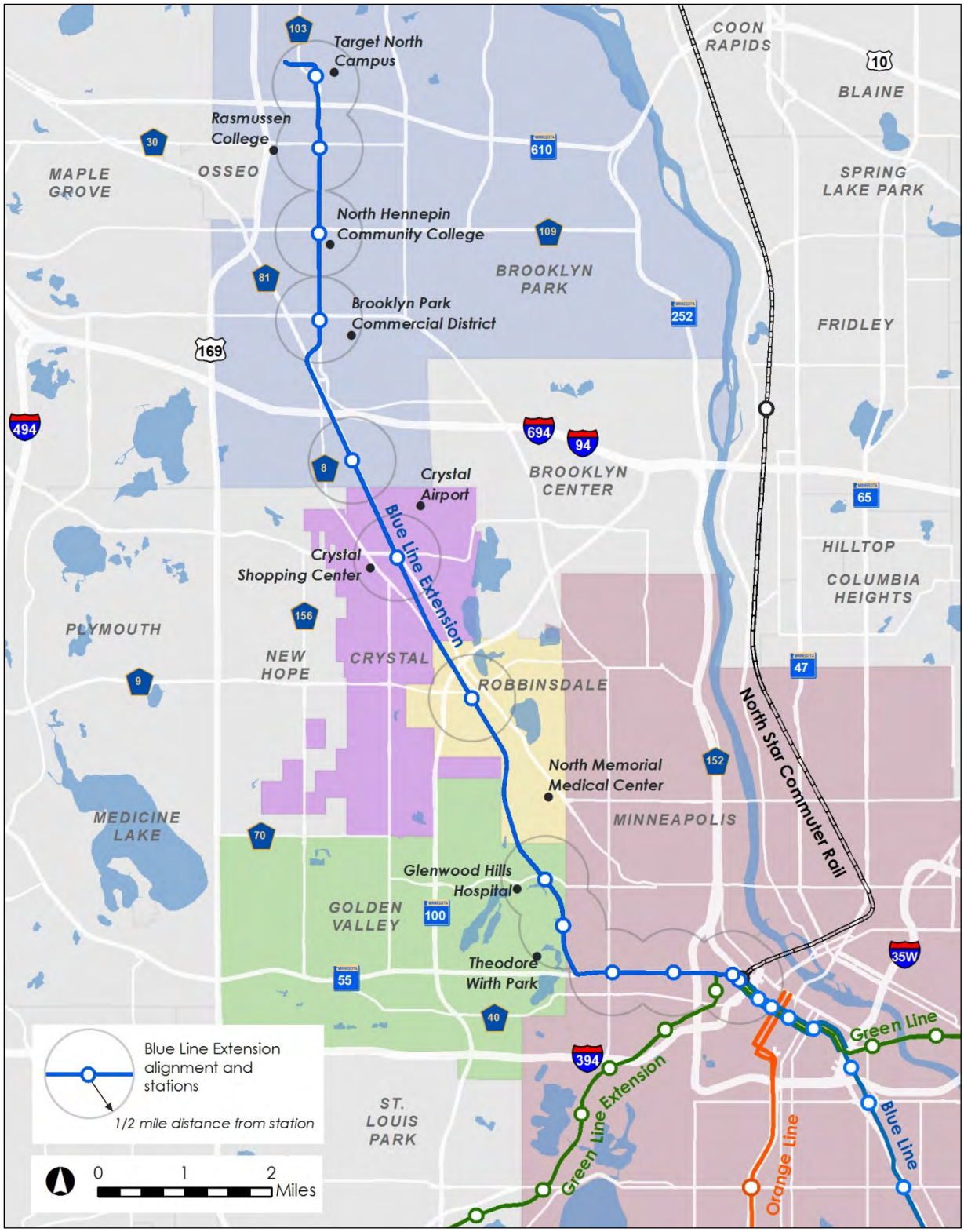
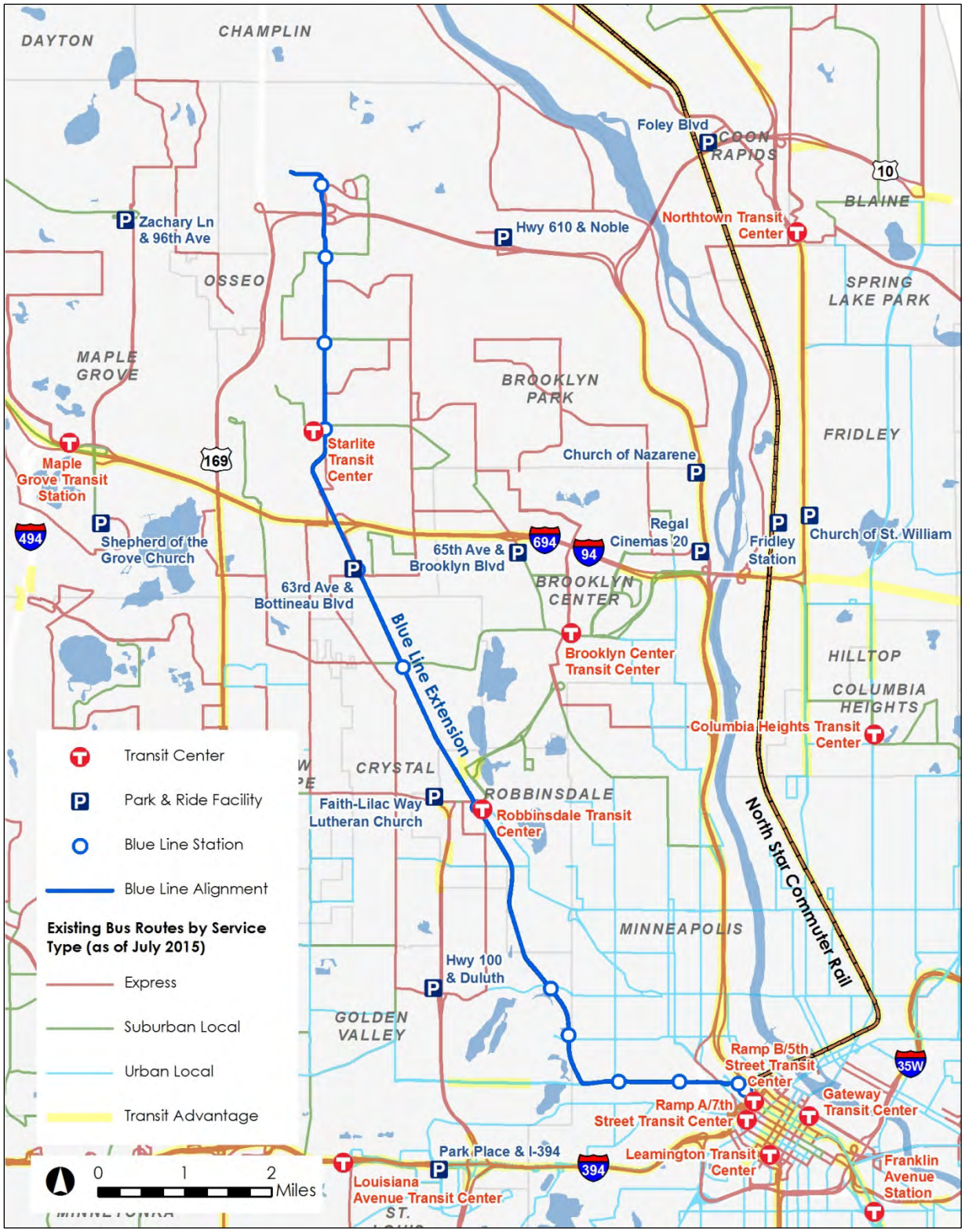


Figure 1.1-3. Existing Proposed BLRT Extension Project Area Transit Services and Facilities

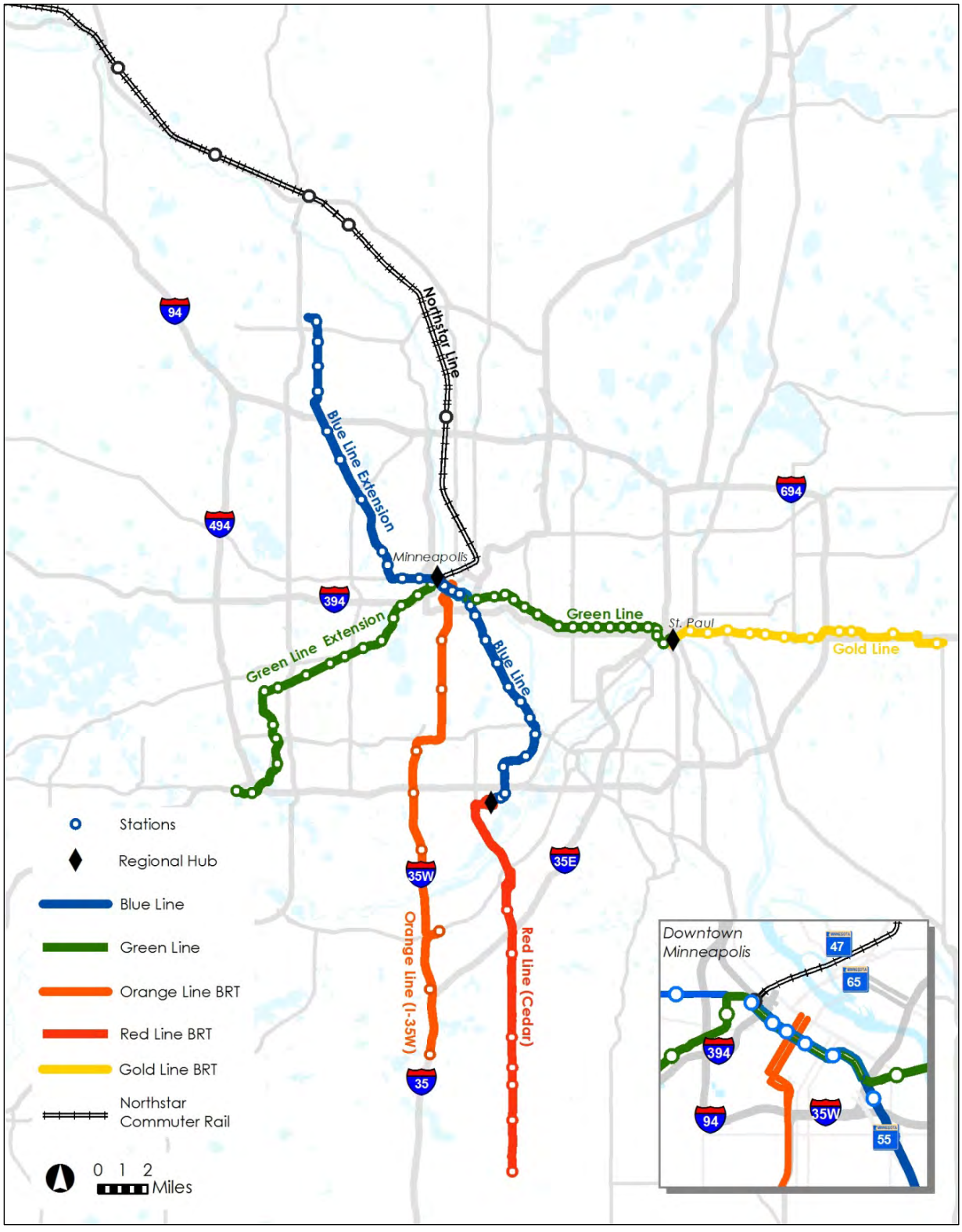


Metro Transit service in the proposed BLRT Extension project area consists of urban local routes serving north Minneapolis and Brooklyn Center, and suburban local and peak-period, peak-direction express service in suburban communities to the north and west. No bus routes currently operate on Bottineau Boulevard north of 29th Avenue North or serve mid-length trips in the general northwest-southeast direction in the proposed BLRT Extension project area.

The Council's *Thrive MSP 2040 TPP* envisions further development of the regional transit system, with opportunities for the expansion and improvement of bus service and transit facilities. In addition, the *2040 TPP* shows the Twin Cities region moving toward a regional system of transit-ways to improve service in high-demand corridors, meet mobility needs, and increase transit system ridership. A transitway is a combination of infrastructure and transit service improvements that allows transit customers to avoid congestion on roadways and connect to regional activity centers, and boosts the potential for transit-oriented development.

The proposed BLRT Extension project would connect north Minneapolis and the region's northwest suburbs with the region's system of transitways that consist of existing LRT on the Blue Line (Hiawatha) and Green Line (Central Corridor and the planned Southwest line), bus rapid transit (BRT) on the Red Line (Cedar Avenue) and Orange Line (I-35W South), the Northstar Commuter Rail, and express bus routes as shown in **Figure 1.1-4**. Development of the proposed BLRT Extension project would include bus service revisions focused on maintaining and enhancing overall transit service in the corridor.

Figure 1.1-4. Regional Transitway System



1.2 Project Background

1.2.1 Early Planning Efforts

Transportation and land use studies in the proposed BLRT Extension project area date back to the late 1980s. Previous studies include regional system studies, corridor studies, and site-specific studies. The proposed BLRT Extension project (previously identified as the Bottineau Transitway and before that the Northwest Transitway) has consistently been included in local and regional transportation system plans. Many different alignments and modes, including BRT, LRT, and commuter rail, have been considered and evaluated in corridor-specific plans and studies. Previous studies provide a valuable base of information for the proposed BLRT Extension project EIS process. **Figure 1.2-1** summarizes the studies conducted to date in the Bottineau/Northwest corridor.

The region's current long-range transportation plan, *Thrive MSP 2040*, targets the year 2022 for completion of the proposed BLRT Extension project and initiation of operations. The recommendation for the proposed BLRT Extension project is based on findings from the Council's *2030 Transit Master Study*[2] (Council, 2008) to address and accommodate the transit travel demand in the Bottineau (Northwest) Transitway. These findings are consistent with previous regional transportation system plans including the *Regional Transit Board LRT Plan* (Council, 1990), *Transit 2020 Master Plan* (Council, 2000), *2025 Transportation Policy Plan* (Council, 2001, amended 2002), and *2030 Transportation Policy Plan* (Council, 2004).

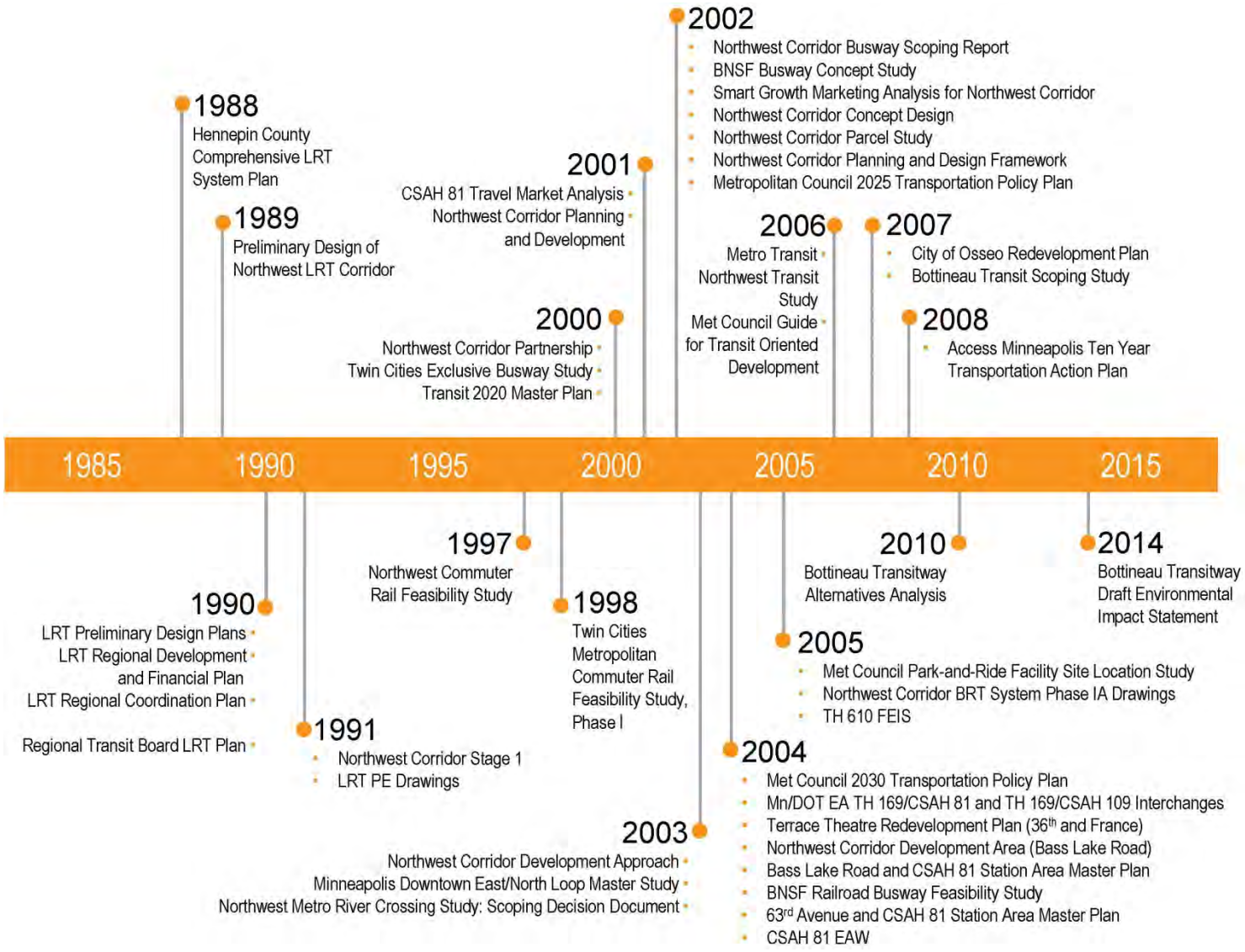
1.2.2 Environmental Review Process

The Council is pursuing federal funding from FTA for the proposed BLRT Extension project and as a result, FTA is required to undertake environmental review in compliance with the National Environmental Policy Act (NEPA). The Council is the local public agency, and is required to comply with the requirements of the Minnesota Environmental Policy Act (MEPA) (Minnesota Statutes 116D.04 and 116D.045). The Council is the project sponsor and federal grantee and would lead the process for preliminary engineering, final design, and construction. FTA, as the Federal Lead Agency, and the Council, as the local project sponsor, have prepared this Final EIS to satisfy both NEPA and MEPA.

The intent of the NEPA and MEPA processes is to ensure that potential social, economic, and environmental impacts are identified and considered in the decision-making process. The primary purpose of the Final EIS is to assist decision-makers in the assessment of impacts associated with the proposed BLRT Extension project. The Final EIS documents the purpose and need for the project, presents a discussion of the alternatives considered, provides full disclosure of the anticipated social, economic, and environmental impacts, and proposes appropriate mitigation measures.

[2] The *2030 Transit Master Study* indicated that "[t]wo corridors had sufficiently high ridership, available right-of-way, and satisfactory costs that showed potential for transitway implementation. The Southwest and Bottineau [the BLRT Extension project] Transitways should continue advanced study towards implementation." Other corridors were recommended for additional study as well.

Figure 1.2-1. Summary of Previous Bottineau (Northwest) Corridor Studies



The Final EIS serves as the primary document to facilitate review by federal, state, and local agencies and the general public of the proposed project. Following the publication and circulation of the Draft EIS for public review, this Final EIS was prepared to: document and address public and agency comments; present design refinements and commitments to mitigate adverse impacts of the project; and document evidence of compliance with related environmental statutes, Executive Orders, and regulations.

NEPA also requires engaging the public in the environmental review process. In addition, Moving Ahead for Progress in the 21st Century (MAP-21) requires the development of a coordination plan to outline how the environmental process for the proposed BLRT Extension project would engage the public, Tribal governments, and local, state, and federal agencies with an interest in the project. Certain state, local and tribal agencies were also invited to have a more formal role in the environmental review process as Cooperating and/or Participating Agencies. A complete discussion of the public and agency engagement process, including the identification of Cooperating and Participating Agencies for the proposed BLRT Extension project, can be found in **Chapter 9 – Consultation and Coordination**.

As a Cooperating Agency, the United States Army Corps of Engineers (USACE) has the ability to adopt the Final EIS for its own NEPA compliance while providing input relative to project development and the associated environmental impacts. This helps USACE determine whether the proposed project is in compliance with the Clean Water Act (CWA), which allows them to issue a permit. USACE has its own process for determining the Least Environmentally Damaging Practicable Alternative (LEDPA), known as the NEPA/404 merger process. As part of this process, USACE evaluates the project and issues four points of concurrence: (1) Purpose and Need and Alternative Screening Criteria; (2) Alternatives to be Evaluated in Detail; (3) Preferred Alternative and LEDPA; and (4) Permit Application and Avoidance and Minimization.

To date, USACE has provided concurrence with Points 1, 2, and 3 (see letters in **Appendix I**). Specific to Point 1, in a letter dated June 19, 2013, USACE reviewed and concurred with the purpose and need statement for use in NEPA documentation for the proposed BLRT Extension project. USACE also concurred on the array of alternatives considered for the proposed BLRT Extension project and the alternatives that had been carried forward for further review (Point 2). In a letter dated October 1, 2013, USACE issued concurrence on the identification of the Preferred Alternative (Point 3). The Council submitted a Section 404 permit application to USACE on May 17, 2016. USACE will make a decision on approval of the permit application using information disclosed in this Final EIS.

1.3 Project Purpose

The purpose statement below specifically defines the fundamental reasons why the BLRT Extension project is being proposed.

The purpose of the proposed BLRT Extension project is to provide transit service, which will satisfy the long-term regional mobility and accessibility needs for businesses and the traveling public.

1.4 Project Need

This section outlines the foundation for the project purpose defined in **Section 1.3**. More specifically, this section identifies the problems or "needs" that the proposed BLRT Extension project is intended to address and the underlying causes of the defined "needs."

The proposed BLRT Extension project is needed to effectively address long-term regional transit mobility and local accessibility needs while providing efficient, travel-time competitive transit service that supports economic development goals and objectives of local, regional, and statewide plans.

Due to a continued increase in travel demand coupled with few highway capacity improvements planned for regional roadways in this area, congestion is expected to worsen by 2040.[3] While transit investment is recognized regionally as one of the key strategies for managing congestion, transit would offer many other benefits to address the needs of the proposed BLRT Extension project area residents and businesses. Residents and businesses in the proposed BLRT Extension project area need improved access to the region's activity centers to fully participate in the region's economy. Access to jobs in downtown Minneapolis and northbound reverse commute transit options to serve jobs in the growing suburban centers are crucial to continued economic vitality. Current transit options in the proposed BLRT Extension project area offer a limited number of travel-time competitive alternatives to the single-occupant vehicle. Without major transit investments in the corridor, it would be difficult to effectively meet the transportation needs of the travelling public and businesses, manage highway traffic congestion, and achieve the region's 2040 goal, as identified in the *2040 TPP,* of increasing transit ridership by providing multi-modal options that are supported by appropriate land uses.

Five factors contribute to the need for the proposed BLRT Extension project:

- Growing travel demand resulting from continuing growth in population and employment
- Increasing traffic congestion and limited federal, state, and local fiscal resources for transportation improvements
- An increase in the number of people who depend on transit to meet their transportation needs
- Limited transit service to suburban destinations (reverse commute opportunities) and time-efficient transit options
- Regional objectives for growth stated in *Thrive MSP 2040*

[3] *Thrive MSP 2040 TPP*

1.4.1 Growing Travel Demand

To illustrate patterns of growth in communities served by the proposed BLRT Extension project, communities are grouped into Corridor Communities and Contributing Communities,[4] as represented in **Figure 1.4-1** and the subsequent tables. Corridor Communities are those adjacent to the locally preferred alternative (LPA), and include Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park. Contributing Communities are those that are not on the corridor, but are anticipated to contribute to travel demand and ridership. These include New Hope, Brooklyn Center, Maple Grove, Osseo, Champlin, and Dayton. This breakdown of communities illustrates that each area has a distinct pattern and rate of growth. As shown in **Table 1.4-1**, between 1990 and 2010, Brooklyn Park experienced population increases, with greater growth in the outlying suburbs of Maple Grove and Champlin. According to the Council's *Thrive MSP 2040* forecasts, between 2010 and 2040, corridor communities served by the proposed BLRT Extension project are expected to grow by approximately 110,000 people. Other contributing communities that may also potentially be served by the proposed BLRT Extension project (New Hope, Brooklyn Center, Maple Grove, Osseo, Champlin, and Dayton) are projected to grow by approximately 39,000 people.

Employment in the proposed BLRT Extension project area is also expected to increase in coming years according to *Thrive MSP 2040* (see **Figure 1.4-2**). Approximately half of all jobs in the proposed BLRT Extension project area are located in downtown Minneapolis, which is currently the region's largest travel demand generator with approximately 74,000 jobs anticipated to be added by 2040. The remaining employment in the proposed BLRT Extension project area is dispersed throughout the proposed corridor, mainly along regional highways. Large employment concentrations outside downtown Minneapolis are located at North Memorial Medical Center in Robbinsdale and the TH 610 development area (including the Target North Campus and other office, commercial and residential development) in Brooklyn Park. The contributing communities are expected to experience the highest percentage of growth in employment in the proposed BLRT Extension project area by 2040. These trends are shown in **Table 1.4-2**.

Growth in population and employment in the proposed BLRT Extension project area and beyond is expected to result in increased transportation demand. Thus, significant growth in traffic volumes is anticipated within the proposed BLRT Extension project area.

Population growth in the collar counties[5] (the 12 counties adjacent to the seven-county Twin Cities Metropolitan Area) coupled with employment growth in the proposed BLRT Extension project area (see **Figure 1.4-2**) will result in a sizable increase in trips between these areas. In 2010, collar county residents from Sherburne and portions of Wright counties made an estimated 23,000 trips per day to destinations within the proposed BLRT Extension project area. By 2040, this number is expected to increase by 37 percent, to nearly 31,500 trips per day, as shown in **Table 1.4-3**.

[4] Corridor Community and Contributing Community information has been updated in this Final EIS to reflect more recent projections and to focus on the communities in the area of the proposed BLRT Extension project alignment.

[5] mn.gov/admin/demography/data-by-topic/population-data/our-projections

Figure 1.4-1. Corridor and Contributing Communities

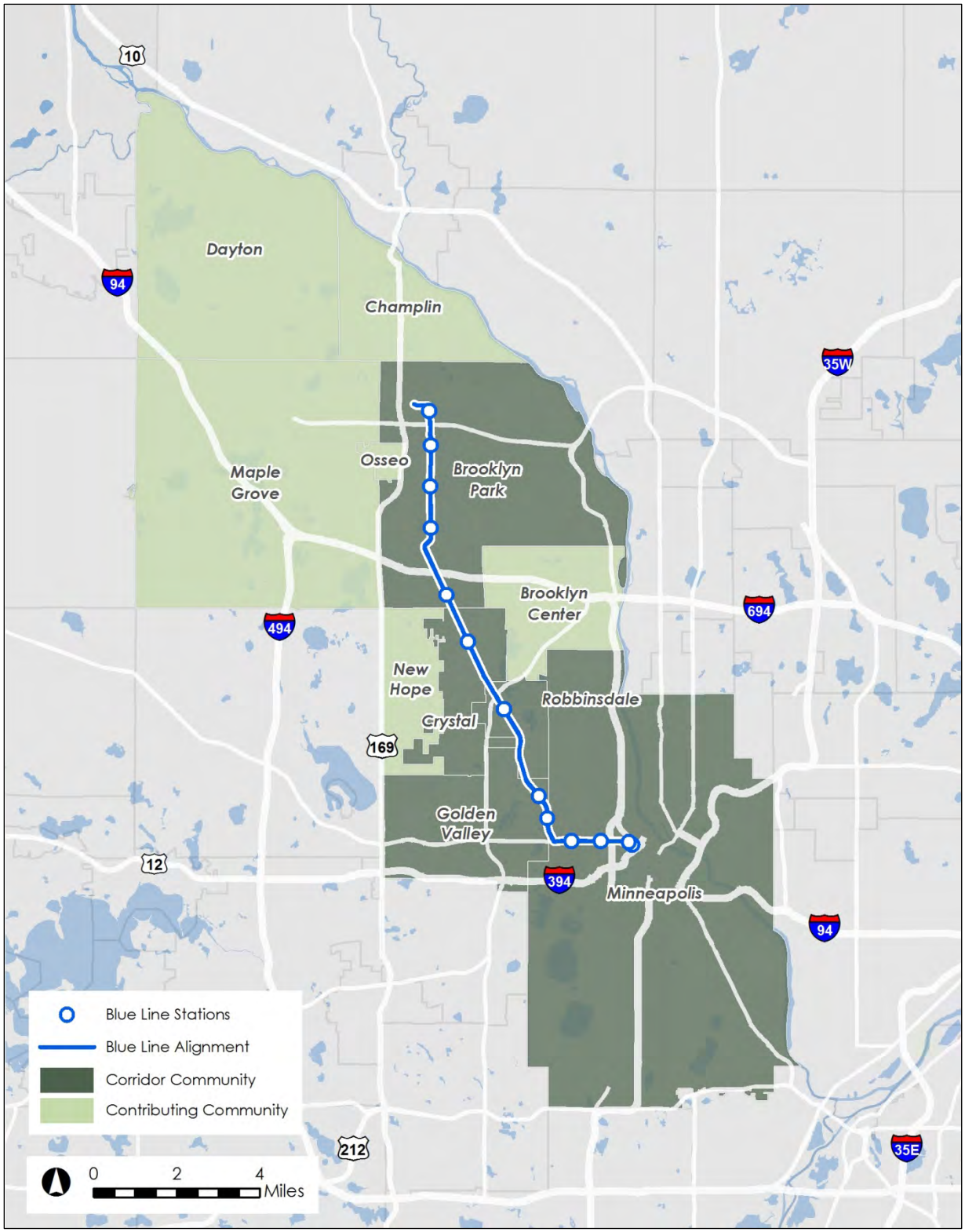


Figure 1.4-2. 2010 to 2040 Employment Forecast

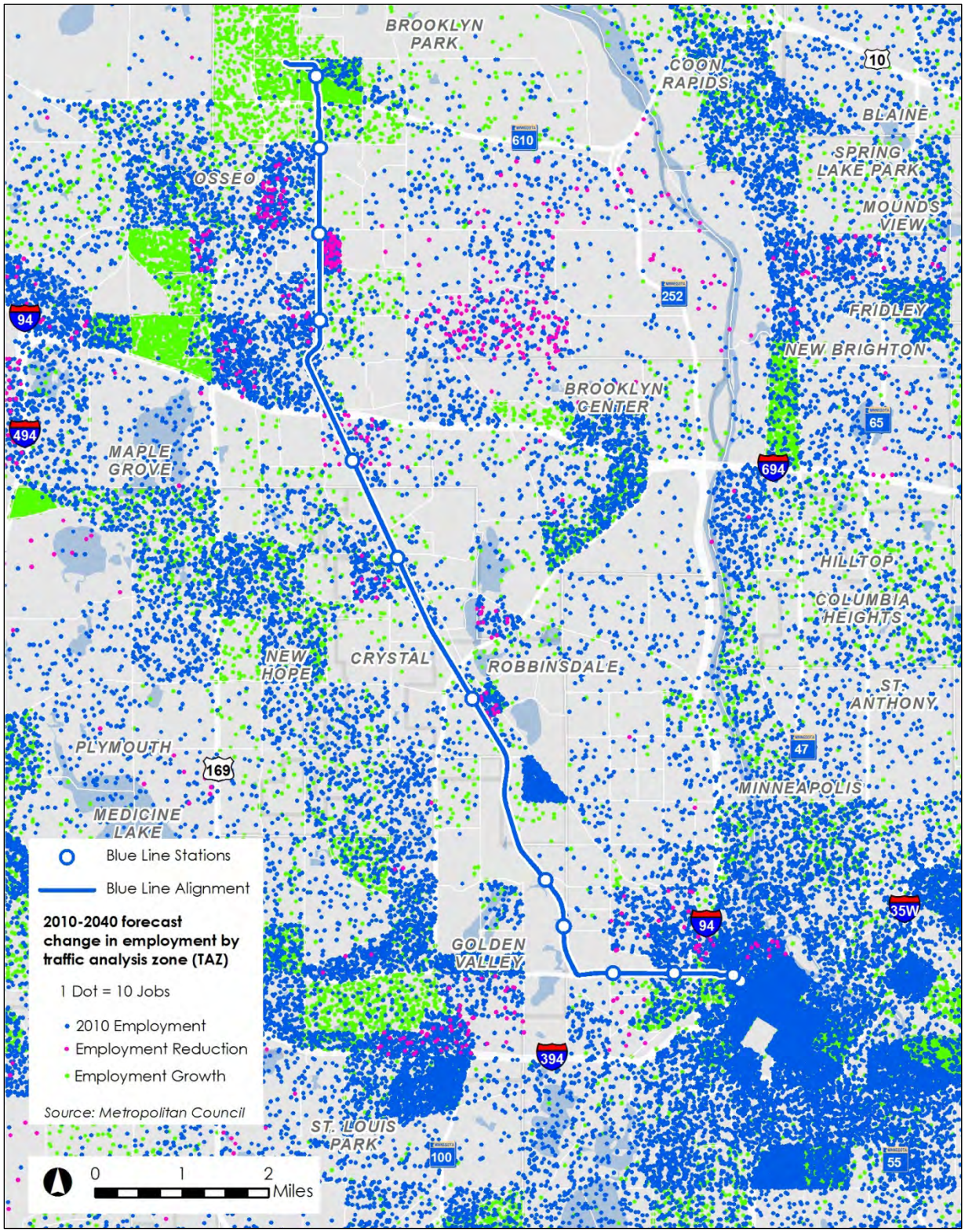


Table 1.4-1. Historic Population Change and Future Population Forecasts within the Proposed BLRT Extension Project Area

	Historic Population			Future Population Forecast			Percent Change	
	1990[1]	2000[1]	2010[1]	2020[2]	2030[2]	2040[2]	1990–2010	2010–2040
Corridor Communities	**483,919**	**507,108**	**514,834**	**568,200**	**602,100**	**624,800**	**6%**	**21%**
Minneapolis	368,383	382,618	382,578	424,700	449,500	466,400	4%	22%
Golden Valley	20,971	20,281	20,371	22,000	23,200	24,300	–3%	19%
Robbinsdale	14,396	14,123	13,953	14,600	14,800	15,300	–3%	10%
Crystal	23,788	22,698	22,151	22,800	23,100	23,300	–7%	5%
Brooklyn Park	56,381	67,388	75,781	84,100	91,500	95,500	34%	26%
Contributing Communities	**113,421**	**129,723**	**142,146**	**154,560**	**167,100**	**181,500**	**25%**	**28%**
New Hope	21,853	20,873	20,339	21,100	22,000	22,800	–7%	12%
Brooklyn Center	28,887	29,172	30,104	31,000	32,900	34,700	4%	15%
Maple Grove	38,736	50,365	61,567	69,300	76,000	84,800	59%	38%
Osseo	2,704	2,434	2,430	2,660	2,900	3,100	–10%	28%
Champlin	16,849	22,193	23,089	23,900	24,200	25,500	37%	10%
Dayton[3]	4,392	4,686	4,617	6,600	9,100	10,600	5%	130%
Proposed BLRT Extension project area total	**597,340**	**636,831**	**656,980**	**722,760**	**769,200**	**806,300**	**10%**	**23%**
Hennepin County	**1,032,431**	**1,116,200**	**1,152,425**	**1,264,460**	**1,354,040**	**1,431,300**	**12%**	**24%**
Twin Cities Metropolitan Area	**2,288,721**	**2,642,062**	**2,849,567**	**3,123,430**	**3,395,060**	**3,675,660**	**25%**	**29%**

[1] US Census Bureau, 1991, 2001, 2011

[2] Metropolitan Council Thrive MSP Forecasts, October 15, 2014

[3] A small portion (less than 1 percent in 2000) of the City of Dayton lies within Wright County; hence, it is not included in the population figures reported in this table.

Table 1.4-2. Historic Employment Change and Future Employment Forecasts within the Proposed BLRT Extension Project Area

	Historic Employment			Future Employment Forecast			Percent Change	
	1990[1]	2000[1]	2010[1]	2020[2]	2030[2]	2040[2]	1990–2010	2010–2040
Corridor Communities	**336,451**	**374,708**	**349,797**	**407,940**	**426,370**	**452,600**	**4%**	**29%**
Minneapolis	278,438	308,127	281,732	324,000	334,500	356,000	1%	26%
Golden Valley	28,589	30,142	33,194	37,500	38,900	41,500	16%	25%
Robbinsdale	6,813	7,109	6,858	7,300	7,400	7,600	1%	11%
Crystal	6,019	5,638	3,929	4,640	4,970	5,500	–35%	40%
Brooklyn Park	16,592	23,692	24,084	34,500	40,600	42,000	45%	74%
Contributing Communities	**42,633**	**54,704**	**58,640**	**73,300**	**80,450**	**91,330**	**38%**	**56%**
New Hope	14,149	13,565	11,080	12,400	13,600	15,300	–22%	38%
Brooklyn Center	17,006	16,698	11,001	12,900	13,900	15,400	-35%	40%
Maple Grove	7,750	18,309	29,877	39,500	43,100	49,500	286%	66%
Osseo	2,120	2,312	1,749	2,130	2,280	2,530	–18%	45%
Champlin	1,110	2,734	4,012	4,860	5,500	5,600	261%	40%
Dayton	498	1,086	921	1,540	2,070	3,000	85%	226%
Proposed BLRT Extension project area total	**379,084**	**429,412**	**408,437**	**481,270**	**506,820**	**543,930**	**8%**	**33%**
Hennepin County	**723,105**	**877,375**	**805,089**	**944,230**	**1,001,200**	**1,066,260**	**11%**	**32%**
Twin Cities Metropolitan Area	**1,272,773**	**1,606,994**	**1,543,872**	**1,820,710**	**1,955,580**	**2,102,090**	**21%**	**36%**

[1] Metropolitan Council Community Data, 2015
[2] Metropolitan Council Thrive MSP Forecasts, October 15, 2014

Table 1.4-3. Collar County Travel Demand for Trips Ending in the Proposed BLRT Extension Project Area

Zone	2010 Average Weekday Person Trips	2040 Average Weekday Person Trips	2010–2040 Increase	2010–2040 Percent Increase
Downtown Minneapolis	3,634	5,041	1,407	39%
North Minneapolis	2,423	2,430	7	0%
Robbinsdale, Golden Valley, Crystal	5,212	6,070	858	16%
Brooklyn Park	6,641	11,620	4,979	75%
Proposed BLRT Extension project area total	**22,992**	**31,441**	**8,449**	**37%**

Source: MnDOT Collar County Travel Demand Model, 2015[6]

Growth in population and employment in the proposed BLRT Extension project area and beyond is expected to result in growing travel demand. The roadway system configured within the area's natural and built environment focuses high mobility demand on a limited number of facilities including I-94, Interstate Highway 694 (I-694), Interstate Highway 494 (I-494), TH 100, and US Highway 169 (US 169). Although TH 610 and its connection (currently under construction) between US 169 and I-94 would increase capacity for some of the east-west demand in the proposed BLRT Extension project area, it is not expected to address the increasing northwest-southeast oriented mobility needs in the proposed BLRT Extension project area travelshed or relieve demand on I-94. Additionally, a managed lanes study is underway for the I-494 corridor and a third lane currently under construction on I-494 to increase capacity and reduce congestion.

1.4.2 Increasing Traffic Congestion

Growing travel demand is expected to increase traffic congestion on the region's highways and in downtown Minneapolis. In the past, the region responded to increased demand by constructing new roadways or expanding existing ones. In recent years, however, roadway expansion in the Twin Cities Metropolitan Area has not kept pace with mounting travel demand and is not anticipated to keep pace in the future (Council, 2015a).

State policy, outlined in the Minnesota Department of Transportation's (MnDOT) *Statewide Multimodal Transportation Plan* (MnDOT, 2012b) and different modal investment plans under the *Minnesota GO Vision* (MnDOT, 2012a), and regional policy, outlined in the *2040 TPP*, recognize the importance of a balanced approach to addressing travel demand that includes maintaining the existing transportation system and public transportation improvements such as the proposed BLRT Extension project.

[6] The collar county model is a modified version of the Twin Cities regional travel demand model developed by MnDOT to better estimate travel demand in portions of the Twin Cities area. The better estimations were developed by including additional refinements to the roadway network and trip making analysis of the 12 counties that surround the seven-county metro area. Note that the communities identified in the table do not constitute all of the proposed BLRT Extension project area communities; therefore the project area total is not the sum of the individual communities in the table.

Specifically, the *Statewide Multimodal Transportation Plan*[7] includes overarching key objectives of "Transportation in Context" and "Critical Connections" that highlight the importance of a multimodal system. Key strategies in support of these objectives include working with other regional and local agencies to:

- Improve accessibility and safety for everyone traveling on, along, and across roads
- Define priority networks for all modes based on connectivity and accessibility
- Improve the connections between transit services to provide greater transportation options for travel within and between cities
- Define priority networks for all modes based on connectivity and accessibility

The need to optimize mobility through strategies that manage highway traffic congestion is relevant to the proposed BLRT Extension project. The proposed BLRT Extension project area contains several major regional highways that experience congestion today. Because many regional highways are already experiencing congestion and this situation is expected to worsen, many local arterial roadways paralleling the regional highway system are likely to absorb increases in traffic by 2040 as the regional system nears capacity.

In recent years, MnDOT, the Council, and Metro Transit have cooperated to provide transit investments along the roadway system, one of the key strategies for managing congestion. In the case of I-94 in the proposed BLRT Extension project area, as well as other freeways in the Twin Cities Metropolitan Area, transit advantages in the form of bus-only shoulders and ramp meter bypass lanes have been implemented. As the I-94 corridor approaches capacity, even minor fluctuations in traffic demand could have a major impact on the performance and level of congestion of the facility overall. With no planned roadway capacity improvements along the I-94 corridor in the proposed BLRT Extension project area, transit investments will play an increasingly important role in effectively managing traffic congestion.

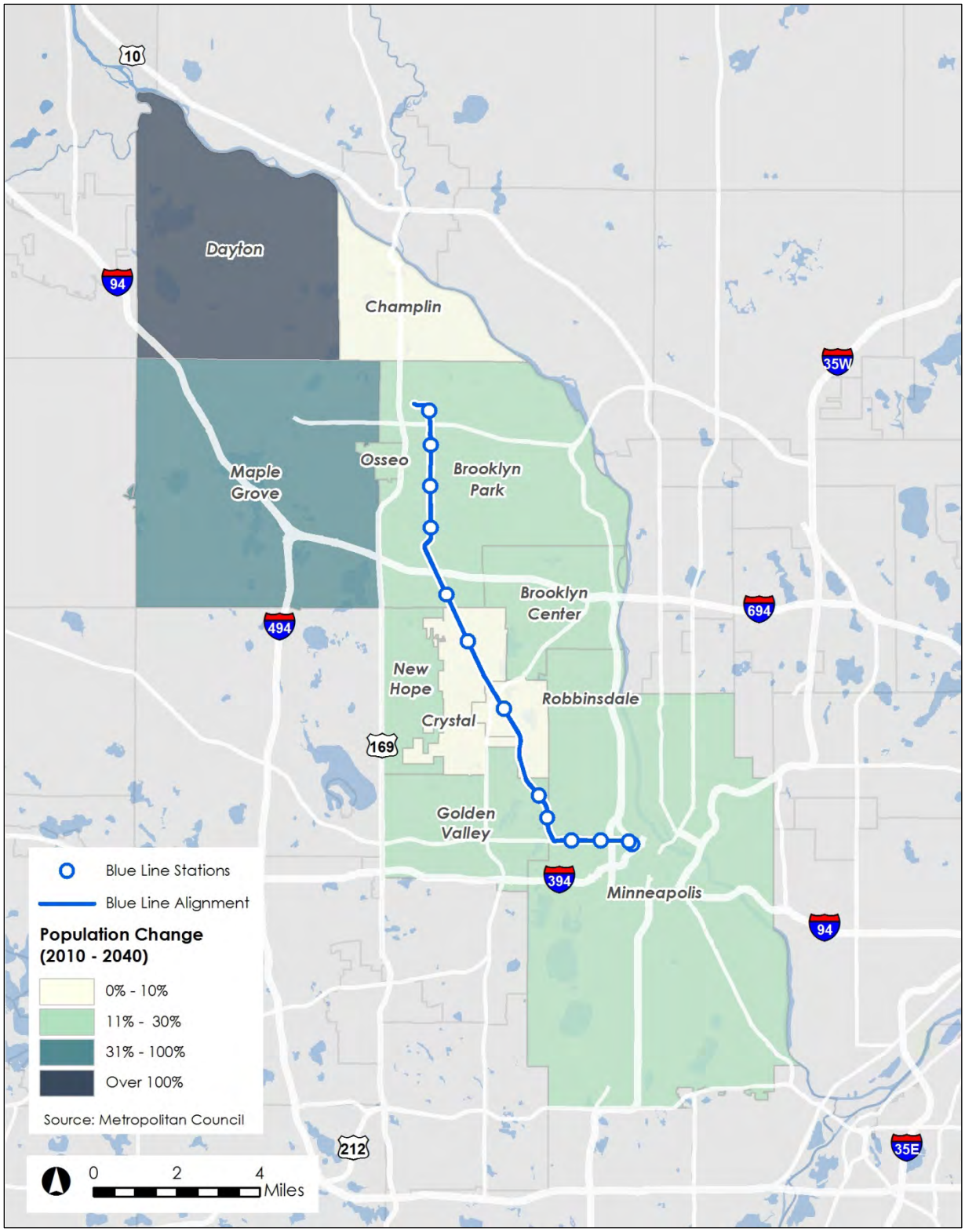
Policy direction at the local level has also concluded that continual roadway expansion is unsustainable. Specifically, the city of Minneapolis comprehensive plan, entitled *The Minneapolis Plan for Sustainable Growth* (City of Minneapolis, 2009a),[8] states that "Minneapolis will build, maintain, and enhance access to multi-modal transportation options for residents and businesses through a balanced system of transportation modes that supports the city's land use vision, reduces adverse transportation impacts, decreases the overall dependency on automobiles, and reflects the city's pivotal role as the center of the regional transportation network." The plan presents land use policy 1.3, which states that the city will "ensure that development plans incorporate appropriate transportation access and facilities, particularly for bicycle, pedestrian, and transit." In addition, the *Citywide Action Plan* (City of Minneapolis, 2009b), a component of the *Access Minneapolis Ten Year Transportation Action Plan* (City of Minneapolis, 2016),[9] "reflects an urban vision that gives high priority to meeting pedestrian, bicycle and transit needs within a multimodal transportation system."

[7] www.dot.state.mn.us/minnesotago/SMTP.html

[8] www.minneapolismn.gov/cped/planning/cped_comp_plan_update_draft_plan

[9] www.ci.minneapolis.mn.us/publicworks/transplan

Figure 1.4-3. 2010–2040 Population Change in the Proposed BLRT Extension Project Area



1.4.3 Needs of People Who Depend on Transit

The proposed BLRT Extension project area is home to a large number of people who depend on transit to meet their transportation needs. Based on US Census information, 14 percent of households in the proposed BLRT Extension project area do not own a vehicle. This is nearly double the metropolitan area average of 8 percent, as shown in **Table 1.4-4**. **Figure 1.4-4** illustrates the distribution of households with no vehicles and highlights the presence of areas in north Minneapolis and portions of suburban communities in the corridor where these percentages are the highest. In some areas of north Minneapolis, the number of zero-car households exceeds 35 percent; in areas of New Hope and Brooklyn Park, the number exceeds 20 percent. The high proportion of people without access to vehicles underscores the need for transit access in these parts of the proposed BLRT Extension project area.

In addition, seniors (people over the age of 65 years) represent an important market segment for public transportation. In the proposed BLRT Extension project area communities of Golden Valley, Robbinsdale, Crystal, and New Hope, seniors make up a larger share of the population compared to the makeup of the overall regional population, as shown in **Table 1.4-4** and **Figure 1.4-5**.

Table 1.4-4. Transit-Dependent Population as a Share of Community Population

	Households[1]	Zero Vehicles Available[2]	Percent Zero-Vehicle	Total Population[3]	Population Over 65[3]	Percent over 65
Corridor Communities	**215,597**	**33,743**	**16%**	**514,834**	**47,629**	**9%**
Minneapolis	165,438	30,064	18%	382,578	32,106	8%
Golden Valley	8,685	416	5%	20,371	4,367	21%
Robbinsdale	5,999	756	13%	13,953	1,814	13%
Crystal	9,133	585	6%	22,151	2,989	13%
Brooklyn Park	26,342	1,922	7%	75,781	6,353	8%
Contributing Communities	**55,513**	**2,938**	**5%**	**142,146**	**15,698**	**11%**
New Hope	8,622	861	10%	20,339	3,816	19%
Brooklyn Center	11,354	1060	9%	30,104	3,945	13%
Maple Grove	23,768	550	2%	61,567	5,103	8%
Osseo	1,144	160	14%	2,430	663	27%
Champlin	8,946	284	3%	23,089	1,661	7%
Dayton	1,679	23	1%	4,617	510	11%
Proposed BLRT Extension project area total	**271,110**	**36,681**	**14%**	**656,980**	**63,327**	**10%**
Hennepin County	**481,263**	**48,771**	**10%**	**1,152,425**	**136,343**	**12%**
Twin Cities Metropolitan Area	**1,117,749**	**90,372**	**8%**	**2,849,567**	**322,838**	**11%**

[1] Metropolitan Council Community Data, 2015
[2] 2009–2013 American Community Survey Five-Year Estimates
[3] 2010 US Census

Figure 1.4-4. Percent of Households with Zero Vehicles

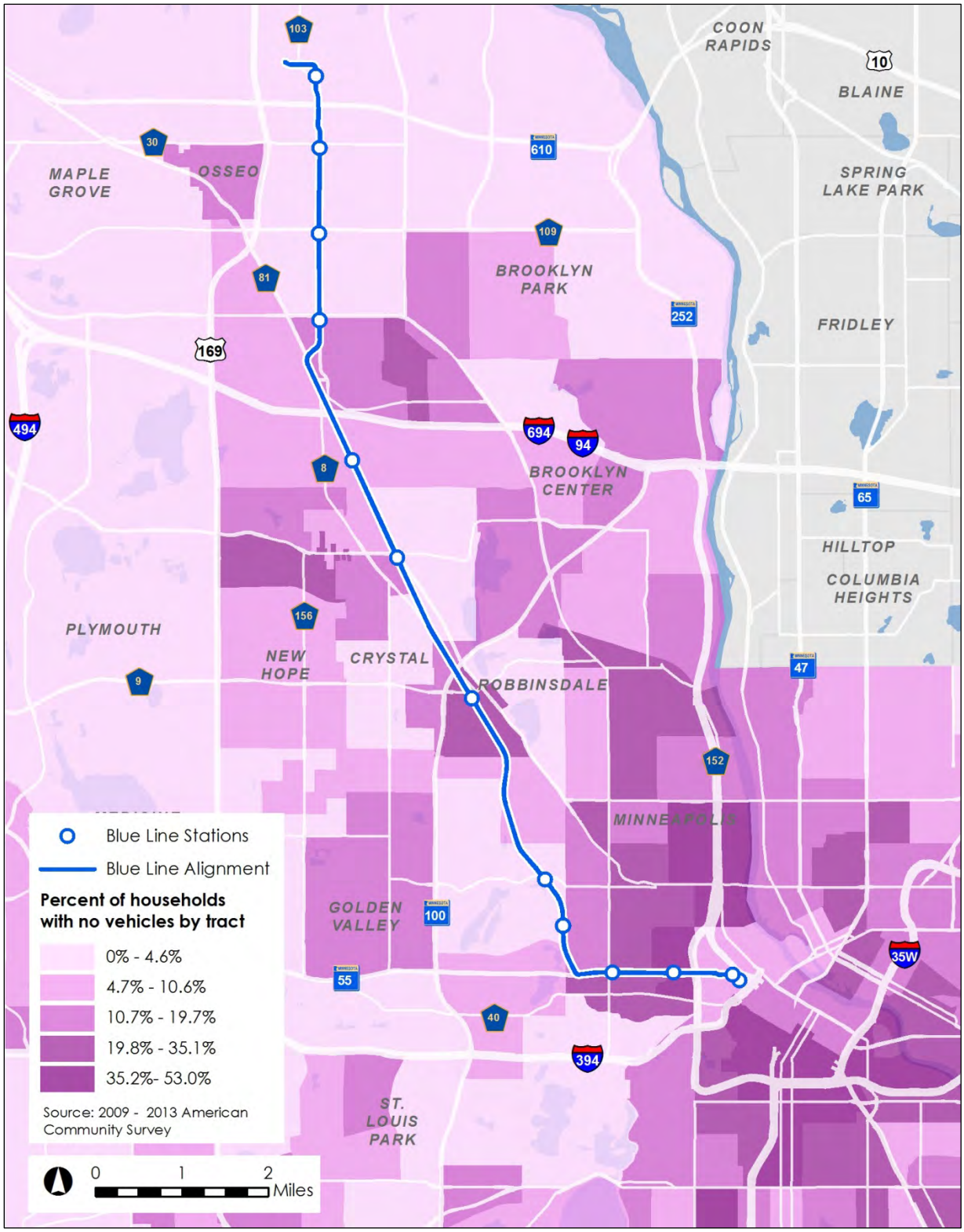
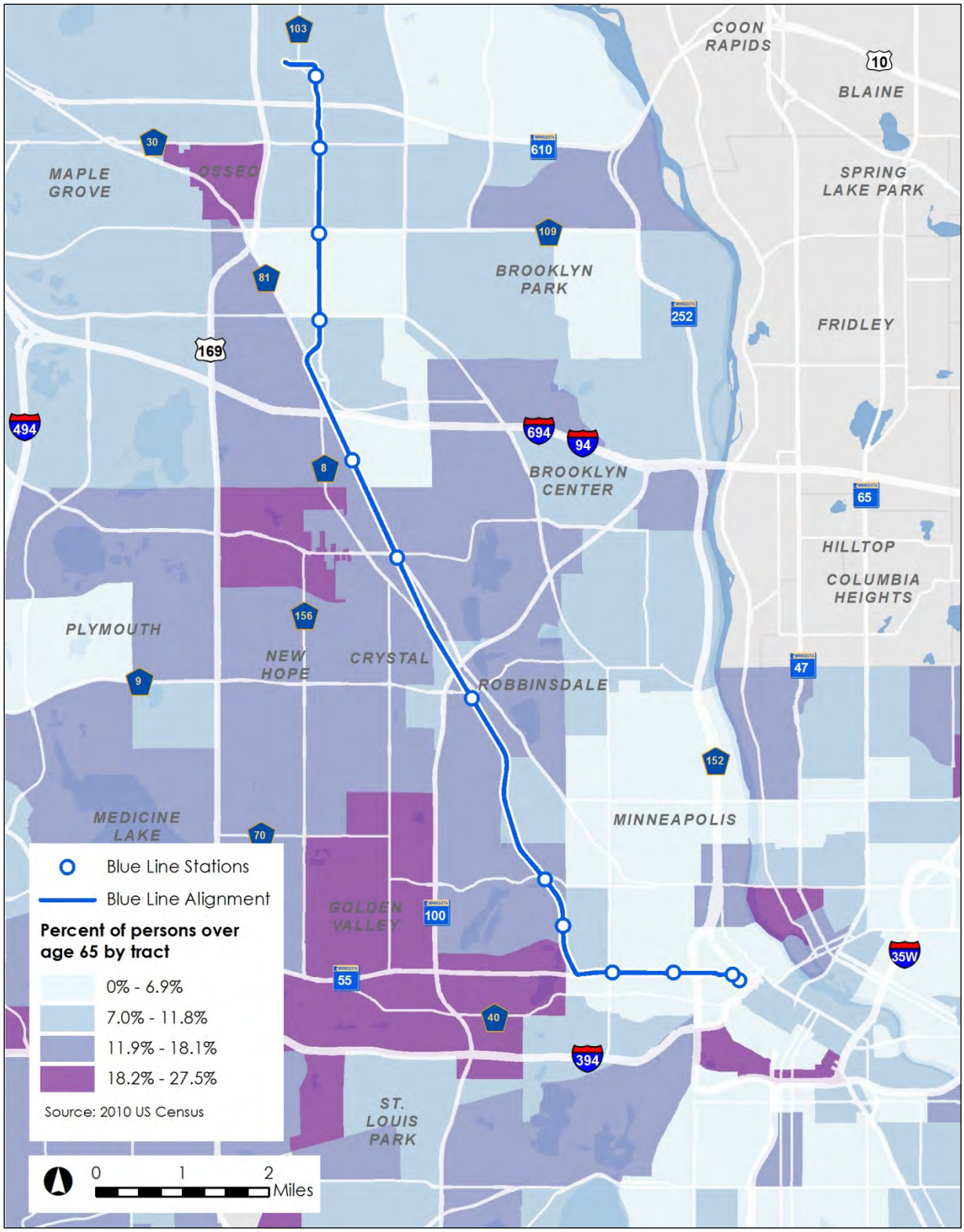


Figure 1.4-5. Percent of Population over Age 65



The information presented in **Table 1.4-4** and **Figures 1.4-4 and 1.4-5** is supported by the results of the FHEA. According to the FHEA analysis, over the past two decades, poverty in suburban and rural areas in the Twin Cities region has increased by 85 percent. Areas of concentrated poverty exist today in cities where they did not a decade ago; the cities of Brooklyn Center and Brooklyn Park are two of the three suburbs where ACPs have emerged.

Without access to opportunities for education and employment, the economic mobility of residents who live in ACPs is diminished, which makes these areas more likely to stay poor across generations. The FHEA, in addressing the need for citizens in ACPs to have access to education and employment, highlights the importance of transit. Specifically, the FHEA states that transit is an essential public service that connects people to opportunities such as jobs, education, social services, and retail (Council, 2014c). The proposed BLRT Extension project would help connect residents in the Brooklyn Park, Brooklyn Center, and North Minneapolis ACPs to these opportunities.

1.4.4 Limited Transit Service to Suburban Destinations (Reverse Commute Opportunities) and Time-Efficient Transit Options

Currently, the dominant commute pattern in the proposed BLRT Extension project area is inbound from suburban areas during the morning peak period to serve traditional employment destinations in downtown Minneapolis.

For suburban commuters originating beyond the I-694/I-494 beltway, several Metro Transit services deliver suburban commuters to downtown Minneapolis jobs via large suburban park-and-rides on the Brooklyn Park end of the corridor. Express buses in the proposed BLRT Extension project area benefit from a robust system of transit advantages, consisting of ramp meter bypass lanes and bus-only shoulders, to ensure travel time reliability and shorter trip times during periods of congestion on the highway system.

Even within the peak commute period, however, travel-time competitive transit options are limited for some proposed BLRT Extension project area travel markets, specifically inside the I-694 ring (including the communities of Crystal, Robbinsdale, Golden Valley, and north Minneapolis neighborhoods). This limits transit's ability to compete with automobile travel times, leaving a significant gap in travel options for residents of this area.

Although the dominant commute pattern in the proposed BLRT Extension project area today is oriented toward downtown Minneapolis, a notable potential for reverse commute exists from Minneapolis and the corridor communities of Robbinsdale, Golden Valley, and Crystal to developing areas such as Brooklyn Park. As illustrated in **Figure 1.4-2**, job concentrations exist throughout the proposed BLRT Extension project area. This reverse commute pattern of job distribution is expected to continue to grow between now and 2040, as the northern suburban employment nodes gain jobs.

Although proposed BLRT Extension project area communities are served by a network of local and express bus routes, fast and convenient transit options to access schools and jobs outside of downtown Minneapolis are limited. Direct bus service from Minneapolis to suburban communities

in the proposed BLRT Extension project area is provided by two limited-stop and express routes. Residents of Minneapolis and the proposed southern corridor communities do have other transit options for accessing activity centers in Brooklyn Park and surrounding areas via three transit centers located within the proposed BLRT Extension project area (Robbinsdale Transit Center, Brooklyn Center Transit Center, and Starlite Transit Center). While providing good access, these suburban local routes also stop frequently and often require transfers, resulting in long overall travel times.

Although regional plans call for improved local and express bus services in the future, the overall configuration of transit service in the proposed BLRT Extension project area is not expected to change significantly by 2040. Future service improvements will focus on the existing network of park-and-rides served by peak period, inbound express routes, and a suburban local service operating out of regional transit centers. Forecast demand for mid-length and reverse commute trips on transit within the proposed BLRT Extension project area will not be met by 2040.

1.4.5 Regional Growth

The Twin Cities Metropolitan Area is working to ensure the orderly, economical development of its seven-county area and the efficient use of four regional systems: transportation, aviation, water resources (including wastewater collection and treatment), and regional parks and open space.

The *Thrive MSP 2040 Plan* establishes a regional policy of five desired outcomes that define the regional vision.

- Stewardship advances the Council's longstanding mission of orderly and economical development by responsibly managing the region's natural and financial resources, and making strategic investments in our region's future.
- Prosperity is fostered by investments in infrastructure and amenities that create regional economic competitiveness, thereby attracting and retaining successful businesses, a talented workforce, and, consequently, wealth.
- Equity connects all residents to opportunity and creates viable housing, transportation, and recreation options for people of all races, ethnicities, incomes, and abilities so that all communities share the opportunities and challenges of growth and change.
- Livability focuses on the quality of our residents' lives and experiences in our region, and how places and infrastructure create and enhance the quality of life that makes our region a great place to live.
- Sustainability means protecting our regional vitality for generations to come by preserving our capacity to maintain and support our region's well-being and productivity over the long term.

The proposed BLRT Extension project, as part of a regional transitway system, would be a step toward achieving these desired outcomes.

2 Alternatives

This chapter describes the process of developing alternatives that could meet the proposed METRO Blue Line Light Rail Transit (BLRT) Extension project's purpose and need, including a summary of the alternatives considered in the Alternatives Analysis (AA) Study (*Bottineau Transitway Alternatives Analysis Study Final Report* [Hennepin County Regional Railroad Authority (HCRRA), 2010]), the *Bottineau Transitway* Draft Environmental Impact Statement (Draft EIS) (Federal Transit Administration [FTA], HCRRA, and Metropolitan Council, 2014) (www.metrocouncil.org/Transportation/Projects/Current-Projects/METRO-Blue-Line-Extension/Environmental/DEIS.aspx), and the locally preferred alternative (LPA) for the proposed Bottineau Transitway project, now called the BLRT Extension project.

This chapter summarizes the primary project decision-making for the proposed BLRT Extension project to date, including the selection and approval of the LPA. This chapter also presents the two alternatives that are the subject of this Final Environmental Impact Statement (Final EIS): the No-Build Alternative and the Preferred Alternative. With the exception of **Chapter 2** in this Final EIS, the *Preferred Alternative* is referred to as the *proposed BLRT Extension project*.

Changes to This Chapter since the AA Study and Draft EIS Were Published

This chapter updates the discussion in the Draft EIS on the alternatives considered and includes the following sections:

- **Section 2.1** describes the alternatives-development process documented in the AA. This section has been summarized from the Draft EIS.
- **Section 2.2** describes the Draft EIS Scoping process. This section has been summarized from the Draft EIS.
- **Section 2.3** describes those alternatives that were advanced for further study in the Draft EIS. This section has been updated to reflect the decisions made during and subsequent to the completion of the Draft EIS.
- **Section 2.4** describes the LPA selection process. This section has been updated to reflect the decisions made during and subsequent to the completion of the Draft EIS.
- **Section 2.5** describes the No-Build Alternative and the Preferred Alternative, including the proposed alignment for the Preferred Alternative, stations, track type, operations and maintenance facility (OMF), ancillary facilities, and service and operating characteristics. The Preferred Alternative represents the design refinements to the LPA that have been made in response to comments received on the Draft EIS and to resolve technical issues raised since the publication of the Draft EIS.

2.1 Alternatives-Development Process

The Hennepin County Regional Railroad Authority (HCRRA), in consultation with the Metropolitan Council (Council), the Federal Transit Administration (FTA), and local jurisdictions—together referred to as the *study team*—completed an AA Study for the Bottineau Transitway in 2010. The study evaluated a wide range of transit modes and alignments (*Bottineau Transitway Alternatives Analysis Study Final Report*, HCRRA, 2010; www.hennepin.us/~/media/hennepinus/residents/transportation/bottineau/bottineau-alternative-analysis-summary-report.pdf).

The AA Study developed and evaluated a No-Build Alternative, an Enhanced Bus/Transportation System Management (TSM) Alternative, and a broad range of transit alternatives (see **Figure 2.1-1**). To narrow this initial universe of alternatives, the study team evaluated alternatives using screening criteria developed in consultation with local Advise, Review, and Communicate Committee (ARCC) members and other stakeholders. Alternatives that met all the screening criteria were advanced in the AA Study. The study did not advance alternatives that did not meet all the screening criteria.

The AA Study considered the mode, alignment, and facility types listed in **Table 2.1-1**.

Table 2.1-1. Elements Considered in the Alternatives Analysis Study

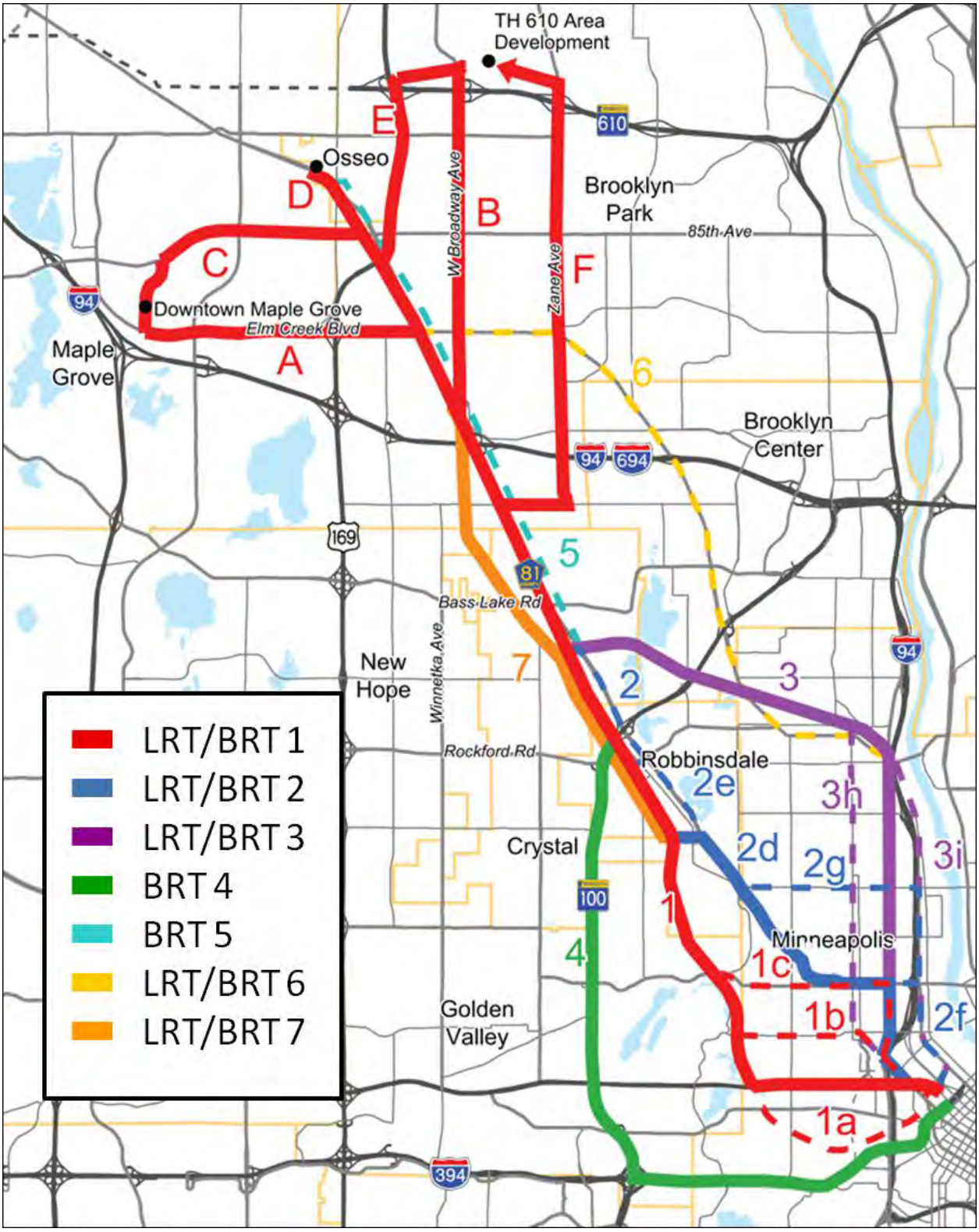
Element	Options Considered	Results of Analysis
Modes	Commuter rail Light rail transit (LRT) Bus rapid transit (BRT)	LRT and BRT were carried forward; commuter rail was not advanced because it did not serve communities in North Minneapolis or Robbinsdale
Alignments	Multiple options evaluated (**Figure 2.1-1**)	Five alignments met all screening criteria and were carried forward
Facility types	Focused on dedicated transitway options; considered certain mixed-traffic facilities	Dedicated transitway facility option was selected

AA Study Decision: Continue Studying Four LRT Alternatives and One BRT Alternative

At the conclusion of the AA Study, five alternatives were advanced. The alternatives included the three most promising LRT alternatives identified in the AA Study, a fourth LRT alternative considered in the study that was less promising but still of interest, and a refined BRT alternative.

The study team developed the refined BRT alternative based on additional understanding that the team gained during the AA Study. The study team explored modifications to routing, alignment, and operations to maximize the potential benefits of BRT. The resulting alternative had substantially improved performance over the BRT alternatives considered in the AA Study, and the study team decided to advance this refined BRT alternative for further study.

Figure 2.1-1. Range of Alternatives from the AA Study



2.2 Draft EIS Scoping Process

2.2.1 Definition of Alignments

For ease of comparison, the alternatives considered following the AA Study were named in terms of their component alignments.

As illustrated in **Figure 2.2-1**, there were two alignment options at the north end of the proposed BLRT Extension project corridor:

- **Alignment A:** Began in Maple Grove at Hemlock Lane/Arbor Lakes Parkway and followed the future Arbor Lakes Parkway and Elm Creek Boulevard to the BNSF Railway (BNSF) rail corridor located on the west side of Bottineau Boulevard (County Road 81).
- **Alignment B:** Began in Brooklyn Park south of Oak Grove Parkway near the Target North Campus (located just north of Trunk Highway [TH] 610), followed West Broadway Avenue (County State-Aid Highway 103), and crossed Bottineau Boulevard at 73rd Avenue to enter the BNSF rail corridor.

In the middle portion of the proposed BLRT Extension project corridor, there was one alignment option:

- **Alignment C:** Just south of 71st Avenue, both the A and B alignments would transition to the C alignment in the BNSF rail corridor on the west side of Bottineau Boulevard through southern Brooklyn Park, Crystal, and Robbinsdale. Alignment C is common to all the alternatives.

South of Robbinsdale and into downtown Minneapolis, there were two alignment options:

- **Alignment D1:** Continued along the BNSF rail corridor to Olson Memorial Highway (TH 55), and then followed Olson Memorial Highway to downtown.
- **Alignment D2:** Exited the rail corridor near 34th Avenue, joined West Broadway Avenue, and traveled on Penn Avenue to Olson Memorial Highway and into downtown.

2.2.2 EIS Scoping

The Notice of Intent to prepare an EIS for the proposed Bottineau Transitway was published on January 10, 2012, in the Federal Register (Volume 77, Number 6). The environmental process began with Scoping to determine the content of the Draft EIS. Using the findings from the AA Study, the Bottineau Transitway project team presented the following alternatives during the EIS Scoping process, a process that served to define the alternatives and to identify the issues that would be evaluated in the Draft EIS:

- No-Build Alternative
- Enhanced Bus/TSM Alternative
- LRT A-C-D1 (Maple Grove to Minneapolis via BNSF/Olson Memorial Highway)
- LRT B-C-D1 (Brooklyn Park to Minneapolis via BNSF/Olson Memorial Highway)
- LRT A-C-D2 (Maple Grove to Minneapolis via West Broadway Avenue/Penn Avenue/Olson Memorial Highway)
- LRT B-C-D2 (Brooklyn Park to Minneapolis via West Broadway Avenue/Penn Avenue/Olson Memorial Highway)
- BRT B-C-D1 (Brooklyn Park to Minneapolis via BNSF/Olson Memorial Highway)

During the Scoping process, the project team coordinated with the cities in the proposed BLRT Extension project corridor and incorporated the findings of the Theodore Wirth Regional Park (TWRP) master planning effort. These actions produced further refinements to the alignments, including the following:

- Modifications to Alignment B to better integrate with master planning activities for the Target North Campus
- The addition of the Plymouth Avenue Station on Alignment D1 to provide better access to TWRP facilities and surrounding residences
- Modifications to Alignment D2 near the transition from the BNSF rail corridor to reduce impacts to Bottineau Boulevard and the Terrace Mall in Robbinsdale

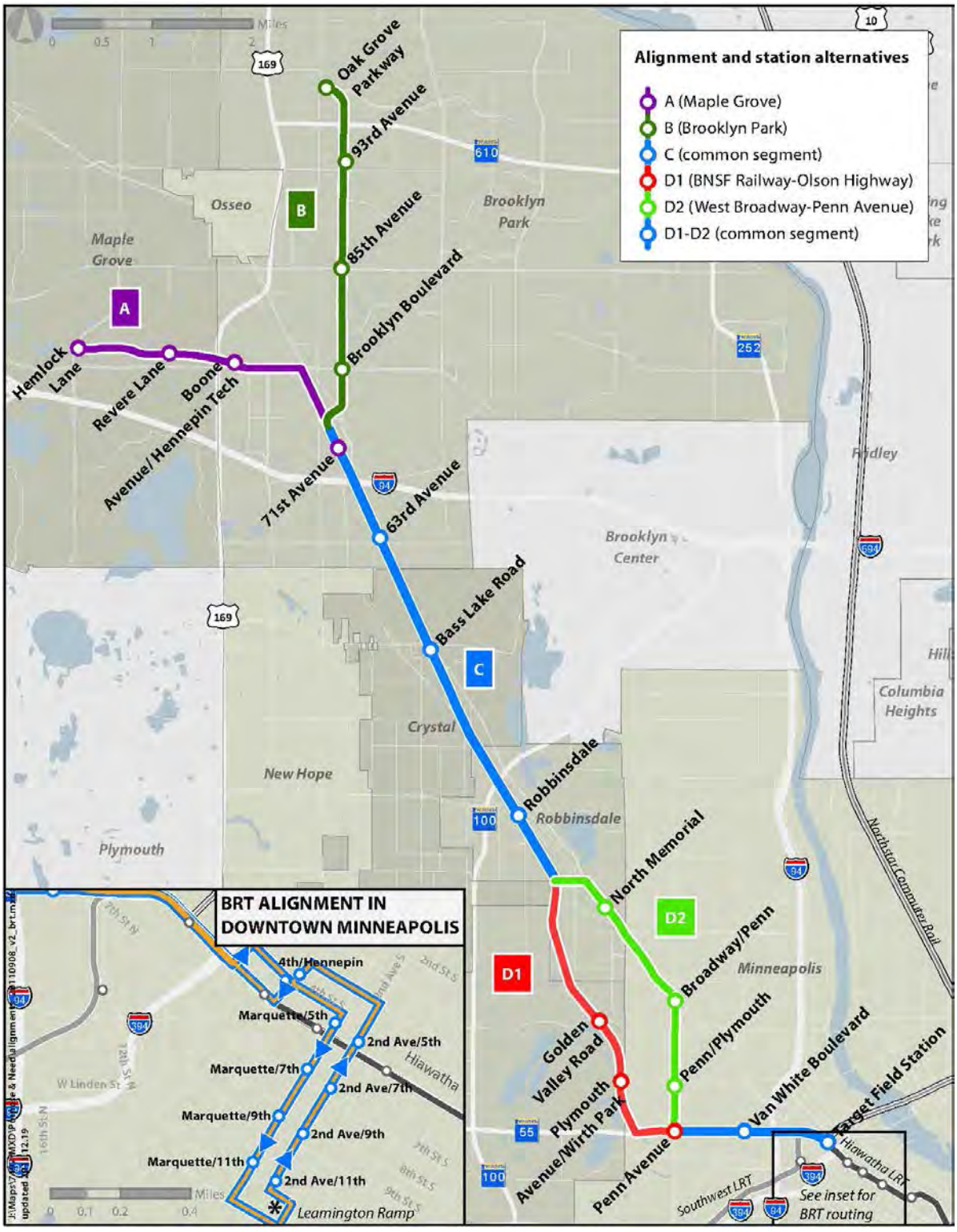
Figure 2.2-1 illustrates the alternatives that were proposed for study during Scoping.

2.2.2.1 Scoping Results: Stop Studying the BRT Alternative and Continue Studying Four LRT Alternatives in the Draft EIS

Based on the results of the technical analysis and Scoping input, and input from the ARCC and the Community Advisory Committee (CAC), the Policy Advisory Committee (PAC) resolved in April 2012 that the BRT alternative should no longer be studied (HCRRA, 2012). The PAC also recommended the continued study of the four LRT alternatives in the Draft EIS in addition to the No-Build and Enhanced Bus/TSM alternatives. Following the PAC action, HCRRA passed a resolution adopting the Scoping Decision recommended by the PAC. This resolution and other supporting documentation to the Scoping process are included in the *Bottineau Transitway Scoping Decision Document*, June 2012 (www.metrocouncil.org/METC/files/db/db2475ff-4d17-40fe-b06b-f0e3c81e2fa1.pdf).

Section 2.3 of the Draft EIS discusses the reasons for not advancing the study of BRT in the Draft EIS.

Figure 2.2-1. Build Alternatives Proposed for Study during Scoping (*as Defined in the Scoping Booklet*)



2.3 Alternatives Advanced for Further Study in the Draft EIS

A No-Build Alternative, an Enhanced Bus/TSM Alternative, and four LRT build alternatives were advanced for further study in the Draft EIS. These alternatives are described in more detail below.

2.3.1 Draft EIS No-Build Alternative

The Draft EIS No-Build Alternative reflected existing and committed improvements to the regional transit network for the horizon year of 2030. The Draft EIS No-Build Alternative included transportation improvements identified in the Council's *2030 Transportation Policy Plan* (*2030 TPP*) (www.metrocouncil.org/Transportation/Planning/Transportation-Policy-Plan/2030-Transportation-Policy-Plan-(1).aspx).

2.3.2 Draft EIS Enhanced Bus/TSM Alternative

The Draft EIS Enhanced Bus/TSM Alternative was defined as enhancements and upgrades to the existing transportation system in the proposed BLRT Extension project corridor. In developing this alternative, the project team attempted to meet the project's purpose and need as much as possible without a major transit capital investment. The purpose of the Draft EIS Enhanced Bus/TSM Alternative was to provide a comparable transit service to the build alternatives without the significant capital investment of building a transitway.

In addition to the improvements included in the Draft EIS No-Build Alternative, the Draft EIS Enhanced Bus/TSM Alternative included the following elements:

- New transit center and park-and-ride facility in Brooklyn Park on West Broadway Avenue near TH 610
- Additional limited stop bus routes 731 and 732
- Improvements in frequency of service to existing transit routes
- Restructuring of existing bus routes in the proposed BLRT Extension project corridor to connect to the Route 731/732 services and enhance connections within the corridor

2.3.3 Draft EIS Build Alternatives

Four LRT build alternatives were considered in the Draft EIS, as illustrated in **Figure 2.3-1** and summarized below.

- Alternative A-C-D1 (Maple Grove to Minneapolis via BNSF/Olson Memorial Highway)
- Alternative A-C-D2 (Maple Grove to Minneapolis via West Broadway Avenue/Penn Avenue/Olson Memorial Highway)
- Alternative B-C-D1 (Brooklyn Park to Minneapolis via BNSF/Olson Memorial Highway)
- Alternative B-C-D2 (Brooklyn Park to Minneapolis via West Broadway Avenue/Penn Avenue/Olson Memorial Highway)

2.3.3.1 Descriptions of Draft EIS Build Alternatives

The Draft EIS LRT build alternatives are summarized in **Table 2.3-1**. The features below are based on assumptions associated with the conceptual level of engineering conducted on the alternatives as of the date when the Draft EIS was published (March 2014). With each of the proposed Draft EIS build alternatives, the LRT alignment would connect to the regional LRT system at the Target Field Station in downtown Minneapolis.

Table 2.3-1. Elements of the Draft EIS Build Alternatives

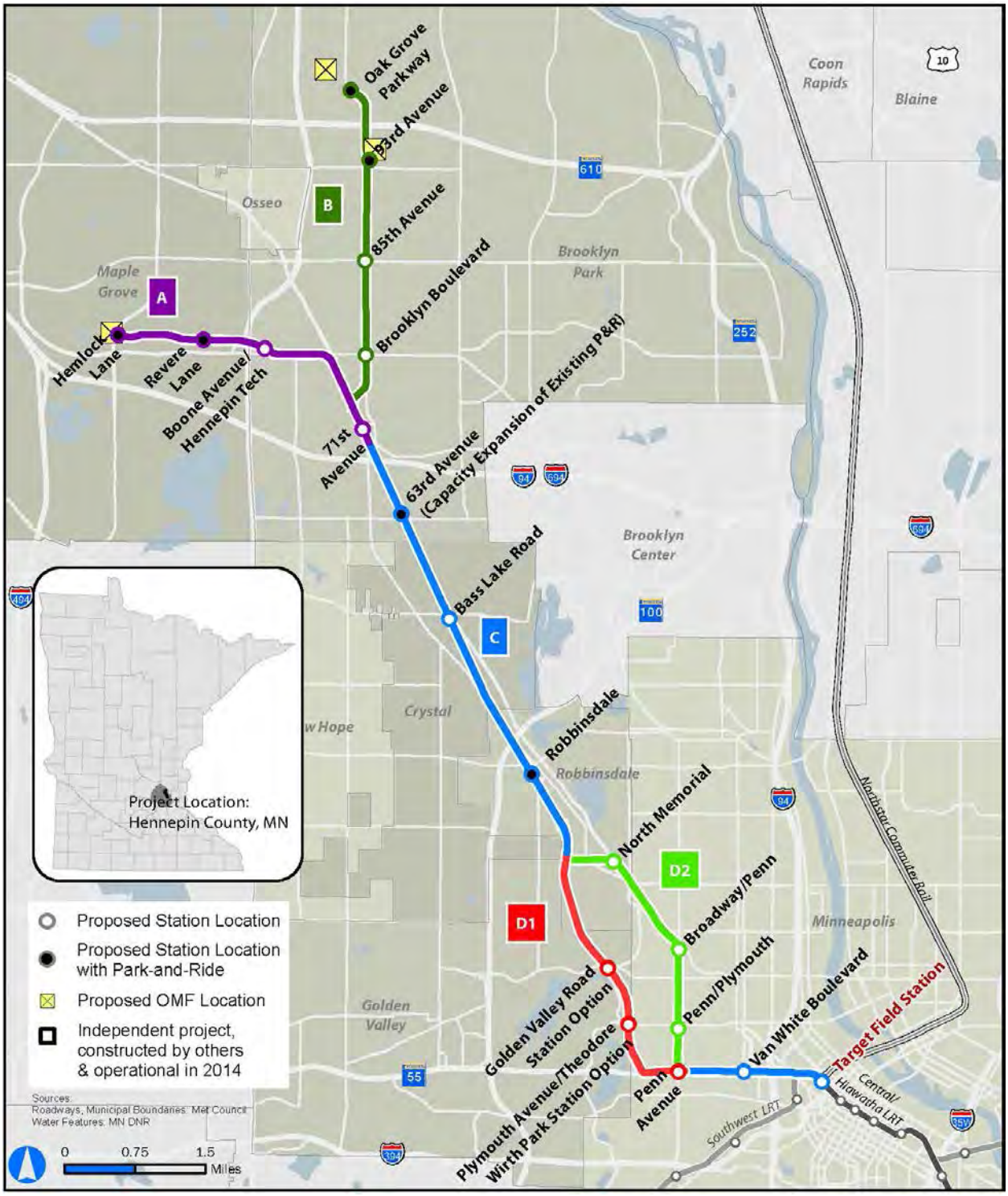
Element	Draft EIS Alternative			
	A-C-D1	A-C-D2	B-C-D1	B-C-D2
Northern terminus	Maple Grove	Maple Grove	Brooklyn Park	Brooklyn Park
Length[1]	12.6 miles	12.7 miles	13.3 miles	13.4 miles
Bottineau stations	**10 Stations** ■ Penn Avenue ■ Van White Blvd. ■ Golden Valley Road or Plymouth Avenue/TWRP[3] ■ Robbinsdale[2] ■ Bass Lake Road ■ 63rd Avenue[2] ■ 71st Avenue ■ Boone Avenue/ Henn Tech ■ Revere Lane[2] ■ Hemlock Lane[2]	**11 Stations** ■ Penn/Plymouth ■ Van White Blvd. ■ Broadway/Penn ■ North Memorial ■ Robbinsdale[2] ■ Bass Lake Road ■ 63rd Avenue[2] ■ 71st Avenue ■ Boone Avenue/ Henn Tech ■ Revere Lane[2] ■ Hemlock Lane[2]	**10 Stations** ■ Penn Avenue ■ Van White Blvd. ■ Golden Valley Road or Plymouth Avenue/TWRP[3] ■ Robbinsdale[2] ■ Bass Lake Road ■ 63rd Avenue[2] ■ Brooklyn Blvd. ■ 85th Avenue ■ 93rd Avenue[2] ■ Oak Grove Parkway	**11 Stations** ■ Penn/Plymouth ■ Van White Blvd. ■ Broadway/Penn ■ North Memorial ■ Robbinsdale[2] ■ Bass Lake Road ■ 63rd Avenue[2] ■ Brooklyn Blvd. ■ 85th Avenue ■ 93rd Avenue[2] ■ Oak Grove Parkway
Ridership (total)	27,600	27,200	27,000	26,000

[1] The length represents the full end-to-end length of the proposed Draft EIS build alternatives. Based on direction provided during the AA Study and affirmed during the Scoping process, the alternatives evaluation in the Draft EIS reflected full corridor analysis.

[2] Proposed station location where park-and-ride lot would be provided.

[3] The Draft EIS evaluated a Golden Valley Road station *and* a Plymouth Avenue/TWRP station on Alignment D1.

Figure 2.3-1. Draft EIS Build Alternatives

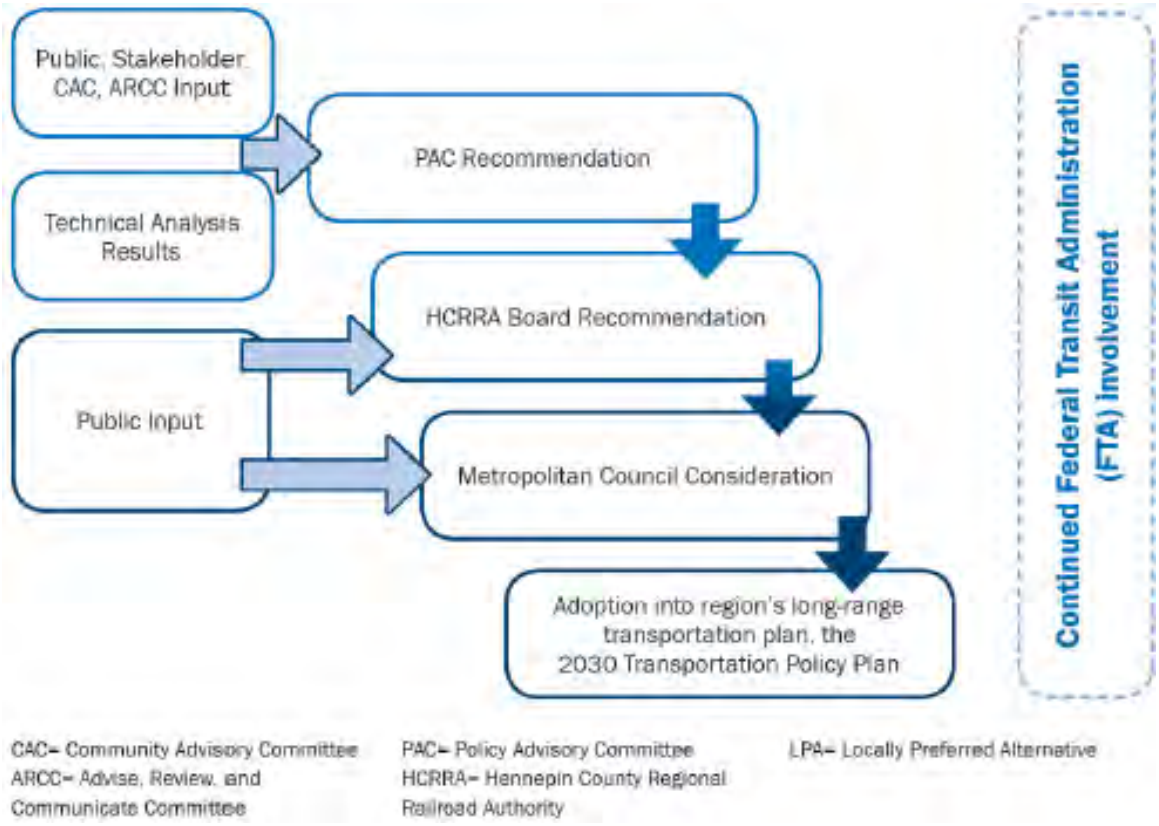


2.4 Process for Selecting the Locally Preferred Alternative (LPA)

The LPA is the transitway alternative that the cities in the proposed BLRT Extension project corridor, Hennepin County, and the Council recommended for detailed study through engineering and environmental review. The LPA specifies both the type of transit that would be used (mode) and the location (alignment). Other elements of the proposed BLRT Extension project, including termini and final station locations, are established formally during subsequent engineering based on additional information, including forecasts of travel demand in the project's opening year. Further documentation of the LPA selection process can be found in Hennepin County's *Alternatives Analysis Summary Report*, May 2013 (www.hennepin.us/~/media/hennepinus/residents/transportation/bottineau/bottineau-alternative-analysis-summary-report.pdf?la=en).

The multi-step process to formally recommend and select an LPA for the Bottineau Transitway began following the technical analysis and Scoping decisions described in **Sections 2.1** and **2.2**. **Figure 2.4-1** illustrates the process for recommending and selecting the LPA.

Figure 2.4-1. LPA Recommendation and Selection Process



Opportunities for public input on the LPA selection were included in these major steps:

- *Bottineau Transitway Alternatives Analysis Study Final Report*, March 2010
- Locally Preferred Alternative Selection, April 2011 to Spring 2013

During the LPA selection process, the PAC recommended Alignment D1 over Alignment D2 because Alignment D1 would result in significantly less property and neighborhood impacts, improved travel time, greater cost-effectiveness, and less disruption of roadway traffic operations. Discussion focused on the adverse impacts of Alignment D2 and that Alignment D1 better meets the project goals. Specifically, the PAC recognized past transportation projects in the region that have had adverse community impacts such as destruction of the Rondo neighborhood from construction of Interstate Highway 94 (I-94) and impacts on northside neighborhoods from construction of Olson Memorial Highway, and the desire not to repeat the past. In terms of the portion of the proposed alignment known as "A" and "B," the PAC recommended Alignment B over Alignment A because it would provide better service to people who depend on transit and to key civic and educational destinations, and access to greater numbers of new jobs and development.

Other steps included a PAC public hearing and recommendation; passage of resolutions of support by the cities of Minneapolis, Robbinsdale, Crystal, and Brooklyn Park; and an HCRRA-sponsored LPA public hearing. Following these steps, at a meeting on June 26, 2012, HCRRA passed a resolution recommending Alternative B-C-D1 as the LPA for the Bottineau Transitway. The city of Golden Valley followed with its resolution in December 2012.

On May 8, 2013, the Council formally adopted amendments to the *2030 TPP*—the region's long-range transportation plan at the time[1]—to include the Bottineau Transitway LPA as Alternative B-C-D1 (see **Figure 2.4-2**). This action, which concluded the LPA process, followed a public comment period and input from the Council's Transportation Advisory Board.

The LPA process was not the only time when cities have had input into the approval of the project. The cities have been engaged in resolving design issues throughout the project-development process (see **Section 2.5.2.1**), and the cities were required to review municipal consent[2] engineering plans and provide municipal approval for portions of the project within their jurisdiction.

In a letter dated September 27, 2013, FTA and the Federal Highway Administration (FHWA) concurred with the Council's amendment to the *2030 TPP* that selected LRT following the B-C-D1 alignment as the LPA for the Bottineau Transitway Project (see Appendix D of the Draft EIS). The Minnesota Pollution Control Agency (MPCA) approved the update to the *2030 TPP*, which included the LPA in their August 8, 2012 letter to the Council. The letter verified the conformance to the relevant sections of the Federal Transportation Conformity Rule and to the applicable sections of the Minnesota State Implementation Plan for Air Quality.

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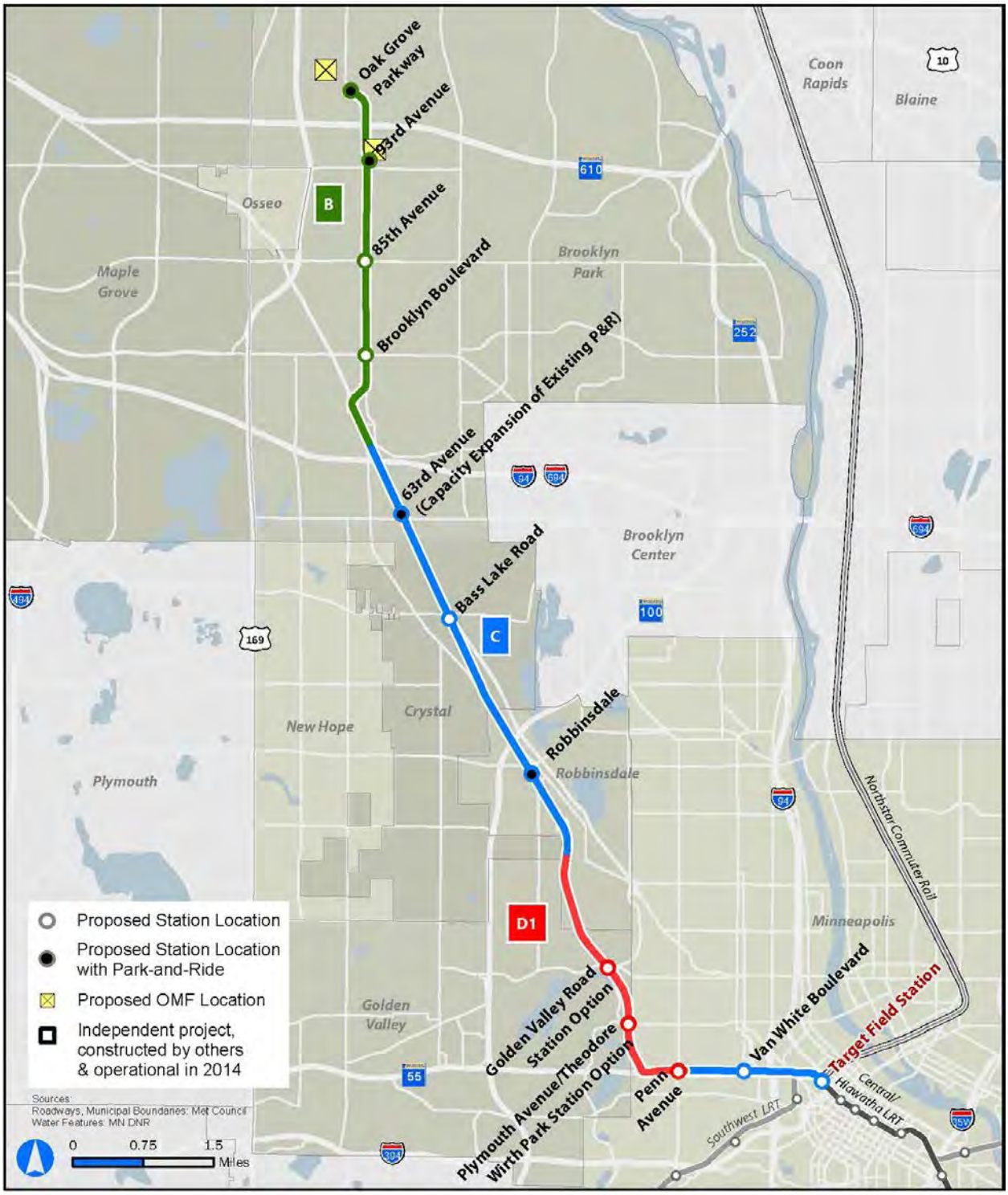
[1] The current regional plan is the *2040 Transportation Policy Plan*, and the Bottineau Transitway LPA is included in that document.

[2] Minnesota municipal consent process is codified in Minnesota Statues Chapter 473.3994

Figure 2.4-2. Draft EIS Alternative B-C-D1 (LPA)



Although HCRRA was the local public agency responsible for completing the Draft EIS, the Council is the project sponsor and federal grantee responsible for completing this Final EIS and completing the preliminary engineering, final design and construction if the project proceeds. The Council also reconstituted the various project advisory committees once the transfer of local sponsorship occurred.

After the selection of the LPA, the Council prepared and submitted the necessary documentation to FTA for entry into the Project Development phase of the New Starts process. FTA approved the proposed BLRT Extension project's entry into Project Development on August 22, 2014. The Project Development phase is where engineering is advanced to a point where key design decisions are made to support the environmental review and the environmental review process is completed.

2.5 Alternatives Evaluated in the Final EIS

A No-Build Alternative and the Preferred Alternative (the proposed BLRT Extension project) were advanced for further study in this Final EIS. These alternatives are described in more detail in this section. The term *Preferred Alternative* as used in this Final EIS refers to the Council's current proposed action, which is the LPA as refined through Project Development and with input from stakeholders through the Council's issue resolution process.

2.5.1 Final EIS No-Build Alternative

The Final EIS No-Build Alternative reflects existing and committed improvements to the regional transit network for the horizon year of 2040. The Final EIS No-Build Alternative does not include the proposed BLRT Extension project. Based on the Council's *Thrive MSP 2040 Transportation Policy Plan* (*2040 TPP*), major transportation improvements assumed under the No-Build Alternative include:

- Interstate Highway 494 (I-494) expansion to six lanes from TH 55 to I-94/I-694
- TH 610 extension to I-94 in Maple Grove
- Expansion of West Broadway Avenue to four lanes between 85th Avenue North and 93rd Avenue North
- Bottineau Boulevard reconstruction/expansion from north of 63rd Avenue North to TH 169 in Brooklyn Park
- I-94 Auxiliary Lane Construction in St. Michael to Rogers

The adopted regional 2040 TPP includes several improvements in its fully funded transit scenario. Near the proposed BLRT extension, this includes the Penn Avenue BRT (C Line) and Chicago-Fremont Avenue Arterial BRT line. The plan assumes modest changes to transit service in the corridor, as reflected in the No-Build Alternative, particularly to reflect the arterial BRT lines (C Line and Emerson-Fremont) or feeder service to the METRO Green Line Extension.

2.5.1.1 West Broadway Avenue Reconstruction Project

The reconstruction of West Broadway Avenue, which is one of the major transportation improvements included in the Final EIS No-Build Alternative (**Section 2.5.1**), is occurring in the same geographic location as the proposed BLRT Extension project. Funds for the reconstruction of West Broadway Avenue have been identified in Hennepin County's Capital Improvement Program (CIP) for several years, but the schedule for designing and reconstructing the roadway is now progressing in parallel with planning, designing, and constructing the proposed BLRT Extension project. The West Broadway Avenue Reconstruction and proposed BLRT Extension projects each have independent utility (that is, each project can function without the other being constructed), as explained below.

The West Broadway Avenue Reconstruction project consists of reconstructing the existing roadway from south of Candlewood Drive to north of 93rd Avenue. This section of the road is currently four lanes between Candlewood Drive and 85th Avenue. North of 85th Avenue, West Broadway Avenue is primarily two lanes with sections that have been widened to accommodate turn lanes and passing lanes.

Since there is no federal funding for the West Broadway Avenue Reconstruction project, it was documented in an Environmental Assessment Worksheet (EAW) in accordance with the Minnesota Environmental Policy Act (MEPA). At the conclusion of the EAW process, Hennepin County prepared its Findings of Fact and Conclusions and finalized the environmental review process through a Negative Declaration on the Need for an EIS. Once this step was completed, the County had the necessary environmental clearance to proceed with permitting and the other activities required to finalize the roadway project.

In summary, and consistent with all applicable environmental review requirements:

- An independent need for the roadway improvements on West Broadway Avenue has long been identified
- Funding has long been dedicated for the West Broadway Avenue Reconstruction project. This funding comes from County State Aid and local sources; there is no federal funding for the roadway project
- The partner agencies are committed to preserving sufficient right-of-way in the West Broadway Avenue corridor for future transit needs
- The partner agencies are committed to constructing the West Broadway Avenue Reconstruction project and the proposed BLRT Extension project at the same time to minimize construction impacts to the community

2.5.2 Preferred Alternative (Proposed BLRT Extension Project)

The proposed BLRT Extension project begins at the Target Field Station in downtown Minneapolis and follows Olson Memorial Highway west to the BNSF rail corridor just west of Thomas Avenue, where it enters the BNSF right-of-way. Adjacent to the freight rail tracks, it continues in the rail corridor through the cities of Golden Valley, Robbinsdale, Crystal, and into Brooklyn Park. It then

crosses Bottineau Boulevard at 73rd Avenue to West Broadway Avenue and terminates just north of TH 610 near the Target North Campus, as illustrated in **Figure 2.5-1**.

The proposed BLRT Extension project includes seven new LRT bridges: a 350-foot-long crossing of the Hennepin Energy Recovery Center (HERC) driveway, a 700-foot-long crossing of the ponds immediately north of Golden Valley Road, a 1,200-foot-long crossing of Grimes Pond in Robbinsdale, a 375-foot-long bridge over TH 100, a 1,200-foot-long bridge over the Canadian Pacific Railway (CP) rail tracks, a 925-foot-long bridge over the 73rd Avenue/Bottineau Boulevard intersection, and a 250-foot-long bridge over TH 610.

Five reconstructed roadway bridges are part of the proposed BLRT Extension project: a 375-foot-long Olson Memorial Highway bridge over the BNSF rail corridor, a 375-foot-long Plymouth Avenue bridge, a 120-foot-long Theodore Wirth Parkway bridge, a 215-foot-long Golden Valley Road bridge, and a 110-foot-long 36th Street bridge. The Olson Memorial Highway bridge over I-94 in Minneapolis and the I-94/I-694 bridge over the BNSF rail corridor in Brooklyn Park would require modifications to accommodate LRT. In addition, the proposed BLRT Extension project includes a pedestrian bridge over Bottineau Boulevard at Bass Lake Road.

2.5.2.1 Issue Resolution Process

This section summarizes the process used by the Council, local partners, and stakeholders to identify design adjustments to the LPA since the end of the Draft EIS public comment period on May 29, 2014. The Council developed and evaluated 16 technical segment-specific and system-wide issues (see **Figure 2.5-2** and **Table 2.5-1**) that could result in design adjustments, including proposed adjustments to accommodate local goals and objectives, improve the performance of the proposed light rail extension, reduce project costs, and avoid or minimize adverse environmental impacts.

The issue resolution process was supported by the Technical Project Advisory Committee (TPAC), which is composed of staff from the Council, Minnesota Department of Transportation (MnDOT), Metro Transit Operations Division, Hennepin County, HCRRA, and Minneapolis Park and Recreation Board (MPRB). The Corridor Management Committee (CMC), which advises the Council on project-related issues, consists of elected officials of the corridor cities and Hennepin County, MnDOT, the Council, MPRB, and representatives from the CAC and the Business Advisory Committee (BAC). The ongoing engagement and communication with the affected public has been a fundamental element of planning for the proposed BLRT Extension project. Community representatives serve on the BAC and CAC, which provide input and recommendations to the CMC, including design adjustments developed as a part of the issue resolution process.

Issue Resolution Teams (IRTs) were formed to carry out the issue resolution process for each of the 16 issues identified (see **Figure 2.5-2** and **Table 2.5-1**). IRTs were composed of representatives of the Council engineering and environmental staff from the proposed BLRT Extension project team and other Metro Transit departments, and staff from Hennepin County, MnDOT, municipalities along the proposed BLRT Extension project alignment, and administrators of park properties in the corridor. Each of the technical and system-wide issues was examined, and possible project design adjustments to the Draft EIS LPA were analyzed. Results and recommendations from each of the IRTs were documented in a technical issue summary and were incorporated into the project elements discussion for the proposed BLRT Extension project Final EIS.

Figure 2.5-1. Proposed BLRT Extension Project

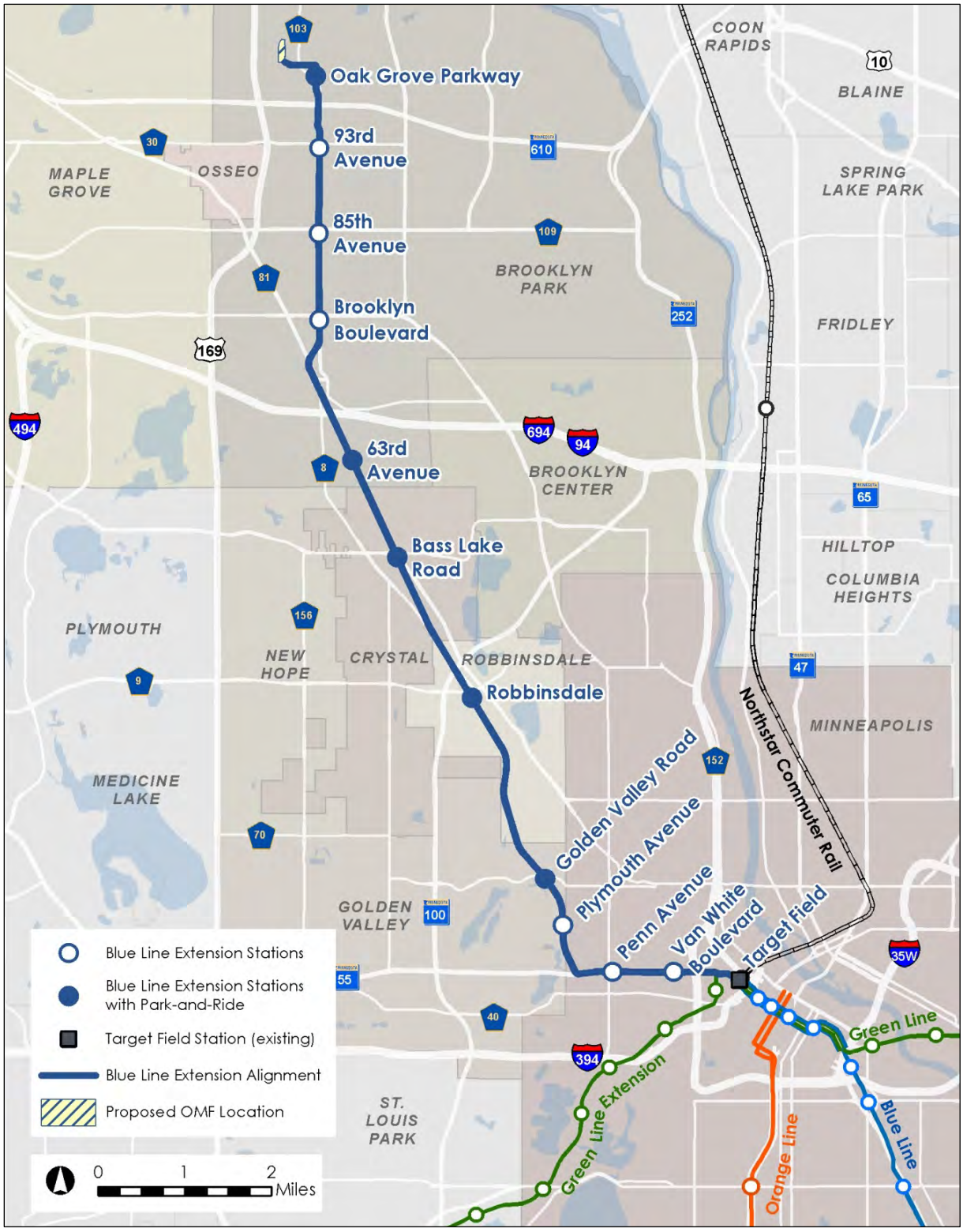


Figure 2.5-2. Final EIS Technical Issues

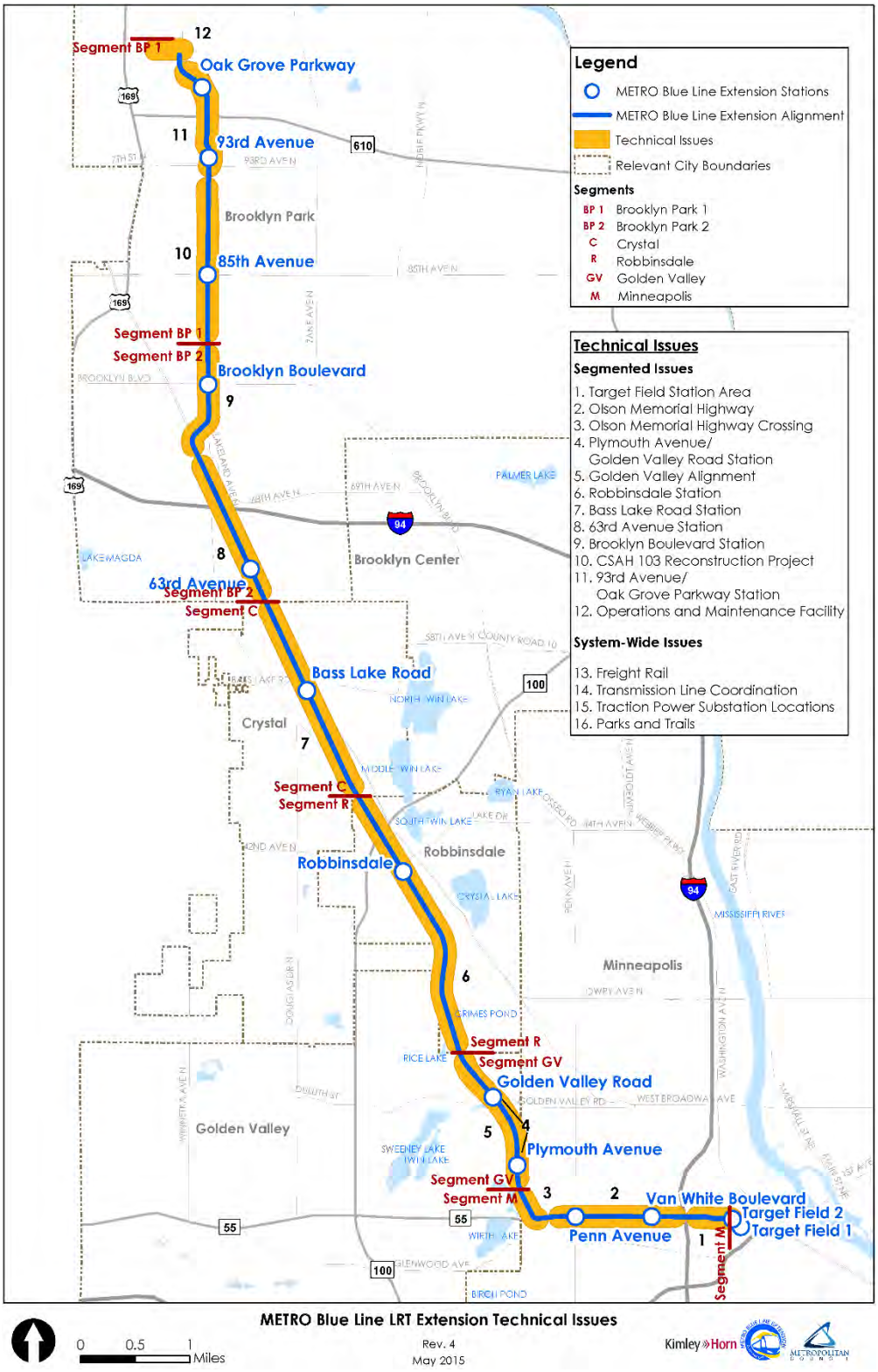


Table 2.5-1. Final EIS Technical Issues

Segment	Technical Issue	Description	Resolution
M – Minneapolis	1. Target Field Station Area	■ **Target Field Station Connection and 7th Street Intersection Design** • The 7th Street/Olson Memorial Highway intersection was evaluated to explore opportunities to create an intersection that would safely and efficiently accommodate all users. The IRT evaluated multiple layout options that considered LRT alignment and intersection geometry as they accommodate the different users of the intersection.	■ Modify intersection of 7th Street/Olson Memorial Highway by relocating the LRT transition from the center of the intersection to the east of the intersection, eliminating existing and/or proposed lanes for every approach and improving pedestrian crossing movements. • Reduces number of travel lanes through the intersection. • Provides more-direct routing for pedestrians and bicyclists, thereby reducing overall length of crossings compared to existing conditions and Draft EIS concept. • Provides pedestrian refuge areas at intersection corners and median. • Provides pedestrian crossings of LRT tracks wide enough to accommodate perpendicular crossings of tracks by wheelchairs and bicycles. • Minimizes impact to the planned arterial BRT stations located at the intersection. • Accommodates all existing vehicle movements at the intersection.
	2. Olson Memorial Highway	■ **I-94/Olson Memorial Highway Interchange Operations** • Placing the proposed BLRT Extension guideway in the center of the Olson Memorial Highway bridge over I-94 reduces the number of through lanes crossing the bridge, thereby requiring further analysis to confirm that an acceptable traffic operations level of service (LOS) would be maintained.	■ Based on the traffic analysis completed and discussions with the IRT and MnDOT, the project would accommodate the LRT guideway in the middle of the existing bridge. This would eliminate one through lane in each direction on the Olson Memorial Highway bridge over I-94; however, an acceptable LOS would be maintained.

Table 2.5-1. Final EIS Technical Issues

Segment	Technical Issue	Description	Resolution
		■ **Olson Memorial Highway Design Treatment** • Adding an LRT guideway within the existing median of Olson Memorial Highway was further studied to evaluate concerns regarding vehicle speeds on Olson Memorial Highway, enhancing pedestrian and bicycle crossing movements across, to, and along the corridor, and finding a way to balance the needs of all modes through this segment of the proposed BLRT Extension project, and ensuring that appropriate redevelopment could occur with LRT as the catalyst.	■ The IRT recommended advancing a six-lane Olson Memorial Highway alternative, with center station platforms at Penn Avenue and Van White Memorial Boulevard. The IRT also agreed that the speed limit on Olson Memorial Highway should be reduced to 35 mph and the project team should consider incorporating boulevard trees during the final design of the proposed BLRT Extension project to promote traffic calming. • Provide pedestrian crossings at each signalized intersection: Thomas Avenue (new), Penn Avenue, Morgan Avenue, Humboldt Avenue, Van White Memorial Boulevard, Bryant Avenue, and West Lyndale Avenue. Provide three additional midblock pedestrian crossings at Russell Avenue, James Avenue, and east of the Penn Avenue Station. Midblock crossing locations would have some form of traffic control. • Provide accommodation for a cycle track on the north side of the roadway. The cycle track cross-section would consist of a 10-foot boulevard, 10-foot-wide bicycle path, 2-foot buffer area, and a 6-foot sidewalk. • Shift the roadway and track alignment north from its existing location to maximize the space available for future development on the south side of the roadway.
		■ **Olson Memorial Highway Tree Impacts** • About half of the 500 existing Olson Memorial Highway median trees along the corridor would be removed by construction of the proposed BLRT Extension project. MPRB has indicated that it might be possible to relocate some of the removed trees to MPRB property.	■ City and MPRB requirements for tree replacement will be considered as the design of the proposed BLRT Extension project moves forward.

Table 2.5-1. Final EIS Technical Issues

Segment	Technical Issue	Description	Resolution
	3. Olson Memorial Highway Crossing	■ **Olson Memorial Highway Crossing of the LRT Guideway** • The Draft EIS concept design represented the westbound lanes of Olson Memorial Highway shifted north (on a new bridge) to accommodate the LRT guideway. As the LRT guideway approaches the BNSF rail corridor in the median of Olson Memorial Highway from the east, it drops in elevation so that it can turn north and pass beneath the proposed Olson Memorial Highway westbound bridge. Retaining walls are represented within the median from just west of Thomas Avenue to the proposed Olson Memorial Highway westbound bridge. The existing westbound Olson Memorial Highway bridge would be removed.	■ The IRT agreed that the transition of the proposed BLRT Extension project guideway from Olson Memorial Highway to the BNSF rail corridor should follow the Draft EIS concept, with further refinements developed during the Engineering phase of project development. ■ A traffic signal at Thomas Avenue and Olson Memorial Highway would accommodate this transition.
GV – Golden Valley	4. Plymouth Avenue/ Golden Valley Station(s)	■ **Golden Valley Road versus Plymouth Avenue Station Resolution** • The environmental analysis completed as part of the Draft EIS evaluated both the Golden Valley Road and Plymouth Avenue Station areas, but only the Golden Valley Road Station was included in the project scope and budget. Further study was required to evaluate whether one or both stations should be constructed to maximize access to the proposed BLRT Extension project, adjacent communities, and TWRP.	■ Rigorous evaluation of transportation needs and floodplain and wetland impacts, noise and vibration impacts, cultural resource impacts, parking impacts, and parkland impacts resulted in the decision to carry both stations in the project scope and cost estimate.

Table 2.5-1. Final EIS Technical Issues

Segment	Technical Issue	Description	Resolution
		■ **Golden Valley Road Station Parking/Passenger Drop-off Needs** • Parking opportunities and drop-off needs near the station were considered to maximize access, enhance connections to the station, and avoid conflicts with parking on residential streets adjacent to the Golden Valley Road Station.	■ A park-and-ride lot with 100 surface parking spaces and additional bus and passenger drop-off areas would be added for direct access to the Golden Valley Road Station area.
	5. Golden Valley Alignment	■ **Bassett Creek Floodplain Impacts** • Construction of the proposed BLRT Extension project would decrease the existing floodplain areas of Bassett Creek. Coordination is needed with the Bassett Creek Watershed Management Commission and the cities of Golden Valley and Minneapolis to design mitigation measures that comply with regulations and can be permitted.	■ About 16,800 cubic yards of existing Bassett Creek floodplain would be decreased by the construction of the proposed BLRT Extension project. Recommended mitigation includes creating necessary mitigation volumes by removing existing soil to create the approximately 16,800 cubic yards of new floodplain storage volume. The property for the area identified is owned by the Soo Line Railroad and MPRB, which is located north of Olson Memorial Highway and west of the BNSF rail corridor.
		■ **Poor Soils through Bassett Creek Watershed** • Available soil log data indicate that poor soils exist within the Bassett Creek watershed area, including portions of the proposed BLRT Extension project alignment within the BNSF rail corridor. Analysis of the poor soil limits and design mitigation options that might be used to compensate for the poor soil conditions are needed early in the design process.	■ Use a combination of conventional bridge, land bridge, load transfer platform (on columns and/or piers), helical piles, in-situ ground improvements, geofoam (lightweight fill), and/or wick drains and surcharge to develop site-specific track foundations suitable for the proposed BLRT Extension project guideway. ■ BNSF tracks to remain on existing embankment over Grimes Pond and Golden Valley Pond. LRT would be constructed on a bridge in these locations.

Table 2.5-1. Final EIS Technical Issues

Segment	Technical Issue	Description	Resolution
		■ **Theodore Wirth Regional Park (TWRP) Property Impacts** • Constructing the proposed BLRT Extension project would require temporary and permanent easement over the existing TWRP property. In the areas of proposed Golden Valley Road and Plymouth Avenue stations, right-of-way acquisition and/or temporary and permanent easements are required to allow for needed construction. Additionally, an area of TWRP property near Olson Memorial Highway and the BNSF rail corridor has been identified to mitigate the proposed impacts to the Bassett Creek floodplain.	■ Constructing the proposed BLRT Extension project would require a combination of temporary and permanent easements on TWRP, which is owned by MPRB. • Grading work on the west side of the BNSF right-of-way just south of Theodore Wirth Parkway to just north of Golden Valley Road would require a temporary easement. • Golden Valley Road Station platform access and retaining wall construction would require a permanent easement. • Reconstruction of the Golden Valley Road, Theodore Wirth Parkway, and Plymouth Avenue roadway bridges would require temporary easements. • Plymouth Avenue Station construction and maintenance of secondary access would require a permanent easement. • Widening the railway corridor to accommodate the proposed BLRT Extension project and the Plymouth Avenue Station would require the Plymouth Avenue Bridge to be replaced. As a part of the railway corridor widening, both Bassett Creek and the existing Bassett Creek Trail would need to shift westward. A temporary easement would be required over TWRP property to shift the creek and trail, as well as to construct the new bridge. ■ Construct trailhead at eastern corner of the Golden Valley Road Station park-and-ride to provide access to the existing MPRB trail system to the proposed Bassett Creek Regional Trail. ■ Existing TWRP trail that parallels Bassett Creek would be relocated to the west from its current location within the BNSF right-of-way.

Table 2.5-1. Final EIS Technical Issues

Segment	Technical Issue	Description	Resolution
R- Robbinsdale	6. Robbinsdale Station	■ **Park-and-Ride/Bus Transit Center Assessment** • Parking needs for patrons using the Robbinsdale Station would require constructing a parking ramp near the station. Further evaluation was needed to confirm a location for the ramp that would meet the needs of transit patrons and complement existing and future development in the area. The location and operations of the existing Metro Transit bus transit center also required coordination with the new parking ramp.	■ The IRT determined that a four-level, 550-stall parking ramp/bus transit center concept is the preferred concept to move into the design process. • Provides riders with convenient access to the LRT station. • Allows for transit-oriented development adjacent to the parking structure. • Accommodates the bus transit center.
		■ **Traffic Congestion at Crossings Analysis** • In response to the Draft EIS, concerns were raised that the proposed BLRT Extension project could cause traffic congestion around the Robbinsdale Station, specifically on 42nd Avenue. Further traffic evaluation was needed to confirm whether the 42nd Avenue and West Broadway Avenue intersection, as well as traffic crossing the at-grade crossing, would continue to function at an acceptable LOS.	■ The IRT found that traffic operations around the Robbinsdale Station would function at acceptable levels with the addition of the 550-stall park-and-ride and the additional LRT train traffic. Improvements to the 42nd Avenue/West Broadway Avenue intersection include adding dedicated northbound and southbound left-turn lanes on West Broadway Avenue and providing a left-turn signal phase for the westbound left-turn movement on 42nd Avenue.
		■ **Pedestrian Crossing Evaluation** • The Draft EIS identified improvements to existing pedestrian crossings at each of the at-grade crossings in Robbinsdale. Further evaluation of pedestrian crossings, the number of crossings provided, and the type of crossing (at-grade versus grade-separated) near the Robbinsdale Station were necessary to confirm whether safe and efficient pedestrian crossings of the LRT/freight rail corridor would be provided.	■ The IRT found that pedestrian movements across the rail corridor, specifically at 42nd Avenue and 41st Avenue, should be maintained as at-grade crossings. Grade-separated pedestrian facilities were eliminated from further consideration.

Table 2.5-1. Final EIS Technical Issues

Segment	Technical Issue	Description	Resolution
		■ **Evaluation of Existing At-grade Crossing Closures** • The Council was asked to evaluate potential crossing closures through the BNSF rail corridor to improve safety, reduce noise impacts, and prepare the rail corridor for future designation as a Quiet Zone.	■ The IRT found that 39½ Avenue is the best candidate for closure. The Final EIS evaluates the environmental impacts of the 39½ Avenue closure (see **Chapter 3**).
		■ **Evaluation of Raised LRT Profile near TH 100** • As the LRT guideway approaches the proposed bridge over TH 100, the LRT track profile raises above adjoining residential properties, generally matching the existing BNSF rail elevation. Concerns were raised during the Draft EIS process about the impacts associated with the LRT guideway being elevated above existing homes, which were constructed at a lower elevation than the existing BNSF rail track. Further evaluation was needed to review possible impacts and mitigation measures that might be required due to the elevated LRT tracks.	■ The increase in grade and the proposed retaining wall are being reviewed as part of the Section 106 (National Historic Preservation Act) process. This is because of the adjacent West Broadway Avenue Residential Historic District, which is eligible for the National Register of Historic Places. This issue was not reviewed further by the IRT.
C – Crystal	7. Bass Lake Road Station	■ **Bass Lake Road Station Location**	■ Bass Lake Road Station is changed to a center platform and is located south of Bass Lake Road and 20 feet south of the location shown in Draft EIS. This change was made to improve the transit passenger experience, as well as to provide for improved flexibility of transit operations.
		■ **Need for Parking/Passenger Drop-off** • City of Crystal and community members identified need for additional access facilities—parking and passenger drop off location.	■ Parking/passenger drop-off needs would be accommodated by a 170-space surface park-and-ride lot with provisions for passenger drop-off.
		■ **At-Grade Crossings of Major Roadways** • City of Crystal identified need for grade separation of the LRT tracks over Bass Lake Road.	■ The IRT found that traffic operations of the Bass Lake Road and Bottineau Boulevard intersection would function at acceptable levels and does not warrant grade separation. LRT tracks would cross Bass Lake Road at grade.

Table 2.5-1. Final EIS Technical Issues

Segment	Technical Issue	Description	Resolution
		■ **Quiet Zone Needs for At-grade Crossings** • In commenting on the Draft EIS, the city of Crystal requested the infrastructure for a Quiet Zone be included in the proposed BLRT Extension project cost.	■ Intersection of LRT/BNSF tracks and Bass Lake Road would be ready for designation as a Quiet Zone.
		■ **Pedestrian Access**	■ Addition of pedestrian bridge over Bottineau Boulevard at Bass Lake Road.
BP 2 – Brooklyn Park 2	8. 63rd Avenue Station	■ **Need for 63rd Avenue Park-and-Ride Expansion** • Draft EIS identified a need to add capacity to the existing parking ramp at 63rd Avenue. Further study of this need was required.	■ Change to a center platform design with a pedestrian overpass of the rail lines from the parking structure to the station platform to provide better rider access. ■ Ridership analysis shows sufficient parking (565 spaces) in existing parking ramp. No further modifications to add parking capacity are being considered as part of the proposed BLRT Extension project.
	9. Brooklyn Boulevard Station	■ **73rd Avenue Crossing** • Further study was needed to determine whether a grade separation for the LRT over the 73rd Avenue/Bottineau Boulevard intersection would be required to maintain safety and acceptable intersection traffic operations.	■ A grade-separated crossing of 73rd Avenue was found to be the preferred design alternative to maintain safety for vehicular traffic, light rail vehicles, and LRT maintenance activities.
		■ **West Broadway/Brooklyn Boulevard Station** • Further study of the Brooklyn Boulevard Station was needed to evaluate station access and enhance connections between the nearby Starlite Transit Center and other destinations near the station. Bus and passenger drop-off/pick-up needs within the Starlite Transit Center as well as near the Brooklyn Boulevard Station should be considered in the overall station area design.	■ A center platform located on the south side of Brooklyn Boulevard was the preferred design alternative. This location provided the best overall access to the station, and the center platform configuration is consistent with other platforms along the line. ■ Adding bus stops on West Broadway Avenue on the north side of 76th Avenue North was the preferred design alternative. This layout provides bus stops for all routes with close access to the LRT station.

Table 2.5-1. Final EIS Technical Issues

Segment	Technical Issue	Description	Resolution
BP 1 – Brooklyn Park 1	10. West Broadway Reconstruction Project	■ **West Broadway Reconstruction by Hennepin County** • See Section 2.5.1.1.	■ Hennepin County completed an Environmental Assessment Worksheet for a four-lane roadway alternative for West Broadway Avenue.
		■ **Need for Gates at Minor Signalized Intersections**	■ Based on the proposed LRT operating speeds, automatic gates are not needed at signalized intersections along West Broadway Avenue.
		■ **Additional Maintenance Responsibilities for Locals**	■ City of Brooklyn Park would review maintenance issues and would bring specific concerns to the Council for discussion. Metro Transit is responsible only for the operation and maintenance of the LRT facilities, platform, and track components. As the design progresses, maintenance issues would be assessed.
	11. 93rd Avenue/Oak Grove Parkway Station	■ **Location and New Roadway Network Supporting Oak Grove Parkway Station** • Further evaluation was needed to locate the Oak Grove Parkway Station and parking ramp, improve the pedestrian and bicycle environment, accommodate a center LRT platform, and support development opportunities being pursued by the city of Brooklyn Park. • Determine roadway network necessary to support opening-day operations at the Oak Grove Parkway Station.	■ Locate a center platform and 850-space parking ramp west of West Broadway Avenue between Oak Grove Parkway and Main Street. Reconfigure the roadway network to accommodate the station and parking ramp. • Design parking ramp to support development opportunities. • Construct West Broadway Avenue with a wide center median to accommodate Xcel transmission lines. • Construct Main Street and intersection to parking ramp. • Construct road west of parking ramp from Oak Grove Parkway to Main Street. • Construct a portion of Xylon Avenue, located west of the proposed OMF site, to provide access to the OMF.

Table 2.5-1. Final EIS Technical Issues

Segment	Technical Issue	Description	Resolution
	12. Operations and Maintenance Facility (OMF)	■ **Location and Layout of OMF** • Further evaluation was needed to confirm a location and layout for the proposed OMF. Determination of a preferred OMF location and layout and the effects of the OMF on the development of the Oak Grove Parkway area are needed.	■ The IRT determined that the 93rd Avenue OMF site should no longer be considered since construction of commercial development by CSM Corporation on the 93rd Avenue site had occurred since publication of the Draft EIS. ■ The IRT found that the preferred location for the OMF is on the east side of proposed Xylon Avenue, north of Oak Grove Parkway. This proposed location would meet the needs of the proposed BLRT Extension project and give the Oak Grove Parkway area the space needed to develop based on the concepts created by the city of Brooklyn Park. ■ Additionally, the IRT found that the proposed downsized OMF layout that is oriented north-south should be moved forward into the design process.
All Segments	13. Freight Rail	■ **BNSF Commuter Principles** • Preserve the ability of BNSF to make future freight rail capacity improvements in the western 50 feet of its right-of-way. Also, provide BNSF the ability to make future capacity improvements in a configuration that can be constructed today without any LRT facilities. • Manage potential liability associated with LRT facilities and operations.	■ Reconstruct bridges over the BNSF right-of-way at Plymouth Avenue, Theodore Wirth Parkway, Golden Valley Road, and 36th Avenue. ■ Design and build appropriate separation or a physical barrier to ensure safe operations in the event of a freight or LRT derailment. • Implement corridor-protection treatments: ▪ Ditch ▪ Crash wall ▪ Retained embankment ▪ Intrusion detection
	14. Transmission Line Coordination	■ **Xcel Energy Transmission Line Corridor** • Xcel intends to own and maintain a transmission line in the proposed BLRT Extension project corridor. • Need to protect the ability of Xcel to access and maintain its transmission line as necessary. • Accommodate the ability of Xcel to replace transmission line structures in the future if they are not replaced when the proposed BLRT Extension project is constructed.	■ Shift the existing transmission line, which is located on the eastern edge of the current BNSF right-of-way, to the western edge of the right-of-way. New transmission line towers would be a monopole design, and would replace the existing metal lattice structures.

Table 2.5-1. Final EIS Technical Issues

Segment	Technical Issue	Description	Resolution
	15. Traction Power Substation Locations	■ **Refinement of locations for Traction Power Substations (TPSSs)** • Typically, TPSS sites are spaced less than 1 mile apart. Refinement of locations is needed since the Draft EIS was published.	■ Preliminary analysis shows that TPSS sites would be required at about 0.75-mile to 1-mile intervals along the proposed BLRT Extension project alignment to supply electrical power to the traction networks, stations, and the OMF. ■ Currently, the IRT identified 17 sites (**Figure 2.5-5**). ■ Most TPSSs would be located within existing transportation right-of-way.
	16. Parks	■ **Avoid, Minimize, or Mitigate Impacts to Park Resources along the proposed BLRT Extension project Alignment**	■ The Council avoided a Section 4(f) use of the Rush Creek Regional Trail property by modifying the layout of the OMF. ■ The proposed BLRT Extension project would require temporary occupancy of Sochacki Park: Sochacki Management Unit for construction access and staging. In addition to restoring the park to its pre-construction condition, the Council is negotiating enhancements to the park that would be part of the mitigation for the temporary occupancy and the purchase of replacement parkland. ■ Construction of the proposed BLRT Extension project would involve temporary occupancy of Sochacki Park: Mary Hills Management Unit, but would not be subject to Section 6(f) requirements. Minnesota Department of Natural Resources (DNR) coordination would be required. ■ The proposed BLRT Extension project would require less than 0.01 acre from Glenview Terrace Park. DNR coordination would be required. ■ The proposed BLRT Extension project would require 2.1 acres of permanent easement from TWRP for station and track components and for the Golden Valley Road Station park-and-ride. ■ The proposed BLRT Extension project would relocate the TWRP Trail adjacent to Basset Creek off the BNSF right-of-way. ■ The proposed BLRT Extension project would require a water resources easement for proposed floodplain mitigation in a combination of current CP property and MPRB property.

2.5.2.2 Description of the Proposed BLRT Extension Project

The proposed BLRT Extension project is described below and summarized in **Table 2.5-2**, including the differences between the LPA identified in the Draft EIS and the proposed BLRT Extension project identified in this Final EIS. The features below are based on the Council's assumptions associated with the level of engineering conducted for the proposed BLRT Extension project to date and as approved by the CMC (November 12, 2015) and the Council (December 9, 2015).

Table 2.5-2. Comparison of Draft EIS LPA and Final EIS Proposed BLRT Extension Project

Feature	Draft EIS LPA Description	Final EIS Proposed BLRT Extension Project Description
Level of engineering design	1%	15%
Northern terminus	Brooklyn Park	Brooklyn Park
Length[1]	13.3 miles	13.49 miles
Capital cost (in millions)[2, 3]	$997 ($2017)	$1.496 (year-of-expenditure $)
Annual operating and maintenance cost (in millions)[2]	$32.5 ($2013)	$50.21 ($2040)
Ridership (total)	27,000	27,000
BLRT stations[4]	**10 Stations** ■ Van White Boulevard ■ Penn Avenue ■ Golden Valley Road or Plymouth Avenue/TWRP ■ Robbinsdale[5] ■ Bass Lake Road ■ 63rd Avenue[5] ■ Brooklyn Boulevard ■ 93rd Avenue[5] ■ 85th Avenue ■ Oak Grove Parkway	**11 Stations** ■ Van White Boulevard ■ Penn Avenue ■ Plymouth Avenue/TWRP ■ Golden Valley Road[5] ■ Robbinsdale[5] ■ Bass Lake Road[4] ■ 63rd Avenue[5] ■ Brooklyn Boulevard ■ 85th Avenue ■ 93rd Avenue ■ Oak Grove Parkway[5, 6]
Station constructed by others where proposed BLRT alignment would connect with regional rail system	Target Field Station	Target Field Station
Reconfiguration of roadway network north of TH 610	Not applicable	■ Construct West Broadway Avenue with a wide center median to accommodate Xcel transmission lines ■ Construct Main Street and intersection to parking ramp ■ Construct road west of parking ramp from Oak Grove Parkway to Main Street ■ Construct a portion of Xylon Avenue, located west of the proposed OMF site, to provide access to the OMF.

Table 2.5-2. Comparison of Draft EIS LPA and Final EIS Proposed BLRT Extension Project

Feature	Draft EIS LPA Description	Final EIS Proposed BLRT Extension Project Description
Key bridge structures (length in feet)	**4 new LRT bridges:** ■ HERC driveway (125)[7] ■ TH 100 (400) ■ CP rail tracks (500) ■ TH 610 (300) **Existing bridges modified:** ■ Olson Memorial Highway ■ Railroad bridge north of Olson Memorial Highway ■ Plymouth Avenue ■ Theodore Wirth Parkway ■ Golden Valley Road ■ TH 100 ■ 36th Avenue ■ I-94	**7 new LRT bridges:** ■ HERC driveway (350)[7] ■ Golden Valley Road ponds (700) ■ Grimes Pond (1,250) ■ TH 100 (375) ■ CP rail tracks (1,250) ■ 73rd Avenue/Bottineau Boulevard (925) ■ TH 610 (300) **5 reconstructed roadway bridges:** ■ Olson Memorial Highway over BNSF rail corridor (375) ■ Plymouth Avenue (375) ■ Theodore Wirth Parkway (120) ■ Golden Valley Road (215) ■ 36th Avenue (110) **Modification to existing bridges:** ■ Olson Memorial Highway over I-94 ■ I-94 over BNSF rail corridor **Pedestrian bridge:** ■ Bottineau Boulevard at Bass Lake Road
Operations and maintenance facility site(s)	In Brooklyn Park at one of two potential sites: 93rd Avenue park-and-ride or in the northwest quadrant of Winnetka Avenue and 101st Avenue intersection with West Broadway	In Brooklyn Park at 101st Avenue and new Xylon Avenue North
Traction power substations	19 proposed	17 proposed

[1] The length represents the full end-to-end length of the proposed alternatives.
[2] Cost estimates provided are a snapshot in time and are based on the level of design development completed at the date of publication of Draft EIS (LPA) and the date of publication of this Final EIS (proposed BLRT Extension project).
[3] Draft EIS (LPA) capital cost estimate was updated to $1,002 million for the proposed BLRT Extension project New Starts application filed subsequent to publication of the Draft EIS; the change was due to the addition of finance costs.
[4] Decisions regarding the locations of stations were made consistent with the Council's *Regional Transitway Guidelines* (www.metrocouncil.org/Transportation/Publications-And-Resources/RegionalTransitwayGuidelines-pdf.aspx).
[5] Proposed station locations where park-and-ride would be provided.
[6] Station located west of West Broadway Avenue between Oak Grove Parkway and Main Street. Roadway network would be reconfigured to accommodate the station and parking ramp.
[7] The Hennepin Energy Recovery Center (HERC) driveway structure is proposed specifically for the proposed BLRT Extension project and would be an expansion of the structure required for the independent Target Field Station in downtown Minneapolis.

2.5.2.3 General Elements of the Proposed BLRT Extension Project

The general elements of the proposed transitway system are stations, the OMF, TPSSs, fare collection, trackway, vehicles, train control, and operating frequencies. These features of the proposed BLRT Extension project are summarized below. (Also see **Appendix E – Engineering Drawings**.)

- **Stations** – See **Table 2.5-3** for a list and description of the stations. Both the Golden Valley Road and Plymouth Avenue stations are included in the Final EIS proposed BLRT Extension project. Both stations would have vertical circulation (elevator and stairs) to allow passengers to access the station platforms. The 63rd Avenue Station would have a pedestrian overpass of the BNSF freight tracks to provide better rider access between the parking ramp and the LRT platform. The Bass Lake Road Station would have pedestrian bridge over Bottineau Boulevard. **Figure 2.5-3** depicts park-and-ride locations on the proposed BLRT Extension project.

Table 2.5-3. Stations on the Final EIS Proposed BLRT Extension Project

Station	Platform Configuration	Passenger Drop-off	Park-and-Ride Facility
Target Field[1]	Not applicable	Not applicable	Not applicable
Van White Boulevard	Center	No	No
Penn Avenue	Center	No	No
Plymouth Avenue/TWRP	Center	Yes	No
Golden Valley Road	Center	Yes	100 spaces (surface lot)
Robbinsdale	Center	Yes	550 spaces (parking ramp)
Bass Lake Road	Center	Yes	170 spaces (surface lot)
63rd Avenue	Center	Yes	565 spaces (existing ramp spaces)
Brooklyn Boulevard	Center	Yes	No
85th Avenue	Center	Yes	No
93rd Avenue	Center	Yes	No
Oak Grove Parkway	Center	Yes	850 spaces (parking ramp)

[1] Built separately from the proposed BLRT Extension project and included under the No-Build Alternative definition.

- **Operations and Maintenance Facility** – The OMF site would be located at the north end of the proposed BLRT Extension project in Brooklyn Park. The proposed OMF site is illustrated in **Figure 2.5-4**. The OMF site was selected based on its proximity to the end of the line, adequate space for the special trackwork required between the mainline track and the facility, and adequate property for the facility (about 10.4 acres). The OMF site would be occupied by a storage and maintenance building that is about 140,000 square-feet, surface parking for employees and visitors, trackwork, and open space. The facility would include areas to store, service, and maintain up to 30 light rail vehicles (LRVs), vehicle washing and cleaning equipment, and office space to accommodate staff who would report for work at this facility. The facility would be equipped to perform daily cleaning and repair activities on the LRVs as they enter and leave revenue service. Scheduled service and maintenance inspections also would be performed in this facility.
- **Traction Power Substations** – Potential locations for the TPSS sites are shown in **Figure 2.5-5**. A total of 17 potential TPSS locations have been identified along the proposed BLRT Extension project. The TPSS locations, as shown in **Figure 2.5-5,** are represented by areas with a 300-foot diameter. The precise location of each TPSS would be refined during the engineering phase of project development to minimize impacts to surrounding properties and resources and to balance safety, reliability, cost, and operational efficiencies. TPSS sites, once located, would be about 4,000 square feet and able to accommodate a single-story building about 40 feet by 20 feet. Access to the building by Metro Transit maintenance personnel must also be accommodated. The Council anticipates that most TPSS sites would be located within existing transportation rights-of-way.
- **Fare-Collection System** – A self-service, proof-of-payment fare-collection system was assumed for the proposed BLRT Extension project, consistent with the ticketing structure currently used on the other regional transitways. A proof-of-payment fare-collection system minimizes the right-of-way needed for each station. The fare collection kiosks would be located at the station platform entrance, and would be about 5 feet tall, 3 feet wide, and 2 feet deep.

- **Trackway** – LRVs would operate on standard-gauge rail. The proposed system would be double-tracked throughout to provide separate tracks for northbound and southbound trains. Crossovers to allow trains to migrate from the northbound to the southbound tracks would be provided at regular intervals for special operations or emergencies. Typically, the trackway in the BNSF rail corridor would be ballasted and separate from the freight rail track. Alignments in streets would be either ballasted or embedded depending on the location and the context of the street. See **Appendix E – Final EIS Engineering Drawings** for typical sections of representative segments of the corridor, including:
  - City of Minneapolis Interchange Connection
  - I-94 Bridge
  - Olson Memorial Highway
  - Olson Memorial Highway at Stations
  - BNSF Right-of-Way
  - Golden Valley Road Bridge Section
  - BNSF Pond Sections
  - TH 100 Bridge Section
  - 73rd Avenue Bridge
  - West Broadway Avenue
  - West Broadway Avenue at Stations
- **Vehicles** – The conceptual engineering to support the Final EIS assumes the following LRV characteristics:
  - Articulated train cars could be operated in either direction as a single-unit or multi-unit train.
  - Cars would be designed for use with an overhead catenary system.
  - Each car would have 66 seats and capacity for 160 passengers (sitting and standing).
  - Two- to three-car trains would operate at speeds up to 55 mph.
  - Cars would be fully compatible with Americans with Disabilities Act (ADA) standards.
- **Train Control** – An operator would occupy each train and have control over acceleration and braking as well as operating the passenger doors. Automated systems would inform the operator of various train and transitway operating conditions and would manage traffic signal priority, activation of crossing gates, and track switch operations.
- **Operating Frequencies** – The Final EIS assumes that trains would operate at 10-minute frequencies for weekday operations.

Figure 2.5-3. Proposed BLRT Extension Project Park-and-Ride Locations

Golden Valley Road Station

Robbinsdale Station

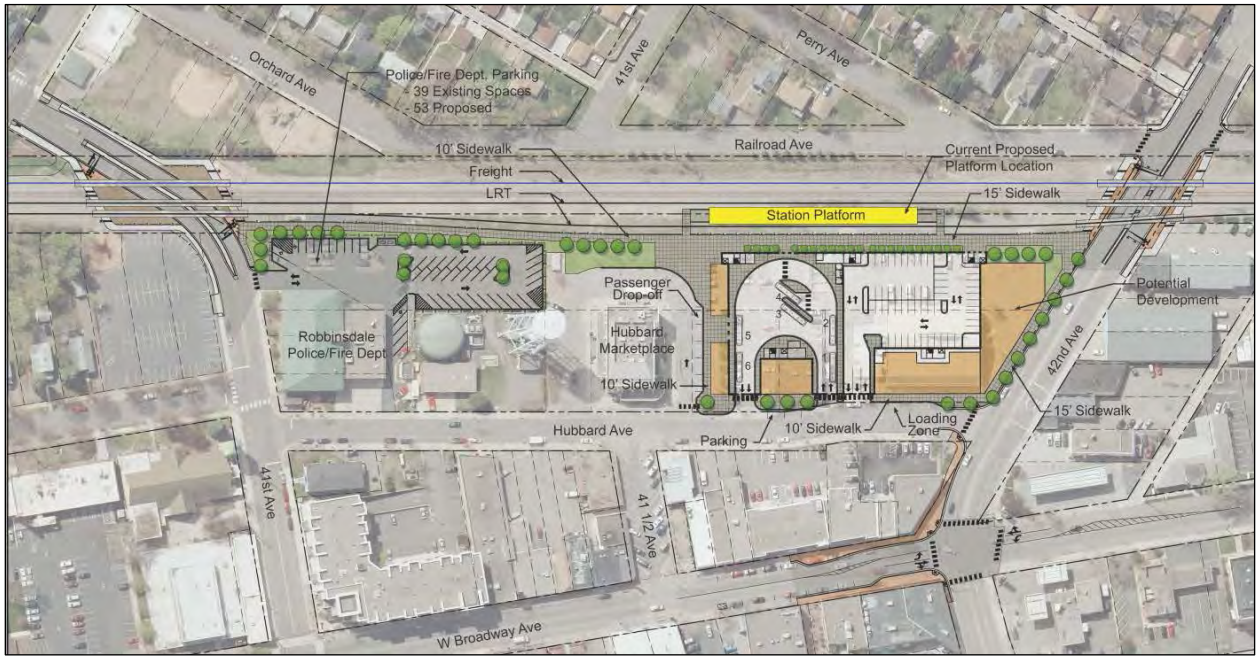


Figure 2.5-3. Proposed BLRT Extension Project Park-and-Ride Locations – continued

Bass Lake Road Station

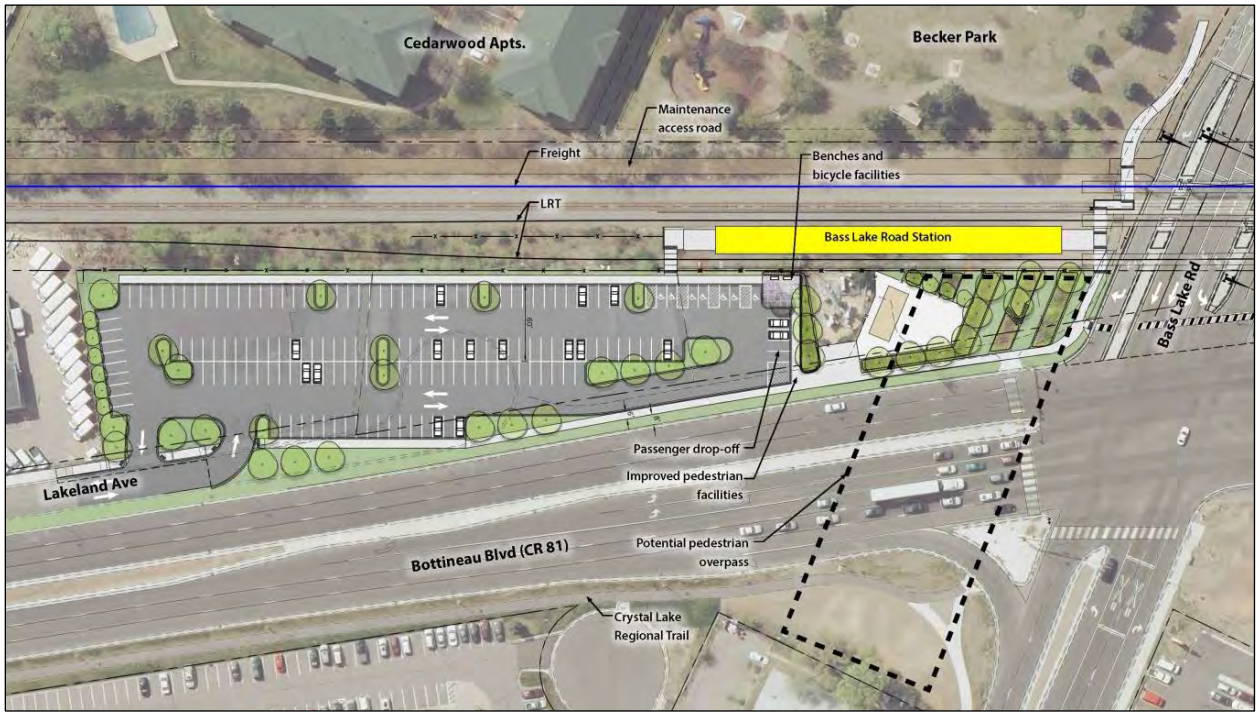


Figure 2.5-3. Proposed BLRT Extension Project Park-and-Ride Locations – continued

63rd Avenue Station

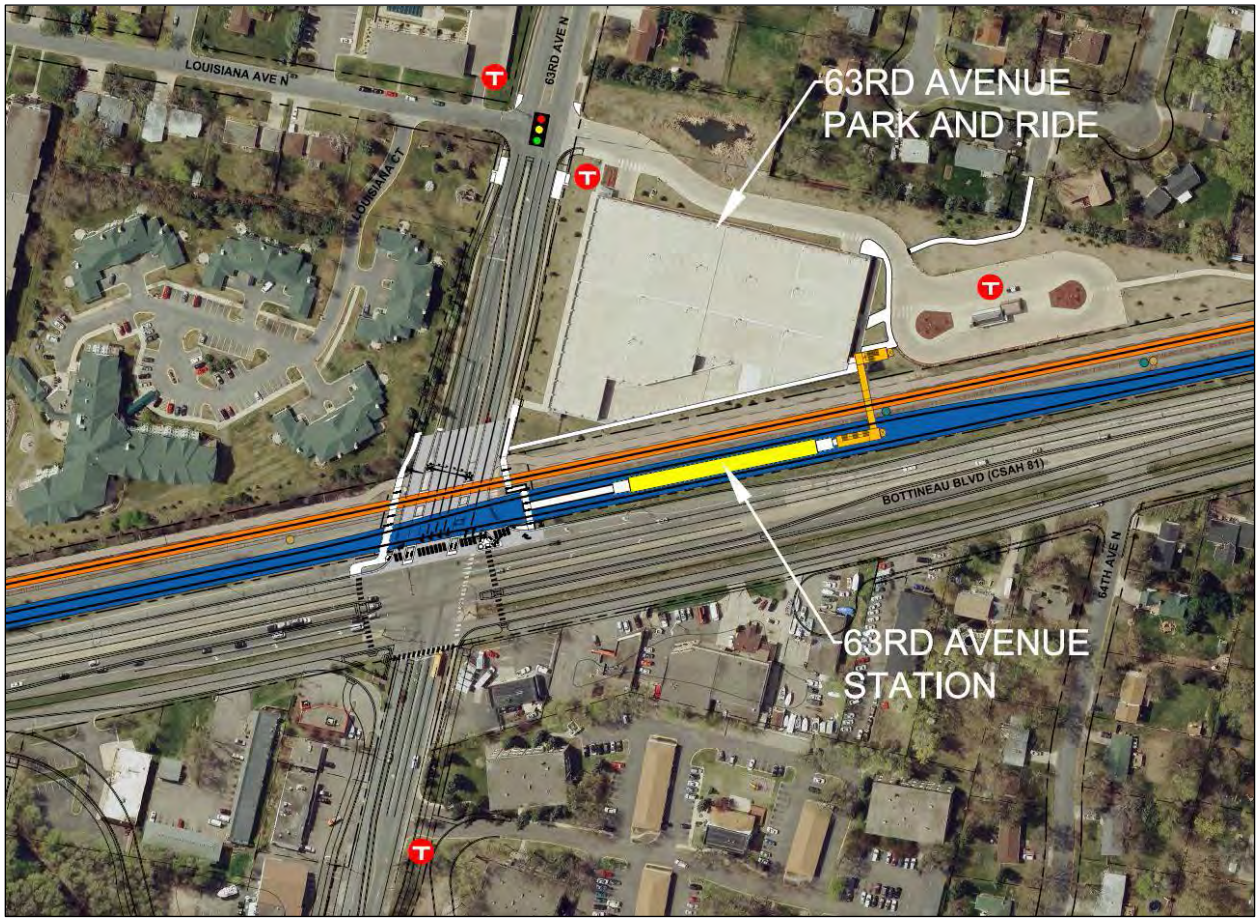


Figure 2.5-3. Proposed BLRT Extension Project Park-and-Ride Locations – continued

Oak Grove Parkway Station

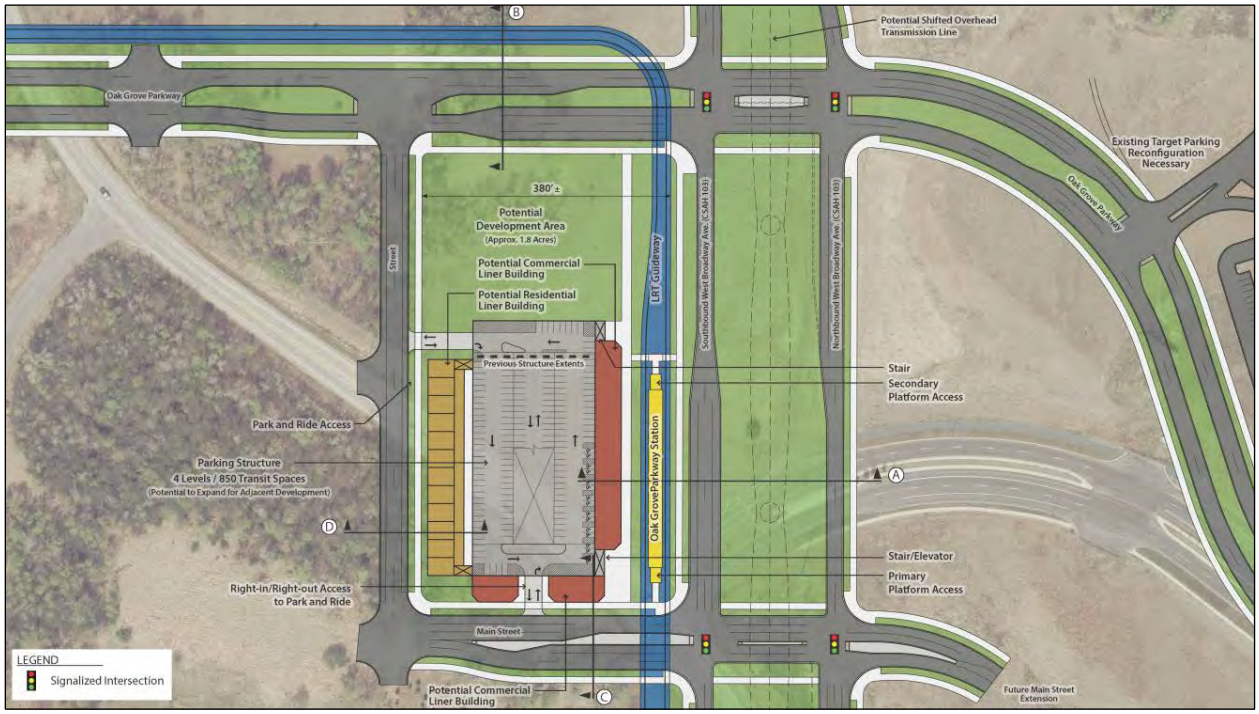


Figure 2.5-4. Proposed OMF Site

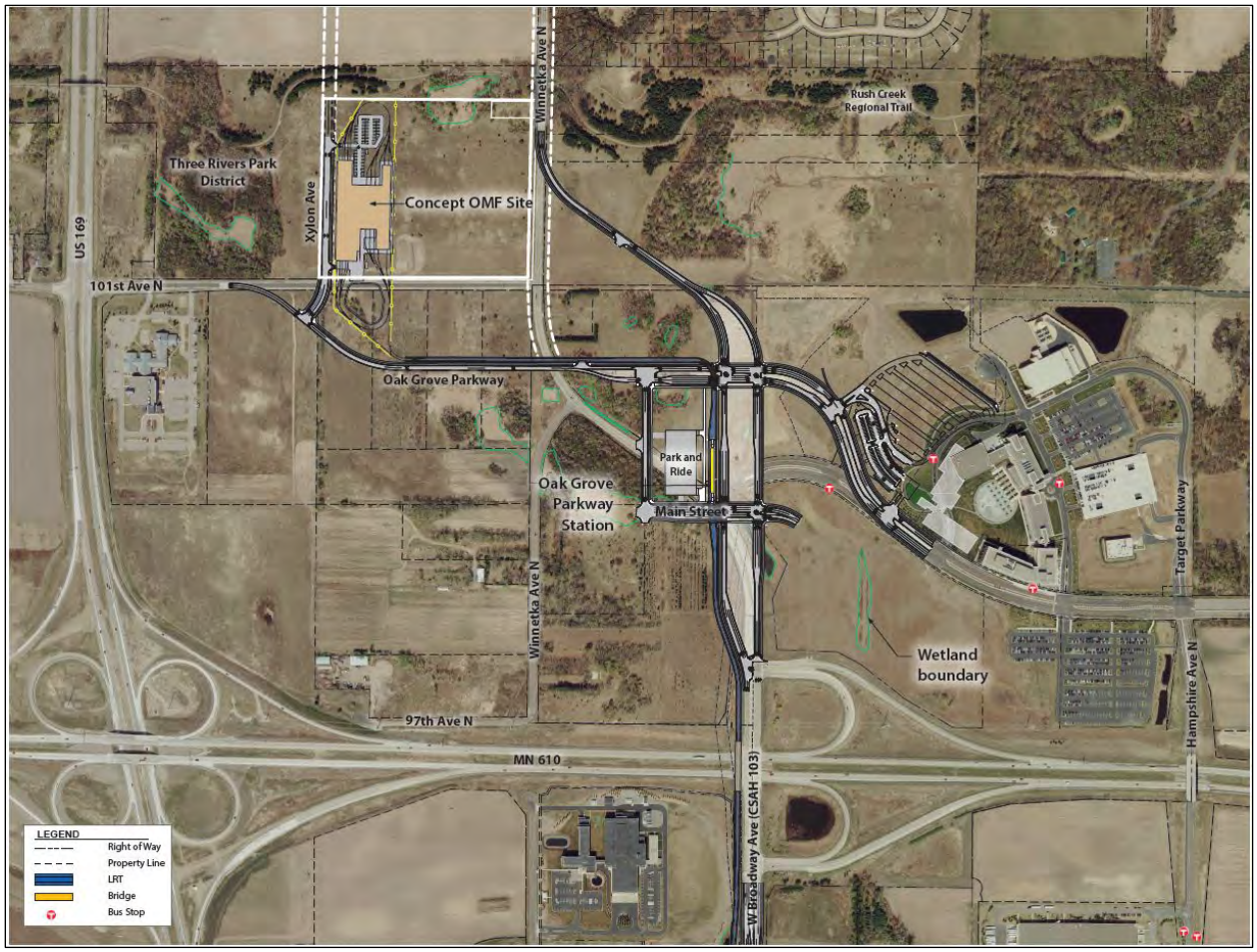


Figure 2.5-5. TPSS Locations for the Proposed BLRT Extension Project

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3 Transportation Analysis

This chapter presents results from the analysis of impacts on the transportation system in the proposed BLRT Extension project study area. Results are presented for the No-Build Alternative and the proposed METRO Blue Line Light Rail Transit (BLRT) Extension project. Operating-phase (long-term) and construction-phase (short-term) impacts are identified for each of the alternatives. The No-Build Alternative and the proposed BLRT Extension project are described and illustrated in **Chapter 2 – Alternatives**.

Changes to This Chapter since the Draft Environmental Impact Statement Was Published

This chapter updates the discussion in the *Bottineau Transitway Draft Environmental Impact Statement* (Draft EIS) (March 2014) on the transportation system effects associated with the No-Build Alternative and the proposed BLRT Extension project. The future year of analysis or the planning horizon year has been updated from 2030 to 2040, which is the current horizon year for the region's long-range transportation plan.

This chapter identifies and evaluates the effects of the No-Build Alternative and the proposed BLRT Extension project on six parts of the transportation system: transit conditions, freight rail conditions, vehicular traffic, pedestrians and bicycles, parking, and aviation.

- **Section 3.1** – Transit is analyzed for the proposed BLRT Extension project in relation to the regional transportation system as defined in the Metropolitan Council (Council) travel demand model.
- **Section 3.2** – Freight rail is analyzed within the affected BNSF Railway (BNSF) and Canadian Pacific Railway (CP) rights-of-way.
- **Section 3.3** – Vehicular traffic is analyzed at all intersections along the proposed BLRT Extension project alignment that are signalized, are anticipated to be signalized, or are unsignalized and are anticipated to be controlled by gate arms.
- **Section 3.4** – Pedestrian and bicycle resources are analyzed within ½ mile of the proposed BLRT Extension project alignment and stations.
- **Section 3.5** – Parking is analyzed within the anticipated limits of disturbance (LOD).
- **Section 3.6** – Aviation impacts are analyzed for the areas where the proposed BLRT Extension project LOD are within the Crystal Airport Runway Protection Zone (RPZ) and Safety Zone A.

Table 3.0-1 summarizes the study area considered for each area of analysis in this chapter. Greater detail is provided in each section of this chapter and in the supporting documentation *BLRT Traffic Operations Technical Memorandum* (Council, 2015e) and the *Transportation Technical Report* (Council, 2016).

Table 3.0-2 summarizes the effects of the BLRT Extension project on the transportation system, as well as the Council's minimization and mitigation commitments that are proposed as a part of the BLRT Extension project.

Table 3.0-1. Defined Study Areas for the Transportation Analysis

Resource Evaluated	Study Area Definition	Basis for Study Area
Transit Conditions	Proposed BLRT Extension project in relation to the regional transportation system as defined in the Council travel demand model	Estimated area where changes would occur for the proposed BLRT Extension project based on 15 percent engineering design
Freight Rail Conditions	BNSF and CP rights-of-way	Freight rail infrastructure and operations lie within BNSF and CP rights-of-way
Vehicular Traffic	All signalized intersections, proposed signalized intersections, and crossings controlled by gate arms along the proposed BLRT Extension project alignment	Intersections capture concentrated area of potential impacts and delay
Pedestrians and Bicyclists	Within ½ mile of the proposed BLRT Extension project alignment and stations	Captures bike/walk area around the proposed BLRT Extension project alignment and stations
Parking	Within LOD	Estimated area where construction would occur for the proposed BLRT Extension project based on 15 percent engineering design
Aviation	LOD for the proposed BLRT Extension project that are outside the Crystal Airport property boundaries but within the RPZ and Safety Zone A for Runway 6L	Crystal Airport is the only aviation facility adjacent to the proposed BLRT Extension project; RPZ and Safety Zone are the areas with specific requirements

Table 3.0-2. Summary of Impacts and Mitigation Measures – Transportation Analysis

Category		Summary of Impacts and Mitigations
Transit Conditions (Section 3.1)	Operating-Phase (Long-Term) Direct Impacts	■ The proposed BLRT Extension project would result in 27,000 daily boardings in 2040
	Construction-Phase (Short-Term) Impacts	■ Intermittent impacts to bus operations in construction areas: • Temporary stop relocations or closures • Route detours ■ Suspensions of service on segments of routes
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ No mitigation is required because no long-term adverse impacts would occur. Route modifications to bus service in order to integrate with the proposed BLRT Extension project will be conducted in accordance with Title VI requirements **Construction-Phase (Short-Term):** ■ Issue construction updates and post them on the BLRT Extension project website ■ Provide advance notice of roadway closures, driveway closures, and utility shutoffs ■ Conduct public meetings ■ Establish a 24-hour construction hotline ■ Prepare materials with information about construction ■ Address property access issues ■ Assign staff to serve as liaisons between the public and contractors during construction ■ Post information at bus stops and regional transit centers indicating temporary stop closures and/or detour details ■ Publish information in advance of bus detours on Metro Transit's website and in its on-board information brochure
Freight Rail Conditions (Section 3.2)	Operating-Phase (Long-Term) Direct Impacts	■ The proposed BLRT Extension project includes construction of LRT guideway generally in the eastern half of BNSF right-of-way; BNSF track would be relocated about 15 feet to the west
	Construction-Phase (Short-Term) Impacts	■ Potential for temporary rail service impacts
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ No mitigation required for operating-phase (long-term) effects because identified avoidance measures (reconstruction of BNSF rail corridor to current standards including continuously welded rail, provision of a service road, corridor protection measures) will prevent any adverse impacts: ■ Reconstructing BNSF corridor including a service road ■ Continuously welded freight rail track resulting in less noise and vibration impacts associated with freight rail operations **Construction-Phase (Short-Term):** ■ Development and implementation of freight rail operation coordination plans ■ Work with affected freight rail owners/operators to sequence construction to reduce effects on freight traffic ■ Use flaggers to allow freight rail operations to continue

Table 3.0-2. Summary of Impacts and Mitigation Measures – Transportation Analysis

Category		Summary of Impacts and Mitigations
Vehicular Traffic (Section 3.3)	Operating-Phase (Long-Term) Direct Impacts	■ Seven intersections would operate at level of service (LOS) F with the No-Build Alternative, which would be reduced to one intersection with the proposed BLRT Extension project in 2040 ■ Two intersections would operate at LOS E with the No-Build Alternative which would increase to five intersections with the proposed BLRT Extension project in 2040
	Construction-Phase (Short-Term) Impacts	■ The construction phase of the proposed BLRT Extension project is expected to cause disruptions to traffic operations, including lane closures, short-term intersection and roadway closures, and detours that would cause local, short-term increases in congestion
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ No mitigation required for operating-phase (long-term) effects because the identified avoidance measures (roadway and intersection improvements) will prevent adverse impacts resulting from the proposed BLRT Extension project **Construction-Phase (Short-Term):** ■ Mitigation for construction-phase (short-term) effects will include development and implementation of the Construction Mitigation Plan, which includes a Construction Communication Plan and a construction staging plan ■ Contractors will need to comply with the requirements of MnDOT, Hennepin County, and all municipalities affected by construction activities related to the closing of roads ■ Contractors will be required to comply with all guidelines in the Minnesota Manual on Uniform Traffic Control Devices and will develop appropriate traffic control plans
Pedestrians and Bicyclists (Section 3.4)	Operating-Phase (Long-Term) Direct Impacts	■ No adverse impacts identified
	Construction-Phase (Short-Term) Impacts	■ Temporary closures or detours during construction of the proposed BLRT Extension project would affect existing bicycle and pedestrian facilities
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ Provision of pedestrian and bicycle improvements as part of the proposed BLRT Extension project elements, including: • Improved, signalized at-grade pedestrian crossings along Olson Memorial Highway • Improved pedestrian and bicycle connections and elevators at Plymouth Avenue and Golden Valley Road stations • Improved pedestrian crossings of the proposed BLRT Extension project/freight rail corridor at existing roadway crossings • Improved pedestrian crossings of Bottineau Boulevard (County Road 81) at Bass Lake Road and 63rd Avenue • Improved pedestrian and bicycle facilities on West Broadway Avenue • New pedestrian and bicycle facilities north of Trunk Highway (TH) 610

Table 3.0-2. Summary of Impacts and Mitigation Measures – Transportation Analysis

Category		Summary of Impacts and Mitigations
		Construction-Phase (Short-Term): ■ Mitigation for construction-phase (short-term) effects will include development and implementation of the Construction Communication Plan; implementation of this plan will provide advance notice of pedestrian and bicycle facility closures and detour options
Parking (Section 3.5)	Operating-Phase (Long-Term) Direct Impacts	■ Loss of on-street parking spaces: • About 25 spaces along frontage road on north side of Olson Memorial Highway between Humboldt Avenue and Van White Memorial Boulevard • About 50 spaces along frontage road on south side of Olson Memorial Highway between Knox Avenue North and the cul-de-sac west of Van White Boulevard • About 8 spaces along frontage road on north side of Olson Memorial Highway roughly one-half block east and west of Queen Avenue North • About 3 spaces on west side of Hubbard Avenue immediately south of 42nd Avenue • About 6 spaces on west side of West Broadway Avenue immediately south of 42nd Avenue ■ Loss of off-street parking spaces: • About 50 parking spaces from a parking lot north of Hubbard Marketplace between 41st and 42nd avenues • Eleven diagonal parking spaces would be converted to five parallel parking spaces on the north side of the Hubbard Marketplace building • About 75 parking spaces from a retail center (7316 Lakeland Avenue) surface parking lot • About 100 parking spaces from Target store (7535 West Broadway Avenue) parking lot
	Construction-Phase (Short-Term) Impacts	■ On-street parking spaces could be temporarily removed at construction locations
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ Loss of off-street parking spaces will be compensated in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act) ■ Coordinate mitigation for loss of on-street parking spaces with local jurisdictions to identify whether suitable replacement locations are necessary ■ The proposed BLRT Extension project would add 1,670 new park-and-ride spaces ■ The Council will complete an annual Regional Park-and-Ride System Report to survey use of and travel patterns to park-and-ride facilities, including addressing potential spillover parking **Construction-Phase (Short-Term):** ■ Mitigation for construction-phase (short-term) effects will include development and implementation of a Construction Mitigation Plan to address temporary parking loss during construction

Table 3.0-2. Summary of Impacts and Mitigation Measures – Transportation Analysis

Category		Summary of Impacts and Mitigations
Aviation (Section 3.6)	Operating-Phase (Long-Term) Direct Impacts	■ The two LRT tracks and associated catenary system would be constructed immediately east of the BNSF tracks within the Runway Protection Zone (RPZ) of Crystal Airport
	Construction-Phase (Short-Term) Impacts	■ Construction of overhead catenary system would occur within the RPZ
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ No additional mitigation beyond the findings of the RPZ Alternatives Analysis (AA) are required ■ Based on decisions rendered by the Federal Aviation Administration (FAA) through the RPZ AA and confirmed through FAA's issuance of a letter of no objection (Form 7460 application), the proposed BLRT Extension project will be included in the updated Crystal Airport Layout Plan

3.1 Transit Conditions

This section documents the travel demand modeling and preparation of 2040 ridership forecasts for the No-Build Alternative and the proposed BLRT Extension project, as defined in this Final Environmental Impact Statement (Final EIS) for the project.

3.1.1 Regulatory Context and Methodology

The Council used its regional travel demand forecasting model to develop the transit ridership forecasts for the project. Detailed documentation regarding the model is available from the Council. Validation data sources included the Council's 2010 On Board Transit Rider Survey and 2010 Household Interview Survey, and transit ridership counts provided by Metro Transit. Additional information on ridership modeling is provided in the *Metro Blue Line LRT Extension Transportation Technical Report* (Council, 2016).

3.1.2 Study Area

The study area for transit conditions is defined as the Metro Transit service area, which is defined in the travel demand model.

The travel demand model is designed to analyze the effects of transportation improvements on travel patterns in the entire Twin Cities metropolitan area. The travel demand model incorporates the entire region (seven-county Council planning area plus parts of 13 surrounding counties in Minnesota and western Wisconsin).

3.1.3 Affected Environment

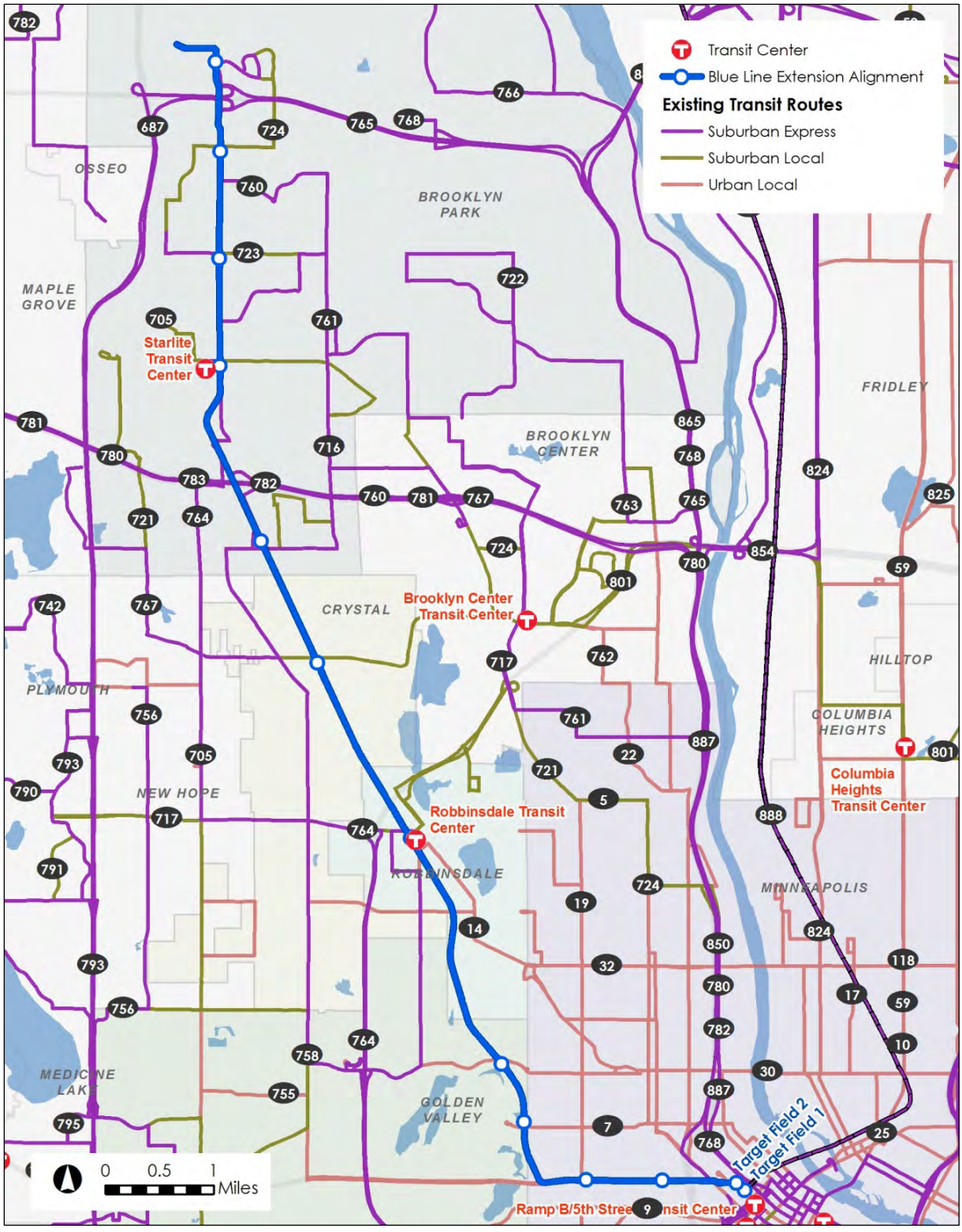
The transit service area for the proposed BLRT Extension project is generally defined by the Mississippi River to the north and east, Olson Memorial Highway TH 55) to the south, and US Highway 169 (US 169) to the west. The area is served by a network of urban and suburban local bus routes that make timed connections at three transit centers in the study area (Robbinsdale Transit Center, Brooklyn Center Transit Center, and Starlite Transit Center) as well as downtown Minneapolis (Target Field Station). The area is also served by express bus routes, most of which are oriented toward downtown Minneapolis and serve the peak-period ("rush hour") commuter travel market. Existing transit service in the area is depicted in **Figure 3.1-1**.

3.1.3.1 Transit Ridership Forecasting Assumptions (2040)

Besides future development, transit ridership forecasts reflect planned and programmed transportation system investments. Background assumptions are made as part of the No-Build Alternative in this Final EIS, with specific changes made to reflect the proposed BLRT Extension project.

The 2040 regional travel demand model incorporates roadway system improvements identified in the fiscally constrained (current revenue) scenario of the Council's regional *2040 Transportation Policy Plan* (*2040 TPP*) adopted in January 2015. In addition, programmed local or county roadway system improvements in the study area are also reflected in the model.

Figure 3.1-1. Existing Transit Service



The proposed BLRT Extension project would operate within the broader environment of the Twin Cities regional transit system. Connections provided to the proposed BLRT Extension project corridor would promote access and mobility for trips beyond the study area. The adopted regional *2040 TPP* includes several improvements in its fully funded transit scenario. Near the proposed BLRT Extension project alignment, this includes the Penn Avenue Arterial Bus Rapid Transit (BRT) line (C Line) and the Chicago-Fremont Avenue Arterial BRT line (D Line).

The alternatives analyzed in the travel demand forecast model include specific network modifications to existing transit service, including changes in routing, frequency, and travel time. Network modifications are focused on providing an integrated "feeder" bus network to connect people to the proposed BLRT Extension project stations. Bus networks and transit plans would continue to be refined as the project progresses; final bus network changes would be subject to a robust public involvement process in accordance with Title VI requirements.[1]

Table 3.1-1 identifies the bus and park-and-ride access planned at each station. In addition, all stations are planned to have pedestrian access.

Table 3.1-1. Station Access Characteristics Using 2040 Bus Feeder Plan

LRT Station	Park-and-Ride	Transfer Routes
Van White Boulevard	No	19, 26, C Line
Penn Avenue	No	19, 26, 755, C Line
Plymouth Avenue	No	7
Golden Valley Road	Yes (100 spaces)	7, 30
Robbinsdale	Yes (550 spaces)	7, 14, 19, 30, 32, 46, 56, 712, 716, 717, 746
Bass Lake Road	Yes (170 spaces)	721, 745
63rd Avenue	Yes (565 spaces)	716, 719
Brooklyn Boulevard	No	705, 720, 723, 724
85th Avenue	No	723, 724, 725
93rd Avenue	No	724
Oak Grove Parkway	Yes (850 spaces)	729, 765

Source: Blue Line Extension Travel Demand Model Estimates (Council, 2015c)

[1] Title VI of the Civil Rights Act of 1964 requires that "no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance."

3.1.4 Environmental Consequences

3.1.4.1 Operating-Phase (Long-Term) Impacts

The Council estimated the transit trips projected for the No-Build Alternative and the proposed BLRT Extension project in terms of linked and unlinked passenger trips. A linked passenger trip includes segments of travel from point of origin to point of final destination as a single trip, regardless of transfers or intermediate stops. Because of this, the number of linked passenger trips provides an estimate of the number of people using the transit system. In contrast, an unlinked passenger trip counts each segment of an overall trip as a separate, unlinked trip. Unlinked passenger trips represent the activity experienced by each route segment and travel mode. Therefore, the number of unlinked trips is greater than the number of linked trips. In presenting the analysis of transit patronage, both linked and unlinked passenger trips are reported to provide a comprehensive assessment of each alternative.

Table 3.1-2 summarizes the commonly used daily performance measures projected for year 2040 for both the No-Build Alternative and the proposed BLRT Extension project. Though the Council presumes that the proposed BLRT Extension project would be through-routed with the Blue Line (Hiawatha Light Rail Line), ridership reported includes only those trips attributable to the new service, not existing Blue Line passengers. This includes those patrons boarding and/or alighting at Van White Boulevard and stations to the north and west (including those continuing on the Hiawatha segment of the line).

For the proposed BLRT Extension project, the total system-wide passenger miles are estimated to increase 124,100 miles—from 2,878,400 with the No-Build Alternative to 3,002,500 daily miles with the proposed BLRT Extension project. Total system-wide transit ridership for the proposed BLRT Extension project is estimated to increase by 12,200 riders per day for linked trips and 26,100 per day for unlinked trips in comparison to the No-Build Alternative.

Table 3.1-2. Projected Transit System Performance Measures for the No-Build Alternative and the Proposed BLRT Extension Project in 2040

Alternative	Performance Measure							
	Unlinked Transit Trips (Daily)					Linked Transit Trips (Daily)	Daily Passenger	
	Local Bus	Express Bus	Commuter Rail	Light Rail Transit	Total		Miles	Hours
No-Build	367,800	78,400	Combined with Express Bus	124,400	570,600	351,700	2,878,400	153,000
Proposed BLRT Extension project	373,900	73,100	Combined with Express Bus	149,700	596,700	363,900	3,002,500	158,900

Source: Blue Line Extension Travel Demand Model Estimates (Council, 2015c)

As shown in **Table 3.1-3**, in 2013, the regional vehicle-miles traveled (VMT) on the transportation network was about 81 million daily VMT for the major roadway and transit facilities (including all operational LRT and commuter rail lines) in the Twin Cities region. The Council expects VMT to increase to about 102.9 million daily VMT by 2040 with the No-Build Alternative. Although VMT is expected to increase about 26 percent between 2013 and 2040, with the proposed BLRT Extension project in place, VMT would decrease slightly to 102.7 million daily VMT.

Likewise, regional vehicle-hours traveled (VHT) are forecasted to increase from about 2.5 million daily in 2013 to nearly 3.5 million hours daily in 2040. The proposed BLRT Extension project and the No-Build Alternative would have essentially the same VHT.

Transit passenger-miles traveled (PMT) are expected to increase from about 474 million annually in 2013 to about 861 million annually with the No-Build Alternative, and to about 898 million annually with the proposed BLRT Extension project. The average daily speeds for the regional roadway system were estimated by the Council based on the VMT and VHT totals (VMT/VHT).

Table 3.1-3. Regional System Performance Measures

Measure	2013	2040 No-Build Alternative	2040 Proposed BLRT Extension Project	Percent Change from 2013 to:	
				2040 No-Build Alternative	2040 Proposed BLRT Extension Project
Daily VMT (in millions)	81.8	102.9	102.7	25.7%	25.6%
Daily VHT (in millions)	2.46	3.45	3.45	40.2%	40.2%
Annual transit PMT (in millions)	473.9	860.6	897.6	81.6%	89.4%
Average system speed (in miles per hour [mph])	33.3	29.8	29.8	–10.4%	–10.4%

Source: Blue Line Extension Travel Demand Model Estimates (Council, 2015c)

Table 3.1-4 shows the daily boardings for the proposed BLRT Extension project (for 2040) by station and mode of access. Total ridership is estimated by the Council at about 27,000 riders per day; the numbers presented in the table are the specific travel demand model output. The data show that the transfer rate for the proposed BLRT Extension project would be 52 percent, drive access would be 15 percent, and walk-up access would be 33 percent.

Table 3.1-4. Daily Boardings for the Proposed BLRT Extension Project by Station and Mode of Access

LRT Station	Mode of Access			
	Walk	Transfers	Drive[1]	Total
Van White Boulevard	410	230	3	643
Penn Avenue	439	559	9	1,007
Plymouth Avenue	224	0	5	229
Golden Valley Road	368	422	115	905
Robbinsdale	638	2,269	610	3,517
Bass Lake Road	570	827	199	1,596
63rd Avenue	427	267	610	1,304
Brooklyn Boulevard	394	1,995	8	2,397
85th Avenue	997	1,176	8	2,181
93rd Avenue	249	105	3	357
Oak Grove Parkway	717	664	950	2,331
On-board Entering/Exiting Extension Area (Downtown and Hiawatha boardings/transfers)				10,392
Total project boardings				**26,859**

Source: Blue Line Extension Travel Demand Model Estimates (Council, 2015c)
[1] Drive access includes both park-and-ride and passenger drop-off

3.1.4.2 Construction-Phase (Short-Term) Impacts

No-Build Alternative

No construction-phase impacts to transit would occur under the No-Build Alternative.

Proposed BLRT Extension Project

Construction of the proposed BLRT Extension project would have intermittent impacts to bus operations on routes within the construction area. These impacts could include temporary stop relocations or closures, route detours, or suspensions of service on segments of routes operating on streets where the proposed BLRT Extension project is being constructed. In particular, the Plymouth Avenue and Golden Valley Road bridges would be reconstructed. Limited alternative roads exist to accommodate regular bus service and maintain connections to area destinations without adding resources for bus operations or curtailing routes and routing buses onto local roads that do not currently have bus service.

3.1.5 Avoidance, Minimization, and/or Mitigation Measures

This section describes the measures that would be implemented to mitigate the long-term and short-term transit impacts from the proposed BLRT Extension project. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures would address.

3.1.5.1 Long-Term Mitigation Measures

No mitigation measures are warranted for long-term impacts to transit because no long-term adverse impacts would occur to transit service due to the proposed BLRT Extension project's expansion of transit service. However, the proposed BLRT Extension project will affect fixed-route bus service as existing transit routes would be modified to more directly serve the proposed LRT stations. The Council will follow federal and local procedures for route modifications or suspension of transit service, which will include a Title VI analysis to determine how service changes will affect low-income and minority communities. This Title VI process will include community outreach for designing route changes, a public hearing for the proposed service changes, and ongoing outreach efforts to communicate service changes prior to implementation.

3.1.5.2 Short-Term Mitigation Measures

Specific mitigation measures for short-term impacts to bus service will be identified in the Construction Mitigation Plan, which includes a Construction Communication Plan and construction staging plan (staging plan) for implementation by the Council prior to and during construction. The purpose of the Construction Communication Plan will be to prepare Metro Transit riders, project-area residents, businesses, and commuters for what to expect during construction (including temporary stop relocations or closures, route detours, or suspensions of service on segments of routes operating on streets), listen to their concerns, and develop plans to minimize disruptive effects. Strategies could include:

- Issue construction updates and post them on the proposed BLRT Extension project website
- Provide advance notice of roadway closures, driveway closures, and utility shutoffs
- Conduct public meetings
- Establish a 24-hour construction hotline
- Prepare materials with information about construction
- Address property access issues
- Assign staff to serve as liaisons between the public and contractors during construction
- Post information at bus stops and regional transit centers (Robbinsdale Transit Center, Brooklyn Center Transit Center, and Starlite Transit Center) indicating temporary stop closures and/or detour details
- Publish information in advance of bus detours on Metro Transit's website and in its on-board information brochure

In addition, the Council will develop and implement a staging plan, which would be reviewed with the appropriate jurisdictions and railroads, and the contractor would be required to secure the

necessary permits and follow the staging plan, unless otherwise approved. Components of a staging plan include traffic management plans and a detailed construction timeline.

3.2 Freight Rail Conditions

3.2.1 Regulatory Context and Methodology

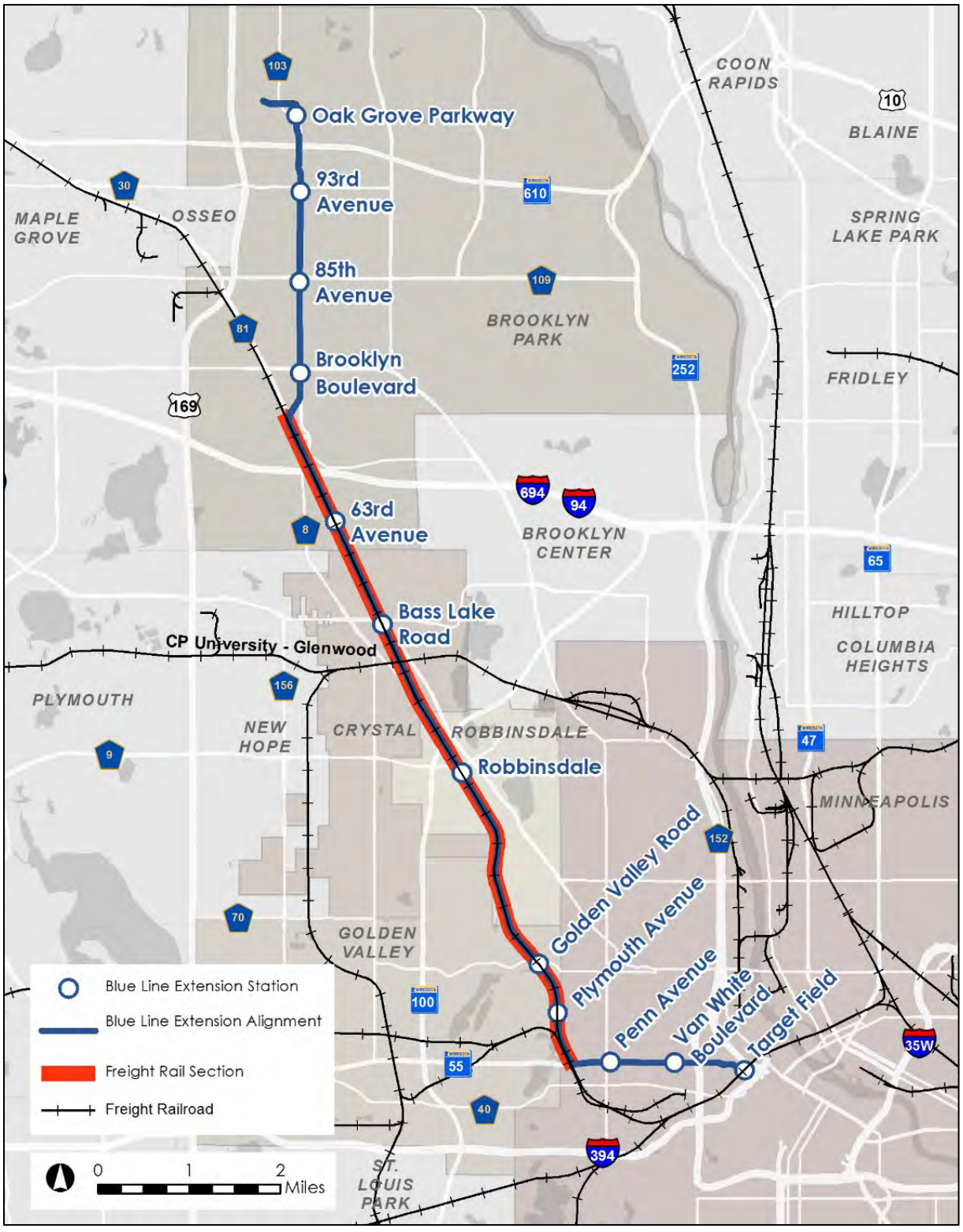
The proposed BLRT Extension project engineering drawings and existing BNSF track charts were used by the Council to identify the physical impacts of the proposed BLRT Extension project to freight rail infrastructure. All proposed physical changes to freight rail lines were identified. Further, all existing at-grade freight rail/roadway crossings affected by the proposed BLRT Extension project were identified, as well as any operational changes to freight rail. The Council reviewed the requirements of Minnesota State Statute 219.46, BNSF, CP, the American Railway Engineering and Maintenance-of-Way Association (AREMA), and the Minnesota Department of Transportation (MnDOT) to determine vertical and horizontal clearance requirements for the freight rail track. Per Minnesota State Statute 219.46, subd. 2, a minimum of 14 feet horizontal separation is required between the rail track centerlines, which is a key issue in understanding where to locate LRT tracks in relation to freight rail tracks. Additional vertical and horizontal clearance requirements are presented in Minnesota Statute 219.46; the proposed BLRT Extension project design is being developed in accordance with these requirements.

The Federal Railroad Administration (FRA) is the federal agency with jurisdictional authority over railroad safety, except "rapid transit operations in an urban area that are not connected to the general railroad system of transportation" (49 USC § 103, 49 USC § 20102). In September 2013, FRA provided a preliminary jurisdiction determination for the proposed BLRT Extension project which concluded that the proposed BLRT Extension project would be an urban rapid transit operation, and therefore, FRA would not exercise its safety jurisdiction over the proposed BLRT Extension project, except to the extent that it is necessary to ensure railroad safety at any limited shared connections between the proposed BLRT Extension project and freight rail. This applies to the shared at-grade light rail/freight rail roadway crossings included in the proposed BLRT Extension project. The proposed BLRT Extension project would be subject to FRA regulations, including 49 CFR Parts 214, 219, 220, 222, 225, 228, 233, 234, 235, and 236 and 49 CFR Part 229.125, as well as the hours of service laws, but only at the points of connection between the proposed BLRT Extension project and the general railroad system. See Appendix D of the Draft EIS for a copy of correspondence between the Council and FRA regarding FRA's jurisdictional determination.

3.2.2 Study Area

The study area for freight impacts is defined as about 7.8 miles of the BNSF right-of-way within the Monticello Subdivision located between Brooklyn Boulevard in Brooklyn Park (Mile Post [MP] 9.39) and Olson Memorial Highway in Minneapolis (MP 1.56). The width of the BNSF-owned right-of-way is generally 100 feet (about 50 feet on either side of the centerline of the existing freight rail track). **Figure 3.2-1** illustrates the study area for determining freight rail impacts.

Figure 3.2-1. Freight Rail Study Area



3.2.3 Affected Environment

Within the study area, BNSF operates about four to eight freight trains per week on its existing track. During peak operations in previous years, up to five trains per day operated in the BNSF rail corridor. Future freight operations could increase or decrease based on the needs of BNSF.

This portion of the BNSF system is located in "dark territory," which means that train movements are controlled by track warrants or train order operations, with train dispatchers issuing orders by radio communication with train engineers, not by train signals. This type of system allows only one train to be on a particular segment of the track at any given time. This segment of the corridor is Class II track and operates at a maximum speed of 25 mph based on existing track conditions.

Between Brooklyn Boulevard and Interstate Highway 94 (I-94), two siding tracks allow rail service to the Anchor Block site and the Atlas Cold Storage building. BNSF has not provided service to these sites for several years. Remnants of two other sidings are present in this area, but do not appear to be functional.

CP has two tracks that come into contact with the BNSF rail line. One is located between Bass Lake Road and Corvallis Avenue and generally runs east-west. At this location, the BNSF track crosses the CP track perpendicularly with a diamond crossing. The second track is located at the south end of the proposed BLRT Extension project alignment just north of Olson Memorial Highway, where the CP track connects to the BNSF track with a crossover.

Between 36th Avenue North and Olson Memorial Highway, the freight rail track is located within an elevation that is lower than adjacent roadways and other land uses (a "trench"). In these areas are vegetated side slopes on either side of the track and no at-grade crossings. The track crosses under five bridge structures located at Olson Memorial Highway, Plymouth Avenue, Theodore Wirth Parkway, Golden Valley Road, and 36th Avenue North.

The freight track located in the remaining segment of the proposed BLRT Extension project alignment, north of 36th Avenue, is generally at the same elevation as, or higher than, the adjacent roadways. Within this area are nine at-grade crossings (39½ Avenue, 41st Avenue, 42nd Avenue, 45½ Avenue, West Broadway Avenue [County Aid State Highway 103], Corvallis Avenue, Bass Lake Road, 63rd Avenue, and 71st Avenue) with active warning devices provided at eight of them. Passive warning devices are provided at the 39½ Avenue at-grade crossing.[2]

[2] Under the proposed BLRT Extension project build condition, the 39½ Avenue at-grade crossing would be closed.

3.2.4 Environmental Consequences

3.2.4.1 Operating-Phase (Long-Term) Impacts

No-Build Alternative

No operating-phase impacts to the freight rail corridor would occur under the No-Build Alternative.

Proposed BLRT Extension Project

The proposed BLRT Extension project includes the construction of proposed LRT guideway generally in the eastern half of the BNSF right-of-way. During preliminary engineering activities and coordination with BNSF, the Council determined that the preferred approach would be to reconstruct the freight rail track adjacent to the southbound (western) LRT track, and construct a freight rail access road to the west of the freight rail track.

With the exception of the LRT crossings of the ponds north of Golden Valley Road and Grimes Pond, the approximately 7.8-mile section in the BNSF right-of-way would be divided to accommodate both the BNSF and LRT tracks. The BNSF track would be relocated about 15 feet to the west, thereby allowing BNSF to operate within the western 50 feet of the right-of-way while providing at least 25 feet of horizontal clearance from the LRT track centerline. The LRT tracks would operate in the eastern 50 feet of the existing right-of-way. The pond crossings would leave the BNSF track in its existing location and new LRT bridges would be constructed east of the freight rail embankment. Proposed BLRT Extension project construction would include a 12-foot-wide access road generally located west of the relocated BNSF track for the majority of the 7.8 miles of the proposed BLRT Extension project in the BNSF rail corridor, with the exception of the pond areas and bridges.

The proposed BLRT Extension project includes modifications to active warning devices and signals for at-grade crossings in order to accommodate the relocated BNSF and new LRT tracks. These modifications would include relocating existing active warning devices, such as gate arms, to accommodate the relocated BNSF and LRT tracks and installing new active warning devices, such as gate arms, where they are not currently provided. In addition, combined freight/LRT at-grade crossings would be designed and constructed to be ready for FRA Quiet Zones.[3]

The proposed BLRT Extension project would include fencing at LRT stations to provide additional separation between pedestrians using the LRT station platform and the freight rail operations. Although BNSF would be required to operate within the western 50 feet of its right-of-way, incorporating an access road would improve BNSF's overall accessibility to its track. The proposed BLRT Extension project would relocate the existing freight track but would not change the overall freight rail operational context.

[3] Quiet Zones are locations, at least one-half mile in length, where the routine sounding of horns has been eliminated because of safety improvements at at-grade crossings, including modifications to the streets, raised median barriers, four quadrant gates, and other improvements designed and implemented as a part of the proposed BLRT Extension project and consistent with Quiet Zone readiness. Horns are sounded in emergency situations at these locations. Municipalities must apply to FRA for approval of Quiet Zones.

Further discussion of the impacts and improvements needed to accommodate the relocated freight rail alignment is provided below. Unless otherwise noted, these impacts would not permanently affect freight rail operations.

Required Freight Rail Modifications

The 36th Avenue bridge, Golden Valley Road bridge, Theodore Wirth Parkway bridge, Plymouth Avenue bridge, and Olson Memorial Highway bridge (westbound lanes) would be reconstructed to accommodate the relocated freight rail track and LRT guideway. See **Table 3.2-1** for proposed modifications. In addition, the crossover connection between the BNSF freight rail alignment and the CP rail spur (just north of the Olson Memorial Highway bridge) would also need to be reconstructed.

The BNSF freight rail track would be relocated about 15 feet west of its current alignment. South of 71st Avenue, part of the BNSF right-of-way is less than 100 feet wide because of the 71st Avenue roadway configuration. This limited right-of-way could require installing a barrier between the existing roadway (back of sidewalk) and the freight rail track. Existing sidings that are located north of I-94 and south of Brooklyn Boulevard are currently out of service and in some cases are not connected to the existing freight track. The relocated freight track might need to reconnect these existing sidings, if BNSF were to resume service to these customers. The existing diamond crossing at the BNSF/CP at-grade intersection would require relocation as part of shifting the freight rail track, while the proposed BLRT Extension project alignment would pass over the CP rail line on a bridge. The portion of the rail corridor between 36th Avenue and Olson Memorial Highway is located within the "trench" described on page 3-16. In some areas, retaining walls would replace the existing vegetated side slopes on either side of the BNSF right-of-way to accommodate the relocated freight rail track while reducing adjacent property impacts.

In three locations, the freight rail tracks would remain on the existing alignment and the LRT tracks would be constructed on a new bridge within the eastern 35 feet of the 100-foot-wide BNSF right-of-way. These three locations are at Grimes Pond adjacent to Sochacki Park south of 36th Avenue, at the ponds immediately north of Golden Valley Road, and at TH 100.

Corridor Protection

The proposed BLRT Extension project was examined by the Council to reduce risks in the event of a freight or LRT derailment. This review included examining technical reports, research papers, and treatments used on other corridors where freight rail and LRT operate jointly.

LRT and freight rail located in a shared corridor is not an unusual occurrence in the United States. These are known as "Common Corridor Operations." The Council collected and documented information on these locations, including mitigation measures in place. Based on this research, the following Light Rail Operators have Common Corridor Operations on portions of their lines: Port Authority Transit Corp (PATCO), Charlotte NC LYNX, Greater Cleveland Regional Transit Authority Blue and Green Lines, Dallas DART, Denver RTD, Jersey City NJT Hudson-Bergen LRT, Los Angeles LACMTA Green and Gold Lines, Sacramento CA, Sacramento RTD, St. Louis, Bi-State Development Agency, San Jose, VTA, Maryland Counties, Purple Line and Portland MAX Orange Line.

The Council contacted staff associated with these projects to identify the following common methods currently used or planned to be used after system build-out. Some of these projects and methods are still in development, but the following is a summary of these measures:

- Reliance on direct communication by internal radio systems and emergency telephone contact with the adjacent railway's dispatch center and vice-versa for notification of an accident that interferes with the other's operation
- Have established incident response protocols with the adjacent railway and first responders as part of their emergency preparedness programs
- Conduct emergency response exercises and drills as part of their training requirements. Many properties actively support "Operation Lifesaver" to reduce trespasser/transit rail accidents.
- Construct corridor protection walls between freight and light rail
- Install intrusion detection devices in areas between freight and light rail

These methods are also planned to be used on the proposed BLRT Extension project and would be incorporated into the construction and management documents, as applicable.

The Metro Transit Light Rail Transit Design Criteria (Council, 2015b), which includes design standards and specifications to provide security and/or enhance safety, includes safeguards to prevent LRT operational derailments, including guardrails (i.e., a rail or other structure laid parallel with the running rails of the track to keep derailed wheels adjacent to the running rails of the track). In addition, the proposed BLRT Extension project includes a combination of horizontal separation, vertical separation, and physical means to provide safe operations. Three specific corridor-protection treatments are proposed:

- A ditch (used where the corridor width permits)
- A retained fill option where the LRT tracks would be at a higher grade than freight rail tracks
- A wall

Typical sections representing these corridor-protection options are shown in **Figures 3.2-2 through 3.2-4** following **Table 3.2-1**. In addition, where clearance between the centerline of the light rail tracks and the centerline of the freight tracks is less than 50 feet, intrusion detection for possible freight derailment would be installed, where appropriate. These corridor-protection treatments were closely coordinated with BNSF.

Further, the design of the proposed BLRT Extension project would include safeguards in the catenary system to help minimize the possibility of sparking occurring in the overhead catenary wires. Electrical sparks, or arcing, occurs when a gap occurs between the overhead contact wire and the vehicles pantograph. Numerous safeguards are included in the design of the Project to address and minimize electrical sparking. Ice cutters would be utilized to maintain positive contact between the contact wire and pantograph during winter weather. Additionally, Metro Transit would regularly inspect pantographs for grooves along the pantograph's carbon strip (as it does on its existing light rail lines), which could cause arcing. Included in the design of the Project to minimize arcing are contact wire gradients, which meet or exceed AREMA recommendations, staggering or zig-zags of the contact wire to ensure even wear, and overlaps between power sections. Finally, the design accounts for the Occupational Safety and Health Administration 10-foot zone of influence, and meets or exceeds National Electrical Safety Code requirements along the proposed shared light rail and freight rail corridor.

The Council's Operations Emergency Management Plan (OEMP) for light rail was developed to assist in identifying, responding to, and resolving emergency situations in an efficient, controlled and coordinated manner, including those related to the location of LRT and freight rail within the same corridor. The OEMP establishes the response process and responsibilities for departments and staff within Metro Transit, as well as outside agencies, in the event of a rail emergency.

In addition, the Council maintains an emergency preparedness exercise plan. The emergency preparedness exercise plan identifies emergency preparedness exercise, which would be carried out by the Fire Life Safety and Security Committee (FLSSC). In advance of operation of the proposed BLRT Extension project, a number of drills would be planned, conducted, and documented in the emergency preparedness exercise plan. Emergency preparedness training exercises would be designed to address areas such as rail equipment familiarization, situational awareness, passenger evacuation, coordination of functions, communications, and hands-on instruction. The FLSSC would coordinate training exercises with the Council and the freight railroad owners and operators, as appropriate. During normal revenue service, the FLSSC would coordinate training exercises to evaluate emergency preparedness. The exact nature of emergency preparedness exercises would be developed in coordination with the FLSSC prior to construction, but could include one tabletop and one full-scale emergency preparedness exercise, annually.

Table 3.2-1. Proposed BLRT Extension Project Bridge Modifications

Bridge Location	Proposed Improvements
Olson Memorial Highway	The north half of the Olson Memorial Highway bridge (westbound lanes) would be reconstructed to accommodate the transition of the LRT guideway out of the BNSF right-of-way into the median of Olson Memorial Highway. These bridge reconstruction impacts are not associated with relocating the freight rail track. No change to BNSF operations or maintenance requirements.
Plymouth Avenue	The bridge deck, piers, and abutments would be removed, and a new bridge would be constructed in the same location. Bridge piers would be spaced to allow the LRT tracks to pass through on the eastern half of the BNSF rail corridor, the reconstructed freight rail track and new access road to pass through on the western half of the BNSF rail corridor, and the reconstructed Theodore Wirth Parkway trail and associated Bassett Creek channel reconstruction. The pier locations would need to accommodate a wider spacing between northbound and southbound LRT tracks to allow the Plymouth Avenue Station to be built in a center platform configuration. Bridge piers would be constructed to provide adequate crash protection based on current MnDOT and AREMA standards. No change to BNSF operations or maintenance requirements.
Theodore Wirth Parkway	The bridge deck, piers, and abutments would be removed, and a new bridge would be constructed in the same location. Bridge piers would be spaced to allow the LRT tracks to pass through on the eastern half of the BNSF rail corridor and the reconstructed freight rail track to pass through on the western half of the BNSF rail corridor. The pier locations would need to accommodate a wider spacing between northbound and southbound LRT tracks to allow the Golden Valley Road Station, which would be located directly north of the Theodore Wirth Parkway bridge, to be built in a center platform configuration. Bridge piers would be constructed to provide adequate crash protection based on current MnDOT and AREMA standards. No change to BNSF operations or maintenance requirements.
Golden Valley Road	The bridge deck, piers, and abutments would be removed, and a new bridge would be constructed in the same location. Bridge piers would be spaced to allow the LRT tracks to pass through on the eastern half of the BNSF rail corridor and the reconstructed freight rail track to pass through on the western half of the BNSF rail corridor. The pier locations would need to accommodate a wider spacing between northbound and southbound LRT tracks to allow the Golden Valley Road Station to be built in a center platform configuration. A portal would be created for a proposed trail connection between Theodore Wirth Regional Park (TWRP) and Sochacki Park. Bridge piers would be constructed to provide adequate crash protection based on current MnDOT and AREMA standards. No change to BNSF operations or maintenance requirements.
36th Avenue	The bridge deck, piers, and abutments would be removed, and a new bridge would be constructed in the same location. Bridge piers would be spaced to allow the LRT tracks to pass through one portal on the eastern half of the BNSF rail corridor and the reconstructed freight rail track and access road to pass through another portal on the western half of the BNSF rail corridor. Bridge piers would be constructed to provide adequate crash protection based on current MnDOT and AREMA standards. No change to BNSF operations or maintenance requirements.

Figure 3.2-2. Typical Railway Section – Ditch Corridor Protection

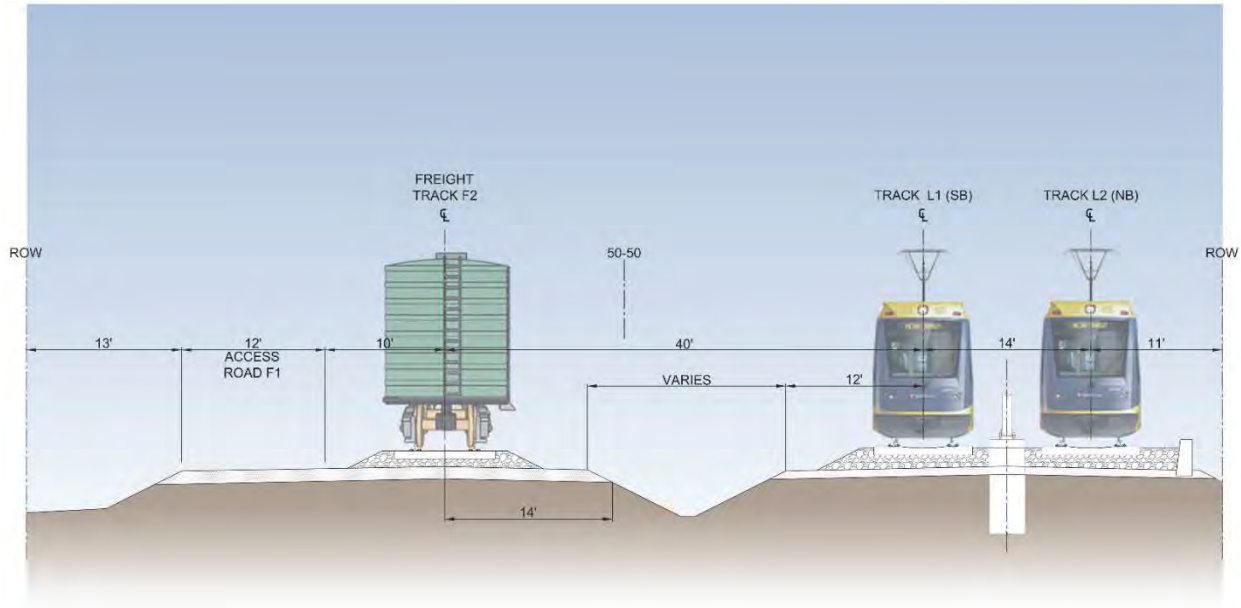


Figure 3.2-3. Typical Railway Section – Retained Embankment Corridor Protection

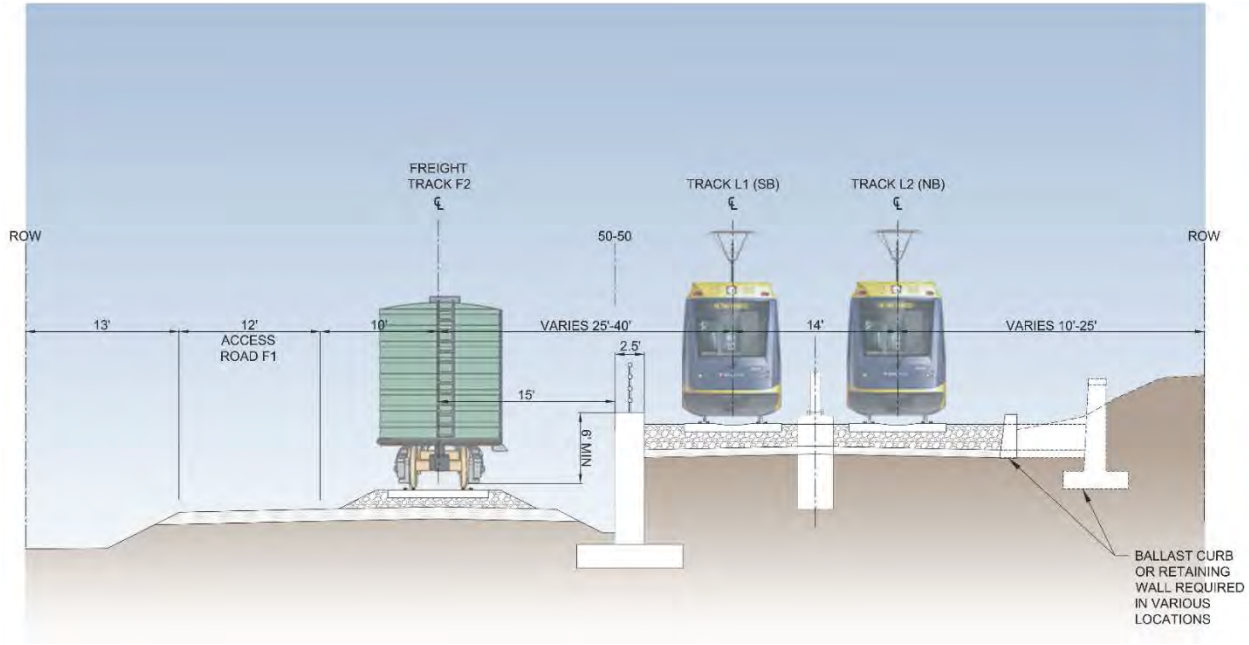
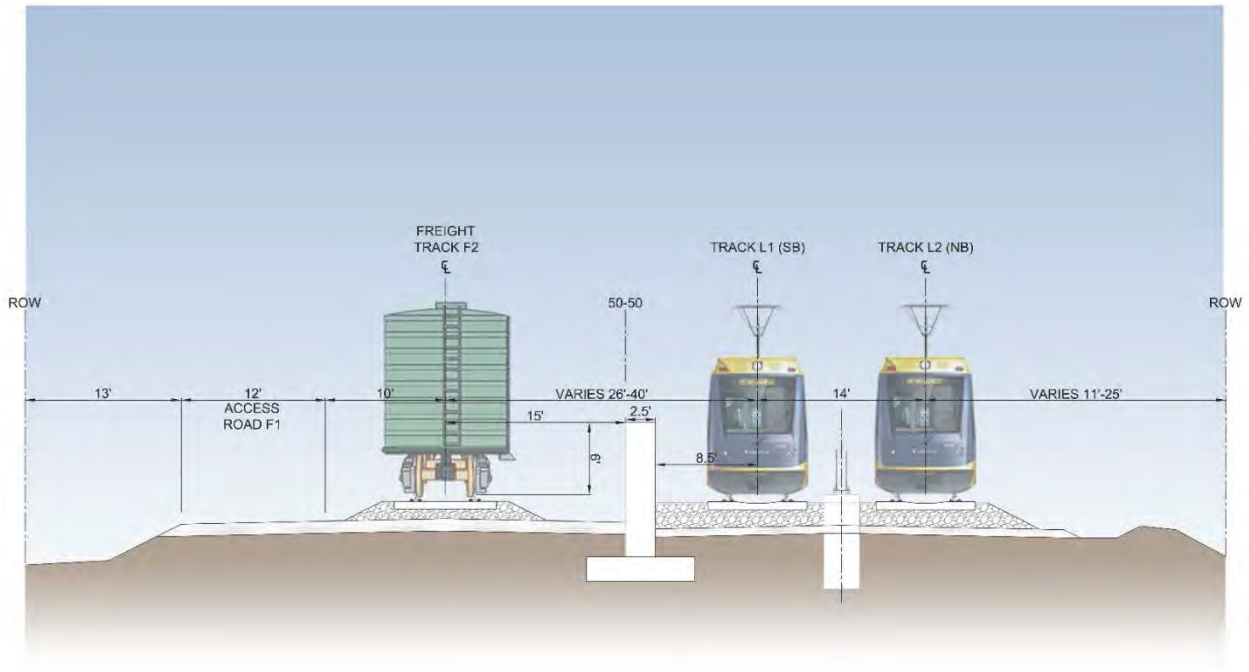


Figure 3.2-4. Typical Railway Section – Wall Corridor Protection



Traction Power Substations (TPSSs)

TPSSs needed to provide power to the LRT system would generally be located on the east side of the BNSF rail corridor, where possible, with a minimum horizontal clearance between the TPSSs and the proposed LRT track centerline of 8 feet. Greater horizontal clearances, a minimum of 15 feet from the track centerline, would be required if the TPSS is located adjacent to the BNSF freight rail track on the west side of the BNSF rail corridor. In most cases, the TPSS sites could be located on property adjacent to and outside of the existing rail corridor to avoid or reduce impacts to the freight rail tracks. Depending on the locations of the TPSS sites, utilities such as the Xcel Energy electrical service might need to cross under or over the freight rail tracks. Vertical and horizontal clearances, as required by the BNSF Utility Accommodation Policy (BNSF, 2011), would be maintained for these utility crossings.

3.2.4.2 Construction-Phase (Short-Term) Impacts

No-Build Alternative

No construction-phase impacts to freight rail would occur under the No-Build Alternative.

Proposed BLRT Extension Project

Construction activities to relocate the freight rail track required as part of constructing the LRT guideway would have limited effects on existing freight service in the BNSF rail corridor. Construction phasing would likely consist of constructing the new freight rail track adjacent to the existing track, shifting freight rail operations to the new freight rail track, and then removing the

existing freight rail track to allow construction of the LRT guideway, thus minimizing disruptions to freight rail operations. Construction work would be done under the guidance of a BNSF flagging crew.

At the BNSF/CP diamond crossing, construction would be coordinated with both railroads to limit freight delays.

Construction activities associated with relocating the freight rail track would occur primarily within the existing BNSF right-of-way, with some temporary easements to accommodate construction outside the in-place rail right-of-way.

Construction activities could also cause temporary impacts to sidings if BNSF were to resume service to freight customers between I-94 and Brooklyn Boulevard. Temporary crossovers between the existing and relocated freight rail track would be required to facilitate construction phasing and maintain freight operations. Construction of these crossovers would occur in such a way as to minimize impacts to freight rail operations in the corridor.

3.2.5 Avoidance, Minimization, and/or Mitigation Measures

This section describes the measures that will be implemented to mitigate the long-term and short-term impacts on freight transportation from the proposed BLRT Extension project. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures would address.

3.2.5.1 Long-Term Mitigation Measures

No mitigation measures are warranted for long-term impacts to freight rail because the identified avoidance measures will prevent any adverse impacts. These measures include reconstructing the BNSF rail corridor, including a service road that would provide BNSF with better access to its rail line. In addition, the existing freight rail track is jointed; this type of track generates noise and vibration as freight trains pass over the joints. The new freight rail track that will be constructed in the corridor would be continuously welded rail, which will eliminate the track joint–related noise and vibration.

In addition, as discussed in the section titled **Corridor Protection** in **Section 3.2.4.1**, corridor-protection elements will be included in the project design to reduce risks in the event of a freight or LRT derailment.

Additional information regarding mitigation measures for long-term impacts to other environmental resources associated with freight rail is included in **Section 5.6** – **Noise** (including train horn Quiet Zones).

3.2.5.2 Short-Term Mitigation Measures

Short-term impacts to freight rail operations resulting from construction activities could occur along the BNSF rail corridor and where the CP rail corridor intersects the proposed BLRT Extension project.

In order to mitigate short-term impacts to freight rail operations related to construction activities, the Council will develop and implement freight rail operation coordination plans. The purpose of

these plans is to facilitate coordination between the Council and the affected freight railroads during construction activities affecting freight rail operations. As part of this effort, Council staff will also work with affected freight rail owners and operators to provide provisions in the construction contract to identify how the contractor will interact with the railroads. Further, Council staff will work with affected freight rail owners and operators to sequence construction to reduce effects on freight movements and to identify optimal periods for closing the rail service and reducing speeds. Dates and times for all stoppages will be determined through coordination with the railroad owners and operators.

During construction activities, flaggers will be used to allow freight rail operations to continue. The use of flaggers will require construction activities adjacent to active freight rail to halt while freight trains traverse the construction area.

3.3 Vehicular Traffic

The introduction of the proposed BLRT Extension project into the existing transportation network could affect the flow of traffic in the study area. In the southern segment of the proposed BLRT Extension project alignment in Minneapolis, the new LRT tracks would run along the median of Olson Memorial Highway through several intersections. Between Olson Memorial Highway and 36th Avenue (primarily in Golden Valley and Robbinsdale), the proposed BLRT Extension project alignment is in a depressed section of the BNSF rail corridor where cars and trucks would be separated from LRT operations. North of 36th Avenue, the proposed BLRT Extension project alignment would continue to share the BNSF right-of-way and would cross several roads in Robbinsdale, Crystal, and Brooklyn Park until it reaches 73rd Avenue. At that point, the proposed BLRT Extension project alignment transitions to West Broadway Avenue where, similar to Olson Memorial Highway, the LRT would operate in the median and would cross several intersections.

In order to understand the potential for and magnitude of traffic impacts, detailed traffic operations analyses were conducted by the Council. The information in this section is based on the information in the *BLRT Traffic Operations Technical Memorandum* (Council, 2015e).

3.3.1 Regulatory Context and Methodology

Analysis of traffic impacts considers how roads and intersections operate currently and then compares those results with modeled traffic operations in the project's design year (in this case, 2040). The 2040 traffic operations were modeled using two scenarios: (1) forecasted traffic operations without the proposed BLRT Extension project (that is, the conditions with the No-Build Alternative) and (2) forecasted traffic operations with the proposed BLRT Extension project. The traffic forecasting process is described in more detail in the *BLRT Traffic and Park-and-Ride Forecast Technical Memorandum* (Council, 2015d).

The approach to the traffic operations analysis was derived by the Council from methodologies documented in the *Highway Capacity Manual*[4] (HCM). The HCM contains analysis techniques for evaluating the operations of transportation facilities under various conditions such as roadway and intersection configuration, intersection control, type of roadway, and other factors such as bus stops, parking, and percentage of heavy vehicle traffic. The proposed BLRT Extension project traffic models[5] consider lane configuration, existing and forecasted[6] turning movement volumes, pedestrian/bicycle volumes, transit stations, freight and LRT alignments, freight and LRT volumes, intersection and grade crossing control devices, and signal timing characteristics. The LOS thresholds are represented as letter grades ranging from A to F. Based on standard practice in the traffic engineering industry, as well as guidance from the American Association of State Highway and Transportation Officials (AASHTO) and conformance with MnDOT and Hennepin County practice, the threshold for acceptable level of intersection operations is between LOS D and LOS E (with LOS D being considered acceptable and LOS E unacceptable) during the peak hour (hour of highest traffic volume) for urban and suburban areas.

In the study area, both AM and PM peak hours were analyzed; in many cases, the PM peak conditions were worse than the AM peak conditions. At several locations where both AM and PM peak conditions were LOS F, the PM peak had greater delays, although at a few locations the AM peak was worse than the PM peak.

3.3.2 Study Area

The study area for vehicular traffic is defined as the existing and proposed signalized intersections along the proposed BLRT Extension project alignment. In addition, several unsignalized crossings of the transitway that would be controlled with automatic gates have been included in the analysis. Study intersections are identified in Figures 1 through 6 in the *BLRT Traffic Operations Technical Memorandum* (Council, 2015e).

3.3.3 Affected Environment

The regional highway system consists of principal and minor arterials (roads that have a primary purpose of moving traffic efficiently, with less emphasis on access to adjacent land), including Interstate state and county highways and some city streets. The Twin Cities region represents slightly less than half of the state's total population. Between 2010 and 2040, growth in this area is expected by the Council to generate an additional 3 million trips and 16 million VMT per day, for a total of 10 million daily trips and 89 million VMT per day. It is the Council's policy to support

[4] The 2010 *Highway Capacity Manual* was developed and is regularly updated by the Transportation Research Board, the nationally recognized leader in transportation research and analysis. Use of the HCM analysis techniques is standard practice for traffic operations analysis.

[5] The proposed BLRT Extension project traffic models use VISSIM software packages that implement HCM methodologies for traffic operations analysis. Synchro software was also used for some of the intersections that did not involve rail crossings.

[6] The *Thrive MSP 2040* plan (Council, 2014) was used to identify the 2040 forecasts that were used for the traffic modeling.

infrastructure investments that reduce VMT and carbon per unit of fuel, which are key drivers of the region's generation of greenhouse gas emissions.

Although the opportunities are limited in the study area to expand roads to address this increase in VMT, several roadway improvement projects are planned and are included in modeled results for the No-Build Alternative and the proposed BLRT Extension project.

- West Broadway Avenue Reconstruction south of Candlewood Drive to north of 93rd Avenue North – Capacity expansion from two lanes to four lanes (Hennepin County Transportation)
- Bottineau Boulevard (County Road 81) Reconstruction, 63rd Avenue to TH 169 (Hennepin County Transportation)
- Candlewood Drive Extension, West Broadway Avenue to 79th Avenue (city of Brooklyn Park)
- TH 610, Bottineau Boulevard to I-94 – New roadway construction (MnDOT)

All intersections currently operate at overall LOS D or better in the AM and PM peak hours, with the following exception:

- Olson Memorial Highway/Penn Avenue North operates at LOS F in the PM peak hour.

3.3.4 Environmental Consequences

3.3.4.1 Operating-Phase (Long-Term) Impacts

No-Build Alternative

The analysis of the No-Build Alternative was based on the future-year (2040) traffic volumes with the No-Build Alternative, existing roadway configurations and rail crossing treatments, and existing signal operations. The roadway improvements assumed by the Council for the No-Build Alternative analysis are shown in the intersection layouts provided in Appendix B of the *BLRT Traffic Operations Technical Memorandum* (Council, 2015e) and were based on the following projects that were completed since 2014 or are currently programmed:

- Bottineau Boulevard from TH 100 to Wilshire Boulevard restriped from a four-lane roadway to a six-lane roadway; completed in 2015 by Hennepin County
- C Line arterial BRT construction on Penn Avenue North and Olson Memorial Highway; currently planned for construction in 2017 by the Council
- Bottineau Boulevard reconstruction from a four-lane roadway to a six-lane roadway from 63rd Avenue North to West Broadway Avenue/71st Avenue North; currently planned for 2016–2018 by Hennepin County
- Bottineau Boulevard reconstruction from a four-lane roadway to a six-lane roadway from West Broadway Avenue/71st Avenue North to TH 169; currently planned for 2019 by Hennepin County
- West Broadway Avenue reconstruction from a two-lane roadway to a four-lane roadway from 78th Avenue North to 93rd Avenue North; currently planned for 2018–2020 by Hennepin County

Table 3.3-1 lists the intersections in the study area where the Council expects the level of service with the No-Build Alternative to be LOS E or F during the AM or PM peak hours in 2040. All other intersections in the study area are expected to operate at overall LOS D or better.

Table 3.3-1. Peak-Hour Traffic Operations at Intersections in 2040 with the No-Build Alternative[1]

Intersection	Time Period	Vehicle Delay (seconds/vehicle)	Intersection LOS
West Broadway Avenue/ 101st Avenue North	AM peak	74	F
	PM peak	194	F
West Broadway Avenue/ Winnetka Avenue North[2]	AM peak	134	F
	PM peak	162	F
West Broadway Avenue/ Oak Grove Parkway	AM peak	152	F
	PM peak	200+	F
West Broadway Avenue/ TH 610 westbound ramps	AM peak	200+	F
	PM peak	200+	F
West Broadway Avenue/ TH 610 eastbound ramps	AM peak	105	F
	PM peak	189	F
Golden Valley Road/ Theodore Wirth Parkway[3]	PM peak	42	E
Olson Memorial Highway/ Thomas Avenue North[2]	AM peak	91	F
	PM peak	89	F
Olson Memorial Highway/ Penn Avenue North	AM peak	81	F
	PM peak	131	F
Olson Memorial Highway/ Morgan Avenue North	PM peak	57	E

[1] Includes only intersections with overall LOS E or F. Intersections are signalized unless otherwise noted.
[2] Side street stop-controlled intersection.
[3] All-way stop-controlled intersection.

The poor operations (delay and queuing resulting in LOS E or F) in the area north of TH 610 with the No-Build Alternative are due to the intense development planned to occur in this area by 2040. Potential transportation system improvements north of TH 610 are discussed in the **Proposed BLRT Extension Project** section that follows.

The poor operations (delay and queuing) at the Golden Valley Road/Theodore Wirth Parkway intersection with the No-Build Alternative are due to the forecasted traffic volume growth and the inefficiency of the all-way stop.

The poor level of service at the Olson Memorial Highway/Thomas Avenue North intersections is due to the high eastbound traffic volumes during the AM peak hour. The LOS E operations at the Olson Memorial Highway/7th Street North/6th Avenue North intersection during the PM peak hour are due to increase in traffic volume at the intersection.

Proposed BLRT Extension Project

The roadway network, and the effect of the proposed BLRT Extension project on that network, is tied to the level of development along the proposed BLRT Extension project alignment. The majority of the study area is developed or developing, and the traffic operations analysis considers the effect of adding LRT into an existing roadway network that serves the surrounding development.

However, the area north of TH 610 in Brooklyn Park is largely undeveloped, with the exception of the Target Northern Campus. The city of Brooklyn Park and other regional stakeholders have identified this area for urban development, and the proposed BLRT Extension project has been designed to support this development. The Council's coordination with city and county stakeholders resulted in a final siting plan for the proposed BLRT Extension project (including track alignment, the Oak Grove Parkway Station, and the Operations and Maintenance Facility [OMF]) that would require realigning the north-south West Broadway Avenue corridor and the east-west 101st Avenue/Oak Grove Parkway corridor.

In addition to realigning these primary roadway corridors, the proposed BLRT Extension project would include minor street connections consistent with the ultimate city and regional plans for the development of this area. These connections include Xylon Avenue, which would provide access to the OMF and additional traffic circulation, and Main Street, which would provide access to the Oak Grove Parkway park-and-ride as well as additional traffic circulation. See **Figure 3.4-14** in **Section 3.4 – Pedestrians and Bicyclists** for a depiction of the proposed transportation network north of TH 610.

In addition, the city of Brooklyn Park is exploring the construction of a full-access interchange at TH 169 and 101st Avenue as a separate project not related to the proposed BLRT Extension project. This interchange is not part of the region's *TPP*, and therefore the traffic operations analysis results do not include the effects of introducing an interchange at this location. However, the Council analyzed a "what-if" scenario, including the interchange, in order to understand the effects on traffic operations. Information regarding this additional traffic analysis is provided in **Chapter 6 – Indirect Impacts and Cumulative Effects**.

Several roadway and intersection improvements were identified by the Council as part of the proposed BLRT Extension project. These improvements fall into four primary categories: (1) improvements necessary to facilitate LRT alignment transitions, (2) improvements necessary to maintain or improve neighborhood access, (3) improvements necessary to maintain or improve traffic operations (level of service), and (4) improvements to support the necessary transportation framework for the planned development north of TH 610. These proposed improvements were incorporated into the proposed BLRT Extension project (build) conditions modeling and are shown in Appendix B of the *BLRT Traffic Operations Technical Memorandum* (Council, 2015e). The improvements are summarized in **Table 3.3-2**.

Table 3.3-2. Traffic-Related Improvements Included in the Proposed BLRT Extension Project

Purpose of Improvement	Improvement Description
Facilitate LRT alignment transition	■ Install a new traffic signal at West Broadway Avenue/94th Avenue North to allow LRT to transition from side-running to center-running. ■ Install a new traffic signal at West Broadway Avenue/75th Avenue North to allow LRT to transition from side-running to center-running.
Maintain and/or improve neighborhood access	■ Install a new traffic signal at Olson Memorial Highway/Thomas Avenue North to maintain neighborhood access. ■ Install new traffic signals on Olson Memorial Highway at the proposed pedestrian crossings of Russell Avenue North, east of Oliver Avenue North, and east of James Avenue North to maintain neighborhood pedestrian access.
Maintain and/or improve traffic operations	■ Modify left-turn signal operations on Brooklyn Boulevard/County Highway 152 from protected-only (green arrows) to protected/permissive (left turn allowed on green ball or flashing yellow arrow, depending on signal configuration). ■ Install a new traffic signal at 63rd Avenue North/Louisiana Avenue to provide for pedestrian crossings of 63rd Avenue North and facilitate traffic exiting the park-and-ride. ■ Modify signal phasing at Bottineau Boulevard/Bass Lake Road to provide a right-turn overlap phase on eastbound Bass Lake Road. ■ Reconfigure the West Broadway Avenue/Vera Cruz Avenue North intersection to a roundabout in order to continue to provide full access to the surrounding neighborhood; provide additional gates and medians at the rail crossing. ■ Restripe West Broadway Avenue at 42nd Avenue North to provide northbound and southbound left-turn lanes and modify the traffic signal to provide northbound and southbound protected/permissive left-turn phasing to accommodate park-and-ride traffic. ■ Modify Penn Avenue lane configurations at Olson Memorial Highway to better accommodate vehicle traffic flow. ■ Modify southbound West Lyndale Avenue North configurations to better accommodate vehicle traffic flow.
Support planned roadway network north of TH 610	■ Reconstruct 101st Avenue North and Oak Grove Parkway to accommodate the needs of the OMF site. ■ Reconstruct West Broadway Avenue from TH 610 to north of Oak Grove Parkway to accommodate the desired location of the LRT alignment, station location, and park-and-ride parking structure. ■ Install a new traffic signal at West Broadway Avenue/Main Street to provide a second access point to the park-and-ride.

With the improvements listed in **Table 3.3-2** above being implemented, the Council expects all intersections in the study area to operate at overall LOS D or better during the AM and PM peak hours in 2040 with the proposed BLRT Extension project, with the exceptions of the following intersections that would operate at LOS E or F (see **Table 3.3-3**).

Table 3.3-3. Peak-Hour Traffic Operations at Intersections in 2040 with the No-Build and Proposed BLRT Extension Project[1]

Intersection	Time Period	Vehicle Delay w/ Proposed BLRT Extension Project (seconds/vehicle)	Intersection LOS	
			Proposed BLRT Extension Project	No-Build Alternative
West Broadway Avenue/ 101st Avenue North[2]	PM peak	Not applicable	Not applicable	F
West Broadway Avenue/ Winnetka Avenue North[2]	PM peak	Not Applicable	Not applicable	F
Oak Grove Parkway/ Xylon Avenue[3,4]	PM peak	75	E	Not applicable
West Broadway Avenue/ Oak Grove Parkway	PM peak	96	F	F
West Broadway Avenue/ TH 610 westbound ramps	PM peak	40	D	F
West Broadway Avenue/ TH 610 eastbound ramps	PM peak	28	C	F
West Broadway Avenue/ Main Street[4]	PM peak	63	E	Not applicable
Golden Valley Road/ Theodore Wirth Parkway[5]	PM peak	43	E	E
Olson Memorial Highway/ Thomas Avenue North	AM peak	65	E	F
Olson Memorial Highway/ Penn Avenue North	PM Peak	51	D	F
Olson Memorial Highway/ Morgan Avenue North	PM peak	23	C	F
Olson Memorial Highway/ 7th Street North/ 6th Avenue North[6]	PM peak	65	E	D

[1] Includes only intersections with overall LOS E or F. Intersections are signalized unless otherwise noted.

[2] With the proposed BLRT Extension project realigned street network, these intersections would no longer exist.

[3] Side street stop-controlled intersection.

[4] These intersections would not exist with the No-Build Alternative; however, the existing intersections in the area were at LOS F in the No-Build Alternative analysis.

[5] All-way stop-controlled intersection.

[6] The LOS E operations at the Olson Memorial Highway/7th Street North/6th Avenue North intersection in the 2040 PM peak is due to growth in traffic volumes at the intersection, the LRT alignment through the intersection that results in changes to the traffic signal phasing, and the roadway geometrics at the intersection. The proposed BLRT Extension project stakeholders, in evaluating the competing needs of all modes at the intersection, recommended that roadway capacity improvements not be implemented at the intersection because the corresponding negative impacts on other modes, including pedestrians, bicyclists, and buses.

The poor operations (delay and queuing) at the Oak Grove Parkway/Xylon Avenue intersection in the PM peak hour with the No-Build Alternative are due to the large amount of traffic that would be generated by development.

The poor operations (delay and queuing) at the West Broadway Avenue/Oak Grove Parkway and West Broadway Avenue/Main Street intersections in the PM peak hour with the proposed BLRT Extension project are due to the large amount of development-generated traffic that would be accessing the TH 610 interchange. The operations issues with the proposed BLRT Extension project would occur to a greater degree with the No-Build Alternative; therefore, no mitigation for these intersections is being proposed by the Council as part of the proposed BLRT Extension project.

The poor level of service (LOS E during the PM peak hour) at the Golden Valley Road/Theodore Wirth Parkway intersection with the proposed BLRT Extension project is due to the forecasted increase in traffic and the inefficiency of the all-way stop.[7] These conditions are essentially the same as those with the No-Build Alternative; the Council expects the addition of the park-and-ride at the Golden Valley Road Station (see **Table 3.3-4**) to contribute 2 percent or less of the PM peak-hour traffic volume in 2040.

The poor level of service at the Olson Memorial Highway/Thomas Avenue North intersection with the proposed BLRT Extension project is due to the high eastbound traffic volumes during the AM peak hour. The operations with the proposed BLRT Extension project are expected to be better than with the No-Build Alternative because of the improvements associated with the proposed BLRT Extension project; therefore, no additional improvements are being proposed by the Council.

The LOS E operations at the Olson Memorial Highway/7th Street North/6th Avenue North intersection in the PM peak hour with the proposed BLRT Extension project are due to increased traffic at the intersection, the LRT alignment through the intersection that results in changes to the traffic signal phasing, and the roadway configurations at the intersection. The proposed BLRT Extension project stakeholders, in evaluating the competing needs of all modes at the intersection, recommended that roadway capacity improvements not be implemented at the intersection because of the corresponding negative impacts on other modes, including pedestrians, bicyclists, and buses.

[7] Potential modifications to this intersection for the purposes of enhanced pedestrian and bicycle safety and mobility are being considered by the Council in coordination with Hennepin County, the Minneapolis Park and Recreation Board, and the city of Golden Valley. See **Section 3.4.4.1** for additional information.

Overall, fewer failing intersections would occur in 2040 with the proposed BLRT Extension project than with the No-Build Alternative because of the improvements that would be made as part of the proposed BLRT Extension project. In addition, all of the intersection operations at LOS E or F were due to an issue that would also exist with the No-Build Alternative, or the stakeholders determined that the traffic mitigation measures would have significant negative impacts on other modes. In summary:

- All intersections that would operate at LOS A to D under the No-Build Alternative would continue to operate at LOS A to D under the proposed BLRT Extension project, with the exception of the Olson Memorial Highway/7th Street North/6th Avenue North intersection as discussed above.
- Four intersections that would operate at LOS E or F under the No-Build Alternative would be improved to LOS A to D under the proposed BLRT Extension project.
- Two intersections that would operate at LOS E or F under the No-Build Alternative would continue to operate at LOS E or F under the proposed BLRT Extension project.

Park-and-Ride Facilities

Several new or expanded park-and-ride facilities are proposed as part of the proposed BLRT Extension project; these facilities would be located at the Golden Valley Road, Robbinsdale, Bass Lake Road, 63rd Avenue, and Oak Grove Parkway stations. The traffic impacts from the park-and-ride facilities were calculated by the Council using a trip generation evaluation based on average rates from other park-and-ride facilities in the Twin Cities metropolitan area. The results of this evaluation are shown in **Table 3.3-4**. The roadway improvements listed in **Table 3.3-2** above were included in the level of service analysis to accommodate the additional traffic generated by the park-and-ride facilities.

Table 3.3-4. Sizes of and Trips Generated by Park-and-Ride Facilities

Station	Size of New Park-and-Ride (parking spaces)	AM Peak Hour Trip Generation (vehicles/hour)	PM Peak Hour Trip Generation (vehicles/hour)	Daily Trip Generation (vehicles/day)
Oak Grove Parkway	850	470	435	2,520
63rd Avenue	565	310	290	1,680
Bass Lake Road	170	95	85	500
Robbinsdale	550	305	280	1,630
Golden Valley Road	100	55	50	300

3.3.4.2 Construction-Phase (Short-Term) Impacts

No-Build Alternative

No construction-phase impacts to vehicular traffic would occur under the No-Build Alternative.

Proposed BLRT Extension Project

The Council expects the construction of the proposed BLRT Extension project to cause disruptions to traffic operations, including lane closures, short-term intersection and roadway closures, and detours that would cause local increases in congestion.

The details of construction staging would be developed by the Council in future stages of project design. Maintenance of traffic (MOT) plans would need to be developed during final design or construction and submitted for approval to the roadway authorities. The MOT plans would address construction phasing, maintenance of traffic, traffic signal operations, access through the construction work zone, road closures, and any traffic detours.

3.3.5 Avoidance, Minimization, and/or Mitigation Measures

This section describes the measures that will be implemented to mitigate the long-term and short-term roadway and traffic impacts from the proposed BLRT Extension project. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures will address.

3.3.5.1 Long-Term Mitigation Measures

No mitigation measures are warranted for long-term impacts to roads and traffic because several improvements were identified as part of the project scope to provide signalized control of LRT movements at and through intersections and to provide adequate infrastructure to accommodate buses, pedestrians, and park-and-ride traffic near stations. As shown in **Table 3.3-2**, the proposed BLRT Extension project includes a variety of roadway modifications that will avoid new congested intersections, and, with one exception, the proposed BLRT Extension project will not worsen conditions at intersections that would be congested with the No-Build Alternative in 2040.

The Olson Memorial Highway/7th Street/6th Avenue intersection would need geometric improvements to maintain acceptable level of service operations. However, as noted previously in **Section 3.3.4.1**, the proposed BLRT Extension project stakeholders, including the city of Minneapolis, Hennepin County, MnDOT, and the Council, evaluated the competing needs of all modes at the intersection. They recommended that roadway capacity improvements should not be implemented at the intersection because of the corresponding negative impacts on other modes, including pedestrians, bicycles, and buses.

3.3.5.2 Short-Term Mitigation Measures

Project construction will result in temporary partial or full closures of existing streets as well as material and equipment deliveries, worker arrivals and departures, and hauling of excavation and borrow materials.

Mitigation measures for short-term (construction) impacts to roads and traffic will be implemented by the Council prior to and during construction through the Construction Mitigation Plan, which includes a Construction Communication Plan and a construction staging plan. MnDOT, Hennepin County, and all municipalities affected by construction activities related to the proposed BLRT Extension project will require compliance with applicable state and local regulations related to the closing of roads and the effects of construction activities.

Contractors will be required to comply with all guidelines established in the *Minnesota Manual on Uniform Traffic Control Devices* (MnDOT, 2015). Construction staging and mitigation documents will be reviewed by appropriate jurisdictions, and required permits will be secured by construction contractors. Traffic-control plans will be developed by the contractor based on information identified in the construction documents and the Construction Mitigation Plan. Traffic-control plans will be reviewed by appropriate jurisdictions and the Council before construction activities began.

3.4 Pedestrians and Bicyclists

3.4.1 Regulatory Context and Methodology

This section describes existing bicycle and pedestrian facilities and connections in the study area and the expected impacts of the No-Build Alternative and the proposed BLRT Extension project on these facilities. Non-motorized transportation facilities, including sidewalks, single- and multi-use trails, on-street bike facilities, and pedestrian bridges are found throughout the study area. The Council identified facilities by reviewing trail and comprehensive plan maps, aerial photographs, and station-area planning documents; site visits; and discussions with stakeholders. Preliminary engineering drawings and LOD were used to determine the number and severity of impacts. Physical encroachments onto existing facilities were identified and evaluated to avoid or minimize impacts.

Impacts to pedestrian and/or bicycle routes from the proposed BLRT Extension project crossing restrictions were identified by the Council and alternates were examined, with consideration for reasonable accessibility associated with the Americans with Disabilities Act (ADA) requirements.

The discussion of the proposed BLRT Extension project focuses on:

- Target Field Station connection area, especially the Olson Memorial Highway/7th Street intersection
- Olson Memorial Highway, especially the area between the I-94 bridge and Thomas Avenue and including the Van White Boulevard and Penn Avenue stations
- Plymouth Avenue Station area
- Golden Valley Road Station area

- Robbinsdale Station area
- Bass Lake Road Station area
- 63rd Avenue Station area
- Grade separation at Bottineau Boulevard and 73rd Avenue, especially changes to Jolly Lane
- West Broadway Avenue, including the Brooklyn Boulevard, 85th Avenue, and 93rd Avenue stations
- Oak Grove Parkway Station area

The discussion includes a summary of effects on bicycle and pedestrian facilities in the study area, with a focus on the proposed accessibility improvements at future station areas and on reconstructed intersections or crossings where existing bicycle and pedestrian access would change.

3.4.2 Study Area

The study area for impacts to pedestrians and bicyclists is defined as the LOD from the proposed BLRT Extension project, facilities near the proposed BLRT Extension project alignment, and alternate routes in the surrounding area. The study area for alternate routes varies based on the conditions of the surrounding bicycle/pedestrian network, but generally includes alternate routes within ½ mile of the transitway and/or affected crossing.

3.4.3 Affected Environment

The extent and condition of existing pedestrian and bicycle facilities associated with the proposed BLRT Extension project ranges from intermittent facilities in the more suburban areas of the study area to complete sidewalk systems and on-street bicycle facilities in Minneapolis and the other more urban portions of the study area.

3.4.4 Environmental Consequences

3.4.4.1 Operating-Phase (Long-Term) Impacts

No-Build Alternative

No operating-phase impacts to pedestrians or bicyclists would occur under the No-Build Alternative.

Proposed BLRT Extension Project

The proposed BLRT Extension project would provide several long-term improvements to pedestrian and bicycle accessibility and safety. All LRT stations would provide safe access for pedestrian and bicycle traffic. Bicycle parking would be included at or near stations as space allows, with the type and location of parking to be determined by the Council as station design and site development progress.

The issue resolution process conducted with Metro Transit, Hennepin County, and staff from the cities along the proposed BLRT Extension project alignment resulted in several modifications to the pedestrian and bicycle environment beyond that presented in the Draft EIS. These modifications are described in detail below, and a summary of impacts resulting from these modifications is shown in **Table 3.4-1**.

Table 3.4-1. Summary of Impacts to Pedestrian and Bicycle Facilities

Location	Impact
Target Field Station connection and 7th Street North intersection design	Pedestrian and bicycle needs accommodated in design of Olson Memorial Highway and 7th Street North intersection, which includes dedicated bicycle lanes and enhanced pedestrian crossings
Olson Memorial Highway	Improved pedestrian safety and access to stations along Olson Memorial Highway; addition of traffic signal at Thomas Avenue intersection and three mid-block signalized pedestrian crossings; provisions for a cycle track on north side of Olson Memorial Highway
Plymouth Avenue Station	Improved pedestrian and bicycle access through reconstruction of sidewalks and bicycle lanes on Plymouth Avenue bridge; access to the Plymouth Avenue Station vertical circulation facility, as well as connecting to the existing trail west of the bridge; improvements to sidewalks along Plymouth Avenue to facilitate pedestrian movements between bus stop and passenger drop-off areas and station; existing TWRP trail would be relocated west out of its current location within BNSF right-of-way
Golden Valley Road Station area	Improved pedestrian and bicycle access at reconstructed Theodore Wirth Parkway and Golden Valley Road bridges; Theodore Wirth Parkway bridge trail would be widened to meet current design standards, and vertical circulation facilities to access Golden Valley Road Station would be added; trailhead would be constructed at Golden Valley Road Station park-and-ride; new trail connection under Golden Valley Road between TWRP and Sochacki Park
Robbinsdale Station area	Improved pedestrian access and safety through proposed pedestrian crossings at 41st Avenue/Noble Avenue and 42nd Avenue; proposed pedestrian crossings to provide ADA-compliant crossings of the freight rail and LRT tracks; improved pedestrian access though proposed LRT crossing at 45½ Avenue; bicyclists access to station via Crystal Lake Regional Trail; improve pedestrian safety through closing the existing informal (and prohibited) crossings of the BNSF track at Sochacki Park
Bass Lake Road Station area	Improved pedestrian access through proposed pedestrian bridge over Bottineau Boulevard and improved connections from trails and sidewalks to station and park-and-ride lot; bicyclists access to station via Crystal Lake Regional Trail; improved pedestrian crossings of the LRT tracks at West Broadway Avenue
63rd Avenue Station area	Improved pedestrian access and safety through improved connections along 63rd Avenue to reach the proposed station and a proposed grade-separated connection from the parking ramp; improved pedestrian access through at-grade pedestrian crossings of LRT/freight tracks at 71st Avenue; bicyclists access to station via Crystal Lake Regional Trail
Jolly Lane/75th Avenue area	Pedestrian and bicycle access would be maintained through reconstruction and realignment to accommodate proposed BLRT Extension project features

Table 3.4-1. Summary of Impacts to Pedestrian and Bicycle Facilities

Location	Impact

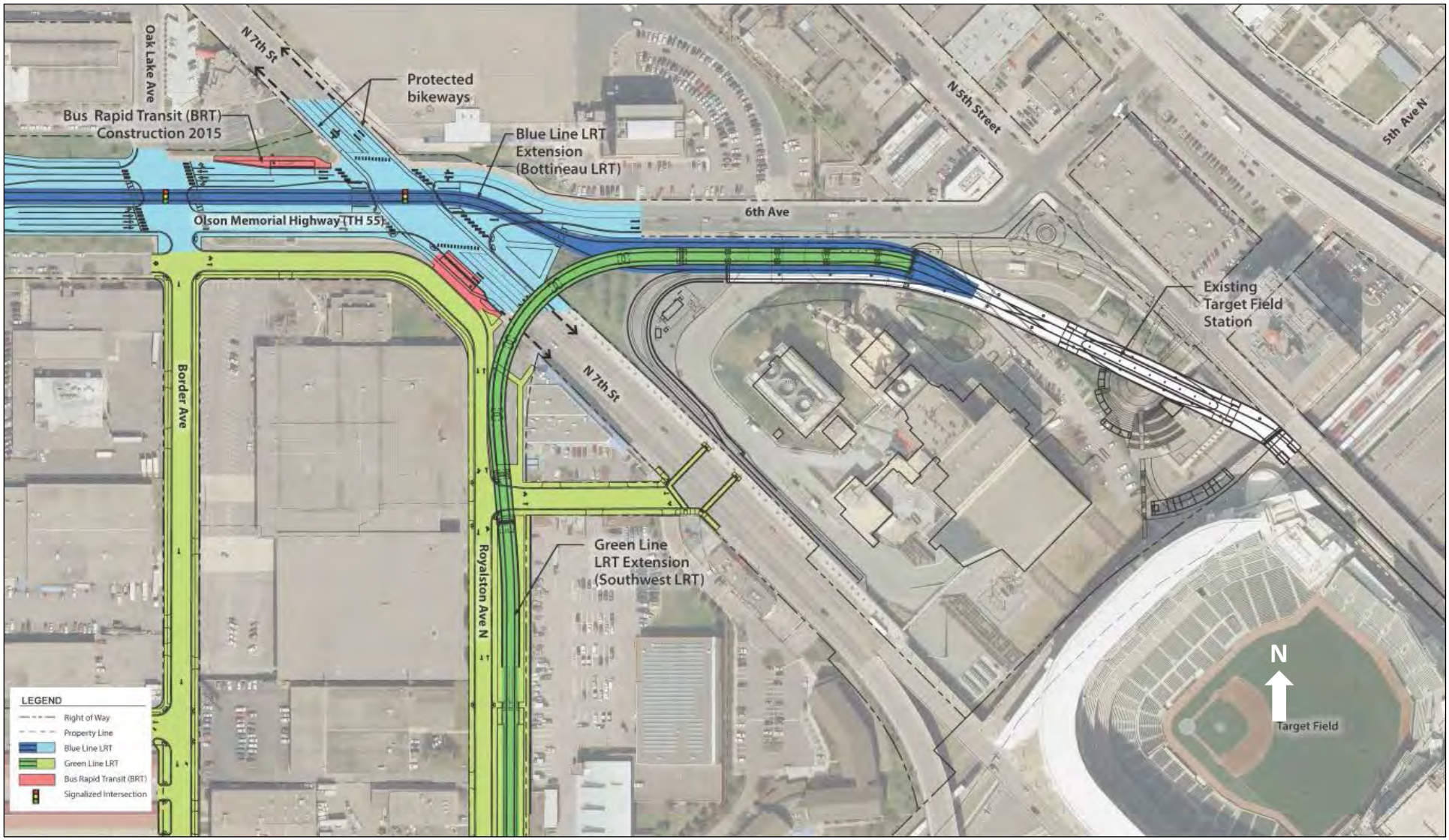
Target Field Station Connection and 7th Street Intersection Design

One of the issues identified for resolution through the early stages of proposed BLRT Extension project development was the LRT connection to the Target Field Station. The challenge was to find a way to address vehicle traffic through the intersection of Olson Memorial Highway and 7th Street North while accommodating pedestrians' and bicyclists' needs. Specific components of the pedestrian and bicycle improvements identified through the issues-resolution process include:

- Shortening the pedestrian crossing distance at each leg of the intersection
- Providing pedestrian refuge space at median crossings
- Accommodating northbound and southbound bicycle lanes in 7th Street North (bicycle lanes to be constructed as a component of the Green Line LRT Extension project)
- Creating perpendicular or near-perpendicular crossing paths at LRT tracks for bicycles and wheelchairs to prevent wheels from getting stuck in track channels
- Eliminating the free right-turn movement from northbound (northwest-bound) 7th Street North to eastbound 6th Avenue North

Figure 3.4-1 depicts the proposed BLRT Extension project's intersection layout at the Olson Memorial Highway/7th Street North intersection near the Target Field Station.

Figure 3.4-1. Proposed Olson Memorial Highway/7th Street North Intersection Layout



Olson Memorial Highway

Concern for pedestrian safety and access to stations along Olson Memorial Highway were key issues identified in multiple comments on the Draft EIS. Currently nine unmarked, unsignalized mid-block crossings occur, in addition to six marked crossings at signalized intersections. Several of these crossings are not ADA-compliant. The city of Minneapolis, Hennepin County, MnDOT, and Metro Transit evaluated multiple options for Olson Memorial Highway that would balance the needs of motorists and other users. The results of extensive analysis and discussion were incorporated into the scope of the proposed BLRT Extension project and are as follows:

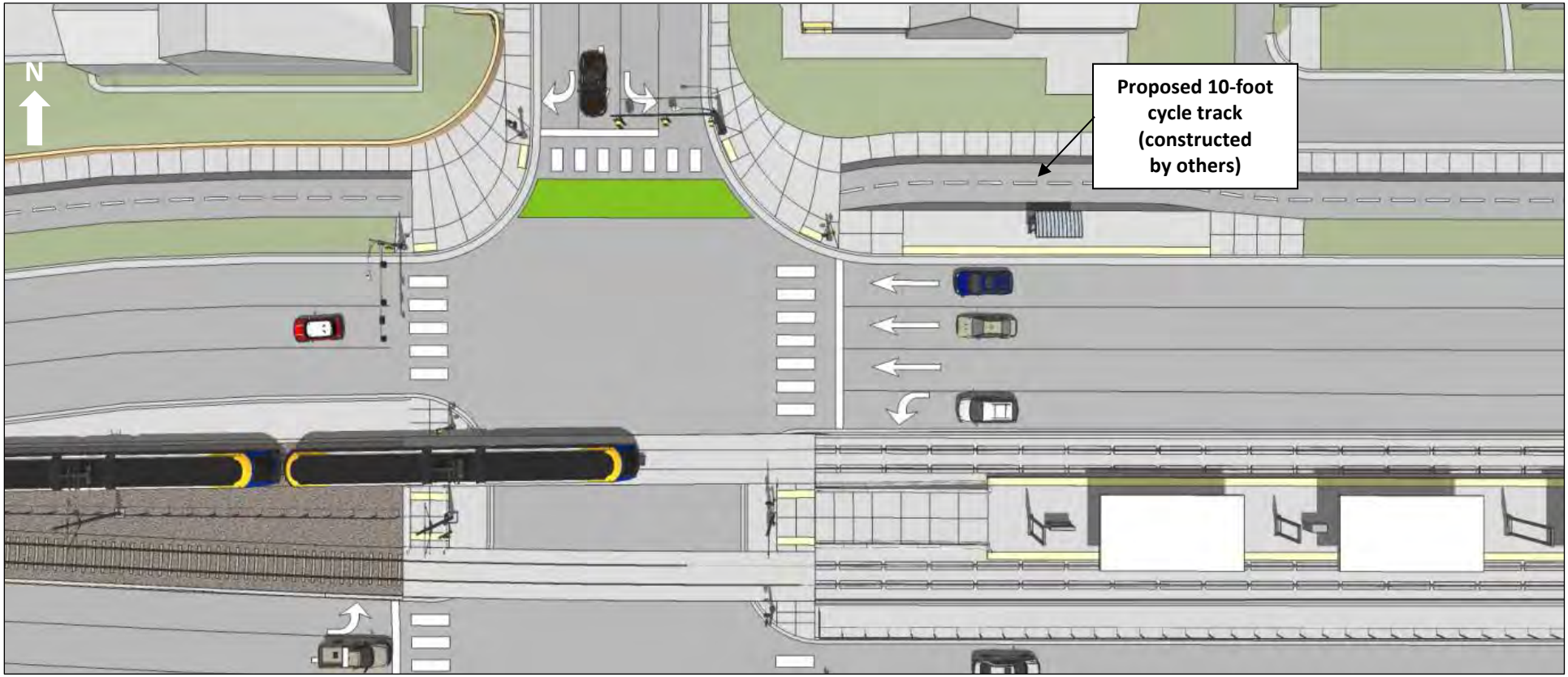
- Maintain a six-lane roadway section to accommodate existing and future traffic volumes.
- Reduce lane widths to 11 feet (current widths are 12 feet and greater) to reduce pedestrian crossing length.
- Reduce the design speed and posted speed limit from 40 to 35 mph to provide a safer environment for pedestrians and bicyclists.
- Replace existing sidewalks on the north and south sides of Olson Memorial Highway. The current sidewalks are 5 feet wide and in poor condition, with some gaps. New sidewalks would be 6 feet wide and continuous.
- Provide ADA-compliant pedestrian crossings at the following signalized intersections:
  - West Lyndale Avenue
  - Bryant Avenue
  - Van White Memorial Boulevard (also provides station access)
  - Humboldt Avenue
  - Morgan Avenue
  - Penn Avenue
  - Thomas Avenue
- Provide ADA-compliant signalized pedestrian crossings at the following three mid-block locations:
  - East of the Penn Avenue Station (also provides secondary access to the Penn Avenue Station)
  - James Avenue (between Humboldt and Morgan avenues)
  - Russell Avenue (also provides secondary access to the Van White Boulevard Station)
- Provide pedestrian refuge areas in the median.
- Provide space on the north side of Olson Memorial Highway for a 10-foot two-way cycle track (to be constructed by others) between Thomas Avenue and Van White Memorial Boulevard.
- Provide a multi-use trail on the north side of the reconstructed westbound Olson Memorial Highway bridge.

Figures 3.4-2, 3.4-3, and 3.4-4 depict proposed conceptual pedestrian crossing safety treatments and improvements along Olson Memorial Highway at signalized intersections and mid-block crossings and provisions for the proposed cycle track.

Figure 3.4-2. Conceptual Intersection Pedestrian Safety Improvements

Figure 3.4-3. Conceptual Mid-block Pedestrian Safety Improvements

Figure 3.4-4. Provisions for a Cycle Track on the North Side of Olson Memorial Highway



Plymouth Avenue Station

At the Plymouth Avenue Station, the Plymouth Avenue bridge is proposed to be reconstructed to accommodate the LRT and relocated freight rail tracks. Reconstruction is required because the existing bridge pier spacing would not allow the necessary freight, LRT, and LRT station configurations.

The Minneapolis Park and Recreation Board (MPRB) has requested enhanced trail connections providing greater levels of connectivity with the regional trail system and the proposed Plymouth Avenue Station in this area as well, including a connection between Plymouth Avenue and the TRWP trail adjacent to Bassett Creek.

Pedestrian sidewalks and bicycle lanes in the shoulders on the bridge would be reconstructed and would provide access to the Plymouth Avenue Station vertical circulation facility as well as connecting to the existing trail west of the bridge. Additional improvements would be made to the sidewalks along Plymouth Avenue to the east to facilitate pedestrian movements between bus stop and passenger drop-off areas and the station. As part of this bridge reconstruction, the existing TRWP trail that runs parallel to Bassett Creek would be relocated to the west out of its current location within the BNSF right-of-way. (See **Section 5.3.4** for a discussion of impacts to Bassett Creek.) Details of these design improvements have been coordinated with MPRB.

Figure 3.4-5 illustrates the planned bicycle and pedestrian accommodations at the proposed Plymouth Avenue Station.

Golden Valley Road Station Area

At the Golden Valley Road Station, both the Theodore Wirth Parkway bridge and the Golden Valley Road bridge are proposed to be reconstructed, including the existing pedestrian and bicycle facilities. The trail on the Theodore Wirth Parkway bridge would be widened to meet current design standards, and vertical circulation facilities to access the Golden Valley Road Station would be added to the Golden Valley Road bridge. A trailhead would be constructed at the eastern corner of the proposed Golden Valley Road Station park-and-ride. This trailhead would provide access to the existing MPRB trail system and access to the proposed Bassett Creek Regional Trail that would be constructed by the Three Rivers Park District along Golden Valley Road.

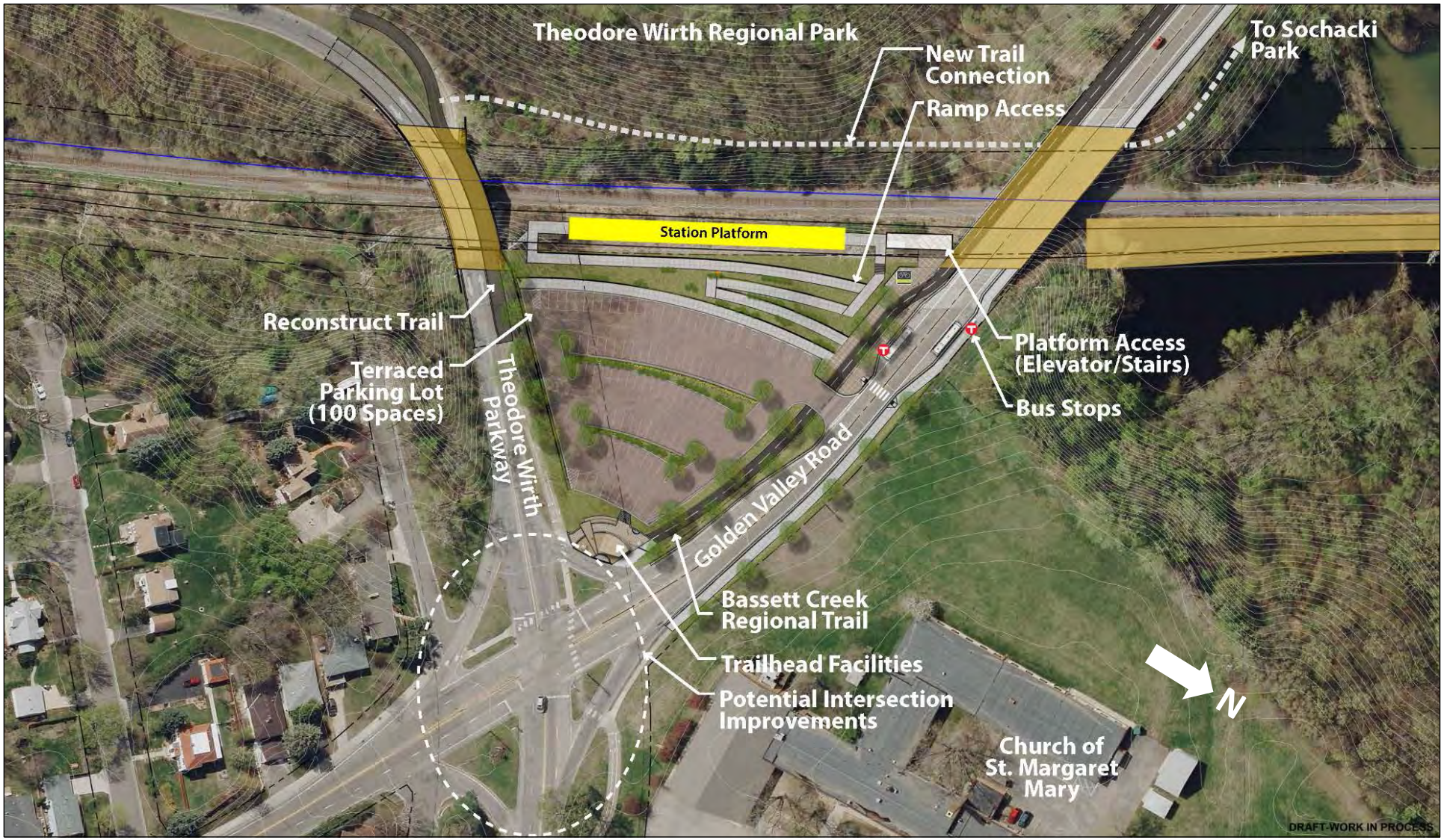
The new Golden Valley Road bridge would be designed to accommodate a new trail connection under Golden Valley Road between TWRP and Sochacki Park.

The traffic operations analysis indicates that the Golden Valley Road/Theodore Wirth Parkway intersection would have approximately the same vehicular traffic level of service in 2040 with either the No-Build Alternative or the proposed BLRT Extension project (see **Section 3.3 – Vehicular Traffic**). However, the proximity of bicycle and pedestrian facilities and the addition of new trail connections with the proposed BLRT Extension project could require improving the intersection to enhance the safety of pedestrians and bicyclists. The Council will coordinate such improvements with MPRB, the city of Golden Valley, and Hennepin County, along with other stakeholders.

Figure 3.4-6 illustrates the planned bicycle and pedestrian accommodations at the proposed Golden Valley Road Station.

Figure 3.4-5. Plymouth Avenue Station Area

Figure 3.4-6. Golden Valley Road Station Area



Robbinsdale Station Area

At the Robbinsdale Station, pedestrian crossings at 41st Avenue/Noble Avenue and at 42nd Avenue are proposed to be improved to provide safe access from the west side of the BLRT Extension project alignment. A grade-separated crossing at 41st Avenue/Noble Avenue was considered by the Council but was rejected because of impacts to adjacent properties and potential security concerns. Pedestrian crossings are proposed to be constructed to provide ADA-compliant crossings of the freight rail and LRT tracks. Improvements to the 42nd Avenue/West Broadway Avenue intersection would maintain the existing pedestrian crossing alignment.

The Crystal Lake Regional Trail is located about 1,500 feet east of the Robbinsdale Station; cyclists would be able to access the station via 41st and 42nd avenues.

Existing pedestrian facilities are proposed to be improved at the proposed LRT crossing at 45½ Avenue (about 1,300 feet north of TH 100). As proposed, the BLRT Extension project LOD would come within 10 feet of the existing trail in Lee Park, but would not alter the trail itself.

Construction of the proposed BLRT Extension project as proposed would require closing the existing informal (and illegal) crossings of the BNSF track at Sochacki Park. Fences or other barriers to discourage pedestrian crossings would be necessary in these locations to preserve pedestrian safety near the LRT and freight tracks. Reconstructing the 36th Avenue bridge in this area (about ¾ mile south of the Robbinsdale Station) would also include restoring existing bicycle and pedestrian facilities.

Figure 3.4-7 illustrates the planned pedestrian accommodations at the proposed Robbinsdale Station.

Bass Lake Road Station Area

The proposed Bass Lake Road Station area provides a pedestrian bridge over Bottineau Boulevard and improved connections from trails and sidewalks along the south side of Bass Lake Road to reach the station. In addition, sidewalk connections are proposed to be provided or improved in the area of the proposed park-and-ride lot, including improved connections to Lakeland Avenue.

The Crystal Lake Regional Trail runs along the east side of Bottineau Boulevard; bicyclists and pedestrians would be able to use the existing crossing facilities at the Bass Lake Road intersection to connect to the Bass Lake Road Station.

South of Bass Lake Road, the proposed BLRT Extension project also includes improved pedestrian crossings of the LRT tracks at West Broadway Avenue (about 1 mile south of the Bass Lake Road Station) and Corvallis Avenue (about ⅔ mile south of the Bass Lake Road Station).

Figure 3.4-8 illustrates the planned bicycle and pedestrian accommodations at the proposed Bass Lake Road Station.

Figure 3.4-7. Robbinsdale Station Area

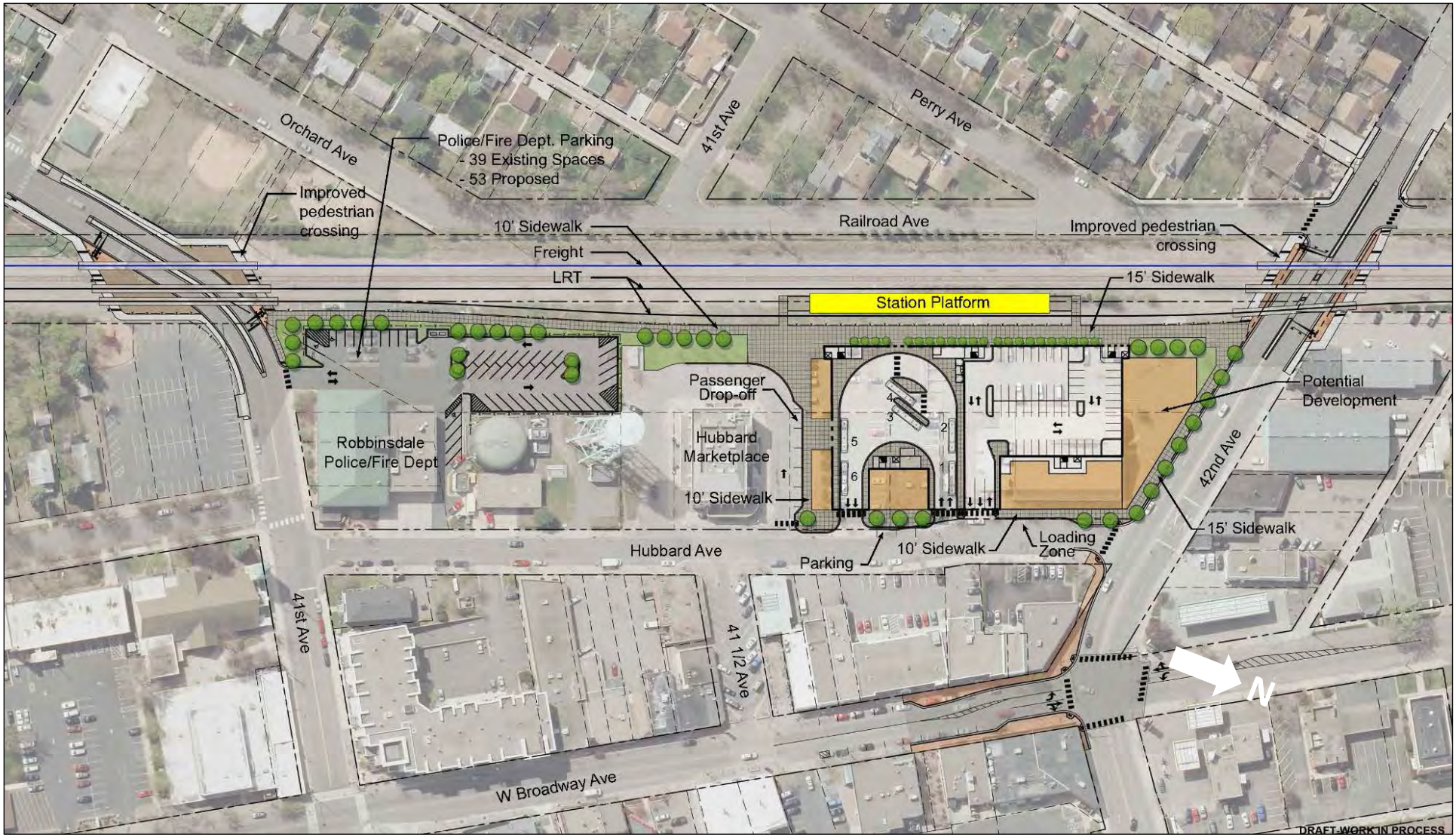
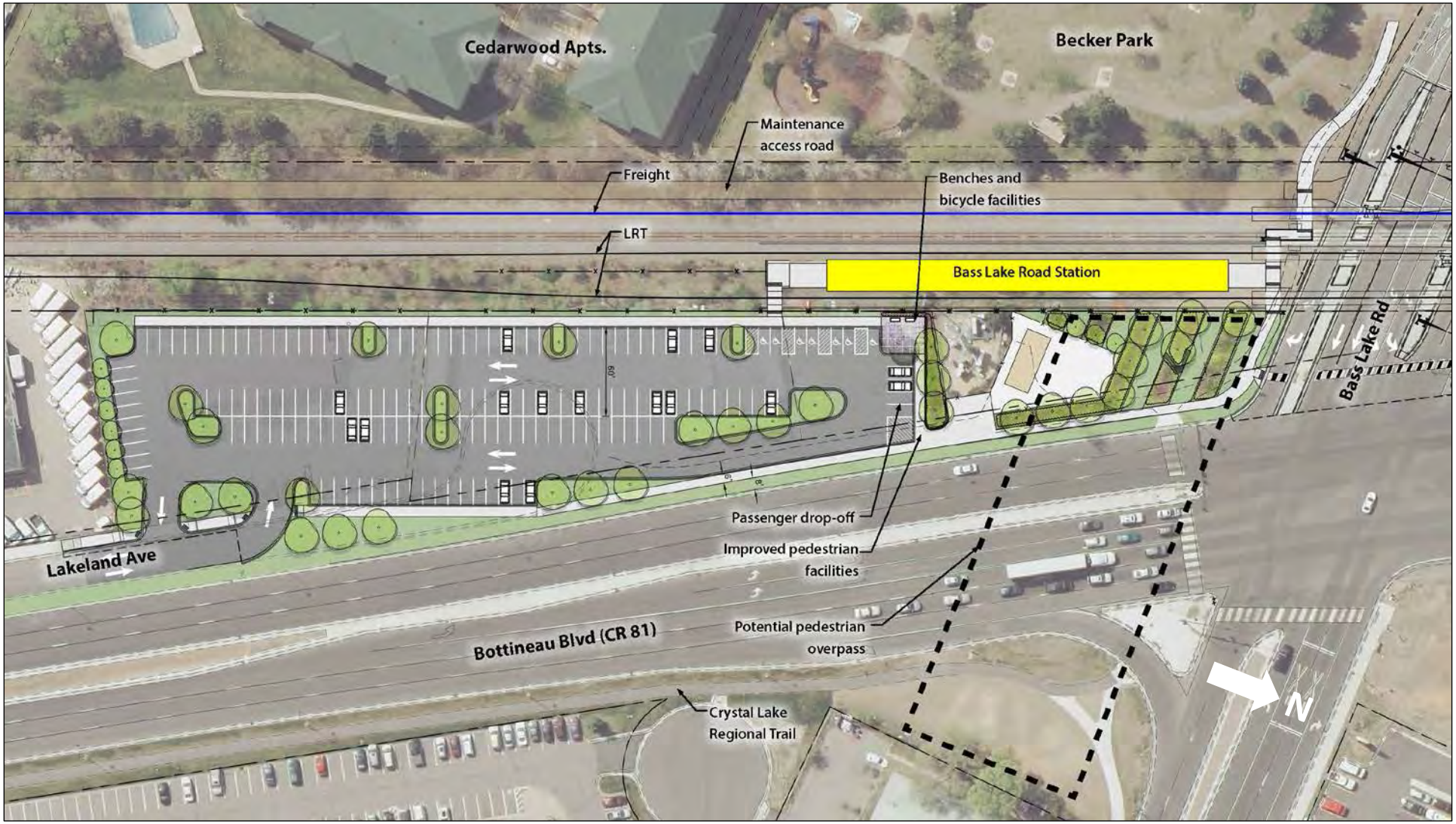


Figure 3.4-8. Bass Lake Road Station Area



63rd Avenue Station Area

The proposed 63rd Avenue Station area stands to provide improved connections along 63rd Avenue to reach the proposed station and a proposed grade-separated connection from the parking ramp to the station to provide a safe means of accessing the station platform directly from the parking ramp.

The Crystal Lake Regional Trail runs along the east side of Bottineau Boulevard; bicyclists would be able to use the existing crossing facilities at the 63rd Avenue intersection to connect to the station.

Improved at-grade pedestrian crossings of the LRT/freight rail alignment would also be provided at 71st Avenue (about 1¼ miles north of the 63rd Avenue Station).

Figure 3.4-9 illustrates the planned pedestrian accommodations at the proposed 63rd Avenue Station area.

Jolly Lane/75th Avenue Area

Just south of the Bottineau Boulevard/73rd Avenue intersection, the LRT alignment is proposed to transition from the BNSF rail corridor to a grade-separated crossing. The LRT would pass over both Bottineau Boulevard and 73rd Avenue and then descend to a run at grade in the center of West Broadway Avenue (see **Figure 3.4-10**). The introduction of the LRT alignment in the Jolly Lane area would require modifying roadway connections; the sidewalks in this area would be modified as well under the proposed BLRT Extension project, but would maintain pedestrian and bicycle connections to West Broadway Avenue.

The Crystal Lake Regional Trail currently ends at the I-94/Interstate Highway 694 (I-694) interchange about ½ mile south of 73rd Avenue. Hennepin County is planning to improve Bottineau Boulevard in this area in 2017; the roadway corridor improvements would include extending the trail. At 73rd Avenue, the trail would go under the proposed LRT bridge built over Bottineau Boulevard.

Figure 3.4-9. 63rd Avenue Station Area

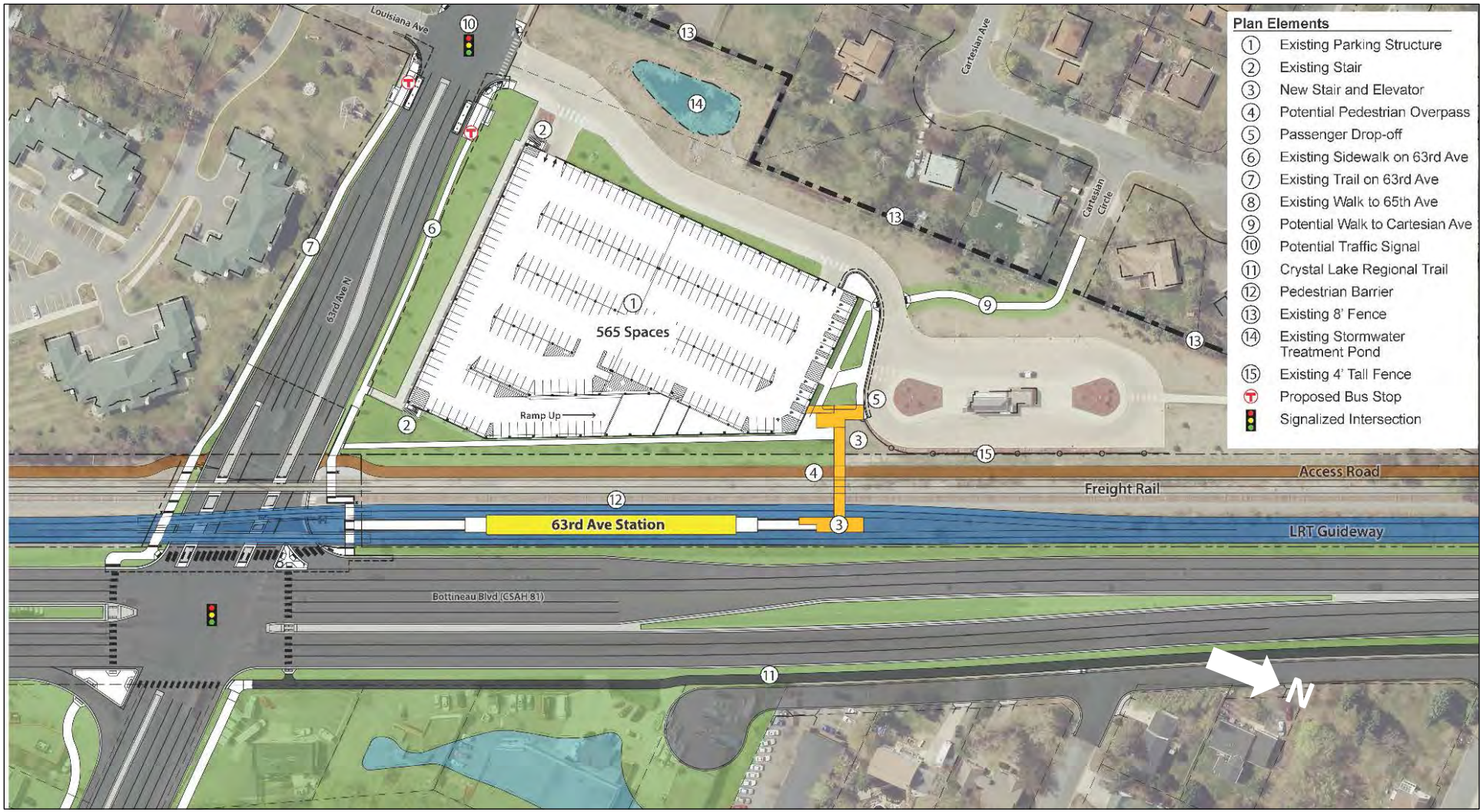


Figure 3.4-10. Grade-Separated Crossing at 73rd Avenue and Jolly Lane/75th Avenue Area

West Broadway Avenue Station Areas (including Brooklyn Boulevard, 85th Avenue, and 93rd Avenue Station Areas)

As proposed, the BLRT Extension project would require closing one pedestrian crossing at West Broadway Avenue in Brooklyn Park at a commercial property access about 400 feet north of the Brooklyn Boulevard/West Broadway Avenue intersection. An alternate crossing is available within ⅛ mile of the closed crossing.

The proposed BLRT Extension project, and programmed improvements by other agencies, would considerably enhance the non-motorized transportation environment in comparison to the No-Build Alternative. A continuous bicycle/pedestrian facility between Candlewood Drive and 93rd Avenue is included in the design plans for the West Broadway Avenue Reconstruction project, which has been programmed independently of the proposed BLRT Extension project and would be completed by Hennepin County. The existing off-street trails on both sides of West Broadway Avenue north of 93rd Avenue would be crossed by the proposed LRT alignment in the vicinity of 94th Avenue, where the LRT alignment transitions from running alongside the center of West Broadway Avenue to the western side of the street in new right-of-way. Any direct impacts to the trails would be mitigated through trail reconstruction. Trails are proposed to be constructed south of Candlewood Drive along West Broadway Avenue to 75th Avenue. A new signalized crossing would be constructed at 75th Avenue.

Reconstruction of the trails south of Candlewood Drive would be completed as a component of the proposed BLRT Extension project, thereby providing continuous facilities along both sides of West Broadway Avenue in the study area.

Figures 3.4-11, 3.4-12, and 3.4-13 illustrate the planned bicycle and pedestrian accommodations at the proposed West Broadway Avenue station areas at Brooklyn Boulevard, 85th Avenue North, and 93rd Avenue North. At the Brooklyn Boulevard Station, the 76th Avenue/West Broadway Avenue intersection would be improved and would include bus stop access and a secondary pedestrian access to the station. Improvements to the Brooklyn Boulevard/West Broadway Avenue intersection would provide safer pedestrian crossings by eliminating free right turns and would provide the primary pedestrian access to the station.

In the area of the 85th Avenue Station, the pedestrian crossing at 84th Avenue and West Broadway Avenue would be closed. Pedestrian crossing facilities would be provided at a new signalized intersection at College Park Drive and West Broadway Avenue. Pedestrian access to the 85th Avenue Station would be from the 85th Avenue/West Broadway Avenue intersection, as well as from a secondary access about 400 feet south of the intersection. The secondary access would also allow pedestrians to cross West Broadway Avenue if their destination is not the LRT station.

Between the 85th Avenue and 93rd Avenue stations, improved pedestrian crossings of West Broadway Avenue would be located at the Maplebrook Parkway/West Broadway Avenue intersection and also at the Setzler Parkway/West Broadway Avenue intersection, where new, full-access signalized intersections would be constructed as part of the Hennepin County West Broadway Avenue Reconstruction project.

Figure 3.4-11. Brooklyn Boulevard Station Area

Figure 3.4-12. 85th Avenue Station Area

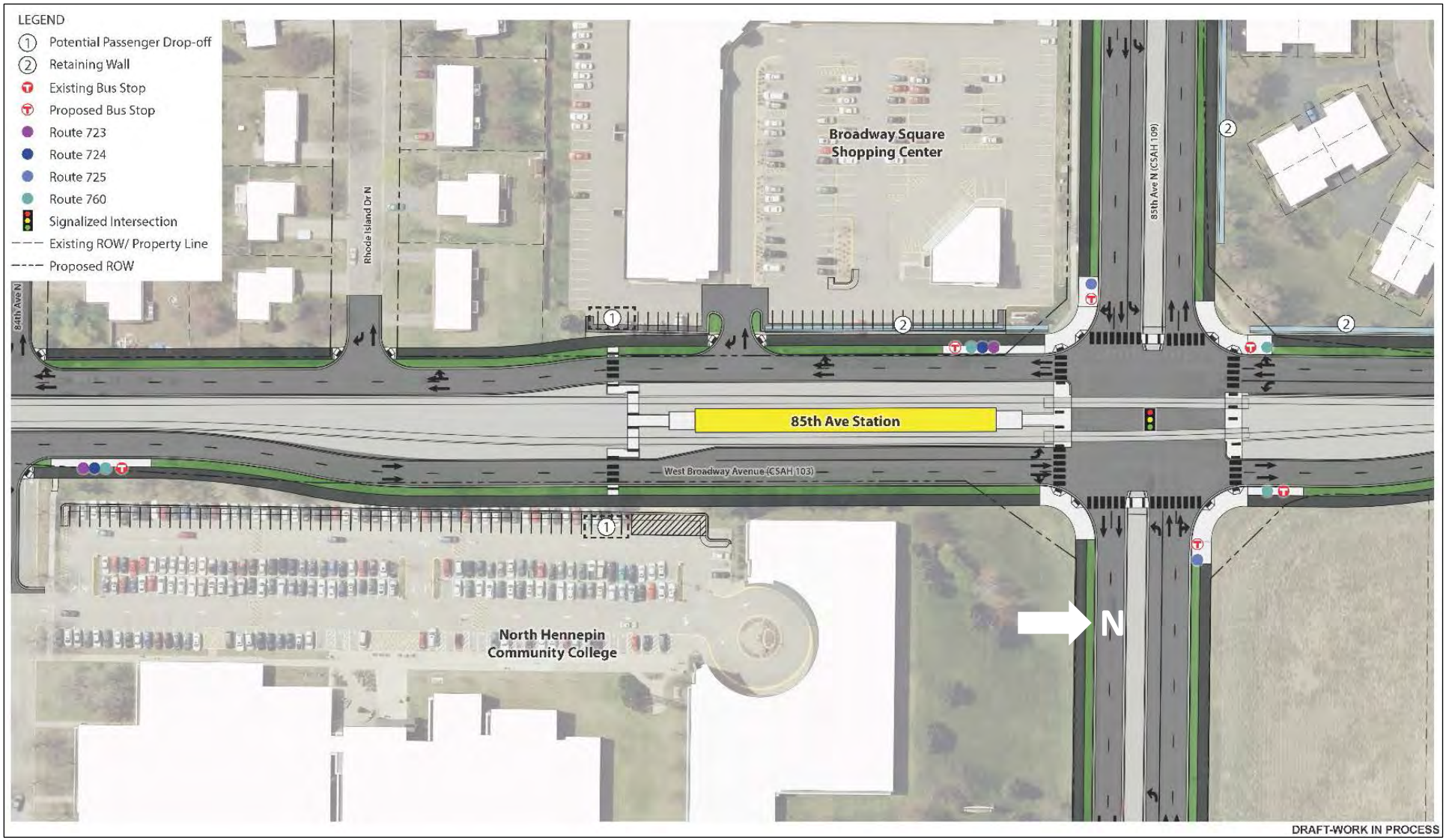
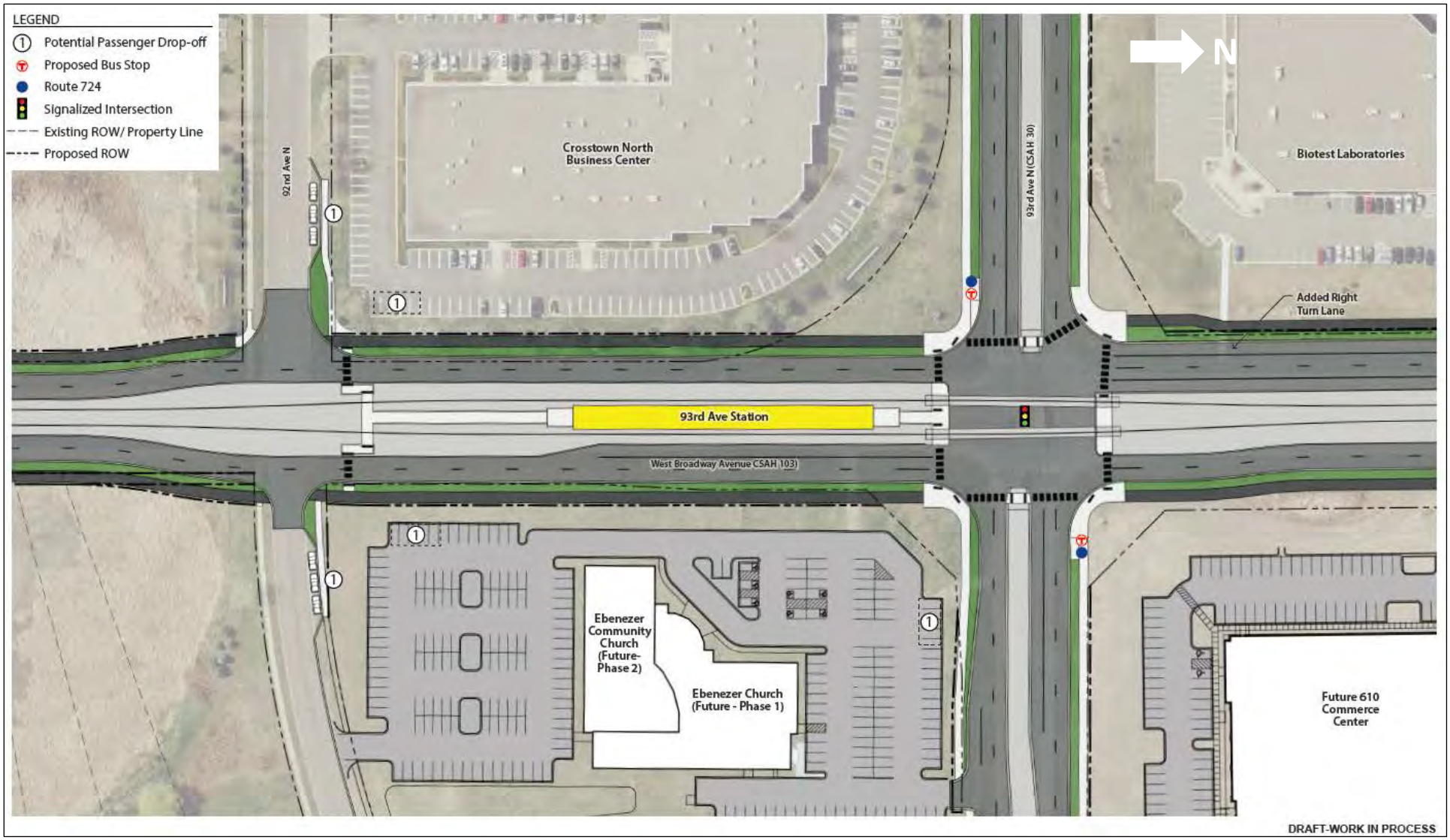


Figure 3.4-13. 93rd Avenue Station Area



Access to the 93rd Avenue Station would be provided at the improved 93rd Avenue/West Broadway Avenue intersection (also part of the Hennepin County West Broadway Avenue Reconstruction project). Secondary access to the station is proposed to be provided by a crossing at 92nd Avenue; this crossing would be constructed as part of the proposed BLRT Extension project.

Bicycle access to proposed LRT stations would use the same locations as those identified for pedestrians; the introduction of bicycle/pedestrian trails on both sides of West Broadway Avenue (through the Hennepin County West Broadway Avenue Reconstruction project) would further enhance bicycle accessibility in this area.

Oak Grove Parkway Station Area

Extensive discussions with the city of Brooklyn Park and Hennepin County resulted in a preliminary layout realigning West Broadway Avenue, Oak Grove Parkway, and 101st Avenue (see **Figure 3.4-14**). This proposed roadway layout incorporates the proposed Oak Grove Parkway Station and park-and-ride into a transportation network that would accommodate proposed development in the area. The intent of the proposed transportation network is to create a walkable, bicycle-friendly environment; therefore, the appropriate provisions for sidewalks and bicycle trails are proposed to be incorporated into the final design for the proposed BLRT Extension project in this area. Provisions for future connections (by others) to the Rush Creek Regional Trail, located just north of the OMF, would also be included.

TPSS

The proposed TPSS sites associated with the proposed BLRT Extension project would have little to no impact on existing bicycle and pedestrian facilities.

3.4.4.2 Construction-Phase (Short-Term) Impacts

No-Build Alternative

No construction-phase impacts to pedestrians or bicyclists would occur under the No-Build Alternative.

Proposed BLRT Extension Project

For the For the proposed BLRT Extension project, the Council anticipates that temporary closures or detours would affect existing bicycle and pedestrian facilities. Construction traffic and debris, such as excess dirt and gravel, can also pose obstacles or issues for pedestrians and bicyclists. Maintaining safe access for non-motorized users as a result of detours, closures, and other inconveniences during the construction phase would be included by the Council in phasing plans.

Figure 3.4-14. Oak Grove Parkway Station Area

3.4.5 Avoidance, Minimization, and/or Mitigation Measures

This section describes the measures proposed to mitigate the long-term and short-term pedestrian and bicyclist impacts from the proposed BLRT Extension project. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures are proposed to address.

3.4.5.1 Long-Term Mitigation Measures

No mitigation measures are warranted for long-term impacts to pedestrians and bicyclists because the proposed avoidance measures will prevent any adverse impacts. As described in **Section 3.4**, the proposed BLRT Extension project includes a variety of pedestrian and bicyclist enhancements at station locations and at other LRT crossings.

3.4.5.2 Short-Term Mitigation Measures

The proposed BLRT Extension project will require short-term closures of sidewalks, trails, or roads (typically up to about 3 to 5 days), during which detour routes or facilities might not be provided.

Mitigation strategies to be taken in the event of temporary closures will be identified by the Council in the Construction Communication Plan, which will include a staging plan for implementation by the Council prior to and during construction. The purpose of the Construction Communication Plan is to prepare project-area residents, businesses, and commuters for construction; listen to their concerns; and develop plans to minimize disruptive effects. Strategies could include:

- Issuing and distributing regular construction updates
- Providing advance notice of roadway closures, driveway closures, and utility shutoffs
- Conducting public meetings
- Establishing a 24-hour construction hotline
- Preparing materials with information about construction
- Addressing property access issues
- Assigning staff to serve as liaisons between the public and contractors during construction

3.5 Parking

3.5.1 Regulatory Context and Methodology

This section describes the loss of parking in the study area as a result of the proposed BLRT Extension project. The construction of LRT and associated modifications to roadway geometry would alter the supply of on-street and off-street parking. These changes could, in turn, reduce convenient access to businesses and residences.

Dedicated park-and-ride facilities have been identified by the Council as part of the proposal for the BLRT Extension project. All new park-and-ride facilities are described in **Section 2.5** and not addressed as part of this impact assessment of existing parking conditions. The transit effects of proposed park-and-ride facilities are addressed in **Section 3.1**. Also see **Table 3.3-4** in **Section 3.3** for a summary of the effects of the proposed park-and-ride facilities on traffic.

The study area is characterized by highway facilities with no parking, arterial roads, local streets, frontage roads with some on-street parking, and off-street parking that serves commercial and institutional facilities.

The analysis in this section focuses on the impacts of the proposed BLRT Extension project on existing on-street and off-street parking. The Council reviewed the existing parking supply in the proposed BLRT Extension project corridor, which included reviewing aerial photographs and project engineering drawings, as well as conducting field visits, in order to assess the potential effects of changes in the parking supply.

3.5.2 Study Area

The study area for parking is defined as the proposed BLRT Extension project LOD.

3.5.3 Affected Environment

Vehicle parking in the study area is a combination of on-street parking and surface parking lots. Local jurisdictions have the authority to regulate parking, including introducing permit parking or other parking restrictions.

Almost all on-street parking is available to the public as either metered or unmetered spaces. Some on-street parking spaces are available along certain frontage roads along Olson Memorial Highway and West Broadway Avenue at 42nd Avenue.

Off-street parking consists of a mix of public and private lots. Private off-street parking is restricted to authorized people. Off-street public parking spaces are available for commercial and retail businesses, as well as park areas and facilities such as the TWRP Chalet parking lot. Other off-street parking facilities include parking lots for restaurants, churches, North Hennepin Community College, other public parks, and medical-related businesses. The public can use these parking lots only when they are using these facilities.

3.5.4 Environmental Consequences

3.5.4.1 Operating-Phase (Long-Term) Impacts

No-Build Alternative

No operating-phase parking impacts would occur under the No-Build Alternative.

Proposed BLRT Extension Project

Impacts to on-street and off-street parking resources were considered; the results of the analysis are shown in **Figure 3.5-1** and described below.

Olson Memorial Highway

Existing on-street parking would be affected by the proposed BLRT Extension project primarily on the frontage roads along Olson Memorial Highway. This impact would be caused by the configuration of the proposed reconstruction of the highway. As it developed the proposed BLRT Extension project, the Council tried to maintain frontage road connections and minimize the acquisition of right-of-way. Specifically, reconstructing the frontage roads on the north and south sides of Olson Memorial Highway would eliminate about 83 on-street parking spaces, as follows (see **Figure 3.5-1**):

- About 25 spaces along the frontage road on the north side of Olson Memorial Highway between Humboldt Avenue and Van White Memorial Boulevard; on-street parking would be available on nearby roadways to the north, and the adjacent buildings also have off-street parking
- About 50 spaces along the frontage road on the south side of Olson Memorial Highway between Knox Avenue North and the cul-de-sac west of Van White Boulevard; off-street parking would remain available for the adjacent apartment buildings and businesses
- About eight spaces along the frontage road on the north side of Olson Memorial Highway roughly one-half block east and west of Queen Avenue North; parking on Queen Avenue North would not be affected

Robbinsdale Station Area

Several on-street and off-street parking spaces would also be eliminated on Hubbard Avenue and West Broadway Avenue near the Robbinsdale Station park-and-ride. Specific impacts include:

- About three spaces on the west side of Hubbard Avenue immediately south of 42nd Avenue
- About six spaces on the west side of West Broadway Avenue immediately south of 42nd Avenue
- City of Robbinsdale Police/Fire Department spaces west of the city buildings and east of the proposed BLRT Extension project alignment would be reconfigured. No net loss of spaces is anticipated.
- About 50 parking spaces would be eliminated from a parking lot for local businesses north of Hubbard Marketplace between 41st and 42nd avenues.
- Eleven diagonal parking spaces would be converted to five parallel parking spaces on the north side of the Hubbard Marketplace building.

As discussed in **Chapter 2** and shown in **Table 3.3-4**, the proposed BLRT Extension project would include a 550-space park-and-ride facility for transit patrons adjacent to the Robbinsdale Station.

73rd Avenue/West Broadway Avenue Area

Off-street parking impacts would occur in the area just north of 73rd Avenue and west of West Broadway Avenue in Brooklyn Park. Impacts would include:

- Near 73rd Avenue, about 75 spaces would be eliminated from a retail center (7316 Lakeland Avenue) surface parking lot (about 20 percent of the existing parking lot). This reconfiguration is intended to accommodate the LRT alignment as it transitions from the BNSF rail corridor to West Broadway Avenue.
- At the eastern edge of the Target store (7535 West Broadway Avenue) parking lot, about 80 spaces would be eliminated to accommodate the reconstructed southbound lanes of West Broadway Avenue and the associated multipurpose trail. An additional 15 to 20 spaces would likely be lost at the southern edge of the parking lot as a result of reconfiguring the roadway connection between Jolly Lane and West Broadway Avenue. The total impact at this site would be up to 100 spaces lost out of about 1,200 spaces, or about eight percent.

Oak Grove Parkway Station Area

Realigning Oak Grove Parkway on the east side of West Broadway Avenue north of TH 610 would require reconfiguring the Target North Campus parking lot. No net loss of spaces is anticipated.

Figure 3.5-1. Parking Impacts

Table 3.5-1 summarizes the number of parking spaces that would be eliminated by the proposed BLRT Extension project.

Table 3.5-1. Number of Parking Spaces Eliminated by the Proposed BLRT Extension Project

Alternative	Parking Spaces Eliminated		
	On-Street Spaces	Off-Street Spaces	Total Spaces
No-Build Alternative	0	0	0
Proposed BLRT Extension project	92	231	323

TPSS

The Council anticipates that TPSS sites would be located on available parcels that are adjacent to the guideway and would not directly affect existing on-street or off-street parking.

3.5.4.2 Construction-Phase (Short-Term) Impacts

No-Build Alternative

No construction-phase parking impacts would occur under the No-Build Alternative.

Proposed BLRT Extension Project

On-street parking spaces could be temporarily removed at locations to facilitate construction of the proposed BLRT Extension project (for example, to facilitate truck movements or to provide a temporary truck loading zone). These potential temporary removals of on-street parking spaces would be identified as part of a construction staging plan prior to construction. At the Council's direction, the contractor would reduce the loss of parking spaces during construction to the extent possible.

3.5.5 Avoidance, Minimization, and/or Mitigation Measures

This section describes the measures that will be implemented to mitigate the long-term and short-term parking impacts from the proposed BLRT Extension project. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures will address.

3.5.5.1 Long-Term Mitigation Measures

Where off-street parking spaces would be lost but buildings and businesses remain, the Council plans to compensate business owners for the loss of off-street parking spaces, including potential associated losses in business revenues. The Council will compensate property owners based on the terms of the purchase agreement between the Council and the property owner in accordance with the Uniform Act. Refer to **Section 4.3 – Displacement of Residences and Businesses** for additional information regarding the Uniform Act.

The Council will coordinate mitigation for the loss of on-street parking spaces with local jurisdictions (the cities of Minneapolis and Robbinsdale) to identify whether suitable replacement locations are necessary. In Minneapolis, the character of the proposed Olson Memorial Highway has been designed to facilitate multimodal transportation options with greater emphasis on transit, bicycle, and pedestrian modes. Furthermore, parking would remain on nearby streets and at off-street parking lots associated with the adjacent buildings. As a result, mitigating lost parking spaces might not be necessary. Similarly, the city of Robbinsdale is exploring transit-oriented development in the Robbinsdale Station area. This could preclude the need for parking mitigation or provide the opportunity for parking that is better integrated into planned development.

3.5.5.2 Short-Term Mitigation Measures

During construction, some on-street parking spaces could be removed to facilitate construction of the proposed BLRT Extension project and associated roadway and freight rail modifications (for example, to facilitate truck movement or provide a temporary truck loading zone). To address these impacts, the Council will develop a Construction Mitigation Plan to address temporary parking loss during the construction of the proposed BLRT Extension project. Construction activities will be phased; therefore, many of the spaces lost during construction will be lost for only part of the construction phase.

3.6 Aviation

3.6.1 Regulatory Context and Methodology

According to FAA's *Advisory Circular* (*AC 150/5300-13A*) (FAA, 2012c), a Runway Protection Zone (RPZ) is "an area at ground level prior to the threshold or beyond the runway end to enhance the safety and protection of people and property on the ground." RPZs are located at the end of each airport runway, and land use is typically controlled by the airport owner. Minnesota State Safety Zone areas overlay and extend beyond the federal RPZs.

The most restrictive areas created by MnDOT regulations are called State Safety Zones A and B. The length of State Safety Zone A is typically two-thirds of the total runway length; State Safety Zone B is typically one-third of the total runway length and extends from State Safety Zone A. The Metropolitan Airports Commission (MAC) adopted an airport zoning ordinance applicable to Crystal Airport on August 25, 1952. This ordinance provides additional guidance on the use of property near Crystal Airport.

The FAA Office of Airports issued a memorandum in 2012 that presents interim guidance on land uses within RPZs (FAA, 2012b). This memorandum clarifies what constitutes a compatible land use within an RPZ, as identified in *FAA Advisory Circular 150/5300-Change 17 (Airport Design)* (FAA, 2011). The memorandum states that "it is desirable to clear all objects from the RPZ," but the memorandum also acknowledges that "some uses are permitted" with conditions, while other "land uses are prohibited." The memorandum also provides guidance on how to evaluate proposed land uses within an RPZ. The proposed BLRT Extension project is considered by FAA to be a local development (transportation facility) proposed in the RPZ (either new or reconfigured).

In accordance with the FAA policy guidance, the Council prepared an RPZ Alternatives Analysis (AA) for the proposed BLRT Extension project. The RPZ AA defined and evaluated several alternatives that addressed eliminating or minimizing the effect of the proposed LRT alignment on the Runway 6L RPZ. These alternatives included modifications to the LRT alignment vertically and horizontally, both within and outside the Runway 6L RPZ; modifications that shifted the location of the RPZ; and operational alternatives that addressed the coexistence of aircraft and LRT simultaneously in the RPZ.

3.6.2 Study Area

The only aviation facility within the LOD of the proposed BLRT Extension project is Crystal Airport. The study area for aviation is defined as the area that is within the LOD of the proposed BLRT Extension project and within the Runway 6L RPZ and State Safety Zone A for Runway 6L, but outside the Crystal Airport property boundary.

The size of the RPZ for Runway 6L is based on the design aircraft of the runway, which is a B-1 small aircraft. The RPZ, which is trapezoidal in shape with a 250-foot inner dimension and 450-foot outer dimension, is 1,000 feet long and contains 8.0 acres, 3.1 acres of which are not on airport property. State Safety Zone A contains 10.3 acres, 3.1 acres of which are not on airport property. State Safety Zone B contains 8.3 acres, none of which are on airport property or within the study area.

3.6.3 Affected Environment

Crystal Airport is one of seven airports owned and operated by MAC. The airport is designed for B-1 small aircraft. Based on FAA control tower counts, the total number of operations at Crystal Airport in 2014 was 49,550. The BNSF rail corridor, which runs parallel to Bottineau Boulevard and is about 3 to 4 feet higher in elevation than the adjacent ground west and east of the BNSF rail corridor, passes through the existing Runway 6L RPZ. The approximate length of the existing freight rail track within the RPZ is 435 feet. The land use in the portion of State Safety Zone A that is beyond Crystal Airport's property boundary is residential. State Safety Zone B is located beyond the limits of State Safety Zone A, outside the BNSF right-of-way and outside the proposed BLRT Extension project's identified LOD.

3.6.4 Environmental Consequences

3.6.4.1 Operating-Phase (Long-Term) Impacts

No-Build Alternative

The No-Build Alternative would not include any improvements within the RPZ; therefore, no operating-phase aviation impacts would occur under the No-Build Alternative.

Proposed BLRT Extension Project

With the proposed BLRT extension project, the existing BNSF tracks are proposed to be relocated about 15 feet west of the current location, and two LRT tracks would be constructed immediately east of the BNSF tracks. All three tracks would be located within the existing 100-foot-wide BNSF right-of-way through the RPZ. The length of the northbound and southbound LRT tracks within the RPZ would be about 425 feeteach.

The proposed speed of the LRT at this location is about 55 mph. Therefore, the train would be in the RPZ for about 5 seconds per operation. The Council anticipates that trains would operate in this area about every 10 minutes throughout the day.

Airports define runways as having several imaginary surfaces, one of which is the approach surface, which is used as a boundary to determine whether an object would extend upward into navigable airspace. The height of the proposed BLRT Extension project's LRT vehicle is about 16 feet, or about 16.5 feet below Runway 6L's approach surface.

Overhead catenary system (OCS) poles about 23 feet 4 inches high would be located about 200 feet apart. The poles would be located to maximize the distance from the poles to the RPZ centerline. The Council anticipates that the poles could be located about 100 feet left and right of the extended runway centerline. Final OCS pole spacing and locations would be determined during the final design of the proposed BLRT Extension project.

The proposed BLRT Extension project would affect the central portion and the controlled activity area of the RPZ.[8] The proposed LRT alignment would be within the existing 100-foot BNSF right-of-way, which is currently within the controlled activity area (17,860 square feet) and the central portion of the RPZ (25,470 square feet). During development of the proposed BLRT Extension project, the Council shifted the LRT alignment 10 feet to the east—still within the BNSF right-of-way, but slightly closer to the airport. The alignment shift would allow for additional clearance between the proposed LRT tracks and the BNSF track. **Figure 3.6-1** illustrates the impacts to the RPZ.

[8] The RPZ includes two areas: (1) the central portion, which is a rectangular area centered on the runway centerline, and (2) the controlled activity areas, which are triangular areas extending from the central portion that are narrower near the runway and wider farther from the runway.

3.6.4.2 Construction-Phase (Short-Term) Impacts

No-Build Alternative

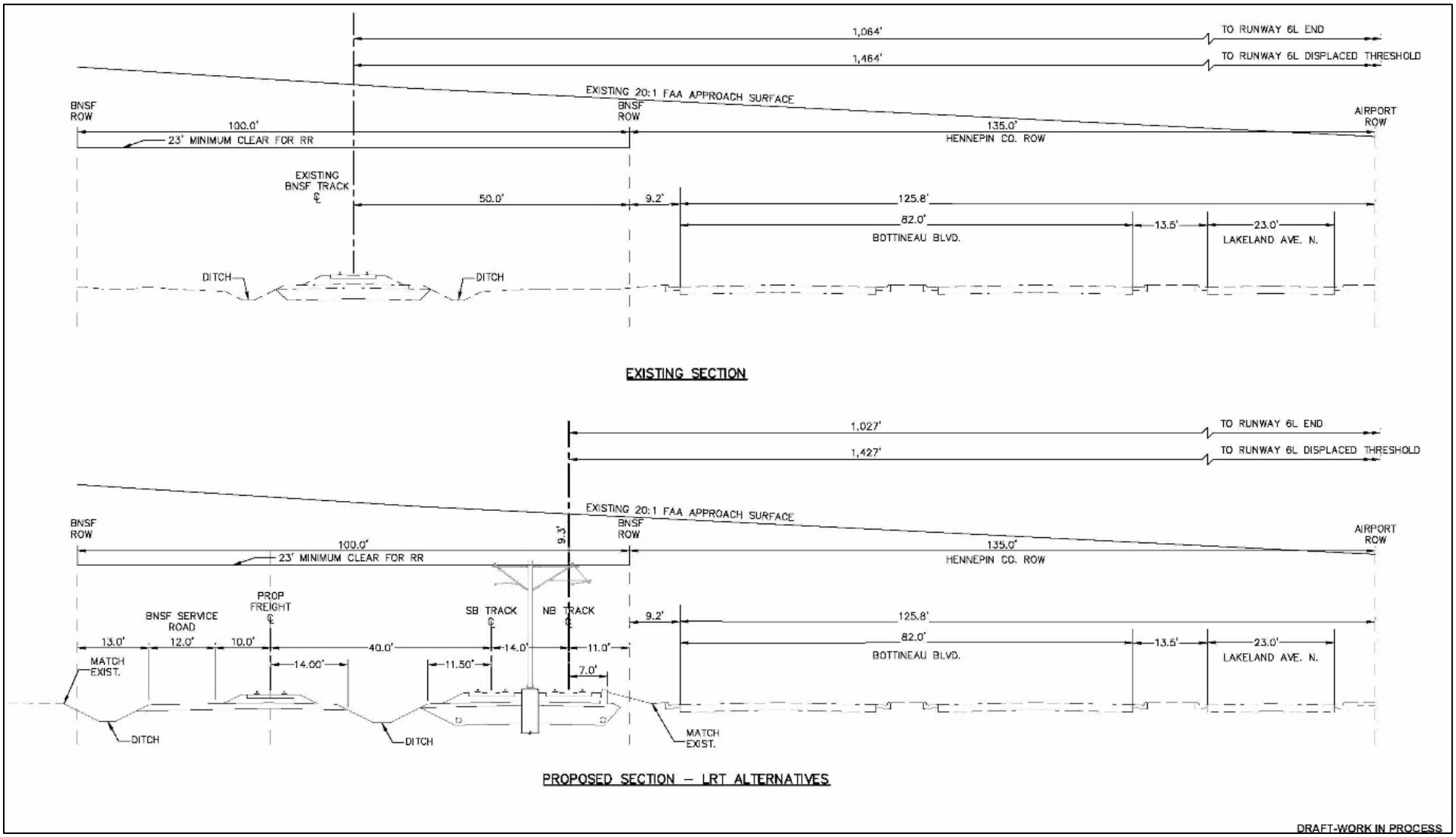
The No-Build Alternative would not involve any improvements within the RPZ; therefore, no construction-phase impacts on aviation would occur under the No-Build Alternative.

Proposed BLRT Extension Project

Construction of the proposed BLRT Extension project, including the overhead catenary system, would occur within the Runway 6L RPZ. Construction operations and phasing in the RPZ would be coordinated with MAC and FAA during the project's final design phase to mitigate these impacts. The Council would complete FAA's *Form 7460 – Notice of Proposed Construction or Alteration* (FAA, 2012a) during final design. The Council would consider the FAA *Form 7460* process complete if FAA were to issue a statement of no objection to the proposed activity.

Construction equipment height would be restricted within the runway approach surface. To discourage bird nesting, no open water would be allowed within the RPZ during construction.

Figure 3.6-1. Crystal Airport Runway Protection Zone and State Safety Zone Effects



3.6.5 Avoidance, Minimization, and/or Mitigation Measures

This section describes the measures that are proposed to mitigate the long-term and short-term aviation impacts from the proposed BLRT Extension project. For each proposed mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures will address.

As discussed in **Section 3.6.1**, an RPZ AA was performed, in conformance with the FAA memorandum *Interim Guidance on Land Uses within a Runway Protection Zone* (FAA, 2012b), to identify the full range of alternatives that could avoid and/or minimize the effects of the proposed BLRT Extension project on the land use within the RPZ, as well as mitigate the risks to people and property on the ground. The RPZ AA reviewed several alternatives to minimize impacts to the RPZ. The recommendation identified in the RPZ AA was that Alignment C, as defined in the Draft EIS locally preferred alternative, was the Preferred Alternative. FAA reviewed the findings and recommendations of the RPZ AA and stated in a letter dated November 24, 2014, that it concurred with the RPZ AA findings.

Because of the shift in the LRT alignment noted above in **Section 3.6.4.1**, the Council provided updated information regarding the position of the LRT catenary system to FAA on November 20, 2015, along with the Council's opinion that the shift in alignment will not alter the RPZ AA; FAA concurred with the Council's analysis in a letter dated December 28, 2015 (see **Appendix D**).

MAC is in the process of updating the Crystal Airport Layout Plan. An Airport Layout Plan is a planning tool that aviation authorities use to depict both existing facilities and planned development for an airport. The Crystal Airport Layout Plan identifies the boundaries and proposed additions that are owned or controlled by the Airport and planned to be used for airport purposes, existing and proposed airport facilities and structures, and the location of existing and proposed non-aviation areas within the airport boundaries. The proposed BLRT Extension project will modify the existing conditions within the RPZ.

Based on the decisions rendered by FAA through the RPZ AA and confirmed through FAA's issuance of a letter of no objection (Form 7460 application), the proposed BLRT Extension project will be included in the updated Crystal Airport Layout Plan.

4 Community and Social Analysis

This chapter updates the discussion in the *Bottineau Transitway Draft Environmental Impact Statement* (Draft EIS) (March 2014) assessing the impacts of the No-Build Alternative and the proposed METRO Blue Line Light Rail Transit (BLRT) Extension project on the social characteristics and conditions within the proposed BLRT Extension project study area. Operating-phase (long-term) and construction-phase (short-term) impacts are identified for the No-Build Alternative and the proposed BLRT Extension project. The alternatives are described and illustrated in **Chapter 2 – Alternatives**.

Changes to This Chapter since the Draft Environmental Impact Statement Was Published

This Final Environmental Impact Statement (Final EIS) evaluates a number of different social characteristics and conditions for impacts: land use plan compatibility; community facilities and community character and cohesion; displacement of residents and businesses; cultural resources; visual and aesthetics; economic effects; and safety and security. Specifically:

- **Section 4.1** – This section reviews the most current comprehensive plans for the cities of Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park for land use and plan compatibility with the proposed BLRT Extension project.
- **Section 4.2** – This section describes each of the communities along the proposed BLRT Extension project (the cities of Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park). The analysis of long-term and short-term direct neighborhood and community effects anticipated from the revised definition of the proposed BLRT Extension project is based on the following three criteria: changes to community facilities access; changes to community character; and changes to community cohesion.
- **Section 4.3** – This section updates the partial and full property acquisitions and displacements affected by the limits of disturbance (LOD) associated with the proposed BLRT Extension project.
- **Section 4.4** – This section describes cultural resources and discusses impacts that would result from the implementation of the proposed BLRT Extension project as defined in this Final EIS. This section also describes resolution of adverse effects by exploring alternatives that avoid, minimize, or mitigate the adverse effects through project design, consultation with Section 106 consulting parties, and development of a Section 106 Memorandum of Agreement (MOA).
- **Section 4.5** – This section assesses the existing physical character of the revised definition of the proposed BLRT Extension project study area including physical development, vegetation and other natural features, and visually sensitive landmarks and views. Potential impacts on the visual character of the areas adjacent to the proposed BLRT Extension project are also evaluated.
- **Section 4.6** – This section focuses on the potential economic effects associated with the revised definition of the proposed BLRT Extension project and its effect on the local economy. These effects would be realized to varying degrees throughout the region in terms of increased economic output, earnings, and employment.
- **Section 4.7** – This section assesses the potential safety and security impacts to light rail transit (LRT) users, area residents, rail corridor visitors, and construction workers for the revised definition of the proposed BLRT Extension project.

The study area represents a geographic area used to identify resources, and varies based on the resource being evaluated. The basis for each study area begins with the LOD, which has been defined as the estimated area where construction would occur for the proposed BLRT Extension project. In some cases the study area extends beyond the LOD to understand the potential extent of impacts on adjacent resources. The study area considered for each area of analysis in this chapter is summarized in **Table 4.0-1**. Greater detail is provided in each section of this chapter. For reference, conceptual engineering plans are located in **Appendix E**.

Table 4.0-2 summarizes the effects of the proposed BLRT Extension project on the social characteristics and conditions, as well as the Metropolitan Council's (Council) minimization and mitigation commitments, which become a part of the proposed BLRT Extension project upon issuance of the Record of Decision.

Table 4.0-1. Summary of Defined Study Areas – Social Analysis

Resource Evaluated	Study Area Definition	Basis for Study Area
Land Use Plan Compatibility	Jurisdictions in which the transitway would be located	Project compatibility with overall city plans
Community Facilities/ Community Character and Cohesion	½ mile radius around stations ¼ mile on either side of alignments	A half-mile radius is commonly used by transit planners to represent the distance transit users are willing to walk to access an LRT station; for alignments, a quarter-mile captures direct (within 300 feet) impacts
Displacement of Residents and Businesses	Within the LOD	Area reflecting direct impacts on properties
Cultural Resources	*Architecture/History Area of Potential Effects (APE)*: Within the LOD and 500 feet on either side of alignments; 0.25-mile radius around stations, Operations and Maintenance Facility (OMF), new bridges/structures, and the modification of existing bridges/structures; and 500-foot radius around bridges/structures for the modification of piers *Archaeological APE:* For LRT alignments on an existing rail corridor, the railroad right-of-way; for LRT alignments not along an existing rail corridor, the proposed construction limits; and a 500-foot radius from the construction limits of proposed stations, park-and-rides, and OMF	APE as agreed upon by the Minnesota Historic Preservation Office (MnHPO)
Visual/Aesthetics	The immediate area of properties adjacent to and in visual proximity to the various project components, including track alignments, stations, park-and-rides, traction power substations (TPSSs), new bridges, and any other infrastructure elements	Properties and features visible from the proposed BLRT Extension project components
Economic Effects	Minneapolis–St. Paul–Bloomington Metropolitan Statistical Area (MSA)	Area reflecting direct economic impacts from the proposed BLRT Extension project
Safety and Security	Within and adjacent to the LOD	Reflects direct impacts and proximity of proposed alignments to places that attract persons of special concern relative to safety and security

Table 4.0-2. Summary of Impacts, Commitments, and Mitigation Measures – Social Analysis

Category		Summary of Impacts and Mitigations
Land Use Plan Compatibility (Section 4.1)	Operating-Phase (Long-Term) Direct Impacts	■ No adverse impacts identified
	Construction-Phase (Short-Term) Impacts	■ None anticipated
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ The proposed BLRT Extension project will be compatible with land use planning policy documents, therefore no mitigation measures will be needed
Community Facilities/ Community Character and Cohesion (Section 4.2)	Operating-Phase (Long-Term) Direct Impacts	■ Impacts associated with the proposed BLRT Extension project were not severe enough to affect overall community character and cohesion, or the accessibility to and use of community facilities
	Construction-Phase (Short-Term) Impacts	■ Traffic detours could increase traffic through residential neighborhoods or change access to community facilities ■ Sidewalk closures and detours could affect pedestrian traffic patterns ■ Construction impacts such as increased levels of noise and dust could temporarily affect neighborhood character, primarily in areas that are relatively quiet ■ The presence of large construction equipment could be perceived as visually disruptive, resulting in temporary effects on community character, particularly in residential settings ■ A temporary easement from Theodore Wirth Regional Park would be required to construct the LRT guideway ■ Construction of the proposed BLRT Extension project would require a temporary occupancy of Sochacki Park: Sochacki Management Unit for construction access and staging. ■ Construction of the proposed BLRT Extension project would require a temporary occupancy of Becker Park to reconstruct the sidewalk and trail from the park to the Bass Lake Road Station. ■ Construction of the proposed BLRT Extension project would require a temporary occupancy of Three Rivers Park to construct the OMF.
	Mitigation Measures	**Construction-Phase (Short-Term):** ■ Develop and implement the Construction Mitigation Plan and a Construction Communication Plan. Specific mitigation measures included in the Construction Communication Plan will be site-specific and may include: • Issuing construction updates and posting them to the proposed BLRT Extension project website • Providing advance notice of roadway closures, driveway closures and utility shutoffs • Conducting public meetings • Establishing a 24-hour construction hotline • Preparing materials with applicable construction

Table 4.0-2. Summary of Impacts, Commitments, and Mitigation Measures – Social Analysis

Category		Summary of Impacts and Mitigations
		• Addressing property access issues • Assigning staff to serve as liaisons between the public and contractors during construction ■ Develop and implement a construction staging plan, which will be reviewed with the appropriate jurisdictions and railroads. Components of the staging plan include traffic management plans and a detailed construction timeline ■ Restoration and as applicable, enhancement of affected proposed BLRT Extension project area park facilities
Displacement of Residents and Businesses (Section 4.3)	Operating-Phase (Long-Term) Direct Impacts	■ Acquisitions of 292 parcels • 14 total acquisitions, 278 partial acquisitions • About 46.7 acres of permanent easement, and 28.9 acres of temporary easement ■ Displacement of 10 businesses; no displacements of residential, industrial, or public land uses
	Construction-Phase (Short-Term) Impacts	■ 28.9 acres of temporary easements
	Mitigation Measures	■ Non-residential displacements (to be conducted in accordance with the provisions of the Uniform Relocation Act and Minnesota Statutes [Minn. Stat.] 117): • Relocation advisory services • Minimum 90 days written notice to vacate prior to requiring possession ■ Reimbursement for moving and reestablishment expenses

Table 4.0-2. Summary of Impacts, Commitments, and Mitigation Measures – Social Analysis

Category		Summary of Impacts and Mitigations
Cultural Resources (Section 4.4)	Adverse Effects	■ Adverse effect on the Wayman African Methodist Episcopal (AME) Church, Floyd B. Olson Memorial Statue, Osseo Branch Historic District, Homewood Historic District, Theodore Wirth Segment of the Grand Rounds Historic District, and the West Broadway Avenue Residential Historic District ■ No adverse effect (with implementation of mitigation measures) on Sumner Branch Library, Labor Lyceum, Sacred Heart Catholic Church, Robbinsdale Waterworks, and Hennepin County Library – Robbinsdale Branch
	Mitigation Measures	■ Implement Section 106 Memorandum of Agreement measures that will include the following mitigation measures: • Design the proposed BLRT Extension project to the Secretary of the Interior's Standard for the Treatment of Historic Properties for the Minneapolis-Golden Valley segment, and the Robbinsdale segment • Consult with MnHPO and the MOA concurring parties on the proposed BLRT Extension project design in the segments listed above • Preconstruction design review at the 30 percent, 60 percent, 90 percent, and 100 percent phases • Development of a Construction Protection Plan • Implementation of noise mitigation measures for the Sacred Heart Catholic Church, Hennepin County Library-Robbinsdale Branch, and West Broadway Avenue Residential Historic District • National Register of Historic Places nomination forms for Floyd B. Olson Memorial Statue and Wayman AME Church • Interpretation of historic properties • Historic property treatment plans
Visual/Aesthetics (Section 4.5)	Operating-Phase (Long-Term) Direct Impacts	■ Adverse impacts to higher-quality visual features in the following settings: • View to west toward Penn Avenue, from center Olson Memorial Highway (Trunk Highway [TH] 55) median • View to east-southeast toward Olson Memorial Highway bridge over the BNSF Railway (BNSF) rail corridor, from Wirth Park Trail • Boulevard and median trees along Olson Memorial Highway west of Interstate Highway 94 (I-94) • View to west toward proposed Plymouth Avenue Station and bridge, from Plymouth Avenue North and Washburn Avenue North • View to south toward existing BNSF tracks and proposed LRT tracks, from Plymouth Avenue North bridge • View to north toward proposed Plymouth Avenue Station, from Plymouth Avenue bridge • View to southeast toward proposed Plymouth Avenue Station and bridge, from Theodore Wirth Regional Park Chalet • View to northeast toward Bassett Creek and proposed Golden Valley Road Station, from Theodore Wirth Regional Park Golf Course • View to west toward proposed Golden Valley Road Station, from Golden Valley Road and Theodore Wirth Parkway

Table 4.0-2. Summary of Impacts, Commitments, and Mitigation Measures – Social Analysis

Category		Summary of Impacts and Mitigations
		• View to west toward proposed Golden Valley Road Station, from Theodore Wirth Parkway at Golden Valley Road • Theodore Wirth Regional Park and Golf Course • Bassett Creek and Bassett Creek Lagoons • Sochacki Park and South Halifax Park • View to east toward proposed Robbinsdale Station, from 42nd Avenue • View to southeast toward proposed wall and fence, from adjacent residential alley • View to southeast toward proposed Bass Lake Road station and pedestrian bridge, from Bottineau Boulevard (County Road 81) • View to northwest toward proposed Bass Lake Road station and pedestrian bridge, from southeast quadrant of the Bass Lake Road/Bottineau Boulevard intersection • View to northeast toward proposed Bass Lake Road pedestrian bridge, from southwest quadrant of the Bass Lake Road/Bottineau Boulevard intersection • Bass Lake Road pedestrian overpass • Green boulevard on west side of West Broadway Avenue between 47th Avenue and TH 100 • Residential neighborhood between Bass Lake Road and 63rd Avenue • View to south toward proposed 63rd Avenue Station, from trail adjacent to Bottineau Boulevard • View to southeast toward proposed 63rd Avenue Station, from adjacent neighborhood west of 63rd Avenue • View to north toward proposed 73rd Avenue/Bottineau Boulevard bridge, from Bottineau Boulevard at 71st Avenue • View to north toward proposed 73rd Avenue/Bottineau Boulevard bridge, from southeast corner of Bottineau Boulevard and 71st Avenue • View to south toward proposed 73rd Avenue/Bottineau Boulevard bridge, from Bottineau Boulevard at 73rd Avenue • View to southwest toward proposed OMF, from Rush Creek Regional Trail • 63rd Avenue park-and-ride • 73rd Avenue/Bottineau Boulevard bridge • OMF • Rush Creek Regional Trail
	Construction-Phase (Short-Term) Impacts	■ Construction-phase (short-term) impacts would be associated with construction staging areas, concrete and form installation, removal of some of the existing vegetation, lights and glare from construction areas, and generation of dust and debris in the proposed BLRT Extension project area

Table 4.0-2. Summary of Impacts, Commitments, and Mitigation Measures – Social Analysis

Category		Summary of Impacts and Mitigations
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ Follow design guidelines for key proposed BLRT Extension project elements ■ Design and implement landscaping at appropriate locations throughout the proposed BLRT Extension project corridor ■ Minimize operational lighting at night (while maintaining safety/security of LRT facilities) ■ Provide visual screening as appropriate for certain proposed BLRT Extension project facilities **Construction-Phase (Short-Term):** ■ Minimize visual disruption from construction activities, including minimizing light disturbance ■ Restore areas disturbed during construction
Economic Effects (Section 4.6)	Operating-Phase (Long-Term) Direct Impacts	■ Loss of tax revenues caused by right-of-way acquisition would be a recurring loss on an annual basis, partially offset by increases in other tax revenues
	Construction-Phase (Short-Term) Impacts	■ None identified
	Mitigation Measures	■ No mitigation required
Safety and Security (Section 4.7)	Operating-Phase (Long-Term) Direct Impacts	■ Adherence to transitway design guidelines and the oversight of security personnel would result in no adverse impacts related to safety and security
	Construction-Phase (Short-Term) Impacts	■ Construction activities would result in temporary increased congestion along adjacent roads as a result of temporary lane and road closures, shifts in roadway alignments, and detours that could affect access and response times for emergency service providers
	Mitigation Measures	**Operating Phase (Long-Term):** ■ Metro Transit will provide security at and around the transit stations ■ Transit rider, pedestrian, and bicycle safety features will be incorporated into design and maintained and enforced over time ■ Conform to FTA's Rail Fixed Guideway Systems; State Safety Oversight Program for Safety and Security Guidance for Recipients with Major Capital Projects (Circular C 5800.1), covered under 49 CFR Part 633 – Project Management Oversight ■ Conform to the State of Minnesota rail safety regulations that went into effect in July 2014 as part of MN Chapter 312 ■ Implement the proposed BLRT Extension project's *Safety and Security Management Plan* (*SSMP*) (Council, 2014a) and the Metro Light Rail Transit Design Criteria (Council, 2015c) to avoid potential safety issues at new light rail stations, including emergency equipment and appropriate lighting for public areas

Table 4.0-2. Summary of Impacts, Commitments, and Mitigation Measures – Social Analysis

Category		Summary of Impacts and Mitigations
		■ Install fencing where substantial grade changes exist adjacent to sidewalks, trails, and side platform areas, and between the light rail alignment or freight rail alignment when adjacent to a trail or sidewalk, to prevent pedestrian and bicycle encroachment on light rail tracks and accidental falls from station platforms ■ Design at-grade LRT crossings of sidewalks and trails per the Metro Light Rail Transit Design Criteria (Council, 2015c) to include flashing light signals with an audible warning to notify pedestrians of a train's arrival and detectable warnings and signs ■ Design shared freight rail and light rail crossings to meet Federal Railroad Administration (FRA) requirements for at-grade crossings, including requirements for train horn Quiet Zones as described in the Train Horn Quiet Zone Final Rule (49 CFR Part 222), where applicable ■ Maintain emergency vehicle access to areas within the vicinity of the proposed BLRT Extension project ■ Coordinate with affected emergency service providers providing the light rail operating schedule and identification of alternative crossing routes ■ Design LRT facilities within the vicinity of freight rail facilities in accordance with the Metro Light Rail Transit Design Criteria which includes design standards and specifications to provide security and/or enhance safety, such as safeguards to prevent derailments, emergency guardrails, and corridor protection barriers ■ Install intrusion detection for possible freight derailment, and corridor protection, where LRT is jointly operating with freight rail ■ Include safeguards in the catenary system for the proposed BLRT Extension project to help minimize the possibility of sparking occurring in the overhead catenary wires ■ Metro Transit will regularly inspect pantographs for grooves along the pantograph's carbon strip (as it does on its existing light rail lines), which could cause arcing ■ Where the light rail alignment is adjacent to a freight rail alignment, the light rail alignment will be primarily on segregated right-of-way, in accordance with the National Electric Safety guidelines ■ Plan, schedule, conduct, and evaluate at least one tabletop and one full-scale emergency preparedness exercise annually ■ In advance of operation of the proposed BLRT Extension project, a number of drills will be planned, conducted, and documented in an emergency preparedness exercise plan

Table 4.0-2. Summary of Impacts, Commitments, and Mitigation Measures – Social Analysis

Category		Summary of Impacts and Mitigations
		Construction-Phase (Short-Term): ■ Develop and implement a Construction Mitigation Plan, which includes a construction staging plan and a Construction Communications Plan Coordinate with emergency service providers on required detour routes and lane closures to minimize increases in travel and response times; maintain required access during established periods or keep one lane of traffic open on main arterials as described in the Construction Mitigation Plan ■ Maintain federal OSHA and Minnesota OSHA standards for safety of construction site personnel to minimize and/or avoid injury to construction workers ■ Contractors will prepare a proposed BLRT Extension project safety and health program along with a site-specific safety plan to ensure that, while on the work site and construction activities, contractor and subcontractor personnel comply with the specified safety practices, codes, and regulations as described in the proposed BLRT Extension project's *SSMP* ■ Develop and implement freight rail operation coordination plans to facilitate coordination between the proposed BLRT Extension project and the affected freight railroads during construction activities affecting freight rail operations

4.1 Land Use Plan Compatibility

The Council reviewed land use planning information for the proposed BLRT Extension project communities. During this review, the Council determined that the land use plans were mostly unchanged from the Draft EIS phase of the proposed BLRT Extension project. Therefore, the information included in this section is primarily based on the information in the Bottineau Transitway Draft EIS *Land Use Plan Compatibility Technical Report* (HCRRA, 2014).

4.1.1 Regulatory Context and Methodology

No specific laws or executive orders regulate the consideration of land use impacts as part of preparing federal environmental review documents. The National Environmental Policy Act (NEPA) (41 USC § 4321) and the Minnesota Environmental Policy Act (MEPA) (2007 c 116D) form the general basis of consideration for discussing land use issues. Local municipalities have policies addressing land use, including comprehensive plans, as well as official controls including zoning and subdivision codes that regulate development.

Note that various impacts, including noise, community cohesion, economic development, and visual quality, have a relationship to the land uses in the land use study area and are considered in other sections of this Final EIS. Although these impacts might require mitigation at the site level, this section focuses on the compatibility of the proposed BLRT Extension project with local and regional land use planning documents on a broader scale.

4.1.2 Study Area

The study area for land use is defined as the jurisdictions in which the proposed BLRT Extension project would be located. The Council obtained specific land use data from existing and planned land use maps for the cities of Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park. These land use maps are drawn from each city's comprehensive plan, which is a locally approved planning document that guides planning policy and land use. The Council's assessment of the compatibility of the proposed BLRT Extension project with existing and planned land uses was based on the land use inventories and plans in cities' adopted comprehensive plans.

4.1.3 Affected Environment

4.1.3.1 Planning Context

This section summarizes comprehensive plans and land use and other planning documents, which are the basis for the Council's evaluation of the land use compatibility of the proposed BLRT Extension project. Comprehensive plans are updated every 10 years; the comprehensive plans below have not changed since the publication of the Draft EIS in 2014. The Council's *Transportation Policy Plan* (*TPP*) (Council, 2015a) has been updated since the publication of the Draft EIS; however, the conclusions in the current *TPP* (*Thrive MSP 2040 Transportation Policy Plan*) (Council, 2014b) are consistent with those in the *2030 Transportation Policy Plan* (Council, 2010) that was evaluated in the Draft EIS. The land use policy in the current *2040 TPP* (Council, 2015a) is substantially

stronger than in the previous 2030 plan. It contains density targets and activity levels that reinforce station areas as focal points for growth.

In addition to comprehensive planning that is consistent with the *TPP* process, the communities along the proposed BLRT Extension project have been participating in Hennepin County's proposed BLRT Extension project Community Works program. This program was established in 2014 to leverage this important regional transit investment by partnering with cities along the proposed BLRT Extension project to help plan for and implement critical changes "beyond the rails." The program goals include:

- Re-envision the proposed BLRT Extension project corridor as a multi-modal transit corridor that supports LRT, pedestrian, and bicycle connections.
- Maximize and strategically align public and private investments in the proposed BLRT Extension project corridor to support transit-oriented development through catalytic investments in life-cycle housing, commercial development, and public infrastructure.
- Promote economic opportunity by improving access to jobs and supporting business recruitment and expansion along the proposed BLRT Extension project corridor.
- Enhance livability in the proposed BLRT Extension project corridor by improving public spaces, supporting the creation of healthy communities, and connecting people to key destinations, including employment centers, educational institutions, and regional amenities.

4.1.3.2 Local and Regional Plans and Policies

The Council reviewed local and regional policies to determine their compatibility with the proposed BLRT Extension project. The proposed BLRT Extension project is consistent with the local and regional plans as discussed below.

The transportation chapter of *The Minneapolis Plan for Sustainable Growth* (City of Minneapolis, 2009) states that enhanced transit services are the means to efficiently meet the needs of the traveling public. The plan also calls for ongoing investment and development of corridors served by light rail, commuter rail, streetcars, and buses. Additionally, the future Transitway System map in the *Minneapolis Plan for Sustainable Growth* acknowledges potential, proposed BLRT Extension project routes, noting that transitway alignments and station locations are still under review and are subject to change.

The *City of Golden Valley Comprehensive Plan 2008–2018* (City of Golden Valley, 2008) includes the goal of enhancing transit use. A supporting objective is to support local and regional transit provider plans and programs that benefit residents and visitors in the community.

An objective of the *City of Robbinsdale 2030 Comprehensive Plan* (City of Robbinsdale, 2010) is to provide an effective choice of transportation modes for the city's residents. The plan states that transit corridors provide the potential for concentrations of residential uses that could accommodate the regional projections for increased population. The plan also states that the city should coordinate all future downtown redevelopment with a transit hub, exclusive busway, and LRT plans. In addition, the transitway is included on the city of Robbinsdale's Transit Routes map (Figure 4G of the comprehensive plan). The transportation chapter of the city of Robbinsdale's

comprehensive plan acknowledges the proposed BLRT Extension project planning efforts, expressing a preference for LRT.

It is a policy of the *City of Crystal, Minnesota Comprehensive Plan Update Through the Year 2030* (City of Crystal, 2011) to plan and invest in multi-modal transportation choices, based on the full range of costs and benefits, to slow the growth of congestion and serve the region's economic needs. A strategy supporting this policy is to expand the transit system. The Public Transit chapter of the city of Crystal's comprehensive plan supports the development of the proposed BLRT Extension project with LRT as the preferred transit technology.

The *City of Brooklyn Park 2030 Comprehensive Plan* (City of Brooklyn Park, 2008) acknowledges that Bottineau Boulevard is currently being studied by Hennepin County and Metro Transit for use as a transit corridor. The plan states that the city encourages a thorough analysis of the corridor to provide the most cost-effective and efficient mode of transit and to construct it in a timely manner. In addition, the city of Brooklyn Park's comprehensive plan recognizes that changes would be necessary to implement the policies and objectives of the plan, including the consideration of transit overlay districts in areas where the city plans to have transit connections in the future, such as Bottineau Boulevard. Additionally, the plan calls for promoting transit-oriented development where possible and encouraging commercial higher-density residential uses along transit routes. The proposed station locations would provide access to employment centers and other major destinations in the City of Brooklyn Park, which would be compatible with these goals.

Hennepin County's *2030 Transportation Systems Plan* (*TSP*) (Hennepin County, 2011c) is one of the four planning elements of the *Hennepin County Comprehensive Plan* (Hennepin County, 2011b), which includes regional plans for wastewater and sewage systems, regional park systems, and surface water management.

The *TSP* states five central transportation goals, and the development of transitways is addressed as a strategy to achieve three of these goals. Goal 3 identifies the need to "provide mobility and choice to meet the diversity of transportation needs, as well as to support health objectives throughout the county." Continuing the progress of environmental documentation for the proposed BLRT Extension project is explicitly listed as a transit strategy to meet this goal, which also includes targets for improving regional accessibility and the number of jobs accessible via transit service. Goals 4 and 5 address increasing spatial efficiency of land use and reducing the region's environmental footprint through increased development along key transit corridors. The *TSP* also lists the dedicated transitway as one of multiple strategies to achieve a 50-percent increase in transit ridership by 2030.

The Hennepin County *Sustainable Development Strategy* (Hennepin County, 2011a) outlines the County's Housing, Community Works, and Transit Departments' approaches to aligning resources and targeting development to "integrate multi-modal transportation, economic development, housing, and community choices." Specifically, the *Strategy* addresses the agency partnerships, funding sources, and innovative problem-solving used to fund and implement transitways; encourage sustainable, mixed-use development; and apply the sustainable development strategy to transit corridors in the planning, engineering, and design phases of the project.

Hennepin County, in partnership with the Bottineau Boulevard Partnership, also prepared the *Bottineau Land Use Planning Framework* (Hennepin County, 2012). Although the *Framework* is unlike the aforementioned local comprehensive planning documents because the county does not have land use planning administrative authority, it clearly states the county and Partnership's priority for increased development along the Bottineau Transitway.

The *Framework* creates a land use planning "to do" list for the corridor, outlines local and best practices regarding land use planning around transit, and specifically emphasizes the Federal Transit Administration's (FTA) non-financial rating methodology, 40 percent of which is based on land use and economic development measures. The *Framework* states that "a strong land use planning process and subsequent adoption of new policies can increase this score and make a transit project more likely to receive federal funding."

The Council's *2040 TPP* envisions further development of the regional transit system, with opportunities for expanding and improving bus service and transit facilities. In addition, the *2040 TPP* (Council, 2015a) shows the Twin Cities region moving toward a regional system of transitways to improve service in high-demand corridors, meet mobility needs, and increase transit system ridership. A *transitway* is defined in the *2040 TPP* as a combination of infrastructure and transit service improvements that allows transit customers to avoid congestion on roads and connect to regional activity centers and boosts the potential for transit-oriented development.

Choice, Place and Opportunity: An Equity Assessment of the Twin Cities (Council, 2014c) is a Fair Housing and Equity Assessment (FHEA) funded through a Region Sustainable Communities Regional Planning Grant by the US Department of Housing and Urban Development (HUD). The FHEA analyzed the region's racial and ethnic diversity, identifying Areas of Concentrated Poverty (ACPs) and High Opportunity areas, describing public investments and policies as well as the jurisdiction's fair housing landscape. This information, gathered through both community engagement and secondary data sources, provided a full picture of regional equity and access to opportunity. HUD's guidance encourages regions to consider types of transportation infrastructure investments (freeways, transit, fixed bus, recreational trails, and other non-vehicular transportation modes) in relation to a region's housing needs assessment, noting that transportation infrastructure plays a significant role in shaping opportunities within regions, from individual circumstances such as areas of health, employment and education, to collective measures such as prosperity, competitiveness and environmental quality. As noted within the Council's FHEA, a key policy direction for the region is to continue to strengthen the transit connections between lower-income residents and opportunities such as jobs and education.

4.1.4 Environmental Consequences

4.1.4.1 Operating-Phase (Long-Term) Impacts

The conclusions from the Draft EIS have not changed since its publication in March 2014. The proposed BLRT Extension project remains consistent with the local and regional planning policies. For the purposes of this Final EIS, the conclusions of the Draft EIS are summarized below.

No-Build Alternative

The No-Build Alternative would not fulfill a key goal of city and regional plans described above. These plans indicate support for the enhancement, development, and implementation of transit improvements. In addition, these plans address the importance of diversity of transportation modes and the efficiency of land use offered by transit.

Proposed BLRT Extension Project

Overall, the proposed BLRT Extension project would be compatible with the local comprehensive plans and land use and other planning policies of the cities of Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park. Although the city of Golden Valley's comprehensive plan does not specifically mention the proposed BLRT Extension project, LRT would be compatible with the transit goal and objective of the city's comprehensive plan. The proposed BLRT Extension project would also be compatible with regional land use planning policies.

4.1.4.2 Construction-Phase (Short-Term) Impacts

Construction-phase impacts are defined as the temporary impacts that occur during project construction only.

No-Build Alternative

No construction-phase impacts would occur with the No-Build Alternative. Therefore, there would be no construction-related land use compatibility issues with this alternative.

Proposed BLRT Extension Project

Construction-phase impacts generally include:

- Traffic detours resulting in traffic increases through residential neighborhoods
- Noise, dust, and visual impacts due to construction
- Temporary effects on land use due to staging areas

These impacts would not pose compatibility issues with comprehensive plans, land use plans, or other planning policy documents. Negative impacts such as those listed above are addressed under other topic areas (see **Section 3.3 – Vehicular Traffic**, **Section 4.2 – Community Facilities/ Community Character and Cohesion**, **Section 4.5 – Visual/Aesthetics**, **Section 5.6 – Noise**, **and Section 5.10 – Air Quality/Greenhouse Gas Emissions**).

4.1.5 Avoidance, Minimization, and/or Mitigation Measures

Because the proposed BLRT Extension project will be compatible with land use planning policy documents, no avoidance, minimization, or mitigation measures will be needed.

4.2 Community Facilities/Community Character and Cohesion

The information in this section is based on the information provided in the proposed BLRT Extension project's *Transportation Technical Report* (Council, 2015d), *Noise and Vibration Technical Report* (Council, 2016d), and *Visual Quality Technical Report* (Council, 2016b). For information on

coordination regarding community facilities, see **Chapter 8 – Amended Draft Section 4(f) and 6(f) Evaluation**.

4.2.1 Regulatory Context and Methodology

No specific laws or executive orders regulate how impacts to community character, cohesion, and community facilities resulting from transit projects are evaluated. NEPA (41 USC § 4321) and MEPA (2007 c 116D) form the general basis of consideration of these social impacts. The Council obtained community data from comprehensive plans for the cities of Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park. The Council reviewed and evaluated the information from the technical reports cited above to assess direct effects on community character and facilities.

Community facilities near the proposed BLRT Extension project include schools, colleges, libraries, community centers, parks, medical facilities, places of worship, funeral chapels, police and fire departments, and a food bank. The Council assumed that community facilities and park resources more than 300 feet from the proposed BLRT Extension project alignment would experience no direct impacts. This distance was used because 300 feet is the unobstructed screening distance for FTA noise impact assessments and would allow identification of noise impacts to community facilities and park resources.

The analysis of long-term and short-term direct neighborhood and community effects is based on the following three criteria, each of which uses a variety of measures as indicators of effect: changes to community facilities access, changes to community character, and changes to community cohesion. **Table 4.2-1** summarizes the measures used in this analysis for each of the neighborhood and community effects criteria. The evaluation measures are based on the findings in this Final EIS for the following environmental categories: transportation (**Chapter 3**), land use plan compatibility (**Section 4.1**), displacement of residents and businesses (**Section 4.3**), visual quality and aesthetics (**Section 4.5**), noise (**Section 5.6**), and vibration (**Section 5.7**).

Table 4.2-1. Neighborhood and Community Impacts Criteria and Measures

Criteria	Measure[1]
Community Facilities	■ Physical property acquisition and/or displacement of the facility ■ Noise and vibration impacts to community facilities ■ Changes to roads and transit service that can affect transit access to community facilities
Community Character	■ Noise and vibration impacts to residences and business within a neighborhood ■ Visual changes within a neighborhood; property conversion (that is, acquisitions of existing public or private property and its conversion to a publicly owned transportation or related facility) ■ New at-grade light rail crossings of roads and bicycle/pedestrian facilities
Community Cohesion	■ Introduction of new physical barriers ■ Changes to the local road network ■ Changes to the bicycle and pedestrian network, and changes to parking

[1] All measures are derived from findings in this Final EIS for the respective environmental category. All changes are compared to the No-Build Alternative.

In addition to being evaluated as community facilities, parks are also subject to evaluation in the context of Section 4(f) of the Department of Transportation Act of 1966, which governs the use of publicly owned park and recreation lands open to the public, government-owned wildlife lands, and historic resources. In addition to the protection provided by Section 4(f), Section 6(f) of the Land and Water Conservation Fund Act of 1965 (LWCF) stipulates that any land or facility planned, developed, or improved with LWCF funds cannot be converted to uses other than parks, recreation, or open space unless land of at least equal fair market value and reasonably equivalent usefulness is provided. Section 4(f) and Section 6(f) resources are specifically addressed in **Chapter 8 – Amended Draft Section 4(f) and 6(f) Evaluation**.

4.2.2 Study Area

For operating-phase (long-term) impacts, the study area for community facilities/community character and cohesion is defined as the area within a half-mile of the proposed transit stations and one-fourth of a mile along the light rail alignment not in the station areas. A half-mile radius is commonly used by transit planners to represent the distance that transit users are willing to walk to access an LRT station. For areas along the proposed BLRT Extension project corridor that are not within a half-mile radius of a transit station, the Council evaluated community character and facilities within one-fourth of a mile of the transitway alignments. As indicated in **Section 4.2.1**, no direct impacts were assumed by the Council to occur beyond 300 feet of the proposed BLRT Extension project alignment.

4.2.3 Affected Environment

This section describes each of the neighborhoods and communities in the study area, including a summary of the general characteristics of each community (that is, city) and a description of existing community facilities.[1] This section includes a description of the existing community character (for example, development patterns, important physical features, and residential neighborhoods) as well as existing major community connections and barriers (for example, highways, freight rail alignments, and trails).

4.2.3.1 City of Minneapolis

Within the City of Minneapolis, the proposed BLRT Extension project would pass through five officially designated neighborhoods: North Loop, Sumner-Glenwood, Near-North, Harrison, and Willard-Hay. The North Loop is a mixed-use downtown neighborhood. The remaining neighborhoods are primarily urban in character with a grid street pattern and residential housing in a variety of densities along the proposed BLRT Extension project alignment.

Table 4.2-2 describes the existing community character (for example, development patterns, important physical features, and residential neighborhoods), and community connections and

[1] For this analysis, communities are defined as the cities within which the neighborhood and community study area lies (that is, the cities of Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park). Community facilities include land and building uses that are frequently used by the public, such as schools, colleges, libraries, community centers, medical facilities, places of worship, funeral chapels, and police and fire departments. Community facilities can be either publicly or privately owned.

barriers in the study area in the City of Minneapolis, by proposed light rail station areas. **Table 4.2-3** lists the existing community facilities in the study area in the City of Minneapolis, and **Table 4.2-4** lists the park resources. Both community facilities and parks are mapped in **Figure 4.2-1**.

Table 4.2-2. Community Character – City of Minneapolis[1]

Neighborhood[2]	Station Area	Community Character[3]	Community Connections and Barriers
North Loop	Van White Boulevard Station	■ The neighborhood has experienced redevelopment of warehouse buildings into apartments, condominiums, lofts, offices, and artist studio spaces. ■ The Minneapolis Farmers Market is located in this neighborhood.	■ I-94 borders the neighborhood along its western border, and Interstate Highway 394 (I-394) borders the neighborhood along its southern and most of its eastern border; both highways present connectivity challenges. ■ Olson Memorial Highway and Glenwood Avenue are also east-west connections through the neighborhood. ■ The Cedar Lake Trail provides an east-west pedestrian and bicyclist connection through the southern half of the neighborhood.
Sumner-Glenwood	Van White Boulevard Station	■ Olson Memorial Highway bisects the neighborhood, with I-94 serving as the eastern boundary. ■ North of Olson Memorial Highway, the neighborhood is made up of predominantly single-family detached and low-rise apartment buildings. ■ A regional commercial use, International Market Square, is located along the neighbor-hood's southern border. ■ A charter school, vocational school, and public library are located on Olson Memorial Highway.	■ I-94 is a north-south connection along the eastern border of the neighborhood, but it limits connectivity to and from the neighborhood. ■ Van White Memorial Blvd, Bryant Avenue N, and West Lyndale Avenue N provide north-south connections through the neighborhood. ■ Olson Memorial Highway is an east-west connection that bisects the neighborhood and limits connectivity. ■ Glenwood Avenue is an east-west connection along the eastern border of the neighborhood and provides many access points to the neighborhood.
Near-North	Van White Boulevard and Penn Avenue Stations	■ Richly diverse, predominantly residential neighborhood with acres of beautiful parkland and easy access to growing retail opportunities along West Broadway Avenue (County State-Aid Highway [CSAH] 103).	■ Olson Memorial Highway is an east-west connection that forms the southern boundary of this neighborhood.

Table 4.2-2. Community Character – City of Minneapolis[1]

Neighborhood[2]	Station Area	Community Character[3]	Community Connections and Barriers
Harrison	Van White Boulevard and Penn Avenue Stations	■ A mix of land uses including residential, neighborhood commercial, and industrial. ■ The neighborhood is bordered by Theodore Wirth Regional Park, Olson Memorial Highway, I-394, and I-94. ■ Features include Bassett Creek Park along Bassett Creek.	■ Olson Memorial Highway is an east-west connection, but it limits north-south connectivity within the neighborhood. ■ Glenwood Avenue is the major east-west connection through the neighborhood and provides connections throughout the neighborhood. ■ I-94 is a north-south connection that also limits connectivity to and from the neighborhood. ■ Bassett Creek Trail and the Luce Line Extension provide several north-south and east-west pedestrian and bicyclist connections within the neighborhood.
Willard-Hay	Penn Avenue Station	■ Richly diverse, predominantly residential neighborhood with acres of beautiful parkland and easy access to growing retail opportunities along West Broadway Avenue.	■ Olson Memorial Highway is an east-west connection that forms the southern boundary of this neighborhood.

[1] Within the neighborhood and community study area.
[2] Formally designated by the city of Minneapolis.
[3] Applies to the entire neighborhood and not just the study area.

Table 4.2-3. Community Facilities – City of Minneapolis[1]

Community Facility	Neighborhood/ Station Area	Distance[2]	Address	Facility Type
Sharing and Caring Hands	North Loop/ Van White	< 300 feet	525 7th Street North	Community service center
Greater Lake Country Food Bank	North Loop/ Van White	> 300 feet	554 8th Avenue North	Food bank
Fire Station 4	North Loop/ Van White	> 300 feet	1101 6th Street North	Fire station
Phyllis Wheatley Community Center	Sumner-Glenwood/ Van White	> 300 feet	1301 10th Avenue North	Community center
Heritage Park Senior Services Center	Sumner-Glenwood/ Van White	> 300 feet	1015 4th Avenue North	Senior center
Bethune Community School	Near-North/ Van White	> 300 feet	919 Emerson Avenue North	School
Glenwood Lyndale Community Center	Sumner-Glenwood/ Van White	< 300 feet	555 Girard Terrace	Community center
Sumner Library	Near-North/ Van White	< 300 feet	611 Van White Memorial Boulevard	Library
Harvest Preparatory School	Near-North/ Van White	< 300 feet	1300 Olson Memorial Highway	School
Wayman AME Church	Near-North/ Van White	< 300 feet	1221 7th Avenue North	Place of worship
Lao Assistance Center	Harrison/Van White/Penn Avenue	> 300 feet	503 Irving Avenue North	Community service center
Jehovah's Witnesses	Near-North/Van White/Penn Avenue	> 300 feet	701 Humboldt Avenue North	Place of worship
Fire Station 16	Harrison/Van White/Penn Avenue	> 300 feet	1600 Glenwood Avenue	Fire station
Zion Baptist Church	Near-North/Van White/Penn Avenue	< 300 feet	621 Elwood Avenue North	Place of worship
La Creche Early Childhood Center	Near-North/Van White/Penn Avenue	< 300 feet	1800 Olson Memorial Highway	Child care
Redeemer Lutheran Church	Harrison/ Penn Avenue	> 300 feet	1800 Glenwood Avenue	Place of worship
Joint Heirs with Christ Faith	Harrison/ Penn Avenue	> 300 feet	500 Newton Avenue North	Place of worship
Minneapolis Central Church	Harrison/ Penn Avenue	> 300 feet	1922 4th Avenue North	Place of worship
United Christian Ministries	Near-North/ Penn Avenue	> 300 feet	1919 8th Avenue North	Religious organization
Bryn Mawr Health Care Center	Harrison/ Penn Avenue	> 300 feet	275 Penn Avenue North	Medical facility

[1] Within the neighborhood and community study area.
[2] Indicates distance from the proposed BLRT Extension project alignment.

Table 4.2-4. Park Resources – City of Minneapolis

Park	Acres	Neighborhood/ Station Area	Distance[1]	Facilities
Sumner Field	4.8	Sumner-Glenwood/ Van White Boulevard	> 300 feet	Walking trail
Humboldt Triangle Park	0.3	Near-North/Van White Boulevard/ Penn Avenue	< 300 feet	Picnic tables
Mary McLeod Bethune Park	12.2	Near-North/Van White Boulevard/ Penn Avenue	> 300 feet	Basketball court, picnic area, play field, playground, wading pool
Lovell Square	1.3	Near-North/Van White Boulevard/ Penn Avenue	> 300 feet	Walking path, picnic area, tot-lot playground
Barnes Place	0.6	Near-North/Van White Boulevard/ Penn Avenue	< 300 feet	Green space
Harrison Park	6.9	Harrison/Van White Boulevard/Penn Avenue	< 300 feet	Baseball field, basketball court, picnic area, playground, soccer field, softball field, tennis court, wading pool
Theodore Wirth Regional Park	759	Penn Avenue	Adjacent	Fishing pier, boat launch, volleyball courts, playground, picnic area/pavilion, snowboard park, trails, golf courses and clubhouse, Eloise Butler Wildflower Garden, Quaking Bog, cross-country skiing
Farwell Park	1.1	Willard-Hay/Penn Avenue	> 300 feet	Picnic area, playground

[1] Indicates distance from the proposed BLRT Extension project alignment.

Figure 4.2-1. Officially Recognized Neighborhoods and Primary Community Features along the Proposed BLRT Extension Project in the City of Minneapolis

4.2.3.2 City of Golden Valley

The City of Golden Valley does not have any officially designated neighborhoods within its boundaries. The proposed BLRT Extension project would travel through the city parallel to the BNSF rail corridor from Olson Memorial Highway to 34th Avenue. **Table 4.2-5** describes the existing community character (for example, development patterns, important physical features, and residential neighborhoods), and community connections and barriers in the study area in the City of Golden Valley, by proposed light rail station area. **Table 4.2-6** lists the existing community facilities in the study area in the City of Golden Valley, and **Table 4.2-7** lists the park resources. Both community facilities and park resources are mapped in **Figure 4.2-2**.

Table 4.2-5. Community Character – City of Golden Valley[1]

Station Area	Community Character	Community Connections and Barriers
Plymouth Avenue Station	■ Land uses consist generally of parkland to the west and residential neighborhoods to the east. ■ Residential areas are cohesive among themselves but not across the BNSF rail corridor or parkland, and some have limited vehicular access to the parks.	■ Theodore Wirth Parkway, part of the Grand Rounds Scenic Byway, provides an important connection to Golden Valley Road and connects parkland to nearby neighborhoods. ■ BNSF rail corridor presents a barrier between the residential neighborhoods and park land. ■ Cross streets are limited to Golden Valley Road, Theodore Wirth Parkway, Plymouth Avenue, and Olson Memorial Highway, all of which pass over the existing BNSF rail corridor on bridge structures. ■ Grade-separated roadway crossings provide pedestrians and bicyclists with the only formal crossings of the rail corridor. Residential neighborhoods in the City of Golden Valley have a suburban character with curvilinear streets.
Golden Valley Road Station	■ Land uses consist generally of parkland to the west and residential neighborhoods to the east. ■ Residential areas are cohesive among themselves but not across the BNSF rail corridor or parkland, and some have limited vehicular access to the parks.	■ Theodore Wirth Parkway, part of the Grand Rounds Scenic Byway, provides an important connection to Golden Valley Road and connects parkland to nearby neighborhoods. ■ BNSF rail corridor presents a barrier between the residential neighborhoods and park land. ■ Cross streets are limited to Golden Valley Road, Theodore Wirth Parkway, Plymouth Avenue, and Olson Memorial Highway, all of which pass over the existing BNSF rail corridor on bridge structures. ■ Grade-separated roadway crossings provide pedestrians and bicyclists with the only formal crossings of the rail corridor. Residential neighborhoods in the City of Golden Valley have a suburban character with curvilinear streets

[1] Within the neighborhood and community study area.

Table 4.2-6. Community Facilities – City of Golden Valley[1]

Community Facility	Station Area	Distance[2]	Location	Facility Type
Golden Valley Public Safety Fire Station #3	Golden Valley Road Station	> 300 feet	Fire Station #3 Driveway	Fire station
St. Margaret Mary Catholic Church and Loveworks Academy	Golden Valley Road Station	> 300 feet	2225 Zenith Avenue	Place of worship

[1] Within the neighborhood and community study area.
[2] Indicates distance from the proposed BLRT Extension project alignment.

Table 4.2-7. Park Resources – City of Golden Valley

Park	Acres	Station Area	Distance[1]	Facilities
Theodore Wirth Regional Park	759	Plymouth Avenue/Golden Valley Road Stations	Adjacent	Fishing pier, boat launch, volleyball courts, playground, picnic area/pavilion, snowboard park, trails, golf courses and clubhouse, Eloise Butler Wildflower Garden, Quaking Bog, cross-country skiing
Sweeney Lake Park	0.9	Plymouth Avenue/Golden Valley Road Stations	> 300 feet	Dock, canoe launch, sun shelter
Valley View Park	5.5	Golden Valley Road Station	> 300 feet	Picnic areas, open fields, walking and cycling paths
Glenview Terrace Park	5	Golden Valley Road Station	Adjacent	Play equipment, walkways/trails, tennis court
Sochacki Park: Rice Lake Management Unit	9	Golden Valley Road Station	> 300 feet	Trail, wooden boardwalk, overlook across scenic pond
Sochacki Park: Mary Hills Management Unit	15.7	Golden Valley Road Station	Adjacent	Trails, picnic areas, benches

[1] Indicates distance from proposed BLRT Extension project alignment.

Figure 4.2-2. Primary Physical and Community Features along the Proposed BLRT Extension Project in the City of Golden Valley

4.2.3.3 City of Robbinsdale

The City of Robbinsdale does not have any officially designated neighborhoods within its boundaries. The proposed BLRT Extension project would travel through the city parallel to the BNSF rail corridor from about 34th Avenue to 26th Avenue. **Table 4.2-8** describes the existing community character (for example, development patterns, important physical features, and residential neighborhoods), and community connections and barriers in the study area in the City of Robbinsdale, by proposed light rail station area. **Table 4.2-9** lists the existing community facilities in the study area in the City of Robbinsdale, and **Table 4.2-10** lists the park resources. Both community facilities and park resources are mapped in **Figure 4.2-3**.

Table 4.2-8. Community Character – City of Robbinsdale[1]

Station Area	Community Character	Community Connections and Barriers
Robbinsdale Station	■ Parkland and residential neighborhoods are located on both sides of the proposed BLRT Extension project alignment. ■ Residential neighborhoods have a suburban residential character with a grid street pattern. ■ Residential neighborhoods are cohesive within themselves but are separated by major roads (Trunk Highway [TH] 100, Bottineau Boulevard) and the BNSF rail corridor.	■ Cross-community connections are provided by 36th Avenue, 39½ Avenue, and 42nd Avenue. ■ Major roads (TH 100, Bottineau Boulevard) and the BNSF rail corridor present a barrier between the residential neighborhoods. ■ The grid street pattern is somewhat interrupted by several lakes within the city boundaries. ■ The lakes also present natural barriers that influence access and connectivity within the city.

[1] Within the neighborhood and community study area.

Table 4.2-9. Community Facilities – City of Robbinsdale[1]

Community Facility	Station Area	Distance[2]	Location	Facility Type
Bethel World Outreach	Robbinsdale Station	< 300 feet	3900 Hubbard Avenue North	Place of worship
Elim Lutheran Church	Robbinsdale Station	> 300 feet	3978 West Broadway Avenue	Place of worship
Sacred Heart Catholic Church and School	Robbinsdale Station	> 300 feet	4087 West Broadway Avenue	Place of worship/ school
Robbinsdale Police Department	Robbinsdale Station	< 300 feet	4101 Hubbard Avenue North	Police department
Redeemer Lutheran Church	Robbinsdale Station	> 300 feet	4201 Regent Avenue North	Place of worship

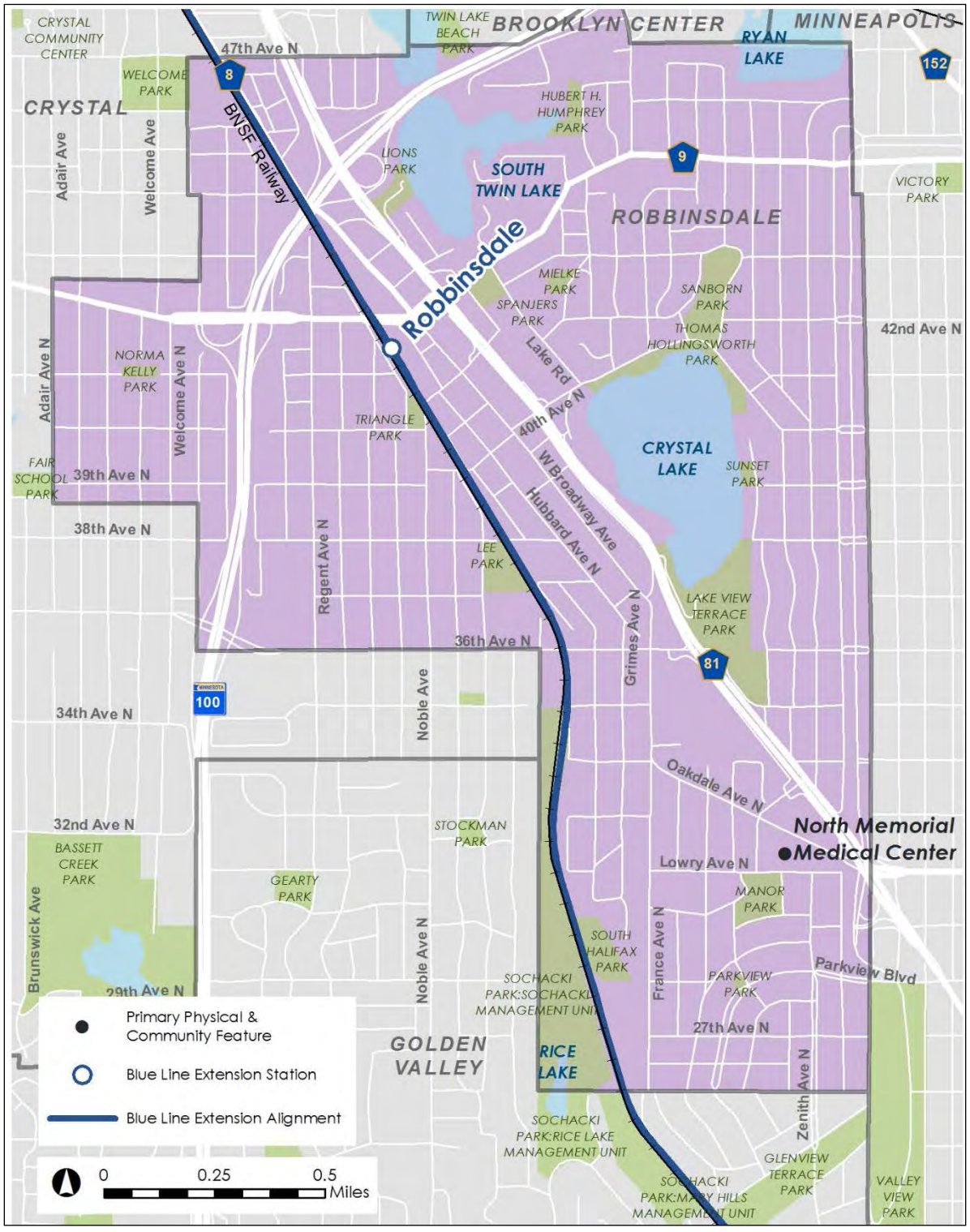
[1] Within the neighborhood and community study area.
[2] Indicates distance from the proposed BLRT Extension project alignment.

Table 4.2-10. Park Resources – City of Robbinsdale

Park	Acres	Station Area	Distance[1]	Facilities
Parkview Park	0.3	Golden Valley Road Station	> 300 feet	Playground equipment, picnic area
Sochacki Park: Sochacki Management Unit	37.4	Golden Valley Road Station	Adjacent	Picnic area, picnic pavilion, paths/trails
South Halifax Park	4	Golden Valley Road Station	Adjacent	Playground equipment, tot equipment, half-court basketball, paths/trails
Lakeview Terrace Park	30	Robbinsdale Station	> 300 feet	Ball fields, playground equipment, tot equipment, picnic area, paths/trails, tennis courts, concession stand, boat access
Lee Park	6.7	Robbinsdale Station	Adjacent	Ball field, playground equipment, tot equipment, picnic area, picnic pavilion, paths/trails,
Thomas Hollingsworth Park	4.4	Robbinsdale Station	> 300 feet	Picnic area, path/trail, fishing dock
Triangle Park	1	Robbinsdale Station	Adjacent	Ball field, playground equipment, picnic area, wading pool
Mielke Park	0.7	Robbinsdale Station	> 300 feet	Picnic area
Spanjers Park	2.5	Robbinsdale Station	> 300 feet	Ball field, picnic area, paths/trails

[1] Indicates distance from the proposed BLRT Extension project alignment.

Figure 4.2-3. Primary Physical and Community Features along the Proposed BLRT Extension Project in the City of Robbinsdale



4.2.3.4 City of Crystal

The City of Crystal comprises 14 officially recognized neighborhoods. The six neighborhoods that would be adjacent to the proposed BLRT Extension project are Welcome Park, Cavanagh Oaks, Twin Oaks, Becker, Lions Park, and Skyway. **Table 4.2-11** describes the existing community character (for example, development patterns, important physical features, and residential neighborhoods), and community connections and barriers in the study area in the City of Crystal, by proposed light rail station area. **Table 4.2-12** lists the existing community facilities in the study area in the City of Crystal, and **Table 4.2-13** lists the park resources. Both community facilities and parks are mapped in **Figure 4.2-4**.

Table 4.2-11. Community Character – City of Crystal[1]

Neighborhood[2]	Station Area	Community Character[3]	Community Connections and Barriers
Welcome Park	Robbinsdale and Bass Lake Road Stations	■ The neighborhood is generally residential but includes mix of residential, neighborhood commercial, and industrial land uses.	■ Canadian Pacific Railway (CP) (east-west orientation) and BNSF (north-south orientation) rail corridors present a barrier for movement between neighborhoods.
Cavanagh Oaks	Bass Lake Road Station	■ The neighborhood is generally residential but includes mix of residential, neighborhood commercial, and industrial land uses.	■ CP (east-west orientation) and BNSF (north-south orientation) rail corridors present a barrier for movement between neighborhoods ■ Bottineau Boulevard is a north-south connection that also limits connectivity in the neighborhood.
Twin Oaks	Bass Lake Road Station	■ The neighborhood is generally residential but includes mix of residential, neighborhood commercial, and industrial land uses. ■ Crystal Airport is located just north of this neighborhood. ■ Bottineau Boulevard is a north-south connection. ■ Bass Lake Road is an east-west connection.	■ CP (east-west orientation) and BNSF (north-south orientation) rail corridors present a barrier for movement between neighbor-hoods. ■ Both Bottineau Boulevard and Bass Lake Road limit connectivity between neighborhoods.
Becker	Bass Lake Road Station	■ The neighborhood is generally residential but includes mix of residential, neighborhood commercial (Crystal Shopping Center), and industrial land uses. ■ Bottineau Boulevard is a north-south connection. ■ Bass Lake Road is an east-west connection	■ CP (east-west orientation) and BNSF (north-south orientation) rail corridors present a barrier for movement between neighbor-hoods. ■ Both Bottineau Boulevard and Bass Lake Road limit connectivity between neighborhoods.

Table 4.2-11. Community Character – City of Crystal[1]

Neighborhood[2]	Station Area	Community Character[3]	Community Connections and Barriers
Lions Park	Bass Lake Road Station	■ The neighborhood is generally residential but includes mix of residential, neighborhood commercial, and industrial land uses. ■ Bottineau Boulevard is a north-south connection. ■ Bass Lake Road is an east-west connection.	■ BNSF rail corridor (north-south orientation) presents a barrier for movement between neighbor-hoods. ■ Both Bottineau Boulevard and Bass Lake Road limit connectivity between neighborhoods.
Skyway	Bass Lake Road Station	■ The neighborhood is generally residential but includes mix of residential, neighborhood commercial, and industrial land uses. ■ Bottineau Boulevard is a north-south connection. ■ Bass Lake Road is an east-west connection. ■ Crystal Airport is located in this neighborhood.	■ BNSF rail corridor (north-south orientation) presents a barrier for movement between neighbor-hoods. ■ Both Bottineau Boulevard and Bass Lake Road limit connectivity between neighborhoods.

[1] Within the neighborhood and community study area.
[2] Formally designated by the city of Minneapolis.
[3] Applies to the entire neighborhood and not just the study area.

Table 4.2-12. Community Facilities – City of Crystal[1]

Community Facility	Neighborhood/ Station Area	Distance[2]	Location	Facility Type
Doug Stanton Ministries	Welcome Park/ Bass Lake Road Station	> 300 feet	4947 West Broadway Avenue	Place of worship
Washburn-McReavy Funeral Chapel	Welcome Park/ Bass Lake Road Station	> 300 feet	5125 West Broadway Avenue	Funeral chapel
Conquerors Christian Center	Becker/Bass Lake Road Station	< 300 feet	5250 Hanson Court	Place of worship
Crystal Medical Center	Skyway/Bass Lake Road Station	< 300 feet	5706 Lakeland Avenue	Medical facility

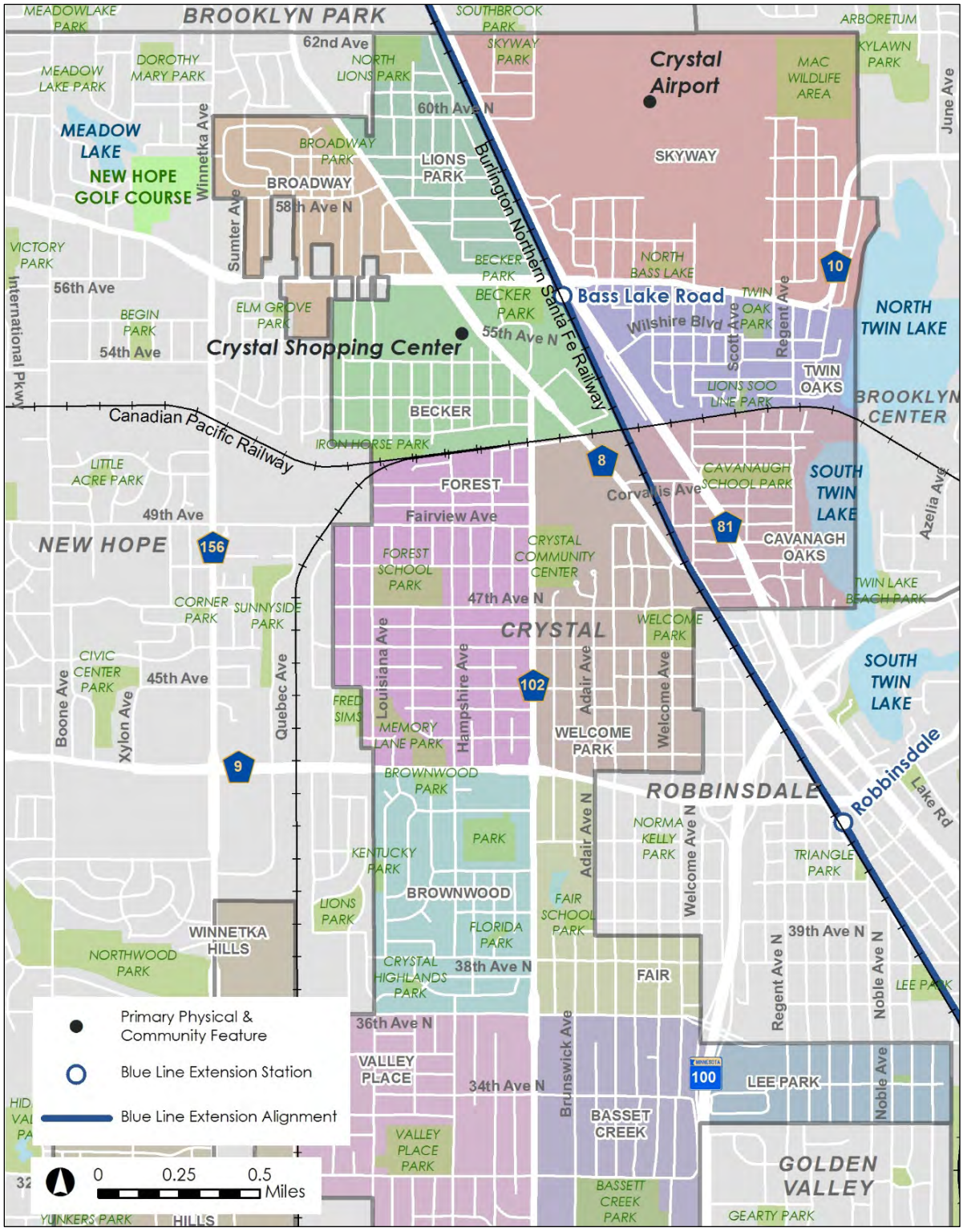
[1] Within the neighborhood and community study area.
[2] Indicates distance from the proposed BLRT Extension project alignment.

Table 4.2-13. Park Resources – City of Crystal

Park	Acres	Neighborhood/ Station Area	Distance[1]	Facilities
Welcome Park	9.5	Welcome Park/Bass Lake Road Station	< 300 feet	Basketball court, skating rink, hockey rink, warming house, tennis courts, baseball fields, playground, soccer field
Cavanagh Park	4.8	Cavanagh Oaks/Bass Lake Road Station	> 300 feet	Playground, picnic shelter, softball fields
Lions Soo Line Park	0.5	Twin Oak/Bass Lake Road Station	> 300 feet	Playground
Becker Park	12.4	Becker/Bass Lake Road Station	Adjacent	Basketball court, playground, tennis courts, softball fields, playground, trails, picnic tables, horseshoe courts, activity center
North Bass Lake Park	1.5	Skyway/Bass Lake Road Station	> 300 feet	Basketball court, playground, picnic shelter
Skyway Park	3.5	Skyway/Bass Lake Road Station	> 300 feet	Half-court basketball, playground, softball field, picnic shelter
North Lions Park	12	Lions Park/Bass Lake Road Station	< 300 feet	Basketball court, tennis courts, warming house, playground, trail, barbeque grills, volleyball courts, softball and baseball fields

[1] Indicates distance from the proposed BLRT Extension project alignment.

Figure 4.2-4. Officially Recognized Neighborhoods and Primary Physical and Community Features along the Proposed BLRT Extension Project in the City of Crystal



4.2.3.5 City of Brooklyn Park

The City of Brooklyn Park does not have any officially designated neighborhoods within its boundaries. Neighborhoods that would be east and west of the proposed BLRT Extension project are separate and cohesive in relation to themselves but not across major roads. **Table 4.2-14** describes the existing community character (for example, development patterns, important physical features, and residential neighborhoods), and community connections and barriers in the study area in the City of Brooklyn Park, by proposed light rail station area. **Table 4.2-15** lists the existing community facilities in the study area in the City of Brooklyn Park, and **Table 4.2-16** lists the park resources. Both community facilities and park resources are mapped in **Figure 4.2-5**.

Table 4.2-14. Community Character – City of Brooklyn Park[1]

Station Area	Community Character	Community Connections and Barriers
63rd Avenue Station	■ Neighborhoods that would be east and west of the proposed BLRT Extension project are separate and cohesive in relation to themselves but not across major roads. ■ Neighborhoods have a low- to medium-density suburban character.	■ 63rd Avenue is an important cross-community connector that links neighborhoods. ■ BNSF rail corridor and Bottineau Boulevard present barriers between the residential neighborhoods. ■ I-94 presents a barrier to north-south travel within the city.
Brooklyn Boulevard Station	■ Neighborhoods that would be east and west of the proposed BLRT Extension project are separate and cohesive in relation to themselves but not across major roads. ■ Neighborhoods have a low- to medium-density suburban character.	■ West Broadway Avenue (north-south) and Brooklyn Boulevard (east-west) serve as important cross-community connectors that link neighborhoods. ■ I-94 presents a barrier to north-south travel within the city.
85th Avenue Station	■ Neighborhoods have a low- to medium-density suburban character with higher-density town homes in the area of 85th Avenue. ■ North Hennepin Community College and a future Hennepin County library (currently under construction) are near the location of the proposed 85th Avenue Station. ■ The existing neighborhoods have winding internal circulation streets and generally would not face the proposed BLRT Extension project on West Broadway Avenue.	■ West Broadway Avenue (north-south) and 85th Avenue (east-west) serve as important cross-community connectors that link neighborhoods. ■ I-94 presents a barrier to north-south travel within the city.
93rd Avenue Station	■ Neighborhoods have a low- to medium-density suburban character. ■ The existing neighborhoods have winding internal circulation streets and generally would not face the proposed BLRT Extension project on West Broadway Avenue.	■ West Broadway Avenue (north-south) and 93rd Avenue (east-west) serve as important cross-community connectors that link neighborhoods. ■ I-94 presents a barrier to north-south travel within the city.

Table 4.2-14. Community Character – City of Brooklyn Park[1]

Station Area	Community Character	Community Connections and Barriers
Oak Grove Parkway Station	■ The existing area near the proposed BLRT Extension project north of TH 610 is currently undeveloped. ■ Future development, including commercial uses, is planned for the area north of TH 610 along the proposed BLRT Extension project near the Oak Grove Parkway Station.	■ TH 610 separates the future development area from the neighborhoods to the south.

[1] Within the neighborhood and community study area.

Table 4.2-15. Community Facilities – City of Brooklyn Park[1]

Community Facility	Station Area	Distance[2]	Location	Facility Type
Grace Lutheran Church	63rd Avenue/ Brooklyn Boulevard Stations	> 300 feet	6810 Winnetka Avenue North	Fire station
Parenting with Purpose	Brooklyn Boulevard Station	> 300 feet	7111 West Broadway Avenue	Place of worship
Brooklyn–Crystal Cemetery	Brooklyn Boulevard Station	> 300 feet	Across from 7217 West Broadway Avenue	Cemetery
Prince of Peace Lutheran Church	Brooklyn Boulevard Station	> 300 feet	7217 West Broadway Avenue	Place of worship
Brooklyn Park Evangelical Free Church	Brooklyn Boulevard Station	< 300 feet	7849 West Broadway Avenue	Place of worship
North Hennepin Community College	85th Avenue Station	< 300 feet	7411 85th Avenue North	College
Future Hennepin County Library	85th Avenue Station	> 300 feet	85th Avenue and West Broadway Avenue	Public library
Step by Step Montessori School	85th Avenue Station	> 300 feet	8401 West Broadway Avenue	School/child care
Berean Baptist Church	85th Avenue/ 93rd Avenue Stations	< 300 feet	8825 West Broadway Avenue	Place of worship

[1] Within the neighborhood and community study area.
[2] Indicates distance from the proposed BLRT Extension project alignment.

Table 4.2-16. Park Resources – City of Brooklyn Park

Park	Acres	Station Area	Distance[1]	Facilities
Southbrook Park	9	63rd Avenue Station	> 300 feet	Picnic area, path and trail, nature area
Edgewood Park	3.6	63rd Avenue Station	> 300 feet	Playground
Lakeland Park	10.2	63rd Avenue Station	> 300 feet	Ball fields, playground, skating and hockey rinks, picnic pavilion, park activity building, tennis, basketball, game courts
Streifel Park	1.3	Brooklyn Boulevard Station	> 300 feet	Ball field, playground
Park Lawn Park	5	Brooklyn Boulevard Station	> 300 feet	Playground, basketball, path and trail
Unknown park	10.9	Brooklyn Boulevard/ 85th Avenue Stations	Adjacent	Trail
Tessman Acres Park	6.2	Brooklyn Boulevard/ 85th Avenue Stations	> 300 feet	Playground, picnic area, path and trail
North Hennepin Community College Trail	—	85th Avenue Station	Adjacent	Trail
North Hennepin Community College Ball Fields	5.8	85th Avenue Station	Adjacent	Ball fields
College Park	6	85th Avenue Station	Adjacent	Playground, skate rink, picnic pavilion, park activity building
Brooklyn Acres	5.6	93rd Avenue Station	> 300 feet	Playground, picnic area, path and trail
Rush Creek Regional Trail	5.22	Oak Grove Parkway Station	Adjacent	Paved and turf trail

[1] Indicates distance from the proposed BLRT Extension project alignment.

Figure 4.2-5. Primary Physical and Community Features along the Proposed BLRT Extension Project in the City of Brooklyn Park

4.2.4 Environmental Consequences

This section identifies the long-term and short-term direct impacts to neighborhoods and communities from the proposed BLRT Extension project. The Council's evaluation of neighborhood and community effects includes an assessment of changes to community facilities access, community character, and community cohesion. This analysis considers evaluation measures that are based on the analysis for other environmental categories documented in this Final EIS. Refer to these other sections of this Final EIS for additional information regarding transportation (**Chapter 3**), land use plan compatibility (**Section 4.1**), displacements of residences and businesses (**Section 4.3**), visual quality and aesthetics (**Section 4.5**), noise (**Section 5.6**), and vibration (**Section 5.7**).

4.2.4.1 Operating-Phase (Long-Term) Impacts

No-Build Alternative

There would be no impacts to community facilities, character, or cohesiveness within communities from the No-Build Alternative.

Proposed BLRT Extension Project

This section summarizes the direct impacts of the proposed BLRT Extension project on community facilities, community character, and community cohesion. The analysis in this section is organized by community (that is, the cities of Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park) from south to north.

City of Minneapolis

As shown in **Table 4.2-17** and summarized below, there would be no adverse impacts to community facilities, community character, or community cohesion in the City of Minneapolis from the proposed BLRT Extension project.

- **Community Facilities.** There are 20 community facilities and eight parks in the study area in the City of Minneapolis (see **Tables 4.2-2, 4.2-3, and 4.2-4 and Figure 4.2-1**). Based on measures described in **Table 4.2-17**, the proposed BLRT Extension project would not disrupt the function of community facilities or parks along the alignment in the City of Minneapolis.
- **Community Character.** Neutral impacts to visual character are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. However, the Council anticipates that station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. Visual impacts to the Olson Memorial Highway center median would be adverse. Also, partial acquisition of some residential, commercial, and industrial parcels is anticipated. Specifically, the proposed BLRT Extension project would require partial acquisition from 18 residential parcels (0.2 acre), two commercial

parcels (0.08 acre),[2] and one industrial parcel (1.83 acres). These acquisitions would not result in displacements nor would they change the overall land use of the surrounding areas.

- These changes would be confined to limited areas and would not adversely impact the overall community character in the City of Minneapolis portion of the study area.
- **Community Cohesion.** Although changes in the local roadway, pedestrian, and bicycle networks would occur, existing roadway and sidewalk/trail connectivity and access would be maintained or improved, and there would be no adverse impacts to community cohesion in the study area in the City of Minneapolis.

Table 4.2-17. Impacts to Community Facilities, Community Character, and Community Cohesion – City of Minneapolis

Neighborhood/ Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
North Loop/ Van White Boulevard Station	Community Facilities	■ *Property acquisition and displacement:* None. ■ *Noise and vibration impacts*: No adverse impacts after mitigation. ■ *Changes in roadway access:* The proposed BLRT Extension project would be in-street-running in Olson Memorial Highway. Modification of 7th Street/Olson Memorial Highway would reduce approach lanes to reduce overall pedestrian and bicyclist crossing lengths. The proposed BLRT Extension project would reduce the number of through lanes over I-94. Crossings (both vehicular and pedestrian) would be restricted to traffic-signal-controlled intersections. ■ *Changes in transit access:* Benefit of improved transit access for Sharing and Caring Hands and the Greater Lake Country Food Bank.
	Community Character	■ *Noise and vibration impacts:* No adverse impacts after mitigation. ■ *Visual changes*: Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. Station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. Visual impacts to the Olson Memorial Highway center median would be adverse, since trees would need to be removed for the transitway alignment. However, trees at the highway edges would remain and would continue to support the "gateway" appearance of the proposed BLRT Extension project corridor. ■ *Property conversion, acquisitions, and displacements*: None. ■ *New at-grade light rail crossings of roadways and pedestrian/bicycle facilities*: New at-grade crossing of 7th Street would be controlled by existing traffic signal.

[2] The two commercial parcels are associated with connecting the proposed BLRT Extension project to the existing Target Field Station and are not presented in **Table 4.2-17**.

Table 4.2-17. Impacts to Community Facilities, Community Character, and Community Cohesion – City of Minneapolis

Neighborhood/ Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
	Community Cohesion	■ *New physical barriers:* None. ■ *Changes to the local roadway network:* Modification of 7th Street/Olson Memorial Highway would reduce approach lanes to reduce overall pedestrian and bicyclist crossing lengths. The proposed BLRT Extension project would reduce the number of through lanes over I-94 on Olson Memorial Highway; however, no degradation in traffic operations is anticipated. ■ *Changes to the pedestrian and bicycle network:* Pedestrian and bicyclist crossings would be improved at 7th Street/Olson Memorial Highway intersection. ■ *Changes to vehicular parking:* None.
Sumner-Glenwood/ Van White Boulevard Station	Community Facilities	■ *Property acquisition and displacement:* None. ■ *Noise and vibration impacts:* No adverse impacts after mitigation. ■ *Changes in roadway access:* The proposed BLRT Extension project would be in-street-running in the median of Olson Memorial Highway with vehicular and pedestrian access across Olson Memorial Highway at existing traffic signals only. The proposed BLRT Extension project would modify southbound West Lyndale Avenue North configurations to better accommodate vehicle traffic flow. ■ *Changes in transit access:* Benefit of improved transit access for Glenwood Lyndale Community Center.
	Community Character	■ *Noise and vibration impacts*: No adverse impacts after mitigation. ■ *Visual changes*: Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. Station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. ■ *Property conversion, acquisitions, and displacements*: None. ■ *New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:* New at-grade crossings of Lyndale Avenue North, Bryant Avenue North, and Van White Memorial Boulevard would be controlled by existing traffic signals.
	Community Cohesion	■ *New physical barriers:* None. ■ *Changes to the local roadway network:* Crossings of Olson Memorial Highway (both vehicular and pedestrian) would be restricted to traffic-signal-controlled intersections (Lyndale Avenue North, Bryant Avenue North, and Van White Memorial Boulevard). ■ *Changes to the pedestrian and bicycle network:* Improved boulevard section (10 feet on each side of Olson Memorial Highway), six-foot sidewalks on both sides, provision for a 10-foot cycle track to be built by others. ■ *Changes to vehicular parking:* None

Table 4.2-17. Impacts to Community Facilities, Community Character, and Community Cohesion – City of Minneapolis

Neighborhood/ Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
Near-North/ Van White Boulevard and Penn Avenue Stations	Community Facilities	■ *Property acquisition and displacement:* None. ■ *Noise and vibration impacts:* No adverse impacts after mitigation. ■ *Changes in roadway access:* The proposed BLRT Extension project would be in-street-running in the median of Olson Memorial Highway with vehicular and pedestrian access across Olson Memorial Highway at existing traffic signals only (Humbolt Avenue North, Morgan Avenue North, and Penn Avenue). ■ *Changes in transit access:* Benefit of improved transit access for Sumner Library, Harvest Preparatory School, Wayman AME Church, Jehovah's Witnesses, Zion Baptist Church, and La Creche Early Childhood Center.
	Community Character	■ *Noise and vibration impacts:* No adverse impacts after mitigation. ■ *Visual changes:* Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. Station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. ■ *Property conversion, acquisitions, and displacements:* None. ■ *New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:* New at-grade crossings of Humbolt Avenue North, Morgan Avenue North, and Penn Avenue would be controlled by existing traffic signals.
	Community Cohesion	■ *New physical barriers:* None. ■ *Changes to the local roadway network:* Crossings of Olson Memorial Highway (both vehicular and pedestrian) would be restricted to traffic-signal-controlled intersections (Humbolt Avenue North, Morgan Avenue North, and Penn Avenue). ■ *Changes to the pedestrian and bicycle network:* Addition of new, signalized pedestrian and bicycle crossings east of James Avenue North and east of Oliver Avenue North. Improved boulevard section (10 feet on each side of Olson Memorial Highway), 6-foot sidewalks on both sides, and provision for a 10-foot cycle track to be built by others. ■ *Changes to vehicular parking:* Loss of 25 on-street parking spaces. Loss of off-street parking would not adversely affect surrounding neighborhoods because there would be adequate parking supply to meet the needs of the existing land uses (for more information on parking impacts, see **Section 3.5**).

Table 4.2-17. Impacts to Community Facilities, Community Character, and Community Cohesion – City of Minneapolis

Neighborhood/ Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
Harrison/Van White Boulevard and Penn Avenue Stations	Community Facilities	■ *Property acquisition and displacement:* The proposed BLRT Extension project would require partial acquisition of three parcels. The proposed BLRT Extension project would not result in displacements. ■ *Noise and vibration impacts:* No adverse impacts after mitigation. ■ *Changes in roadway access:* The proposed BLRT Extension project would be in-street-running in the median of Olson Memorial Highway with vehicular and pedestrian access across Olson Memorial Highway at existing traffic signal at Penn Avenue. The proposed BLRT Extension project would add a traffic signal at Thomas Avenue North. ■ *Changes in transit access:* Benefit of improved transit access for United Christian Ministries.
	Community Character	■ *Noise and vibration impacts:* No adverse impacts after mitigation. ■ *Visual changes:* Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to comple-ment their surroundings, with variations in design that are consistent with the context of each station and TPSS location. Station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. ■ *Property conversion, acquisitions, and displacements:* The proposed BLRT Extension project would require partial acquisition of three residential parcels (0.01 acre). These acquisitions would not change the overall land use of the surrounding areas. ■ *New at-grade light rail crossings of roadways and pedestrian/bicycle facilities: A*t-grade intersection of Penn Avenue and Thomas Avenue North would be controlled by a new traffic signal.
	Community Cohesion	■ *New physical barriers:* None. ■ *Changes to the local roadway network:* The proposed BLRT Extension project would be in-street-running in the median of Olson Memorial Highway with vehicular and pedestrian access across Olson Memorial Highway at existing traffic signal at Penn Avenue. The proposed BLRT Extension project would add a traffic signal at Thomas Avenue North. ■ *Changes to the pedestrian and bicycle network:* Improved boulevard section (10 feet on each side of Olson Memorial Highway), 6-foot sidewalks on both sides, and provision for a 10-foot cycle track to be built by others. ■ *Changes to vehicular parking:* Loss of 50 on-street parking spaces. Loss of off-street parking would not adversely affect surrounding neighborhoods because there would be adequate parking supply to meet the needs of the existing land uses (for more information on parking impacts, see **Section 3.5**).

Table 4.2-17. Impacts to Community Facilities, Community Character, and Community Cohesion – City of Minneapolis

Neighborhood/ Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
Willard-Hay/ Penn Avenue Station	Community Facilities	■ *Property acquisition and displacement:* The proposed BLRT Extension project would require partial acquisition of 16 parcels along Olson Memorial Highway. The proposed BLRT Extension project would not result in displacements. ■ *Noise and vibration impacts:* None. ■ *Changes in roadway access:* The proposed BLRT Extension project would be in-street-running in the median of Olson Memorial Highway with vehicular and pedestrian access across Olson Memorial Highway at existing traffic signal at Penn Avenue. The proposed BLRT Extension project would add a traffic signal at Thomas Avenue North. ■ *Changes in transit access:* None.
	Community Character	■ *Noise and vibration impacts:* None. ■ *Visual changes:* Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. Station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. ■ *Property conversion, acquisitions, and displacements:* The proposed BLRT Extension project would result in the partial acquisition of 15 residential parcels (0.19 acre) and one industrial parcel (1.83 acres). These acquisitions would not change the overall land use of the surrounding areas. ■ *New at-grade light rail crossings of roadways and pedestrian/bicycle facilities: A*t-grade intersection of Penn Avenue and Thomas Avenue North would be controlled by a new traffic signal.
	Community Cohesion	■ *New physical barriers:* None. ■ *Changes to the local roadway network:* The proposed BLRT Extension project would be in-street-running in the median of Olson Memorial Highway with vehicular and pedestrian access across Olson Memorial Highway at existing traffic signal at Penn Avenue. The proposed BLRT Extension project would add a traffic signal at Thomas Avenue North. ■ *Changes to the pedestrian and bicycle network:* Improved boulevard section (10 feet on each side of Olson Memorial Highway), 6-foot sidewalks on both sides, and provision for a 10-foot cycle track to be built by others. ■ *Changes to vehicular parking:* Loss of eight on-street parking spaces. Loss of off-street parking would not adversely affect surrounding neighborhoods because there would be adequate parking supply to meet the needs of the existing land uses (for more information on parking impacts, see **Section 3.5**).

City of Golden Valley

As shown in **Table 4.2-18** and summarized below, there would be direct impacts to community facilities and community character in the City of Golden Valley from the proposed BLRT Extension project.

- **Community Facilities.** There are two community facilities and six parks in the study area in the City of Golden Valley (see **Tables 4.2-5, 4.2-6, and 4.2-7 and Figure 4.2-2**). Based on the measures described in **Table 4.2-18**, none of the community facilities would be adversely affected by the proposed BLRT Extension project. However, right-of-way acquisition would impact park resources.
- **Community Character.** Neutral impacts to visual character are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. However, the Council anticipates that station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. Visual impacts to Theodore Wirth Regional Park and Golf Course and Mary Hills Management Unit of Sochacki Park would be adverse. Also, a full acquisition of industrial property (one parcel, 2.02 acres) and partial acquisition of residential (one parcel, 0.05 acre), commercial (one parcel, 0.23 acre), industrial (one parcel, 5.57 acres), and public (four parcels, 2.11 acres) properties are anticipated. These acquisitions would not change the overall land use of the surrounding areas, and would not displace any residents. These changes would be confined to limited areas and would not adversely impact the overall community character in the City of Golden Valley.
- **Community Cohesion.** The proposed BLRT Extension project would have a positive effect on local roadway, pedestrian, and bicycle networks in the City of Golden Valley. Existing roadway and sidewalk/trail connectivity and access would be maintained or improved, and there would be no adverse impacts to community cohesion in the City of Golden Valley.

Table 4.2-18. Impacts to Community Facilities, Community Character, and Community Cohesion – City of Golden Valley

Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
Plymouth Avenue Station	Community Facilities	■ *Property acquisition and displacement:* The proposed BLRT Extension project would require total acquisition of one parcel and partial acquisition of two parcels. The proposed BLRT Extension project would not result in displacements. The permanent easements would not affect park facilities or recreational use. ■ *Noise and vibration impacts:* No adverse impacts after mitigation. ■ *Changes in roadway access:* None. ■ *Changes in transit access:* Benefit of improved transit access for Theodore Wirth Regional Park.
	Community Character	■ *Noise and vibration impacts:* No adverse impacts after mitigation. ■ *Visual changes:* Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. Station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. ■ *Property conversion, acquisitions, and displacements:* The proposed BLRT Extension project would require total acquisition of one industrial parcel (2.02 acres) and partial acquisition of one industrial parcel (5.57 acres) and one public parcel (1.19 acres). These acquisitions would not change the overall land use of the surrounding areas or affect park or recreational uses. ■ *New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:* None.
	Community Cohesion	■ *New physical barriers:* None. ■ *Changes to the local roadway network:* None. ■ *Changes to the pedestrian and bicycle network:* Existing Theodore Wirth Regional Park trail would be relocated from BNSF right-of-way to park property. ■ *Changes to vehicular parking:* None.

Table 4.2-18. Impacts to Community Facilities, Community Character, and Community Cohesion – City of Golden Valley

Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
Golden Valley Road Station	Community Facilities	■ *Property acquisition and displacement:* The proposed BLRT Extension project would require partial acquisition of five parcels including 0.23 acre from St. Margaret Mary Catholic Church. The proposed BLRT Extension project would not result in displacements. ■ *Noise and vibration impacts:* No adverse impacts after mitigation. ■ *Changes in roadway access:* None. ■ *Changes in transit access:* Benefit of improved transit access for Theodore Wirth Regional Park, Glenview Terrace Park, and Sochacki Park: Mary Hills Management Unit.
	Community Character	■ *Noise and vibration impacts:* No adverse impacts after mitigation. ■ *Visual changes:* Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. Station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. Visual impacts to Theodore Wirth Regional Park and Golf Course and Sochacki Park: Mary Hills Management Unit would be adverse, since views to the BNSF right-of-way might be opened up by grading and vegetation thinning for the transitway. The additional features, including the catenary wires, support poles, tracks, TPSS, and light rail vehicles, would add visual intrusions to the perceived natural character of these parks beyond the existing railroad and overhead utilities. ■ *Property conversion, acquisitions, and displacements:* The proposed BLRT Extension project would require partial acquisition of three public parcels (0.92 acre), one commercial parcel (0.23 acre), and one residential parcel (0.05 acre). These acquisitions would not change the overall land use of the surrounding areas or affect park or recreational use. ■ *New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:* None.
	Community Cohesion	■ *New physical barriers:* None. ■ *Changes to the local roadway network:* Improvement to the Golden Valley Road and Theodore Wirth Parkway would improve vehicular, bicycle, and pedestrian access. ■ *Changes to the pedestrian and bicycle network:* As part of the Golden Valley Road park-and-ride, trailhead improvements would provide improved pedestrian and bicycle access. ■ *Changes to vehicular parking:* Addition of a 100-space park-and-ride at the Golden Valley Road Station.

City of Robbinsdale

As shown in **Table 4.2-19** and summarized below, there would be no adverse impacts to community facilities, community character, or community cohesion in the City of Robbinsdale from the proposed BLRT Extension project.

- **Community Facilities.** There are five community facilities and nine parks in the study area in the City of Robbinsdale (see **Tables 4.2-8, 4.2-9, and 4.2-10 and Figure 4.2-3**). Based on the measures described in **Table 4.2-19**, none of these facilities would be adversely affected by the proposed BLRT Extension project.
- **Community Character.** Full and partial acquisition of commercial and residential property is anticipated. Specifically, the proposed BLRT Extension project would require partial acquisition from one residential parcel (0.01 acre) and full acquisition of one vacant, undevelopable residential parcel (0.53 acre). The full acquisition of the residential parcel would not result in a displacement. The proposed BLRT Extension project would result in the full acquisition of five commercial parcels (4.37 acres) and partial acquisition of four commercial parcels (0.13 acre). These acquisitions would not change the overall land use of the surrounding areas, and would not displace any residents. Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. However, the Council anticipates that station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. These changes would be generally confined to the areas directly adjacent to the existing BNSF rail corridor and would not adversely impact the overall community character in the City of Robbinsdale.
- **Community Cohesion.** Although some changes in the local roadway network in the City of Robbinsdale would occur as a result of the proposed BLRT Extension project, existing roadway and sidewalk/trail connectivity and access would be maintained or improved, and there would be no adverse impacts to community cohesion in the City of Robbinsdale.

Table 4.2-19. Impacts to Community Facilities, Community Character, and Community Cohesion – City of Robbinsdale

Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
Robbinsdale Station	Community Facilities	■ *Property acquisition and displacement:* The proposed BLRT Extension project would require full acquisition of six parcels and partial acquisition of five parcels. Partial acquisition (0.06 acre) from Sacred Heart Catholic Church would occur. The proposed BLRT Extension project would not result in displacements. ■ *Noise and vibration impacts:* Severe impacts to one sensitive receptor after mitigation. No community facilities impacted. ■ *Changes in roadway access:* The at-grade crossing of the BNSF rail corridor at 39½ Avenue would be closed to mitigate noise impacts to sensitive receptors. The at-grade crossing closure would not result in adverse impacts to traffic and emergency response time. ■ *Changes in transit access:* Benefit of improved transit access for Bethel World Outreach, Elim Lutheran Church, Sacred Heart Catholic Church and School, Robbinsdale Police Department, Washburn McReavy Funeral Home, and Redeemer Lutheran Church.
	Community Character	■ *Noise and vibration impacts:* Severe impacts to one sensitive receptor after mitigation. Sacred Heart Catholic Church and School and Washburn McReavy Funeral Home would be impacted. ■ *Visual changes:* Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. Station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. ■ *Property conversion, acquisitions, and displacements:* The proposed BLRT Extension project would require full acquisition of five commercial parcels (4.37 acres) and one vacant residential parcel (0.53 acre) and partial acquisition of four commercial parcels (0.13 acre) and one residential parcel (0.01 acre). These acquisitions would not change the overall land use of the surrounding areas. ■ *New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:* New at-grade light rail/roadway crossings at all existing at-grade freight rail/roadway crossings (except 39½ Avenue), which would be controlled by flashing lights and gates to allow for safe crossings by pedestrians and vehicles and to maintain acceptable traffic operations.
	Community Cohesion	■ *New physical barriers:* None. ■ *Changes to the local roadway network:* The at-grade crossing of the BNSF rail corridor at 39½ Avenue would be closed to mitigate noise impacts to sensitive receptors. The at-grade crossing closure would not result in adverse impacts to traffic and emergency response time. ■ *Changes to the pedestrian and bicycle network:* None. ■ *Changes to vehicular parking:* The proposed BLRT Extension project would result in a loss of on-street parking (nine spaces) and off-street parking (56 spaces). Addition of a 550-space park-and-ride at the station.

City of Crystal

As shown in **Table 4.2-20** and summarized below, there would be no adverse impacts to community facilities, community character, or community cohesion in the City of Crystal from the proposed BLRT Extension project.

- **Community Facilities.** There are four community facilities and eight parks in the study area in the City of Crystal (see **Tables 4.2-11**, **4.2-12, and 4.2-13 and Figure 4.2-4**). Based on measures described in **Table 4.2-20**, none of these facilities would be adversely affected by the proposed BLRT Extension project.
- **Community Character.** Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. However, it is anticipated that station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. In addition, the visual quality of the area adjacent to the pedestrian bridge would be altered. Acquisition of some commercial and residential properties is anticipated. Specifically, the proposed BLRT Extension project would require partial acquisition from two residential parcels (0.24 acre), two commercial parcels (0.11 acre), and two industrial parcels (0.05 acre). Four full acquisitions of commercial parcels (2.08 acres) would be needed. These acquisitions would not change the overall land use of the surrounding areas, and would not displace any residents. These changes are not anticipated to affect the community character of the area surrounding the proposed BLRT Extension project in the City of Crystal.
- **Community Cohesion.** Although changes in the local roadway and pedestrian networks would occur, existing roadway and sidewalk/trail connectivity and access would be maintained or improved, and there would be no adverse impacts to community cohesion in the study area in the City of Crystal.

Table 4.2-20. Impacts to Community Facilities, Community Character, and Community Cohesion – City of Crystal

Neighborhood/ Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
Welcome Park/ Bass Lake Road Station	Community Facilities	■ *Property acquisition and displacement:* The proposed BLRT Extension project would require full acquisition of one parcel and partial acquisition of four parcels. The proposed BLRT Extension project would result in one displacement. ■ *Noise and vibration impacts:* No impacts after mitigation. No community facilities impacted. ■ *Changes in roadway access:* None. ■ *Changes in transit access:* Benefit of improved transit access for Crystal Medical Center.
	Community Character	■ *Noise and vibration impacts:* No impacts after mitigation. ■ *Visual changes:* Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. Station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. ■ *Property conversion, acquisitions, and displacements:* The proposed BLRT Extension project would require full acquisition of one commercial parcel (0.65 acre) and partial acquisition of one commercial parcel (0.10 acre), two industrial parcels (0.05 acre), and one residential parcel (0.21 acre). These acquisitions would not change the overall land use of the surrounding areas. ■ *New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:* New at-grade light rail/roadway crossings at all existing at-grade freight rail/roadway crossings, which would be controlled by flashing lights and gates to allow for safe crossings by pedestrians and vehicles and to maintain acceptable traffic operations.
	Community Cohesion	■ *New physical barriers:* None. ■ *Changes to the local roadway network:* The proposed BLRT Extension project would reconfigure the West Broadway Avenue/Vera Cruz Avenue North intersection to a roundabout in order to continue to provide full access to the surrounding neighborhood; provide additional gates and medians at the rail crossing. ■ *Changes to the pedestrian and bicycle network*: Pedestrian facilities at the reconstructed West Broadway Avenue/Vera Cruz Avenue North intersection would be improved by the proposed BLRT Extension project. ■ *Changes to vehicular parking:* The proposed BLRT Extension project would add a 170-space park-and-ride at the Bass Lake Road Station.

Table 4.2-20. Impacts to Community Facilities, Community Character, and Community Cohesion – City of Crystal

Neighborhood/ Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
Cavanagh Oaks/ Bass Lake Road Station	Community Facilities	■ *Property acquisition and displacement:* None. ■ *Noise and vibration impacts:* Severe impacts to one sensitive receptor after mitigation. No community facilities impacted. ■ *Changes in roadway access:* None. ■ *Changes in transit access:* None.
	Community Character	■ *Noise and vibration impacts:* Severe impacts to one sensitive receptor after mitigation. ■ *Visual changes:* Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. Station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. ■ *Property conversion, acquisitions, and displacements:* None. ■ *New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:* New at-grade light rail/roadway crossings at all existing at-grade freight rail/roadway crossings, which would be controlled by flashing lights and gates to allow for safe crossings by pedestrians and vehicles and to maintain acceptable traffic operations.
	Community Cohesion	■ *New physical barriers:* None. ■ *Changes to the local roadway network:* None. ■ *Changes to the pedestrian and bicycle network:* None. ■ *Changes to vehicular parking:* The proposed BLRT Extension project would add a 170-space park-and-ride at the Bass Lake Road Station.

Table 4.2-20. Impacts to Community Facilities, Community Character, and Community Cohesion – City of Crystal

Neighborhood/ Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
Twin Oaks/Bass Lake Road Station	Community Facilities	■ *Property acquisition and displacement:* The proposed BLRT Extension project would require full acquisition of three parcels and partial acquisition of two parcels. The proposed BLRT Extension project would result in four displacements. ■ *Noise and vibration impacts:* No impacts after mitigation. No community facilities impacted. ■ *Changes in roadway access:* None. ■ *Changes in transit access:* None.
	Community Character	■ *Noise and vibration impacts:* No impacts after mitigation. ■ *Visual changes:* Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. Station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. The visual quality of the area adjacent to the pedestrian bridge would be altered. ■ *Property conversion, acquisitions, and displacements:* The proposed BLRT Extension project would require full acquisition of three commercial parcels (1.43 acres) and partial acquisition of one residential parcel (0.03 acre) and one commercial parcel (0.10 acre). These acquisitions would not change the overall land use of the surrounding areas. ■ *New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:* New at-grade light rail/roadway crossings at all existing at-grade freight rail/roadway crossings, which would be controlled by flashing lights and gates to allow for safe crossings by pedestrians and vehicles and to maintain acceptable traffic operations.
	Community Cohesion	■ *New physical barriers:* None. ■ *Changes to the local roadway network:* None. ■ *Changes to the pedestrian and bicycle network:* The proposed BLRT Extension project would add pedestrian enhancements at Bottineau Boulevard and Bass Lake Road. ■ *Changes to vehicular parking:* The proposed BLRT Extension project would add a 170-space park-and-ride at the Bass Lake Road Station.

Table 4.2-20. Impacts to Community Facilities, Community Character, and Community Cohesion – City of Crystal

Neighborhood/ Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
Becker/Bass Lake Road Station	Community Facilities	■ *Property acquisition and displacement:* None. ■ *Noise and vibration impacts:* No impacts after mitigation. No community facilities impacted. ■ *Changes in roadway access:* None. ■ *Changes in transit access:* Benefit of improved transit access for Conquerors Christian Center.
	Community Character	■ *Noise and vibration impacts:* No impacts after mitigation. ■ *Visual changes:* Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. Station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. The visual quality of the area adjacent to the pedestrian bridge would be altered. ■ *Property conversion, acquisitions, and displacements:* None. ■ *New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:* New at-grade light rail/roadway crossings at all existing at-grade freight rail/roadway crossings, which would be controlled by flashing lights and gates to allow for safe crossings by pedestrians and vehicles and to maintain acceptable traffic operations.
	Community Cohesion	■ *New physical barriers:* None. ■ *Changes to the local roadway network:* None. ■ *Changes to the pedestrian and bicycle network:* The proposed BLRT Extension project would add pedestrian enhancements at Bottineau Boulevard and Bass Lake Road. ■ *Changes to vehicular parking:* The proposed BLRT Extension project would add a 170-space park-and-ride at Bass Lake Road Station.
Lions Park/Bass Lake Road Station	Community Facilities	■ *Property acquisition and displacement:* None. ■ *Noise and vibration impacts:* None. ■ *Changes in roadway access:* None. ■ *Changes in transit access:* None.

Table 4.2-20. Impacts to Community Facilities, Community Character, and Community Cohesion – City of Crystal

Neighborhood/ Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
	Community Character	■ *Noise and vibration impacts:* None. ■ *Visual changes:* Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. Station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. The visual quality of the area adjacent to the pedestrian bridge would be altered. ■ *Property conversion, acquisitions, and displacements:* None. ■ *New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:* New at-grade light rail/roadway crossings at all existing at-grade freight rail/roadway crossings, which would be controlled by flashing lights and gates to allow for safe crossings by pedestrians and vehicles and to maintain acceptable traffic operations.
	Community Cohesion	■ *New physical barriers:* None. ■ *Changes to the local roadway network:* None. ■ *Changes to the pedestrian and bicycle network:* None. ■ *Changes to vehicular parking:* The proposed BLRT Extension project would add a 170-space park-and-ride at the Bass Lake Road Station.
Skyway/Bass Lake Road Station	Community Facilities	■ *Property acquisition and displacement:* None. ■ *Noise and vibration impacts:* None. ■ *Changes in roadway access:* None. ■ *Changes in transit access:* None.
	Community Character	■ *Noise and vibration impacts:* None. ■ *Visual changes:* Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. Station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. The visual quality of the area adjacent to the pedestrian bridge would be altered. ■ *Property conversion, acquisitions, and displacements:* None. ■ *New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:* New at-grade light rail/roadway crossings at all existing at-grade freight rail/roadway crossings, which would be controlled by flashing lights and gates to allow for safe crossings by pedestrians and vehicles and to maintain acceptable traffic operations.
	Community Cohesion	■ *New physical barriers:* None. ■ *Changes to the local roadway network:* None. ■ *Changes to the pedestrian and bicycle network:* None. ■ *Changes to vehicular parking:* The proposed BLRT Extension project would add a 170-space park-and-ride at the Bass Lake Road Station.

City of Brooklyn Park

As shown in **Table 4.2-21** and summarized below, there would be no adverse impacts to community facilities, community character, or community cohesion in the City of Brooklyn Park from the proposed BLRT Extension project.

- **Community Facilities.** There are nine community facilities and 12 parks in the study area in the City of Brooklyn Park (see **Tables 4.2-14, 4.2-15, and 4.2-16 and Figure 4.2-5**). Based on the measures described in **Table 4.2-21**, none of these facilities would be adversely affected by the proposed BLRT Extension project.
- **Community Character.** Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. However, the Council anticipates that station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. Visual impacts would be adverse at the 63rd Avenue park-and-ride. The acquisition of some residential, commercial, and industrial property is anticipated. Specifically, the proposed BLRT Extension project would require partial acquisition from 34 residential parcels (16.16 acres) of which two residential parcels (14.69 acres) are undeveloped land that are zoned residential. Partial acquisition of 14 commercial parcels (3.38 acres) and two industrial parcels (1.07 acres) would also be required. Two full acquisitions of commercial parcels (5.91 acres) and one industrial parcel (0.55 acre) would be needed. These acquisitions would not change the overall land use of the surrounding areas, and would not displace any residents. These changes would not adversely impact the overall community character in the City of Brooklyn Park.
- **Community Cohesion.** Although changes in the local roadway, pedestrian, and bicycle networks in the City of Brooklyn Park would occur as a result of the proposed BLRT Extension project, existing roadway and sidewalk/trail connectivity and access would be maintained or improved, and there would be no adverse impacts to community cohesion in the City of Brooklyn Park.

Table 4.2-21. Impacts to Community Facilities, Community Character, and Community Cohesion – City of Brooklyn Park

Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
63rd Avenue Station	Community Facilities	■ *Property acquisition and displacement*: The proposed BLRT Extension project would require partial acquisition of two parcels. The proposed BLRT Extension project would not result in displacements. ■ *Noise and vibration impacts*: None. ■ *Changes in roadway access*: The proposed BLRT Extension project would add a new traffic signal at the 63rd Avenue North and Louisiana Avenue intersection. ■ *Changes in transit access*: None.
	Community Character	■ *Noise and vibration impacts*: None. ■ *Visual changes*: Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. Station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. Visual impacts would be adverse at the 63rd Avenue park-and-ride. ■ *Property conversion, acquisitions, and displacements*: The proposed BLRT Extension project would require partial acquisition of one residential parcel (0.02 acre) and one industrial parcel (0.17 acre). These acquisitions would not change the overall land use of the surrounding areas. ■ *New at-grade light rail crossings of roadways and pedestrian/bicycle facilities*: New at-grade light rail/roadway crossings at all existing at-grade freight rail/roadway crossings, which would be controlled by flashing lights and gates to allow for safe crossings by pedestrians and vehicles and to maintain acceptable traffic operations.
	Community Cohesion	■ *New physical barriers*: None. ■ *Changes to the local roadway network*: The proposed BLRT Extension project would add a new traffic signal at the 63rd Avenue North and Louisiana Avenue intersection. ■ *Changes to the pedestrian and bicycle network*: The proposed BLRT Extension project would add pedestrian enhancements at Bottineau Boulevard and the BNSF freight tracks. ■ *Changes to vehicular parking*: With the proposed BLRT Extension project, the existing 565-space park-and-ride would continue to serve the 63rd Avenue Station.

Table 4.2-21. Impacts to Community Facilities, Community Character, and Community Cohesion – City of Brooklyn Park

Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
Brooklyn Boulevard Station	Community Facilities	■ *Property acquisition and displacement*: The proposed BLRT Extension project would require total acquisition of three parcels and the partial acquisition of 44 parcels. The proposed BLRT Extension project would result in two displacements. ■ *Noise and vibration impacts*: None. ■ *Changes in roadway access*: The proposed BLRT Extension project would add a new traffic signal at the West Broadway Avenue and 75th Avenue North intersection. Crossings of West Broadway Avenue (both vehicular and pedestrian) would be restricted to traffic signal controlled intersections. ■ *Changes in transit access*: None.
	Community Character	■ *Noise and vibration impacts*: None. ■ *Visual changes*: Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. Station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. ■ *Property conversion, acquisitions, and displacements*: The proposed BLRT Extension project would require total acquisition of two commercial parcels (5.91 acres) and one industrial parcel (0.55 acre) and partial acquisition of 31 residential parcels (1.45 acres) and 13 commercial parcels (3.36 acres). These acquisitions would not change the overall land use of the surrounding areas. ■ *New at-grade light rail crossings of roadways and pedestrian/bicycle facilities*: New at-grade light rail crossings of 76th Avenue North and Brooklyn Boulevard would be controlled by existing traffic signals. All non-signalized intersections would be closed to vehicular, pedestrian and bicycle traffic crossing West Broadway Avenue.
	Community Cohesion	■ *New physical barriers*: None. ■ *Changes to the local roadway network*: The proposed BLRT Extension project would add a new traffic signal at the West Broadway Avenue and 75th Avenue North intersection. Crossings of West Broadway Avenue (both vehicular and pedestrian) would be restricted to traffic-signal-controlled intersections. ■ *Changes to the pedestrian and bicycle network*: None. ■ *Changes to vehicular parking*: The proposed BLRT Extension project would result in the loss of 175 off-street parking spaces.

Table 4.2-21. Impacts to Community Facilities, Community Character, and Community Cohesion – City of Brooklyn Park

Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
85th Avenue Station	Community Facilities	■ *Property acquisition and displacement:* None. ■ *Noise and vibration impacts*: None. ■ *Changes in roadway access*: The proposed BLRT Extension project would close access at 84th Avenue and West Broadway Avenue to maintain pedestrian safety. A new signalized intersection at College Park Avenue would be added. This access change is not expected to affect community facilities near the 85th Avenue Station. Crossings of West Broadway Avenue (both vehicular and pedestrian) would be restricted to traffic-signal-controlled intersections. ■ *Changes in transit access*: None.
	Community Character	■ *Noise and vibration impacts*: None. ■ *Visual changes*: Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. Station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. ■ *Property conversion, acquisitions, and displacements*: None. ■ *New at-grade light rail crossings of roadways and pedestrian/bicycle facilities*: New at-grade light rail crossings of 85th Avenue North, College Park Avenue, and Maplebrook Parkway North would be controlled by existing traffic signals. All non-signalized intersections would be closed to vehicular, pedestrian and bicycle traffic crossing West Broadway Avenue.
	Community Cohesion	■ *New physical barriers*: None. ■ *Changes to the local roadway network*: The proposed BLRT Extension project would close access at 84th Avenue and West Broadway Avenue to maintain pedestrian safety. A new signalized intersection at College Park Avenue would be added. This access change is not expected to affect community facilities near the 85th Avenue Station. Crossings of West Broadway Avenue (both vehicular and pedestrian) would be restricted to traffic-signal-controlled intersections. ■ *Changes to the pedestrian and bicycle network*: None. ■ *Changes to vehicular parking*: None.

Table 4.2-21. Impacts to Community Facilities, Community Character, and Community Cohesion – City of Brooklyn Park

Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
93rd Avenue Station	Community Facilities	■ *Property acquisition and displacement*: The proposed BLRT Extension project would require partial acquisition of two parcels. The proposed BLRT Extension project would not result in displacements. ■ *Noise and vibration impacts*: None. ■ *Changes in roadway access*: The proposed BLRT Extension project would add a new traffic signal at the West Broadway Avenue and 94th Avenue North intersection. Crossings of West Broadway Avenue (both vehicular and pedestrian) would be restricted to traffic-signal-controlled intersections. ■ *Changes in transit access*: None.
	Community Character	■ *Noise and vibration impacts*: None. ■ *Visual changes*: None. ■ *Property conversion, acquisitions, and displacements*: The proposed BLRT Extension project would require partial acquisition of one commercial parcel (0.02 acre) and one industrial parcel (0.90 acre). These acquisitions would not change the overall land use of the surrounding areas. ■ *New at-grade light rail crossings of roadways and pedestrian/bicycle facilities*: New at-grade light rail crossings of 93rd Avenue North and 94th Avenue North would be controlled by existing traffic signals. All non-signalized intersections would be close to vehicular, pedestrian, and bicycle traffic crossing West Broadway Avenue.
	Community Cohesion	■ *New physical barriers*: None. ■ *Changes to the local roadway network*: The proposed BLRT Extension project would add a new traffic signal at the West Broadway Avenue and 94th Avenue North intersection. Crossings of West Broadway Avenue (both vehicular and pedestrian) would be restricted to traffic-signal-controlled intersections. ■ *Changes to the pedestrian and bicycle network*: None. ■ *Changes to vehicular parking*: None.

Table 4.2-21. Impacts to Community Facilities, Community Character, and Community Cohesion – City of Brooklyn Park

Station Area	Impact Category	Long-term Effects by Impact Criteria/Measure
Oak Grove Parkway Station	Community Facilities	■ *Property acquisition and displacement*: The proposed BLRT Extension project would require partial acquisition of two parcels. The proposed BLRT Extension project would not result in displacements. ■ *Noise and vibration impacts*: None. ■ *Changes in roadway access*: The proposed BLRT Extension project would reconstruct 101st Avenue North and Oak Grove Parkway to accommodate the needs of the OMF site; reconstruct West Broadway Avenue from TH 610 to north of Oak Grove Parkway to accommodate the desired location of the proposed BLRT Extension project alignment, station location, and park-and-ride parking structure; and install a new traffic signal at West Broadway Avenue/Main Street to provide a second access point to the park-and-ride. ■ *Changes in transit access*: None.
	Community Character	■ *Noise and vibration impacts*: None. ■ *Visual changes*: Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. Station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. ■ *Property conversion, acquisitions, and displacements*: The proposed BLRT Extension project would require partial acquisition of two undeveloped residential parcels (14.69 acres). This acquisition would not change the overall land use of the surrounding areas. ■ *New at-grade light rail crossings of roadways and pedestrian/bicycle facilities:* New at-grade light rail crossings of Main Street and Oak Grove Parkway would be controlled by the new traffic signals. All non-signalized intersections would be closed to vehicular, pedestrian, and bicycle traffic crossing West Broadway Avenue.
	Community Cohesion	■ *New physical barriers*: None. ■ *Changes to the local roadway network*: The proposed BLRT Extension project would reconstruct 101st Avenue North and Oak Grove Parkway to accommodate the needs of the OMF site; reconstruct West Broadway Avenue from TH 610 to north of Oak Grove Parkway to accommodate the desired location of the proposed BLRT Extension project alignment, station location, and park-and-ride parking structure; and install a new traffic signal at West Broadway Avenue/Main Street to provide a second access point to the park-and-ride. ■ *Changes to the pedestrian and bicycle network*: Reconstructed roadway system around the Oak Grove Parkway Station would have new pedestrian facilities. ■ *Changes to vehicular parking*: The proposed BLRT Extension project would add an 850-space park-and-ride.

4.2.4.2 Construction-Phase (Short-Term) Impacts

Construction-phase impacts are defined as the temporary impacts occurring during project construction.

No-Build Alternative

There would be no construction impacts from the No-Build Alternative.

Proposed BLRT Extension Project

Although temporary in nature, construction-phase impacts could affect community facilities, character, and cohesion. Traffic detours could increase traffic through residential neighborhoods or change access to community facilities. Similarly, sidewalk closures and detours could affect pedestrian traffic patterns. Construction impacts such as increased levels of noise and dust could temporarily affect neighborhood character, primarily in areas that are relatively quiet. The presence of large construction equipment could be perceived as visually disruptive, resulting in temporary effects on community character, particularly in residential settings.

A temporary easement from Theodore Wirth Regional Park would be required to construct the LRT guideway north of Olson Memorial Highway where it transitions from the street right-of-way to the BNSF rail corridor. Further discussion of park impacts is provided in **Chapter 8 – Amended Draft Section 4(f) and 6(f) Evaluation**.

Construction of the proposed BLRT Extension project would require temporary occupancy of Sochacki Park for construction access and staging affecting in 6.17 acres of parkland for an estimated duration of 18 months. In addition to restoring the park to its pre-construction condition, mitigation commitments have been made and accepted by the various jurisdictional entities including the cities of Golden Valley and Robbinsdale, and the Three Rivers Park District (see **Chapter 8 – Amended Draft Section 4(f) and 6(f) Evaluation**).

A temporary occupancy of Becker Park would be needed to reconstruct the sidewalk and trail from the park to the Bass Lake Road Station affecting 0.1 acre of parkland for an estimated duration of 12 months.

In addition, a temporary occupancy of Three Rivers Park in the City of Brooklyn Park would be needed to construct the OMF affecting 1.1 acres of parkland for an estimated duration of 12 months.

4.2.5 Avoidance, Minimization, and/or Mitigation Measures

Although the Council does not anticipate that impacts associated with the proposed BLRT Extension project will be severe enough to affect overall community character and cohesion, mitigation will be implemented for specific locations where long-term operational impacts and short-term construction impacts are anticipated.

4.2.5.1 Long-Term Mitigation Measures

No mitigation measures are warranted for long-term neighborhood and community impacts, because the effectiveness of mitigation measures identified for specific environmental categories (including but not limited to noise, vibration, visual quality and aesthetics, transit, roadways and traffic, parking, and pedestrian and bicyclist considerations) would prevent adverse impacts. Specific mitigation for the long-term impacts such as property acquisitions and displacements, visual quality, and noise are discussed in other sections of this Final EIS (**Section 3.4 – Pedestrians and Bicyclists, Section 3.5 – Parking, Section 4.3 – Displacement of Residents and Businesses, Section 4.5 – Visual Quality and Aesthetics, Section 5.6 – Noise,** and **Section 5.7 – Vibration**).

4.2.5.2 Short-term Mitigation Measures

Short-term construction impacts will be mitigated by the use of deliberate construction staging or phasing, signage, and signal control requirements during construction for roads, trails, and sidewalks to maintain access to neighborhoods and community facilities throughout the construction period. Although specific mitigation plans have not yet been developed, best management practices (BMPs) will include working with residents and community facility managers to provide alternative access, giving residents and community facilities adequate notice about construction plans and phasing, keeping access to bus stops open, and alerting the public to detours.

Specific mitigation measures for short-term impacts to land use related to temporary construction easements and other construction activities will be identified in the Construction Mitigation Plan and Construction Communication Plan, which would be implemented by the Council prior to and during construction. The purpose of the Construction Communication Plan would be to prepare project-area residents, businesses, and commuters for construction; listen to their concerns; and develop plans to reduce harmful or disruptive effects. Specific mitigation measures included in the Construction Communication Plan would be site-specific and could include the following:

- Issue construction updates and post them on the BLRT Extension project website
- Provide advance notice of roadway closures, driveway closures, and utility shutoffs
- Conduct public meetings
- Establish a 24-hour construction hotline
- Prepare materials with applicable construction information
- Address property access issues
- Assign staff to serve as liaisons between the public and contractors during construction

In addition, the Council would develop and implement a Construction Mitigation Plan, which will include a construction staging plan (staging plan) that will be reviewed with the appropriate jurisdictions and railroads, and the contractor would be required to secure the necessary permits and follow the staging plan, unless otherwise approved; and also include a construction communication plan and a construction noise plan.

4.3 Displacement of Residents and Businesses

The proposed BLRT Extension project would require the acquisition (both partial and full) of real property to include permanent and temporary easements for the construction and operation of the transitway. The proposed BLRT Extension project would require additional land beyond that already dedicated to transportation purposes. This section summarizes the land acquisition and easements, and residential and commercial displacements, which would be required for the proposed BLRT Extension project.

4.3.1 Regulatory Context and Methodology

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 proposed BLRT Extension project would be in accordance with the Uniform Relocation and Real Property Acquisitions Policies Act of 1970 as amended (Uniform Act or URA) (Public Law 91–646), 49 CFR Part 24 (the implementing regulations); FTA's Circular 5010.1D *Grants Management*; and Minn. Stat. 117. 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 displaced person's financial means.

The following types of real estate transactions and impacts are discussed in this section:

- **Full Acquisition** – Purchase of all fee-simple landownership rights of a property.
- **Partial Acquisition** – Purchase of a portion of an overall property. A partial acquisition would include fee-simple or easement acquisitions. See the fourth item below for a description of easement property rights.
- **Displacement** – Displacement results from full acquisitions and the conversion of the existing land use to a transportation use. Displacements are measured by housing unit or business, not tax parcel. For example, the acquisition of an apartment building on a single tax parcel with six units would result in six residential displacements.
- **Easement** – An easement provides for the temporary (during construction) or permanent use of a property for a particular purpose. The proposed BLRT Extension project would require both temporary and permanent easements within the proposed BLRT Extension project limits. A temporary easement might be purchased from a property owner for the purpose of storing materials and equipment, providing access to construction areas, site grading, or other construction-related activities. Properties affected by temporary easements would be restored to an acceptable pre-construction condition depending on the individual easement need and agreement. Alternately, a permanent easement might be purchased from a property owner to permanently locate infrastructure on the property without completely diminishing the property owner's use of the land. Examples of uses provided by permanent easements include stormwater management, drainage channels or storm drains, utilities, slope/grading, and subsurface/tunnels.

The analysis in **Section 4.3** identifies the location, size, and number of parcels and type of property that might be required to accommodate the proposed BLRT Extension project. The proposed acquisitions have been estimated using the LOD and approximate right-of-way requirements for the proposed BLRT Extension project.

4.3.2 Study Area

The study area for displacement of residents and businesses is defined as the area within the LOD, which provides a conservative estimate of right-of-way requirements. These requirements have been identified for the proposed BLRT Extension project and are presented in **Section 4.3** of this Final EIS.

4.3.3 Affected Environment

Development along the proposed BLRT Extension project alignment includes residential, commercial, industrial, park, and transportation uses. Existing land uses along the proposed BLRT Extension project alignment are identified and described in **Section 4.1** of this Final EIS.

Parklands, and the specific regulations associated with parkland acquisition, are described in **Chapter 8 – Amended Draft Section 4(f) and 6(f) Evaluation**. Utilities and potential utility relocations are discussed in **Section 5.1**.

4.3.4 Environmental Consequences

4.3.4.1 Operating-Phase (Long-Term) Impacts

The operating phase of the proposed BLRT Extension project would require the permanent acquisition of right-of-way from residential, commercial, and industrial properties and permanent easements on park properties.

No-Build Alternative

The No-Build Alternative would not require acquisition of any properties for the proposed BLRT Extension project.

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Parcel Impacts

Table 4.3-1 summarizes the total and partial property acquisitions by city and by current land use. Property acquisitions required for the proposed BLRT Extension project would affect 292 parcels with a combined area of 75.54 acres of permanent and temporary easements. Of the 75.54 acres, about 28.86 acres would be temporary easements, most commonly involving a strip of land needed to allow for construction activities to occur.

The proposed BLRT Extension project would require 14 total acquisitions including commercial and industrial parcels, with one vacant, undevelopable residential property, spread throughout the proposed BLRT Extension project corridor. The largest number of acquisitions would occur in the City of Crystal. The largest acquisition of property (calculated as total acreage) would occur in the City of Robbinsdale.

Table 4.3-1. Partial and Full Acquisitions Required for the Proposed BLRT Extension Project

Type	Land Use	Minneapolis	Golden Valley	Robbinsdale	Crystal	Brooklyn Park	Total
Full acquisitions[1] (parcels)	Residential	0	0	1[2]	0	0	1
	Commercial	0	0	5	4	2	11
	Industrial	0	1	0	0	1	2
	Public	0	0	0	0	0	0
	Total	**0**	**1**	**6**	**4**	**3**	**14**
Partial acquisitions[3] (parcels)	Residential	18	15	76	64	34	207
	Commercial	2	2	4	16	18	42
	Industrial	2	1	0	11	4	18
	Public	1	4	4	1	1	11
	Total	**23**	**22**	**84**	**92**	**57**	**278**
Total acreage – permanent right-of-way and easements	Residential	0.2	0.05	0.54	0.24	16.16	17.19
	Commercial	0.08	0.23	4.5	2.19	9.29	16.29
	Industrial	1.83	7.59	0.00	0.05	1.62	11.09
	Public	0.00	2.11	0.00	0.00	0.00	2.11
	Total	**2.11**	**9.98**	**5.04**	**2.48**	**27.07**	**46.68**
Total acreage – temporary easements	Residential	0.54	1.04	2.27	1.17	0.84	5.86
	Commercial	0.00	0.30	0.45	1.06	1.67	3.48
	Industrial	0.11	0.00	0.00	0.85	0.59	1.55
	Public	0.29	10.0	6.40	0.10	1.18	17.97
	Total	**0.94**	**11.34**	**9.12**	**3.18**	**4.28**	**28.86**

Source: Council, 2016

[1] Because some properties are unoccupied or vacant, not all full acquisitions would result in displacements.

[2] This acquisition is a vacant, undevelopable parcel that is zoned residential and would not result in a displacement.

[3] Partial acquisitions include both temporary easements and permanent easements or acquisitions.

Displacements

The proposed BLRT Extension project would require 10 commercial displacements. These displacements are described below.

Residential

The proposed BLRT Extension project would not displace any residential properties. One residential property would require a full acquisition, but the property is unoccupied.

Commercial

A total of 10 commercial operations would be displaced by the proposed BLRT Extension project in three of the corridor cities: the cities of Robbinsdale, Crystal, and Brooklyn Park. **Table 4.3-2** summarizes the commercial displacements.

Table 4.3-2. Commercial Displacements by City Required for the Proposed BLRT Extension Project

City	Location	Property Description	Number of Businesses Displaced
City of Robbinsdale	4740 42nd Avenue N	Sawhorse	1
	4719 42nd Avenue N	EMI Audio	1
	4165 Hubbard Avenue N	Oriental Grocery	1
City of Crystal	4900 West Broadway Avenue	Steve O's Restaurant	1
	5501 Lakeland Avenue N	Office building	4
City of Brooklyn Park	7308 Lakeland Avenue N	Furniture store	1
	7300 Lakeland Avenue N	Dentist office	1
		Total	**10**

Industrial

The proposed BLRT Extension project would not displace any industrial properties.

Public

The proposed BLRT Extension project would not displace any public properties.

Operations and Maintenance Facility

In addition to the right-of-way needed to construct the proposed BLRT Extension project alignment as shown in **Table 4.3-1**, the proposed BLRT Extension project would require the construction of an OMF. The OMF site north of 101st Avenue (see **Chapter 2**, **Figure 2.5-4**) consists of an undeveloped parcel owned by the city of Brooklyn Park. Two parcels would be required, and the total acreage required would be 10.4 acres. No displacements would be required to construct the OMF.

TPSS

Potential locations for the TPSS sites are shown in **Chapter 2**, **Figure 2.5-5**. A total of 17 potential TPSS locations have been identified along the proposed BLRT Extension project alignment. The TPSS locations, as shown in **Figure 2.5-5,** are represented by areas with a 300-foot diameter. These areas would be refined through the Engineering phase of project development to reduce impacts to surrounding properties and resources and to balance safety, reliability, cost, and operational efficiencies. TPSS sites would be about 4,000 square feet and would be able to accommodate a single-story building about 40 feet by 20 feet. Although most TPSSs would be located within existing transportation right-of-way, there might be cases in which they would be sited on property not part of public rights-of-way.

4.3.4.2 Construction-Phase (Short-Term) Impacts

Construction activities would result in short-term impacts primarily from the use of temporary construction easements. In addition, proposed BLRT Extension project construction would likely require temporarily modifying or closing existing property accesses. Refer to **Section 3.3**, **Section 3.4**, **Section 3.5**, and **Section 4.6** of this Final EIS for further discussion of construction impacts related to access closures.

4.3.5 Avoidance, Minimization, and/or Mitigation Measures

- Loss of private residential property will be mitigated by payment of fair market compensation and provision of relocation assistance in accordance with the Uniform Act and Minn. Stat. 117.

For non-residential displacements, the following will be provided:

- Relocation advisory services including identification of relocation sites based on the business owners' preferences to retain their client base and/or continue to serve a similar population
- Minimum 90 days' written notice to vacate prior to requiring possession
- Reimbursement for moving and reestablishment expenses

Although the law requires a minimum of 90 days' written notice to vacate for non-residential displacements, the displaced owners will be contacted by a right-of-way agent and an appraiser prior to that. Advisory services would ensure that relocation activities are coordinated with the owners. There are a number of other reimbursable incidental expenses related to relocation that might also be provided to residents and businesses if determined to be actual, reasonable, and necessary.

4.4 Cultural Resources

This section describes the long-term direct and indirect and short-term (construction) direct and indirect effects of the No-Build Alternative and the proposed BLRT Extension project on cultural resources. NEPA requires federal agencies to consider the impacts of their actions on cultural resources, and the National Historic Preservation Act of 1966 (NHPA), as amended (54 USC § 300101 et seq.), 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 that are listed in or eligible for listing in the National Register of Historic Places (NRHP). The Council on Environmental Quality's (CEQ) *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR Parts 1500–1508) encourage integration of the NEPA process with other planning and environmental reviews, such as 54 USC § 306108 of the NHPA (hereinafter referred to as Section 106). CEQ regulations also clarify that, under NEPA, *impact* is synonymous with *effect* (40 CFR Part 1508.8). For consistency with the Section 106 regulations, *effect* is used throughout this section.

Because federal policy and guidance encourages "coordination" and "integration" between NEPA and Section 106, FTA used the Section 106 process for this project to fulfill the requirements for the consideration of effects on cultural properties under NEPA. For this reason, this section of the Final EIS includes identification of commitments and mitigation measures included in the proposed BLRT Extension project's Section 106 MOA (see **Section 4.4.4** and **Appendix H**).

This section includes an overview of the regulatory context and methodology used for the analysis; a summary of the proposed BLRT Extension project's Section 106 consultation process; an evaluation of existing historic properties; an assessment of the anticipated effects on historic properties; and a description of avoidance, minimization, and mitigation measures to implement with the proposed BLRT Extension project (for cumulative impacts, see **Chapter 6**).

Appendix H includes documentation of the Section 106 consultation process, including copies of the proposed BLRT Extension project's consultation materials (also see **Section 4.4.1.4**). A list of reports and studies on historic properties studies is provided in the *Cultural Resources Evaluation Supporting Documentation Technical Memorandum* (Council, 2016a) (for instructions on how to access the technical memorandum, see **Appendix H**). The reports summarized in this memorandum, combined with correspondence with MnHPO in **Appendix H**, provide documentation of FTA's efforts to identify historic properties (also see **Section 4.4.2**).

Appendix H includes the *Section 106 Assessment of Effects and Final Determination of Effect for Historic Properties* (*Assessment of Effect Report*) (FTA and MnDOT CRU, 2016), which documents FTA's findings of effect for all identified historic properties (also see **Section 4.4.3**) and its overall determination of effect for this project. Documentation of MnHPO's concurrence with those findings is provided in **Appendix H**.

4.4.1 Regulatory Context and Methodology

This section describes the regulatory context and methodology for the historic properties assessment under Section 106. After an introduction summarizing the Section 106 process, this section describes the methodologies used to determine the architecture/history and archaeological areas of potential effects (APEs), 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 Council would apply for FTA funding for the proposed BLRT Extension project and would seek permits for construction from the US Army Corps of Engineers (USACE); therefore, this project is a federal undertaking and must comply with Section 106 and other applicable federal mandates. Section 106 requires federal agencies to consider the effects of their actions on historic properties before undertaking a project. FTA is the Federal Lead Agency for the proposed BLRT Extension project. The Council is the proposed BLRT Extension project's local Lead Agency and project sponsor. USACE is a federal Cooperating Agency for the proposed BLRT Extension project, responsible for implementing NEPA and related laws and Section 404 of the Clean Water Act. Pursuant to 36 CFR Part 800.2(a)(2), USACE has also designated FTA as the Federal Lead Agency responsible for fulfilling their collective Section 106 obligations for the proposed BLRT Extension project.[3]

FTA's Section 106 compliance was achieved through consultation with MnHPO, Indian tribes, local governments, and other interested parties. Section 106 directs that the responsible federal agency shall:

- Initiate the Section 106 process by determining whether the action is an undertaking, notifying MnHPO and Indian tribes, and developing a plan to involve the public (36 CFR Part 800.3);
- Identify historic properties that are listed, or eligible for listing, in the NRHP by determining an APE, conducting a survey to identify historic properties, and evaluating historic properties under NRHP criteria (36 CFR Part 800.4);
- Assess the effects of the undertaking on historic properties by applying the criteria of adverse effect and consulting with MnHPO, Indian tribes, and the public [36 CFR Parts 800.5 and 800.11(e)]; and
- Resolve any adverse effect(s) by continuing consultation with Section 106 consulting parties to explore measures that avoid, minimize, or mitigate the adverse effect(s), and develop a Section 106 MOA to document agreed-upon measures (36 CFR Part 800.6).

The Minnesota Department of Transportation (MnDOT) Cultural Resources Unit (CRU) is aiding FTA in many aspects of the Section 106 process for the proposed BLRT Extension project, per 36 CFR Part 800.2(a)(3). FTA detailed these responsibilities in a letter to MnDOT, included in **Appendix H**. FTA in consultation with MnHPO defined the proposed BLRT Extension project's architecture/history and archaeological APEs, identified and evaluated historic properties, assessed

[3] In a letter dated March 30, 2015, USACE recognized FTA as the Federal Lead Agency pursuant to 36 CFR Part 800.2(a)(2) to act on USACE's behalf for meeting the requirements of Section 106.

the effects of the proposed BLRT Extension project on historic properties listed in or eligible for inclusion in the NRHP, and resolved adverse effects.

The proposed BLRT Extension project is also using funding from the state of Minnesota and political subdivisions of the state and is seeking permits for construction from several state agencies, including MnDOT, the Minnesota Department of Natural Resources, the Minnesota Pollution Control Agency, and the Minnesota Department of Health. Therefore, the proposed BLRT Extension project must also comply with Minnesota laws, including the Minnesota Environmental Policy Act of 1973, the Minnesota Field Archaeology Act (Minn. Stat. 138.31–138.42), the Minnesota Historic Sites Act (Minn. Stat. 138.661–138.669), and the Minnesota Private Cemeteries Act (Minn. Stat. 307.08), as applicable.

4.4.1.1 Area of Potential Effects

The proposed BLRT Extension project has two APEs, one for architecture/history properties (**Figure 4.4-1 and Figure 4.4-2**) and one for archaeological properties (**Figure 4.4-3 and Figure 4.4-4**), which are the geographic areas within which an undertaking could directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist.[4] The rationale for the architecture/history and archaeological APEs can be found in the *Bottineau Transitway – Draft Environmental Impact Statement Research Design for Cultural Resources* (HCRRA, 2011), which is included in the *Cultural Resources Evaluation Supporting Documentation Technical Memorandum*. The proposed BLRT Extension project's MOA includes a process for modifying the APE, if needed, to account for changes in project effects as project engineering advances.

A. Architecture/History Area of Potential Effects

The APE for architecture/history properties includes (see **Figure 4.4-1 and Figure 4.4-2**):

- **Alignment** – 500 feet on either side of the proposed alignment;
- **Stations and OMFs** – 0.25-mile radius from the center point of the station or OMF area;
- **New structures** (new or replacement bridges, pedestrian bridge, etc.) – 0.25-mile radius from the structure (assumes the potential for pile driving);
- **Existing structures; modification** (widening/reconstruction of existing structures) – 0.25-mile radius from the structure (assumes the potential for pile driving); and
- **Existing structures; pier modification only** (moving piers to allow the LRT to go under) – 500-foot radius from the structure (assumes using drilling and no pile driving).

[4] The architecture/history and archaeological APEs that MnHPO concurred with were developed in 2011, prior to the preparation of the Draft EIS for the project and prior to the Council's selecting the locally preferred alternative (LPA). For this reason, the APEs included several alignment alternatives that were considered during the development of the Draft EIS but were not selected as part of the LPA and have been dropped from further consideration. Therefore, these other alignment alternatives are not shown in **Figure 4.4-1 through Figure 4.4-4**.

Figure 4.4-1. Architecture/History APE – South of Bass Lake Road

Figure 4.4-2. Architecture/History APE – North of Bass Lake Road

B. Archaeological Area of Potential Effects

The APE for archaeology includes all areas of proposed construction activities or other potential ground-disturbing activities associated with construction (see **Figure 4.4-3 and Figure 4.4-4**):[5]

- **Alignment** (within an existing rail corridor) – Existing railroad right-of-way;
- **Alignment** (outside an existing rail corridor) **–** LOD for the proposed BLRT Extension project (ranges from 55 to 550 feet in width);
- **Stations** – 500-foot radius from the center point of the station; and
- **Park-and-Ride Stations and OMFs** – 500-foot radius from the potential limit of disturbance.

4.4.1.2 Identification and Evaluation of Historic Properties

Section 106 gives equal consideration to historic properties listed in or determined eligible for listing in the NRHP. 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. A historic property can be eligible for the NRHP individually, as part of a historic district, or both.

FTA evaluated the significance of each historic property in relation to the following NRHP eligibility criteria:

- **Criterion A** – Association with events that have made a significant contribution to broad patterns of history.
- **Criterion B** – Association with the life of a historically significant person.
- **Criterion C** – Embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction.
- **Criterion D** – Has yielded, or is likely to yield, information important in history or prehistory (this generally is understood to refer to archaeological significance).

[5] **Figure 4.4-3 and Figure 4.4-4** show the location of the LPA and the corresponding archaeological APE. As the proposed BLRT Extension project design has advanced since the archaeological APE was established, several slight revisions have been made to the project design but not to the project scope. As a result, as shown in **Figure 4.4-4**, several small portions of the LPA are now located outside the existing archaeological APE. However, the Phase IA archaeological investigation conducted for the project (see the next paragraph in this section [**Section 4.4.1.2**]) identified known archaeological sites within an area extending 1 mile beyond the archaeological APE, so known archaeological sites have been identified for the portions of the current LPA that are outside the archaeological APE. No known historic properties were identified. The portion of the LPA outside the APE, from and including the 93rd Avenue Station and its park-and-ride facility to the OMF site, also were previously surveyed at a Phase I level for another project, and no historic properties were identified (Woodward-Clyde, 1994). MnDOT CRU also examined the portions of the LPA outside the present APE again on January 12, 2016, through the use of its Minnesota Model (MnModel) and confirmed that these areas have low archaeological site potential. Based on the previous archaeological assessments completed for the project, the 1994 survey by Woodward-Clyde, and MnModel data, FTA has determined that there is low potential for archaeological resources to exist, but would incorporate measures covering unanticipated discoveries during construction in its Section 106 MOA for the project.

Figure 4.4-3. Archaeology APE – South of Bass Lake Road

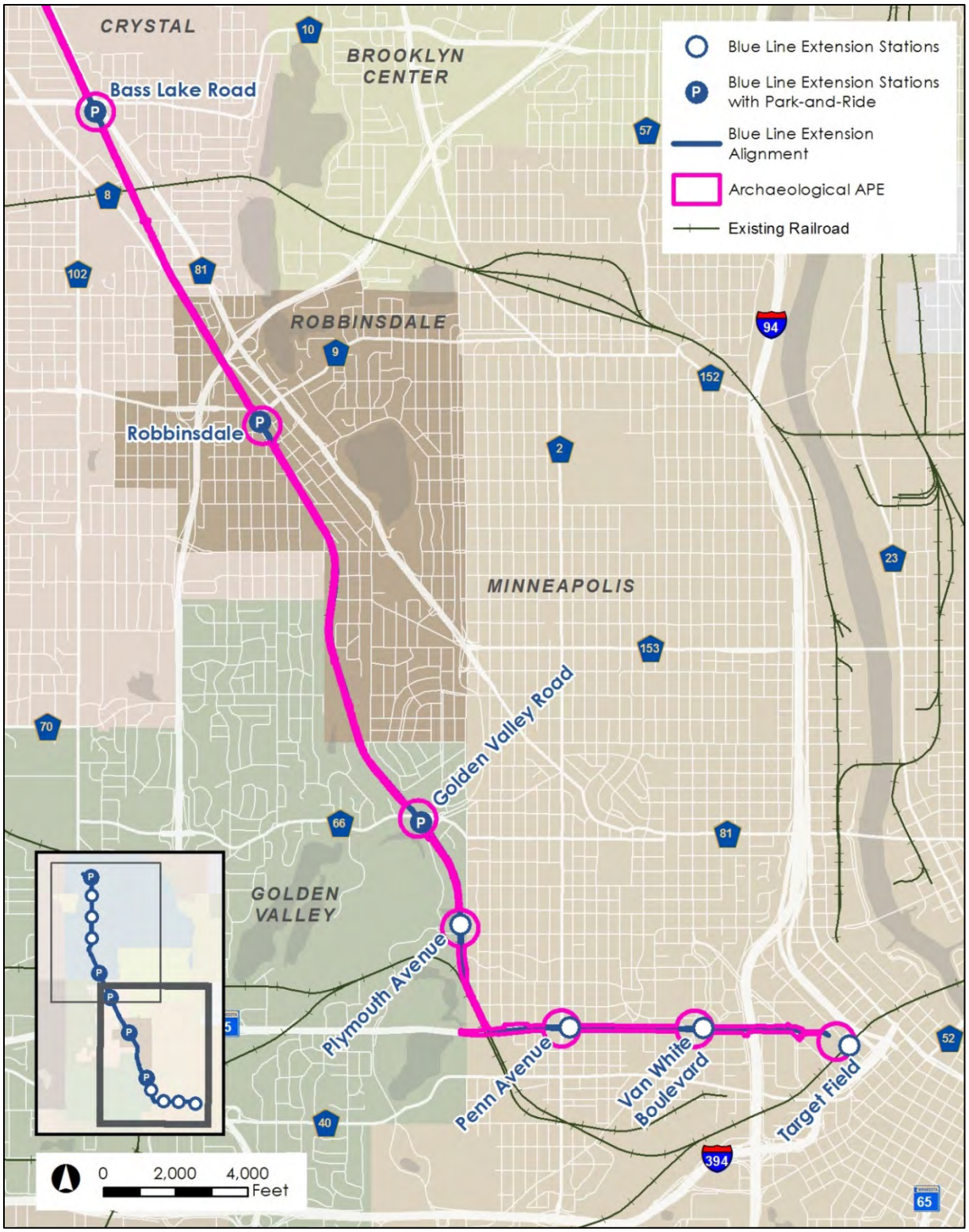


Figure 4.4-4. Archaeology APE – North of Bass Lake Road

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

To identify historic properties within the proposed BLRT Extension project's architecture/history and archaeological APEs, two architecture/history surveys, one archaeological survey, and one cultural landscape study have been completed since 2011. These investigations documented previously identified or evaluated historic properties and included field surveys to document any previously unidentified properties more than 50 years of age within the proposed BLRT Extension project's APEs. **Appendix H** lists the surveys and investigations conducted in support of the proposed BLRT Extension project as well as a description of each eligible or listed property. A list of, and instructions on how to access, reports associated with the historic properties studies is provided in the *Cultural Resources Evaluation Supporting Documentation Technical Memorandum* in **Appendix H**.

The proposed BLRT Extension project's MOA includes a process for identifying and evaluating additional historic properties, if needed, if there are changes in the proposed BLRT Extension project and/or modifications to the project's APEs as project engineering advances.

4.4.1.3 Standards Used to Assess and Resolve Adverse Effects

FTA and MnDOT CRU used the criteria of adverse effect described in 36 CFR Part 800.5(a)(1) to assess the proposed BLRT Extension project's effects on historic properties. Per 36 CFR Part 800.5(a)(1), "an adverse effect on a historic property is found when an undertaking could 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." A full discussion of the proposed BLRT Extension project's effects on each historic property is provided in **Appendix H**.

The proposed BLRT Extension project's MOA includes a process for resolving any newly identified adverse effects, if needed, as project engineering advances.

4.4.1.4 Section 106 Coordination and Consultation

Agency Coordination and Public Involvement

Section 106 consultation continued with MnHPO and other consulting parties since publication of the Notice of Intent to prepare an EIS and through development of the Section 106 MOA. The Section 106 process tasks conducted to date include identifying the architecture/history and archaeological APEs; identifying historic properties and determining their eligibility for the NRHP; assessing project effects on historic properties and making findings of effects, including a final determination of effect; and developing a Section 106 MOA that lists measures to avoid, minimize, and mitigate adverse effects on historic properties. Stipulations in the Section 106 MOA would guide the proposed BLRT Extension project's implementation.

To comply with Section 106 requirements, MnDOT CRU, on FTA's behalf, submitted the architecture/history and archaeological APEs; the results of the surveys and investigations completed for the proposed BLRT Extension project, including NRHP eligibility determinations; and preliminary determinations of effect to MnHPO for concurrence and to other Section 106 consulting parties for comment. FTA submitted the final determinations of effect to MnHPO for concurrence and to other Section 106 consulting parties for comment.

MnHPO concurred with the proposed BLRT Extension project's APEs, NRHP eligibility determinations, and final determination of effect on historic properties. Letters from MnHPO are provided in **Appendix H**. Additional consultation with Section 106 consulting parties occurred throughout the Section 106 process, and documentation of these consultation efforts is also provided in **Appendix H**. Pursuant to the Section 106 regulations [36 CFR Part 800.6(a)(1)], the Advisory Council on Historic Preservation (ACHP) was notified of the final determination of an adverse effect and was provided an opportunity to enter into the consultation process. In their letter dated March 15, 2016, the ACHP formally declined to participate in the consultation process. The Section 106 consulting parties for the proposed BLRT Extension project are MnHPO; USACE; Hennepin County; the cities of Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park; and the Minneapolis Park and Recreation Board (MPRB). The signatories and invited signatories to the proposed BLRT Extension project's Section 106 MOA are FTA, MnHPO, MnDOT, and the Council.

In accordance with 36 CFR Part 800.8, FTA and the Council coordinated Section 106 consultation efforts with the NEPA process and related outreach activities and events. In particular, FTA and the Council incorporated opportunities for the public to review information and provide comments related to steps in the Section 106 process, as appropriate, into public meetings related to the NEPA and design and engineering processes, such as open houses. At these meetings, information was shared summarizing the steps in the Section 106 process, historic properties identified, and effects on historic properties. A list of meetings related to agency coordination and public involvement efforts is included in **Table 4.4-1**.

Table 4.4-1. Meetings Related to the Section 106 Process

Date	Meeting Type	Purpose
June 6, 2015	Section 106 consulting parties meeting	Provide Section 106 process overview, proposed BLRT Extension project overview, and Section 106 findings through the Draft EIS.
July 10, 2015	Section 106 consulting parties meeting	Discuss potential effects on historic properties and present Theodore Wirth Cultural Landscape Study
July 16, 2015	Section 106 consulting parties meeting	Discuss potential effects on historic properties and present Theodore Wirth Cultural Landscape Study
October 19, 2015	Public open house in the City of Crystal	Environmental review process. Included boards with information on historic properties in the APE in the City of Crystal and potential, proposed BLRT Extension project effects on these properties.
October 20, 2015	Public open house in the City of Brooklyn Park	Environmental review process. Included boards with information on historic properties in the APE in the City of Brooklyn Park and potential, proposed BLRT Extension project effects on these properties.
October 21, 2015	Public open house in the City of Robbinsdale	Environmental review process. Included boards with information on historic properties in the APE in the City of Robbinsdale and potential, proposed BLRT Extension project effects on these properties.
October 28, 2015	Public open house in the City of Golden Valley	Environmental review process. Included boards with information on historic properties in the APE in the City of Golden Valley and potential, proposed BLRT Extension project effects on these properties.
October 29, 2015	Public open house in the City of Minneapolis	Environmental review process. Included boards with information on historic properties in the APE in the City of Minneapolis and potential, proposed BLRT Extension project effects on these properties.
February 4, 2016	Section 106 consulting parties meeting	Review FTA's effects findings and final determination of effect for the proposed BLRT Extension project and consult on unresolved adverse effects.
March 7, 2016	Section 106 consulting parties meeting	Presentation: Information share to Homewood neighborhood residents on proposed BLRT Extension project effects on the Homewood Residential Historic District.
March 10, 2016	Section 106 consulting parties meeting	Consultation on unresolved adverse effects.
March 24, 2016	Section 106 consulting parties meeting	Consultation on unresolved adverse effects.

Tribal Coordination

In January 2012, FTA sent letters to potentially affected Indian tribes, requesting that they identify any concerns about the proposed BLRT Extension project's potential effects and inviting them to participate in public Scoping meetings and/or schedule a separate meeting to discuss any specific tribal issues and concerns. Letters were sent to the following tribes:

- Fond du Lac Reservation Tribal Council
- Keweenaw Bay Indian Community
- Grand Portage Reservation Council and Tribal Historic Preservation Office
- Mille Lacs Band of Ojibwe
- Upper Sioux Indian Community
- Standing Rock Sioux Tribe
- White Earth Tribal Council
- Bois Forte Reservation Tribal Council
- Prairie Island Indian Community Council
- Lower Sioux Indian Community Council
- Red Lake Tribal Council
- Shakopee Dakota Community Council
- Three Affiliated Tribes
- Bad River Band of Lake Superior Chippewa
- Flandreau Santee Community
- Lac Courte Oreilles Band of Lake Superior Chippewa Indians of Wisconsin
- Lac du Flambeau Band of Lake Superior Chippewa Indians of Wisconsin
- Lac Vieux Desert Band Ketegitigaaning Ojibwe Nation
- Red Cliff Band of Lake Superior Chippewa Indians
- Sokaogon Chippewa (Mole Lake)
- Spirit Lake Tribal Council
- St. Croix Chippewa Indians of Wisconsin
- Turtle Mountain Band of Chippewa
- Northern Cheyenne Tribe
- Fort Peck Tribes
- Leech Lake Band of Ojibwe
- Santee Sioux Nation
- Sisseton-Wahpeton Oyate of the Lake Travers Reservation

Copies of the letters are provided in **Appendix H**. The tribes also received copies of the Draft EIS and were invited to comment on the document. Comments were received from one tribe, and FTA provided the tribe with the additional information requested. However, no further correspondence was received in response, and no other tribes expressed an interest in meeting or participating in the Section 106 process.

To date, no historic properties significant to tribes have been identified within the proposed BLRT Extension project's APE. If such properties are identified in the future or as unanticipated discoveries during construction, consultation would proceed per the terms of the Section 106 MOA.

4.4.2 Affected Environment

A total of 17 NRHP-listed or -eligible properties have been identified in the proposed BLRT Extension project's architecture/history and archaeological APEs. All are architecture history properties; no NRHP-listed or -eligible archaeological properties have been identified in the proposed BLRT Extension project's archaeological APE. **Table 4.4-2 and Table 4.4-3** list these historic properties, which are shown in **Figure 4.4-5 and Figure 4.4-6**.

4.4.2.1 Architecture/History Properties

The 17 architecture/history resources identified within the proposed BLRT Extension project's architecture/history APE include seven historic districts, nine properties that are individually eligible for or listed in the NRHP, and one property that is both individually eligible for the NRHP and eligible as a contributing element to a historic district. **Figure 4.4-5 and Figure 4.4-6** show the locations of the 17 architecture/history properties identified within the proposed BLRT Extension project's architecture/history APE.

4.4.2.2 Archaeological Properties

No previously recorded or reported archaeological sites, nor any new sites, have been identified within the archaeological APE to date. One area of archaeological potential was identified within the APE for the locally preferred alternative (LPA); however, the area of potential is outside the LOD, so it would not be affected by the proposed BLRT Extension project unless there is a change to the LOD as the proposed BLRT Extension project's design advances. The proposed BLRT Extension project's MOA includes measures for continuing review of the proposed BLRT Extension project's design to verify that no ground-disturbing activities would affect this area.

Because of the sensitive nature of archaeological properties, **Figure 4.4-3 and Figure 4.4-4** illustrate the archaeological APE but do not show the exact location of any previously recorded or reported archaeological site or materials, nor any areas of archaeological potential.[6]

[6] These properties are considered sensitive historic resources under Section 304 of the NHPA, as amended. In accordance with Section 304, information on these sensitive historic resources could cause a significant invasion of privacy and/or put the resources at risk to harm and is not included in this Final EIS. To help preserve these sensitive resources, names, locations, and areas of significance of archaeological sites are not disclosed.

Figure 4.4-5. Location of Historic Properties Identified within the Architecture/History APE – South of Bass Lake Road

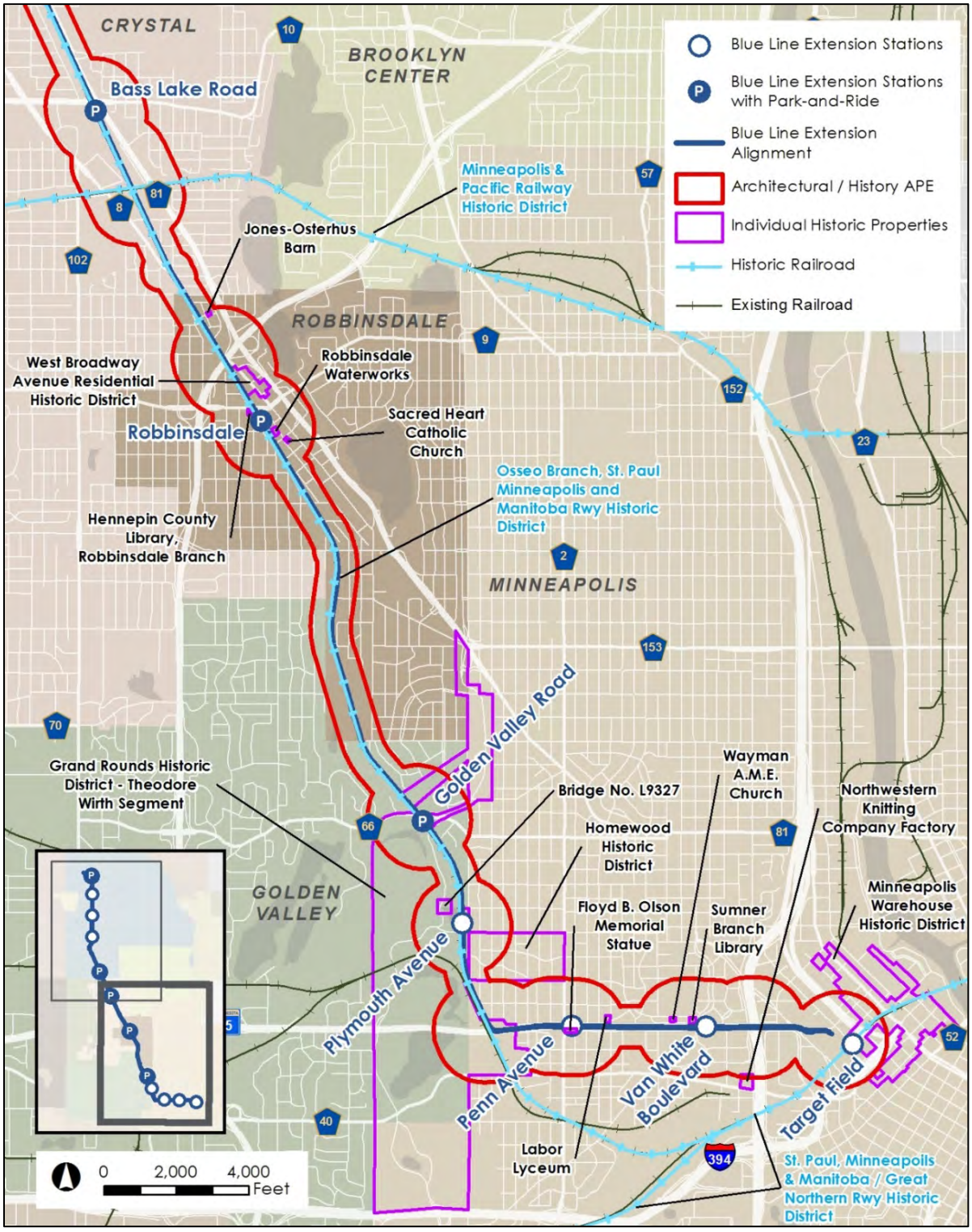


Figure 4.4-6. Location of Historic Properties Identified within the Architecture/History APE – North of Bass Lake Road

4.4.3 Environmental Consequences

This section identifies the long-term and short-term direct and indirect effects on historic properties from the No-Build Alternative and the proposed BLRT Extension project. Direct effects include those that physically alter, damage, or destroy all or part of the historic property, as well as ownership changes. Indirect effects include changes in a property's use or physical features within the property's setting that contribute to its historic significance; the introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features; or neglect of the property that causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe (36 CFR Part 800.5).

Direct effects generally occur at the same time and place as the proposed action, while indirect effects might occur at the same time as the proposed action or later in time and might be farther removed in distance from the proposed action, but are still reasonably foreseeable (40 CFR Part 1508.8). Long-term effects are those that would continue to occur after construction is complete, while short-term effects are those that are associated with the proposed action's construction activities and would be temporary in duration.

Short-term construction effects are addressed in the respective section for each resource addressed in this Final EIS. For a description of cumulative impacts, see **Chapter 6**.

4.4.3.1 No-Build Alternative

There would be no long-term direct, long-term indirect, or short-term effects on the identified historic properties from the No-Build Alternative.

4.4.3.2 Proposed BLRT Extension Project

In accordance with 36 CFR Part 800.5, FTA, in consultation with MnHPO and other consulting parties, reviewed proposed BLRT Extension project elements and applied the criteria for an adverse effect under Section 106 to determine whether the proposed BLRT Extension project would cause any adverse effects on historic properties within the proposed BLRT Extension project's APEs. This consultation considered anticipated long-term or short-term direct and indirect effects on the identified historic properties from construction and operation of the proposed BLRT Extension project. See **Section 4.4.1.3** for a description of the criteria and process used to reach a determination of effect.

Table 4.4-2 and Table 4.4-3 summarize the effects on historic properties considered and the rationale for the finding of effect for each property, as determined through the Section 106 process. They also include measures that have been, or would be, integrated into the proposed BLRT Extension project's design to avoid and minimize effects, as well as mitigate adverse effects, on historic properties. These measures are documented in the proposed BLRT Extension project's Section 106 MOA.

The *Assessment of Effects Report* in **Appendix H** contains a detailed discussion of the proposed BLRT Extension project's effects on each historic property, including the rationale and final finding of effect for each property. It also includes the final overall Section 106 determination of effect of the proposed BLRT Extension project on historic properties. **Appendix H** also includes the proposed BLRT Extension project's Section 106 MOA.

Table 4.4-2. Historic Properties Adversely Affected by the Proposed BLRT Extension Project

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria and Area of Significance	Rationale for Adverse Effect Finding and Avoidance/Minimization/Mitigation Measures
Table Notes					
■ Properties are listed by property type (districts then individual properties), then by their occurrence along the proposed BLRT Extension project alignment from south/east to north/west. ■ A Section 106 MOA is documentation that commits FTA and the Council to implement measures to avoid, minimize, and/or mitigate adverse effects on historic properties. For information on avoidance/minimization/mitigation measures specific to an individual property or historic district, see the Section 106 MOA in **Appendix H**. ■ Assessing visual impacts under NEPA and potential visual impacts to inform a determination of effect under Section 106 are two separate processes that could have similar or different conclusions. The results of an evaluation of impacts to visual quality and aesthetics per NEPA are provided in **Section 4.5**. ■ Under FTA guidance, historic properties are designated as noise- or vibration-sensitive depending on the land use of the property, not their designation as historic. Properties of national significance with considerable outdoor use required for site interpretation would be in Category 1. Historic properties that are currently used as residences would be in Category 2. Historic buildings with indoor use of an interpretive nature involving meditation and study would be in Category 3, including museums, significant birthplaces, and buildings in which significant historical events occurred. Most downtown areas have buildings that are historically significant because they represent a particular architectural style or are prime examples of the work of a historically significant designer. If the buildings or structures are used for commercial or industrial purposes and are located in busy commercial areas, they are not considered noise- or vibration-sensitive, and the noise and vibration impact criteria do not apply. Similarly, historical transportation structures, such as terminals and railroad depots, are not considered noise- or vibration-sensitive land uses. For additional information on noise, see **Appendix F – Noise and Vibration Technical Report**.					
Historic Districts					
HE-RRD-002 (including segments HE-BPC-0084, HE-CRC-0238, HE-RBC-0304, HE-MPC-16389)	Osseo Branch Line of the St. Paul, Minneapolis & Manitoba Railroad / Great Northern Railway Historic District[1]	Minneapolis, Golden Valley, Robbinsdale, Crystal, Brooklyn Park	Eligible	■ Criterion: A ■ Area of Significance: • Transportation	■ Effects Considered: • Removal of track and the existing alignment's infrastructure, and its reconstruction 25 feet west of the present alignment. • Introduction of LRT-related infrastructure to the district, including two LRT tracks of a higher speed design, overhead power system, five stations, three vertical circulation towers, multiple TPSS and signal bungalows, retaining walls, the reconstruction of bridges over the corridor, and a protection barrier system between freight rail and LRT. The barrier system will include a mix of tall walls, grade separations supported by retaining walls, and ditches. • Removal of vegetation within and along the historic district. • Removal and replacement of the existing high-voltage transmission line (HVTL) from the eastern edge of the corridor to the western side of the right-of-way, including replacement of steel-truss towers with monopoles.

Table 4.4-2. Historic Properties Adversely Affected by the Proposed BLRT Extension Project

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria and Area of Significance	Rationale for Adverse Effect Finding and Avoidance/Minimization/Mitigation Measures
					• Possible redevelopment of properties near light rail stations in the vicinity of the historic district. ■ Rationale for Adverse Effect Finding: • The historic alignment and contributing track structure would be removed, the alignment would be relocated, and two new LRT tracks would be placed in the historic district, along with a substantial amount of new infrastructure, resulting in the substantial alteration and destruction of a significant portion of the eligible historic district (over 60 percent of the length of this linear historic district), thereby altering characteristics of the Osseo Branch that qualify it for inclusion in the NRHP in a way that would diminish its integrity of design, materials, setting, workmanship, feeling, and association. ■ Avoidance/Minimization Measures: • Implement Section 106 MOA measures.
XX-PRK-0001	Grand Rounds Historic District, Theodore Wirth Segment	Minneapolis, Golden Valley, Robbinsdale	Eligible	■ Criteria: A and C ■ Areas of Significance: • Community Planning and Development • Entertainment/ Recreation • Landscape Architecture	■ Effects Considered: • Acquisition and permanent use of portions of the historic district (within the Theodore Wirth Regional Park element) totaling over 2 acres. • Alterations to portions of the historic district (all within Theodore Wirth Regional Park) including the portion of the BNSF right-of-way within the district, including removal of vegetation, alteration of topography, and the construction of project infrastructure, including two stations, two vertical circulation towers, and a 100-space park-and-ride lot. • Demolition and reconstruction of two bridges in the park. • Relocation of the existing HVTL from the eastern edge of the BNSF right-of-way corridor to the western side. • Relocation, narrowing, and channelizing a segment of Bassett Creek from its existing channel to a new channel, including replacing a natural earthen bank with a retaining wall. • Relocation of an existing non-historic park trail from the BNSF right-of-way into park land.

Table 4.4-2. Historic Properties Adversely Affected by the Proposed BLRT Extension Project

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria and Area of Significance	Rationale for Adverse Effect Finding and Avoidance/Minimization/Mitigation Measures
					• Alterations to the visual character of the district, and viewsheds and views within the district, including designed viewsheds, resulting from the introduction of project infrastructure. • Possible redevelopment outside, but adjacent to, the district around the two new stations (Plymouth Avenue and Golden Valley Road stations), which would be visible from this historic district and thereby alter its setting. • Noise from light rail vehicles (LRVs) and station operations. • Increases in vehicular traffic along roads that access this segment of the historic district. ■ Rationale for Adverse Effect Finding: • Direct effects would physically alter the entire eastern edge of the contributing Theodore Wirth Regional Park element, as well as its northern edge where Theodore Wirth Parkway, another contributing element to the district, enters the park. In addition, two historic entry points to the Theodore Wirth Segment are also being demolished and reconstructed, or substantially altered from natural to developed spaces. • The proposed BLRT Extension project would introduce new contemporary elements into portions of the district in the form of formal, engineered structures such as retaining walls, the LRT guideway and overhead power system, stations, vertical circulation towers, a parking lot, and other elements to the otherwise naturalistic setting of the park's landscape. • Key viewsheds and views within the park would be altered by introduction of proposed BLRT Extension project elements, including the most prominent viewshed within it, from the Theodore Wirth Chalet. • Collectively, the direct and indirect effects of the proposed BLRT Extension project on the Theodore Wirth Segment of the historic district would alter characteristics of this segment of the district that qualify it for inclusion in the NRHP in a way that would diminish its integrity of

Table 4.4-2. Historic Properties Adversely Affected by the Proposed BLRT Extension Project

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria and Area of Significance	Rationale for Adverse Effect Finding and Avoidance/Minimization/Mitigation Measures
					design, setting, materials, workmanship, feeling, and association. ■ Avoidance/Minimization Measures: • Implement Section 106 MOA measures.
HE-MPC-12101	Homewood Residential Historic District (HRHD)	Bounded by Penn, Oak Park, Xerxes, and Plymouth Avenues, Minneapolis	Eligible	■ Criterion: A ■ Areas of Significance: • Community Planning and Development • Social History	■ Effects Considered: • Direct physical effects, including: – Construction of a retaining wall and the reconstruction of a small portion of a street within the HRHD. – Visual changes resulting from the reconstruction of Plymouth Avenue Bridge and Plymouth Avenue Station, as well as the introduction of other project infrastructure within the BNSF rail corridor directly west of the district, which would be visible from the district. – Relocation of the existing HVTL from the eastern edge of the BNSF right-of-way corridor to the western side. – Noise from LRVs and station operations. – Possible redevelopment of properties adjacent to or within the district. ■ Rationale for Adverse Effect Finding: • The district is a Category 2 noise receptor per FTA criteria, and a noise analysis indicates that, without mitigation, LRT operations would cause a moderate noise impact to three residences in the district, resulting in a diminishment of the district's integrity of setting and feeling. ■ Avoidance/Minimization Measures: • Implement Section 106 MOA measures.
HE-RBC-158	West Broadway Avenue Residential Historic District	West Broadway Avenue, between 42nd Avenue North and TH 100, Lakeland	Eligible	■ Criterion: C ■ Area of Significance: • Architecture	■ Effects Considered: • Visual changes from the proposed BLRT Extension project's alignment along an elevated roadbed adjacent to the western boundary of the district, and the proposed BLRT Extension project's bridge over TH 100, as well as from the blocking of a viewshed from the district across the existing BNSF freight track by the proposed BLRT Extension project guideway's higher elevation.

Table 4.4-2. Historic Properties Adversely Affected by the Proposed BLRT Extension Project

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria and Area of Significance	Rationale for Adverse Effect Finding and Avoidance/Minimization/Mitigation Measures
		Avenue North to the BNSF right-of-way, Robbinsdale			• Noise from LRVs and station operations. • Potential changes in traffic patterns in the district. ■ Rationale for Adverse Effect Finding: • The introduction of project infrastructure along an elevated alignment immediately adjacent to the district would sever the district's visual connection across the existing BNSF freight rail track to areas to the west and introduce new, incompatible elements into the district's immediate setting, which would diminish the historic district's integrity of setting and feeling. • The district is a Category 2 noise receptor per FTA criteria. A noise analysis indicates that, without mitigation, the proposed BLRT Extension project would cause a severe auditory impact to some residences in the historic district. Although implementation of a Quiet Zone[2] would eliminate the severe auditory impacts, two residences would still have moderate impacts, which would thereby diminish the district's integrity of setting, feeling, and association. • Collectively, as a result of the blocking of historic views from the district and the introduction of out-of-scale elements, and since two residences would still have moderate impacts with implementation of Quiet Zones, the direct and indirect effects of the proposed BLRT Extension project on the historic district would alter its characteristics that qualify it for inclusion in the NRHP in a way that would diminish its integrity of setting, feeling, and association. ■ Avoidance/Minimization Measures: • Implement Section 106 MOA measures.

Table 4.4-2. Historic Properties Adversely Affected by the Proposed BLRT Extension Project

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria and Area of Significance	Rationale for Adverse Effect Finding and Avoidance/Minimization/Mitigation Measures
Individual Properties					
HE-MPC-8290	Wayman African Methodist Episcopal (AME) Church	1221 7th Avenue North, Minneapolis	Eligible	■ Criterion: C ■ Area of Significance: • Architecture	■ Effects Considered: • Noise from LRVs and station operations. • Possible redevelopment of properties adjacent to the church, and the church itself. ■ Rationale for Adverse Effect Finding: • A station-area planning study completed in coordination with the proposed BLRT Extension project identifies the church as part of a group of properties around the Van White Boulevard Station proposed to be rezoned to allow for increased density and mixed-use development in order to create a planned neighborhood commercial zone around the station. As a result, development pressure created in part by the construction and operation of the proposed BLRT Extension project could lead to changes to the setting of the church and potential alteration or demolition of this property. Although new development in the setting would not alter characteristics that qualify the church for the NRHP, alteration would likely diminish the property's historic integrity, and demolition would destroy the historic property. ■ Avoidance/Minimization Measures: • Implement Section 106 MOA measures.
HE-MPC-9013	Floyd B. Olson Memorial Statue	Olson Memorial Highway at Penn Avenue North, Minneapolis	Eligible	■ Criterion: C ■ Area of Significance: • Art	■ Effects Considered: • Visual changes, including the construction of a new station and proposed BLRT Extension project infrastructure, which would be highly visible from the Memorial, and the obstruction of views and visual relationship of the statue to, from, and with Olson Memorial Highway, with which it is historically associated, by project infrastructure. • Possible redevelopment of adjacent properties and within the NRHP-eligible boundaries of this historic property.

Table 4.4-2. Historic Properties Adversely Affected by the Proposed BLRT Extension Project

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria and Area of Significance	Rationale for Adverse Effect Finding and Avoidance/Minimization/Mitigation Measures
					■ Rationale for Adverse Effect Finding: • The construction of the Penn Avenue Station directly in front of the statue would disrupt the visual connection between the statue and Olson Memorial Highway, further diminishing the property's integrity of setting, feeling, and association. • A station-area planning study completed in coordination with the proposed BLRT Extension project identifies the historic property for redevelopment in order to increase density around the Penn Avenue Station and proposes to incorporate the statue itself into a small plaza within the future redevelopment on the property. The planning study also identifies the redevelopment of adjacent properties. This redevelopment of the historic property would destroy the immediate setting of the historic property and severely alter or sever its critical visual connection with Olson Memorial Highway, which is an important aspect of its integrity of association. The redevelopment of adjacent properties would further diminish the visual connection to the statue and, as a result, its association with Olson Memorial Highway. • Indirect effects of the proposed BLRT Extension project on this historic property would alter the characteristics that qualify it for inclusion in the NRHP in a way that would diminish its integrity of location, design, setting, materials, workmanship, feeling, and association. ■ Avoidance/Minimization Measures: • Implement Section 106 MOA measures.

Source: FTA and MnDOT CRU (2016)

[1] The Osseo Branch Line of the St. Paul, Minneapolis & Manitoba Railroad / Great Northern Railway is the historical name for the BNSF Railway.

[2] Quiet Zones are locations, at least one-half mile in length, where the routine sounding of horns has been eliminated because of safety improvements at at-grade crossings, including modifications to the streets, raised median barriers, four quadrant gates, and other improvements designed and implemented as a part of the proposed BLRT Extension project and consistent with Quiet Zone readiness. Horns are sounded in emergency situations at these locations. Municipalities must apply to FRA for approval of Quiet Zones.

Table 4.4-3. Historic Properties Not Adversely Affected by the Proposed BLRT Extension Project

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria and Area of Significance	Rationale for Adverse Effect Finding and Avoidance/Minimization/Mitigation Measures
Table Notes					
■ Properties are listed by property type (districts then individual properties), then by their occurrence along the proposed BLRT Extension project alignment from south/east to north/west. ■ Assessing visual impacts under NEPA and potential visual impacts to inform a determination of effect under Section 106 are two separate processes that could have similar or different conclusions. The results of an evaluation of impacts to visual quality and aesthetics per NEPA are provided in **Section 4.5**. ■ Under FTA guidance, historic properties are designated as noise- or vibration-sensitive depending on the land use of the property, not their designation as historic. Properties of national significance with considerable outdoor use required for site interpretation would be in Category 1. Historic properties that are currently used as residences would be in Category 2. Historic buildings with indoor use of an interpretive nature involving meditation and study would be in Category 3, including museums, significant birthplaces, and buildings in which significant historical events occurred. Most downtown areas have buildings that are historically significant because they represent a particular architectural style or are prime examples of the work of a historically significant designer. If the buildings or structures are used for commercial or industrial purposes and are located in busy commercial areas, they are not considered noise- or vibration-sensitive, and the noise and vibration impact criteria do not apply. Similarly, historical transportation structures, such as terminals and railroad depots, are not considered noise- or vibration-sensitive land uses. For additional information on noise, see **Appendix F – Noise and Vibration Technical Report**.					
Historic Districts					
HE-MPC-0441	Minneapolis Warehouse Historic District	Bounded by 1st Avenue North, 1st Street North, 10th Avenue, and 6th Street, Minneapolis	Listed	■ Criteria: A and C ■ Areas of Significance: • Architecture • Commerce	■ Effects Considered: • Direct effects from the Target Field Station were considered and accounted for in the Section 106 review for the construction of that station.[1] • Introduction of project infrastructure to the district's setting and possible redevelopment of properties within and adjacent to the western/ southwestern portions of the district. ■ Rationale for No Adverse Effect Finding: • Potential effects were addressed as part of the Section 106 review for the already-built Target Field Station.[1]
XX-RRD-010 (including HE-MPC-16387)	St. Paul, Minneapolis & Manitoba Railroad / Great Northern Railway Historic District	Minneapolis	Eligible	■ Criterion: A ■ Area of Significance: • Transportation	■ Effects Considered: • Direct effects from the Target Field Station were considered and accounted for in the Section 106 review for the construction of that station.[1] • Introduction of project infrastructure to the district's setting. ■ Rationale for No Adverse Effect Finding: • Potential effects were addressed as part of the Section 106 review for the already-built Target Field Station.[1]

Table 4.4-3. Historic Properties Not Adversely Affected by the Proposed BLRT Extension Project

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria and Area of Significance	Rationale for Adverse Effect Finding and Avoidance/Minimization/Mitigation Measures
HE-CRC-199	Minneapolis & Pacific (M&P) Railway / Minneapolis, St. Paul & Sault Ste. Marie Railway Historic District	Crystal	Eligible	■ Criterion: A ■ Area of Significance: • Transportation	■ Effects Considered: • Direct physical effects from the relocation and reconstruction of the existing diamond crossing where the BNSF freight rail track crosses the historic Soo Line Railway to about 25 feet west of its present location. • Indirect visual effects resulting from the introduction of a new 1,260-foot-long LRT bridge and associated LRT infrastructure that would be constructed over this linear historic district. ■ Rationale for No Adverse Effect Finding: • The historic at-grade crossing where the realigned BNSF freight rail track would cross the former Soo Line Railway mainline track would be maintained and reconstructed in-kind and within the historic right-of-way limits of both rail lines, and would not diminish the historic district's ability to convey its significance. • The LRT guideway would pass over the historic district on a bridge with a sufficiently large span to avoid directly affecting the historic district. The visual effect of the bridge would be limited to a short segment of this approximately 386.5-mile-long linear historic district and, therefore, would not diminish the district's integrity of setting, feeling, or association.
Individual Properties					
HE-MPC-8125	Northwestern Knitting Company Factory	718 Glenwood Avenue, Minneapolis	Listed	■ Criterion: A ■ Areas of Significance: • Commerce • Engineering • Industry • Invention	■ Effects Considered: • Introduction of project infrastructure that might be visible at a distance in some views from the property. • Possible redevelopment around the Van White Boulevard Station, the property's setting, which would be visible from this property. ■ Rationale for No Adverse Effect Finding: • Project infrastructure would be located over 1,000 feet from this historic property, and any visual effects of project infrastructure on the property would be negligible and would not alter the characteristics qualifying the property for inclusion in the NRHP.

Table 4.4-3. Historic Properties Not Adversely Affected by the Proposed BLRT Extension Project

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria and Area of Significance	Rationale for Adverse Effect Finding and Avoidance/Minimization/Mitigation Measures
					• Station-area planning studies indicate that introduction of the proposed BLRT Extension project could catalyze redevelopment in the vicinity, changing the property's setting. However, transit development is an indirect catalyst for redevelopment, and, if these areas are redeveloped, it would not change views from the historic property in a manner that would diminish its setting in a way that would affect its ability to convey its historic significance.
HE-MPC-8081	Sumner Branch Library	611 Emerson Avenue North, Minneapolis	Listed	■ Criteria: A and B ■ Areas of Significance: • Education • Social History	■ Effects Considered: • Introduction of project infrastructure and trains to the immediate setting, which would be highly visible from the property. • Noise from LRVs and station operations. • Potential changes in access to the property. • Possible redevelopment of properties adjacent to the library and the library itself. ■ Rationale for No Adverse Effect Finding: • Project infrastructure, including the Van White Boulevard Station, would be added to the immediate setting of the library, but the nature and scale of this infrastructure combined with its distance from the property would allow views of the library to remain intact. To ensure that the library's visual prominence is not diminished, project infrastructure in vicinity of the library would be designed in accordance with *The Secretary of the Interior's Standards for the Treatment of Historic Properties* (36 CFR Part 68) (*SOI's Standards*), and a construction protection plan would be prepared and implemented.[2] • A station-area planning study completed in coordination with the proposed BLRT Extension project identifies the library as part of a group of properties around the Van White Boulevard Station proposed to be rezoned to allow for increased density and mixed-use development in order to create a planned neighborhood commercial zone around the station. Although redevelopment of nearby properties could cause changes to the library's

Table 4.4-3. Historic Properties Not Adversely Affected by the Proposed BLRT Extension Project

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria and Area of Significance	Rationale for Adverse Effect Finding and Avoidance/Minimization/Mitigation Measures
					setting, it would not alter the characteristics of the library that qualify it for inclusion in the NRHP. Because the library is in public ownership and use, it is unlikely to be subjected to redevelopment. Moreover, the library is also designated a local landmark by the city of Minneapolis, which designation provides further protection through design review requiring alterations to meet the *SOI's Standards* and setting a high threshold for demolition. ■ Avoidance/minimization measures: • Implement Section 106 MOA measures.
HE-MPC-7553	Labor Lyceum	1800 Olson Memorial Highway, Minneapolis	Eligible	■ Criterion: A ■ Areas of Significance: • Social History • Politics/ Government	■ Effects Considered: • Introduction of project infrastructure and trains to the immediate setting, which would be highly visible from the historic property. • Noise from LRVs and station operations. • Potential changes in access to the property. • Possible redevelopment of nearby properties. ■ Rationale for No Adverse Effect Finding: • Although the proposed BLRT Extension project infrastructure would be added to the immediate setting of this historic property, the nature and scale of this infrastructure, combined with its distance from the property, would allow views of the Labor Lyceum to remain intact. To ensure that the visual prominence of the Labor Lyceum is maintained and its integrity of setting, feeling, and association is not diminished by the proposed BLRT Extension project, the Council would design the proposed BLRT Extension project's infrastructure in the vicinity of this historic property in accordance with the *SOI's Standards*.[2] • Although station-area planning studies have indicated a strong potential for redevelopment to be catalyzed by the proposed BLRT Extension project around the Penn Avenue Station (which is located 930 feet away) and in the vicinity of this historic property, the Labor Lyceum itself is not among the properties identified in the station-area plan for redevelopment. If redevelopment does occur around the Penn Avenue Station, it could lead

Table 4.4-3. Historic Properties Not Adversely Affected by the Proposed BLRT Extension Project

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria and Area of Significance	Rationale for Adverse Effect Finding and Avoidance/Minimization/Mitigation Measures
					to changes in the setting of the Labor Lyceum, but not in a manner that would alter characteristics of the property that qualify it for the NRHP. • Per FTA criteria, the Labor Lyceum is a Category 3 noise receptor, and a noise analysis indicates that LRT operations would not result in a noise impact to this historic property. • A traffic and access analysis indicates that there would be no change in vehicular access to this property as a result of project construction, and a minor change in pedestrian access resulting from removing a crosswalk would not alter the characteristics of the property that qualify it for the NRHP. ■ Avoidance/minimization measures: • Implement Section 106 MOA measures.
HE-GVC-0050	Bridge No. L9327	Theodore Wirth Parkway over Bassett's Creek, Golden Valley	Eligible individually and as a contributing element to the Grand Rounds Historic District (GRHD)	■ Criterion: C (individual) ■ Area of Significance: • Engineering ■ Criteria: A and C (GRHD) ■ Areas of Significance: • Engineering (individual) • Community Planning and Development • Entertainment/ Recreation • Landscape Architecture	■ Effects Considered: • Visual changes to the setting of the bridge resulting from the removal of vegetation and the introduction of new visual elements in the form of formal, engineered structures such as retaining walls, the LRT guideway and overhead power system, and potential illumination at night from the Plymouth Avenue Station, in contrast to the otherwise naturalistic, park setting of the bridge. • Noise from LRVs and station operations. ■ Rationale for No Adverse Effect Finding:[3] • The removal of vegetation and introduction of project elements to the setting of the bridge would cause minor indirect visual effects on Bridge No. L9327; however, they would not alter any of the characteristics of the bridge that qualify it individually for inclusion in the NRHP in a manner that would diminish its historic integrity. • In addition, per FTA criteria, the bridge is not a noise-sensitive property, so noise from proposed BLRT Extension project operations would not affect the characteristics that qualify the bridge for the NRHP.

Table 4.4-3. Historic Properties Not Adversely Affected by the Proposed BLRT Extension Project

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria and Area of Significance	Rationale for Adverse Effect Finding and Avoidance/Minimization/Mitigation Measures
HE-RBC-1462	Sacred Heart Catholic Church	4087 West Broadway Avenue, Robbinsdale	Eligible	■ Criterion: C ■ Area of Significance: • Architecture	■ Effects Considered: • The introduction of project infrastructure to the setting of the church, including the guideway and a large, multi-level park-and-ride structure, which would be highly visible from the historic property. • Noise from LRVs and station operations. • Possible redevelopment of properties in the church's setting. ■ Rationale for No Adverse Effect Finding: • Given the distance of project elements from the historic property, when also considered with their nature and scale, the proposed BLRT Extension project would cause a negligible change to the property's setting and would not diminish its integrity of feeing or associations. To ensure that the property's visual prominence is not diminished, project infrastructure in vicinity of the church would be designed in accordance with the *SOI's Standards*. • Per FTA criteria, the church is a Category 3 noise receptor. A noise analysis indicates that, without mitigation, the proposed BLRT Extension project would cause a severe auditory impact to this historic property from LRT horns at nearby grade crossings, but that the implementation of Quiet Zones would sufficiently reduce auditory impacts to the church. Therefore, the proposed BLRT Extension project would include the infrastructure to implement Quiet Zones for the 40th Avenue North, 41st Avenue North and 42nd Avenue North grade crossings to avoid an adverse auditory effect on the church. The city of Robbinsdale would be responsible for applying to FRA for these Quiet Zones. ■ Avoidance/minimization measures: • Implement Section 106 MOA measures.

Table 4.4-3. Historic Properties Not Adversely Affected by the Proposed BLRT Extension Project

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria and Area of Significance	Rationale for Adverse Effect Finding and Avoidance/Minimization/Mitigation Measures
HE-RBC-286	Robbinsdale Waterworks	4127 Hubbard Avenue North, Robbinsdale	Eligible	■ Criterion: A ■ Areas of Significance: • Community Planning and Development • Politics/ Government	■ Effects Considered: • The introduction of project infrastructure adjacent, and in close proximity, to the waterworks, including the alignment, the Robbinsdale Station, and a large, multi-level park-and-ride structure that includes street-level transit-oriented development and a parking ramp about 200 feet northwest of the waterworks. • Noise and vibration from LRVs and station operations. • Possible redevelopment of properties in the waterworks' setting. ■ Rationale for No Adverse Effect Finding: • Although the proposed BLRT Extension project would introduce a variety of new elements adjacent to the historic property and also within its setting, they would not diminish the ability of the water tower to serve as the visual focal point of downtown Robbinsdale. To ensure that the proposed BLRT Extension project elements do not diminish the setting, association, or feeling of the waterworks; that the visual prominence of the water tower is not diminished; and that the property would maintain its stature as the visual anchor of downtown Robbinsdale, the Council would design its infrastructure in the vicinity of the waterworks in accordance with the *SOI's Standards*.[2] • A vibration analysis indicates that construction and operation of the proposed BLRT Extension project would not affect the property; however, the Council would prepare and implement a construction protection plan to document measures to be taken to avoid any direct effects on the waterworks during project construction. • Per FTA criteria, the waterworks is not a noise-sensitive property, so noise from proposed BLRT Extension project operations would not affect characteristics that qualify the waterworks for inclusion in the NRHP. • Given the proximity of the waterworks to the Robbinsdale Station, station-area planning studies have indicated a strong potential for redevelopment to be catalyzed by this station in the vicinity of the historic property. If new development were to occur, it could change the setting of the waterworks;

Table 4.4-3. Historic Properties Not Adversely Affected by the Proposed BLRT Extension Project

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria and Area of Significance	Rationale for Adverse Effect Finding and Avoidance/Minimization/Mitigation Measures
					however, it would not alter the characteristics of the waterworks that qualify it for inclusion in the NRHP. It is unlikely that the waterworks itself would be subjected to any redevelopment pressure because it is in public ownership and use, and, because it serves an infrastructure use, it would be cost-prohibitive to relocate its function elsewhere. ■ Avoidance/minimization measures: • Implement Section 106 MOA measures.
HE-RBC-024	Hennepin County Library, Robbinsdale Branch	4915 42nd Avenue North, Robbinsdale	Listed	■ Criterion: A ■ Area of Significance: • Education	■ Effects Considered: • Introduction of project infrastructure, including the guideway, the Robbinsdale Station, and a large, multi-story park-and-ride structure, which would be highly visible from the property because they would be located immediately across Railroad Avenue from the library, within and extending beyond the BNSF right-of-way to the east. • A portion of 42nd Avenue North, including sidewalks and the boulevard, would also be reconstructed in front of the library along the boundary of the historic property. • Noise and vibration from LRVs and station operations. • Changes in access to the library. ■ Rationale for No Adverse Effect Finding: • A vibration analysis indicates that construction and operation of the proposed BLRT Extension project would not affect the historic property; however, the Council would prepare and implement a construction protection plan to document measures to be taken to avoid any direct effects on the property during project construction. • The amount of proposed BLRT Extension project elements, when their size, scale, and massing is considered, would alter the property's setting. This infrastructure would also significantly change the property's viewshed toward downtown Robbinsdale because the park-and-ride structure would introduce a large visual barrier that is much larger than the existing development within the library's setting. As a result, this would diminish

Table 4.4-3. Historic Properties Not Adversely Affected by the Proposed BLRT Extension Project

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria and Area of Significance	Rationale for Adverse Effect Finding and Avoidance/Minimization/Mitigation Measures
					the setting of the library and its feeling and association. To minimize the visual effects of project elements on the library and to avoid an adverse visual effect, the Council would design the proposed BLRT Extension project's infrastructure in the vicinity of the library in accordance with the *SOI's Standards*.[2] • Given the proximity of the library to the Robbinsdale Station, station-area planning studies have indicated a strong potential for redevelopment to be catalyzed by this station in the vicinity of the historic property. If new development were to occur, it could change the setting of the library; however, most views of any potential development would be screened by the proposed BLRT Extension project's park-and-ride structure. • The proposed BLRT Extension project would also cause minor changes in access to the library from the downtown, thereby preventing westbound vehicles from turning onto Railroad Avenue to access the library, but motorists could still access the library by driving around the block and via the alley adjacent to the library. Access from the west and south would not change. • Per FTA criteria, the library is a Category 3 noise receptor. A noise analysis indicates that, without mitigation, the proposed BLRT Extension project would cause a severe auditory impact to this historic property from LRT horns at nearby grade crossings, but that the implementation of a Quiet Zone would sufficiently reduce auditory impacts to the library. Therefore, the proposed BLRT Extension project would include the infrastructure to implement Quiet Zones for the 40th Avenue North, 41st Avenue North and 42nd Avenue North grade crossings to avoid an adverse auditory effect on the library. The city of Robbinsdale would be responsible for applying to FRA for these Quiet Zones. ■ Avoidance/minimization measures: • Implement Section 106 MOA measures.

Table 4.4-3. Historic Properties Not Adversely Affected by the Proposed BLRT Extension Project

Inventory Number	Site Name	Property Address	NRHP Status	NRHP Eligibility Criteria and Area of Significance	Rationale for Adverse Effect Finding and Avoidance/Minimization/Mitigation Measures
HE-RBC-264	Jones-Osterhus Barn	4510 Scott Avenue North, Robbinsdale	Eligible	■ Criterion: C ■ Areas of Significance: • Agriculture • Architecture	■ Effects Considered: • The closest proposed BLRT Extension project infrastructure to the barn would be located a half block (about 190 feet) to the west, so the introduction of proposed BLRT Extension project infrastructure, such as support poles and catenary wires, might be minimally visible from the property. • Changes in vehicular traffic in nearby streets. ■ Rationale for No Adverse Effect Finding: • The proposed BLRT Extension project infrastructure would only be minimally, if at all, visible from the property and would result in a negligible change in one view from the barn. • A traffic and access analysis indicates there would be no change in pedestrian/bicycle access to the property. Given the street network, there is no potential for cut-through traffic to access stations past the barn (the barn is located more than a half mile from the nearest proposed BLRT Extension project station), and projections for 2040 indicate that only an additional 50 cars would use the nearby portion of West Broadway Avenue if the proposed BLRT Extension project were built compared to if it were not constructed. • The proposed BLRT Extension project would not alter any of the characteristics qualifying the Jones-Osterhus Barn for inclusion in the NRHP in a manner that would diminish its historic integrity, including its setting, feeling, and association.

Source: FTA and MnDOT CRU (2016)

[1] FTA and MnHPO (2012). *Section 106 Programmatic Agreement Between the Federal Transit Administration and the Minnesota State Historic Preservation Office Regarding the Construction of the Interchange Project Minneapolis, Minnesota.* This agreement documents the stipulations with which the Interchange project would be implemented in order to take into account the effects of the undertaking on historic properties.

[2] The *SOI's Standards* are a series of concepts about maintaining, repairing, and replacing historic materials as well as designing new additions or making alterations. The *SOI's Standards* offer four distinct approaches—preservation, rehabilitation, restoration, and reconstruction—to the treatment of historic properties with guidelines for each approach. Federal agencies use the *SOI's Standards* and appropriate guidelines to facilitate their preservation responsibilities. More information can be found at www.nps.gov/tps/standards.htm.

[3] The bridge is also located within, and is a contributing element to, the Grand Rounds Historic District, which would be adversely affected by the undertaking (see the entry in **Table 4.4-2**). However, the effects on the bridge as a contributing element to the historic district would be limited to those described under its individual significance.

4.4.4 Avoidance, Minimization, and/or Mitigation Measures

This section describes the measures proposed to resolve the proposed BLRT Extension project's adverse effects, including measures to avoid, minimize, or mitigate adverse effects. These measures were developed by FTA and the Council in consultation with MnHPO and other consulting parties. The proposed BLRT Extension project's measures to resolve adverse effects, including mitigation measures, are specified in the project's Section 106 MOA (**Appendix H**).

Based on results of the effects assessments and implementation of the measures included in the Section 106 MOA, FTA has determined, in consultation with MnHPO and other consulting parties, the proposed BLRT Extension project's effects on historic properties. The determination of effects from the Section 106 process was used to determine impacts pursuant to NEPA.

- **No adverse effect.** The proposed BLRT Extension project would have no adverse effect on 11 historic properties, including five for which adverse effects would be avoided through implementation of MOA measures: Sumner Branch Library; Labor Lyceum; Sacred Heart Catholic Church; Robbinsdale Waterworks; and Hennepin County Library, Robbinsdale Branch.
- **Adverse effect.** The proposed BLRT Extension project would have an adverse effect on six properties, including four historic districts and two individual properties. As a result of the proposed BLRT Extension project's adverse effect on these six properties—the Osseo Branch of the St. Paul, Minneapolis & Manitoba Railroad / Great Northern Railway Historic District; Grand Rounds Historic District, Theodore Wirth Segment; Homewood Residential Historic District; West Broadway Avenue Residential Historic District; Wayman AME Church; and Floyd B. Olson Memorial Statue—FTA has determined that the proposed BLRT Extension project would have an adverse effect on historic properties.

The following sections summarize the measures specified in the proposed BLRT Extension project's Section 106 MOA that the Council would implement to avoid, minimize, and mitigate the proposed BLRT Extension project's effects on historic properties. **Section 4.4.4.2** includes projects for which measures have been developed to avoid an adverse effect, and **Section 4.4.4.1** includes properties that would be adversely affected by the proposed BLRT Extension project.

4.4.4.1 Historic Properties Not Adversely Affected, with Implementation of Avoidance Measures

Measures have been developed to avoid an adverse effect from the proposed BLRT Extension project on the following historic properties. Measures to avoid the adverse effect on the historic properties are included in the Section 106 MOA (**Appendix H**) and summarized below.

Sumner Branch Library (HE-MPC-8081)

Avoidance Measure. Design Preferred Alternative elements in the vicinity of the historic property in accordance with the *SOI's Standards* (36 CFR Part 68), to be reviewed by MnHPO and consulting parties in order to avoid adverse visual effects.

Avoidance Measure. Develop a Construction Protection Plan detailing the measures to be implemented during construction of the Preferred Alternative to avoid adverse effects.

Labor Lyceum (HE-MPC-7553)

Avoidance Measure. Design Preferred Alternative elements in the vicinity of the historic property in accordance with the *SOI's Standards* (36 CFR Part 68), to be reviewed by MnHPO and consulting parties in order to avoid adverse visual effects.

Sacred Heart Catholic Church (HE-RBC-1462)

Avoidance Measure. Incorporate Quiet Zones at nearby grade crossings to avoid adverse auditory effects.

Avoidance Measure. Design Preferred Alternative elements in the vicinity of the historic property in accordance with the *SOI's Standards* (36 CFR Part 68), to be reviewed by MnHPO and consulting parties in order to avoid adverse visual effects.

Robbinsdale Waterworks (HE-RBC-286)

Avoidance Measure. Design Preferred Alternative elements in the vicinity of the historic property in accordance with the *SOI's Standards* (36 CFR Part 68), to be reviewed by MnHPO and consulting parties in order to avoid adverse visual effects.

Avoidance Measure. Develop a Construction Protection Plan detailing the measures to be implemented during construction of the Preferred Alternative to avoid adverse effects.

Hennepin County Library, Robbinsdale Branch (HE-RBC-024)

Avoidance Measure. Design Preferred Alternative elements in the vicinity of the historic property in accordance with the *SOI's Standards* (36 CFR Part 68), to be reviewed by MnHPO and consulting parties in order to avoid adverse visual effects.

Avoidance Measure. Incorporate Quiet Zones at nearby grade crossings to avoid adverse auditory effects.

Avoidance Measure. Develop a Construction Protection Plan detailing the measures to be implemented during the proposed BLRT Extension project construction to avoid adverse effects.

4.4.4.2 Historic Properties That Would Be Adversely Affected

The proposed BLRT Extension project would have an adverse effect on the following historic properties. Measures to avoid, minimize, and mitigate the adverse effect on the properties and districts are included in the Section 106 MOA (**Appendix H**) and summarized below.

Osseo Branch Line of the St. Paul, Minneapolis & Manitoba Railroad / Great Northern Railway Historic District (XX-RRD-002, HE-MPC-16389, HE-RBC-304, HE-CRC-0238, HE-BPC-0084)

Mitigation. Complete Phase II level inventory and evaluation of historic railroad line(s) in Minnesota. This survey will evaluate either one mainline across the entire state of Minnesota or up to a total of five shorter mainlines and/or branch lines.

Mitigation. Incorporate interpretation of the Osseo Branch Line into the final design of the proposed BLRT Extension project.

Grand Rounds Historic District, Theodore Wirth Segment (XX-PRK-0001)

Mitigation. Design Preferred Alternative elements within, and in the vicinity of, the historic property in accordance with the *SOI's Standards* (36 CFR Part 68), to be reviewed by MnHPO and consulting parties in order to avoid and minimize adverse direct effects and indirect visual effects.

Mitigation. Develop a Construction Protection Plan detailing the measures to be implemented during construction of the Preferred Alternative to avoid and minimize adverse effects.

Mitigation. Prepare guidance for future preservation activities within the Grand Rounds Historic District: Theodore Wirth Segment to mitigate the direct physical and indirect visual adverse effects to the Grand Rounds Historic District. This guidance will take the form of two plans: (1) a preservation plan will include an overall vision for historic preservation of this portion of the historic district, strategies to guide historic preservation efforts to achieve the overall vision, and objectives for implementing each strategy and (2) a treatment plan will be prepared to guide preservation activities for up to twelve different historic features, or feature types within the planning area. The plans shall be prepared in accordance with the *SOI's Standards* (36 CFR Part 68); the *SOI's Standards for Preservation Planning*; and the National Park Service's (NPS) *Guidelines for the Treatment of Cultural Landscapes*, Preservation Briefs, and Preservation Tech Notes.

Mitigation. Incorporate interpretation of the Theodore Wirth Segment into the design of the Preferred Alternative's Plymouth Avenue and Golden Valley Road stations. If the final Preferred Alternative scope of work includes a trailhead for the Golden Valley Road Station at the intersection of Theodore Wirth Parkway, interpretation shall also be included in the design of the trailhead.

Homewood Residential Historic District (HE-MPC-12101)

Mitigation. Design Preferred Alternative elements within, and in the vicinity of, the historic property in accordance with the *SOI's Standards* (36 CFR Part 68), to be reviewed by MnHPO and consulting parties in order to avoid and minimize adverse direct effects and indirect visual effects.

Mitigation. Develop a Construction Protection Plan detailing the measures to be implemented during construction of the Preferred Alternative to avoid adverse effects.

Mitigation. Conduct interior testing of three residences within the district to determine whether operation of the Preferred Alternative would result in auditory impacts exceeding interior noise level criteria (45 A-weighted decibels [dBA] day-night sound level [L_{dn}]) and, if so, develop a Noise Mitigation Plan in accordance with the *SOI's Standards* to mitigate adverse auditory effects.

West Broadway Avenue Residential Historic District (HE-RBC-158)

Mitigation. Design Preferred Alternative elements in the vicinity of the historic property in accordance with the *SOI's Standards* (36 CFR Part 68), to be reviewed by MnHPO and consulting parties in order to avoid adverse visual effects.

Mitigation. Incorporate Quiet Zones at nearby grade crossings to avoid adverse auditory effects.

Mitigation. Conduct interior testing of two residences within the district to determine whether operation of the Preferred Alternative with Quiet Zones would still result in auditory impacts exceeding interior noise level criteria (45 dBA L_{dn}) and, if so, develop a Noise Mitigation Plan in accordance with the *SOI's Standards* to mitigate adverse auditory effects.

Mitigation. Develop a Construction Protection Plan detailing the measures to be implemented during construction of the proposed BLRT Extension project to avoid adverse effects.

Wayman African Methodist Episcopal (AME) Church (HE-MPC-8290)

Mitigation. Prepare an NRHP nomination form, in conformance with the guidelines of NPS, for the property. This form will be submitted to MnHPO for review and any recommendations made by MnHPO will be incorporated into the final form.

Floyd B. Olson Memorial Statue (HE-MPC-9013)

Mitigation. Design Preferred Alternative elements in the vicinity of the historic property in accordance with the *SOI's Standards* (36 CFR Part 68), to be reviewed by MnHPO and consulting parties in order to minimize adverse visual effects.

Mitigation. Develop a Construction Protection Plan detailing the measures to be implemented during construction of the Preferred Alternative to avoid adverse effects.

Mitigation. Prepare a Historic Property Treatment Plan in accordance with the *SOI's Standards* (36 CFR Part 68) and NPS's *Guidelines for the Treatment of Cultural Landscapes* to mitigate adverse effects on the historic property. The plan will determine the artist's and/or community's intent on the property's original orientation; provide recommendations on location, setting, orientation and site size for the property to improve and enhance its setting and strengthen its association with Olson Memorial Highway; and establish design parameters to improve and enhance the setting of the property on its current site, or in a new location.

Mitigation. Based on the conclusions in the Historic Property Treatment Plan, design and construct the selected alternative for the historic property. The site improvements shall be designed in accordance with the *SOI's Standards for the Treatment of Historic Properties* (36 CFR Part 68) and NPS's *Guidelines for the Treatment of Cultural Landscapes*, Preservation Briefs and Tech Notes.

Mitigation. Prepare an NRHP nomination form, in conformance with the guidelines of NPS, for the property. This form will be submitted to MnHPO for review and any recommendations made by MnHPO will be incorporated into the final form.

4.5 Visual/Aesthetics

The information in this section is based on the information in the *Visual Quality Technical Report* (Council, 2016b), which is provided in **Appendix F**. The objective of the *Visual Quality Technical Report* is to evaluate the proposed BLRT Extension project's potential effects on visual quality, including on the character of the natural visual features of the visual study area, on the character of the built visual features of the study area, and as visually perceived by the affected population in the study area.

4.5.1 Regulatory Context and Methodology

4.5.1.1 Definition of Terms

Visual Features

The term *visual features* refers to the components of the natural, built, or project environments that are capable of being seen, as described in further detail below.

- **Natural visual features** include the land, water, vegetation, and animals that compose the natural environment. Although natural features might have been altered or imported by people, features that are primarily geological or biological in origin are considered natural.
- **Built visual features** include the buildings, structures, and artifacts that compose the surrounding built environment, also known as the cultural environment. These are features that were constructed by people.
- **Project visual features** include the geometrics, structures, and fixtures that compose the proposed BLRT Extension project itself. These are the constructed features that would be placed in the environment as part of the proposed BLRT Extension project.

Visual Quality

The term *visual quality* refers to what viewers like and dislike about the visual features that compose a particular scene. Visual quality is inherently subjective—different viewers might evaluate visual features differently. In general, people respond favorably to scenes that create a sense of perceived harmony, order, and coherence.

Based on the developed urban and suburban context of the visual study area, the Council identified specific features as "higher-quality visual features" when they exemplified one of the following characteristics:

- A remnant natural feature exemplary of pre-settlement conditions;
- A visually distinct natural or built feature that stands out from the surroundings and that contributes physically and symbolically in a positive way to the overall community's visual quality; or
- A natural or built feature that is an integral component of the broader physical pattern of the community and is generally regarded positively.

Affected Population

The term *affected population* is defined as the viewers who occupy land adjacent to the proposed project—either long term or short term. These people can be characterized by their association with a specific adjacent land use, including residential, commercial, industrial, transportation, agricultural, recreational, and institutional parcels. An example of a long-term viewer would be a homeowner with property along the transitway. An example of a short-term viewer would be a runner using a trail in a park adjacent to the transitway.

General Visual Context

The term *general visual context* is the appearance of the nearby surroundings from the vantage point of a person from ground level; that is, as one would perceive it from a car, train, bus, or bicycle or on foot. The proposed BLRT Extension project would pass through developed urban and suburban areas with a wide range of development patterns.

4.5.1.2 Assessment Methodology

The methodology that the Council used to evaluate aesthetics and visual quality impacts is based on the Federal Highway Administration's (FHWA) *Guidelines for the Visual Impact Assessment of Highway Projects* (FHWA, 2015), which describes four phases used to assess visual impacts: establishment, inventory, analysis, and mitigation. These four phases are described in detail in the *Visual Quality Technical Report* (Council, 2016b).

Visual Character and Quality

The visual impacts of a proposed project are determined by assessing the visual resource changes that would occur as the result of the project and by predicting viewers' responses to those changes. Visual resource change is the sum of the change in visual character and the change in visual quality. This change can be determined by assessing the compatibility of a proposed project with the visual character of the existing landscape and then comparing the visual quality of the existing resources with the projected visual quality after the project is implemented.

Visual character is descriptive and non-evaluative, which means it is based on defined attributes that are neither good nor bad themselves. A change in visual character cannot be described as having good or bad attributes until it is compared with the viewer response to that change. Both natural and artificial landscape features contribute to the visual character of an area or view.

Visual quality is the value that viewers place on the existing visual character of the affected environment based on their visual preferences. FHWA defines the following three aspects of visual perception, which determine the visual quality of a particular scene.

- When viewing the components of a scene's natural environment, viewers inherently evaluate the natural harmony of the existing scene to determine whether the composition is harmonious or inharmonious.
- When viewing the components of the cultural environment, viewers evaluate the scene's cultural order to determine whether the composition is orderly or disorderly.
- When viewing the project environment, viewers evaluate the coherence of the project components to determine whether the project's composition is coherent or incoherent.

According to FHWA's guidelines, people typically perceive the landscape from or to a linear transportation feature as a composition, and the more the composition meets their visual preferences and expectations, the more they like it. The more they like it, the more memorable, or vivid, it becomes. Therefore, it is useful to evaluate whether the new composition would be as vivid as the existing one and whether the improvements would enhance or detract from the original scene.

Viewer Groups

The population affected by a proposed project is referred to as *viewers*. Viewer response is composed of two elements: viewer sensitivity and viewer exposure. These elements combine to form a method of predicting how a viewer might react to visual changes brought about by a project. Viewer sensitivity is defined both as the viewers' concern for scenic quality and the viewers' response to change in the visual resources that make up the view. Viewer exposure is typically assessed by measuring the number of viewers exposed to the resource change, the type of viewer activity, the duration of the view, the speed at which the viewer moves, and the position of the viewer.

Low viewer sensitivity results when there are few viewers who experience a defined view, or when they might be less focused on the view, viewers such as a freeway commuter on the freeway. Low viewer sensitivity is also related to viewer expectations resulting from what viewers are used to seeing in the proposed BLRT Extension project area. For example, because a portion of the proposed BLRT Extension project corridor has historically been a rail corridor, viewers that are roadway users are accustomed to seeing rail as a dominant visual feature in the landscape in areas where the corridor is visible from, or intersects with, roads.

High viewer sensitivity results when there are many viewers who have a view of frequent or long duration. High viewer sensitivity is also related to familiarity with a view, such as when viewing a resource from a residence, a recreational site, or commuting. For example, recreational and residential viewers tend to have extended viewing periods and might be more concerned about changes in views than a commuter would be.

The visual study area for the proposed BLRT Extension project includes several types of viewer groups, such as LRT users, roadway users, Grand Rounds users, pedestrians, residents, workers, and recreational users. A detailed description of these viewer groups is provided in the *Visual Quality Technical Report*.

Levels of Visual Impact

According to FHWA's guidelines, *visual impacts* are defined as either changes to the environment, measured by the compatibility of the impact, or changes to viewers, measured by sensitivity to the impact. Together, the compatibility and sensitivity determine the degree of the impact, which is defined as a beneficial, adverse, or neutral change to visual quality. For example, a project could benefit visual quality by enhancing visual resources and/or views and improving the experience of visual quality. Similarly, a project could adversely affect visual quality by degrading visual resources and/or obstructing or altering desired views.

Assessing Visual Change

The Council determined the visual impacts of the proposed BLRT Extension project by evaluating the changes to existing visual resources that would occur as a result of implementing the proposed BLRT Extension project and assessed the anticipated viewer responses to those changes. The Council determined the aesthetic impacts from the proposed BLRT Extension project based on making direct field observations from multiple vantage points, including from neighboring properties and roads; evaluating the existing visual character; and reviewing proposed project plans and features. The Council's visual impact assessment was also based on photographically documenting the existing conditions for several key views of the proposed BLRT Extension project corridor.

Key views represent specific locations within a landscape unit (defined in **Section 4.5.3.2**) from which the proposed BLRT Extension project would be visible. Within the landscape unit, key views were used to characterize the existing visual conditions and to represent examples of visual character and visual quality. They were also used to determine impacts by demonstrating how the proposed BLRT Extension project would change the views within the landscape unit.

4.5.2 Study Area

The visual study area is defined as the right-of-way for the proposed BLRT Extension project corridor and the adjacent properties with a visual connection to the transitway, properties which include residential, commercial, and park properties. In select instances, the Council expanded the extent of analysis to account for specific features that were visible by field observation along the proposed transitway as a result of topography, physical scale, architectural distinction, or other considerations.

The visual study area includes a diverse array of development patterns, park and natural areas, rail corridors, highways, and local roads. A summary of the general visual context and a listing of identified higher-quality and unique visual features are provided below in **Section 4.5.3**.

4.5.3 Affected Environment

4.5.3.1 Project Setting

As described in **Chapter 1** – **Purpose and Need**, the character of the area surrounding the proposed BLRT Extension project alignment transitions from downtown Minneapolis to a moderately dense urban setting in north Minneapolis and then to a less-dense suburban setting starting in the cities of Golden Valley, Robbinsdale, and Crystal and extending through the City of Brooklyn Park at the north end of the proposed BLRT Extension project corridor. The proposed BLRT Extension project area includes a variety of land use patterns that have been influenced by the transportation-oriented history of the corridor. Low-density, auto-oriented land uses have heavily influenced existing development patterns in the corridor, and the presence of the existing rail lines have also influenced the development patterns and settings in much of the proposed BLRT Extension project corridor.

Much of the proposed BLRT Extension project area, in particular the Golden Valley area, includes substantial park setting along the corridor. These areas are located primarily to the west of downtown Minneapolis, between the intersection of Olson Memorial Highway with Theodore Wirth Regional Park and continuing through the City of Golden Valley. Residential neighborhoods are located along the proposed BLRT Extension project in the cities of Minneapolis, Robbinsdale, Crystal, and Brooklyn Park. In the City of Brooklyn Park and the northern part of the City of Crystal, development adjacent to the proposed BLRT Extension project includes highway-oriented commercial activity. Development in the City of Brooklyn Park also includes mixed commercial and retail, commercial office and corporate, and institutional uses.

4.5.3.2 Landscape Units and Viewshed

A *landscape unit* is a portion of the regional landscape. These units are commonly used to divide long, linear projects into logical geographic areas for assessment purposes. Landscape units generally are made up of areas with similar visual characteristics, although smaller locations within each landscape unit might differ from the overall unit's character. For the purposes of this visual quality analysis, the study area is divided into four landscape units: Minneapolis, Golden Valley, Robbinsdale/Crystal, and Brooklyn Park (see **Figure 4.5-1**). The general visual context of and a list of higher-quality visual features within each landscape unit are described in detail in the *Visual Quality Technical Report*.

A *viewshed* is a subset of a landscape unit comprising all the surface areas visible from an observer's viewpoint. The viewshed also includes the locations of viewers who are likely to be affected by visual changes resulting from the addition of project features. The study area for the proposed BLRT Extension project includes the areas that could have views of project features and the areas which LRT users could view as they travel through the landscape.

Figure 4.5-1. Landscape Units in the Visual Study Area

4.5.4 Environmental Consequences

The Council determined the visual impacts of the proposed BLRT Extension project by evaluating the changes to existing visual resources that would occur as a result of implementing the proposed BLRT Extension project and assessing the anticipated viewer responses to those changes.

4.5.4.1 Key Views

The Council's visual impact assessment included evaluating photographic documentation of several key views of the proposed BLRT Extension project corridor. Key views were selected at critical viewpoints, along commonly traveled routes, or at other likely observation points to document the existing conditions of the study area. For some locations, both an existing condition photograph and a simulated condition drawing are provided.

Simulation vantage points were selected by the Council to provide representative public views from the proposed BLRT Extension project components that would be the most visible to the various types of sensitive receptors that would be located within the landscape units identified for the project. Alternatively, selection was based on the sensitivity of the resource or locations of key vertical features of the proposed BLRT Extension project that could change the visual character or views of an affected area.

A location map of each key view point along with the associated photographs and simulations is provided in the *Visual Quality Technical Report*. Additional key views were evaluated by the Council at several of the locations proposed for noise walls. A location map of each noise wall along with the associated photographs is provided in the *Visual Quality Technical Report*.

4.5.4.2 Visual Impact Assessment

The following sections describe the anticipated changes in visual quality and character from the proposed BLRT Extension project.

4.5.4.3 No-Build Alternative

The No-Build Alternative reflects existing and committed improvements to the regional transit network for the horizon year of 2040, not including the proposed BLRT Extension project. The No-Build Alternative is based on the Council's *2040 TPP*. With the No-Build Alternative, there would be no alteration of the visual quality and character of the corridor. Therefore, there would be no visual impacts, and no mitigation would be required.

4.5.4.4 Proposed BLRT Extension Project

Operating-Phase (Long-Term) Impacts

According to the FHWA guidelines described in **Section 4.5.1.2**, the degree of a visual impact is defined as a beneficial, adverse, or neutral change to visual quality. The anticipated visual effects during operation of the proposed BLRT Extension project would generally be consistent with existing, similar features, resulting in neutral impacts to visual quality in most segments. The proposed BLRT Extension project would not substantially obstruct project-area views or substantially alter the existing visual character of the proposed BLRT Extension project corridor. However, in some areas, the proposed BLRT Extension project would have adverse impacts to visual quality.

A summary of key view points (KVPs), as analyzed in the *Visual Quality Technical Report*, is provided in **Table 4.5-1,** which includes a summary of changes to the existing visual quality and character, as shown in the associated photographic documentation (see **Appendix F**). Impacts to existing views and higher-quality visual features resulting from the addition of primary project features as a result of implementing the proposed BLRT Extension project is provided below in **Table 4.5-2**. Where applicable, **Table 4.5-2** also references the associated photographic documentation (KVPs).

Table 4.5-1. Summary of Changes to Existing Visual Quality and Character (Photographic Documentation)

Landscape Unit	Designation and Description of View	Degree of Visual Change in Quality and Character	Level of Visual Sensitivity
Minneapolis	OMH 1 (view to the west toward Penn Avenue, from center Olson Memorial Highway median)	Altered	Moderate
	KVP 1 (view to the east toward the Olson Memorial Highway bridge over the BNSF rail corridor, from the Wirth Lake Boardwalk)	Not substantially altered	High
	KVP 2 (view to the east-southeast toward the Olson Memorial Highway bridge over the BNSF rail corridor, from the Wirth Park Trail)	Altered	High
Golden Valley	KVP 3 (view to the northwest toward the existing BNSF tracks and proposed LRT tracks, from Farwell Avenue and Xerxes Avenue North)	Not substantially altered	Moderately high
	KVP 4a (view to the west toward the proposed Plymouth Avenue Station and bridge, from Plymouth Avenue North and Washburn Avenue North)	Altered	Moderately high
	KVP 4b (view to the south toward the existing BNSF tracks and proposed LRT tracks, from the Plymouth Avenue North bridge)	Altered	Moderate
	KVP 4c (view to the north toward the proposed Plymouth Avenue Station, from the Plymouth Avenue bridge)	Substantially altered	Moderate
	KVP 5 (view to the southeast toward the proposed Plymouth Avenue Station and bridge, from the Theodore Wirth Regional Park Chalet)	Altered	High
	KVP 6a (view to the north toward the proposed Golden Valley Road Station, from the Theodore Wirth Regional Park Golf Course)	Not substantially altered	High
	KVP 6b (view to the northeast toward Bassett Creek and the proposed Golden Valley Road Station, from the Theodore Wirth Regional Park Golf Course)	Altered	High
	KVP 7 (view to the west toward the proposed Golden Valley Road Station, from Theodore Wirth Parkway near the intersection of Zenith Avenue)	Not substantially altered	Moderately high
	KVP 8 (view to the west toward the proposed Golden Valley Road Station, from Golden Valley Road and Theodore Wirth Parkway)	Altered	High
	KVP 8a (view to the west toward the proposed Golden Valley Road Station, from Theodore Wirth Parkway at Golden Valley Road)	Altered	Moderately high

Table 4.5-1. Summary of Changes to Existing Visual Quality and Character (Photographic Documentation)

Landscape Unit	Designation and Description of View	Degree of Visual Change in Quality and Character	Level of Visual Sensitivity
Robbinsdale/ Crystal	KVP 9 (view to the northwest toward downtown Robbinsdale, from 41st Avenue and Hubbard Avenue)	Not substantially altered	Moderate
	KVP 10 (view to the north toward the proposed Robbinsdale Station, from 41st Avenue)	Not substantially altered	Moderate
	KVP 11 (view to the east toward the proposed Robbinsdale Station, from 42nd Avenue)	Altered	Moderate
	KVP 12 (view to the southeast toward the proposed wall and fence, from the adjacent residential alley)	Altered	Moderately high
	KVP 21 (view to the southeast toward the proposed Bass Lake Road station and pedestrian bridge, from Bottineau Boulevard)	Altered for visual quality; not substantially altered for visual character	Moderate
	KVP 22 (view to the northwest toward the proposed Bass Lake Road station and pedestrian bridge, from the southeast quadrant of the Bass Lake Road/Bottineau Boulevard intersection)	Altered for visual quality; not substantially altered for visual character	Moderate
	KVP 23 (view to the northeast toward the proposed Bass Lake Road pedestrian bridge, from the southwest quadrant of the Bass Lake Road/Bottineau Boulevard intersection)	Altered for visual quality; not substantially altered for visual character	Moderate
Brooklyn Park	KVP 13 (view to the south toward the proposed 63rd Avenue Station, from the trail adjacent to Bottineau Boulevard)	Altered for visual quality; not substantially altered for visual character	Moderate
	KVP 14 (view to the southeast toward the proposed 63rd Avenue Station, from the adjacent neighborhood west of 63rd Avenue)	Altered	Moderately high
	KVP 15 (view to the north toward the proposed 73rd Avenue/Bottineau Boulevard bridge, from Bottineau Boulevard 81 at 71st Avenue)	Altered for visual quality; not substantially altered for visual character	Moderate
	KVP 16 (view to the northeast toward the proposed 73rd Avenue/Bottineau Boulevard bridge, from 71st Avenue)	Not substantially altered	Moderate
	KVP 17 (view to the north toward the proposed 73rd Avenue/Bottineau Boulevard bridge, from the southeast corner of Bottineau Boulevard and 71st Avenue)	Altered for visual quality; not substantially altered for visual character	Moderate

Table 4.5-1. Summary of Changes to Existing Visual Quality and Character (Photographic Documentation)

Landscape Unit	Designation and Description of View	Degree of Visual Change in Quality and Character	Level of Visual Sensitivity
	KVP 18 (view to the south toward the proposed 73rd Avenue/Bottineau Boulevard bridge, from Bottineau Boulevard at 73rd Avenue)	Altered for visual quality; not substantially altered for visual character	Moderate
	KVP 19 (view to the east toward the proposed OMF, from 101st Avenue)	Substantially altered	Moderate
	KVP 20 (view to the southwest toward the proposed OMF, from Rush Creek Regional Trail)	Substantially altered	Moderately high

For each view described in the table, the *Visual Quality Technical Report* in **Appendix F** includes a "before-project" existing condition photograph and a computer-generated sketch-up simulation of the conceptual "after-project" condition.

Table 4.5-2. Summary of Impacts from Primary Project Visual Features and to Higher-Quality Visual Features

Landscape Unit	Description of View, Higher-Quality Visual Feature, or Primary Project Visual Feature	Photographic Documentation[1]	Level of Impact
Minneapolis	OMH 1 (view to the west toward Penn Avenue, from center Olson Memorial Highway median)	OMH 1	Adverse
	KVP 1 (view to the east toward the Olson Memorial Highway bridge over the BNSF rail corridor, from the Wirth Lake Boardwalk)	KVP 1	Neutral
	KVP 2 (view to the east-southeast toward the Olson Memorial Highway bridge over the BNSF rail corridor, from the Wirth Park Trail)	KVP 2	Adverse
	Ford Building	Not applicable	Neutral
	HERC Landscaping	Not applicable	Neutral
	Metro Transit Headquarters	Not applicable	Neutral
	Boulevard and median trees along Olson Memorial Highway west of I-94	See photographic documentation of OMH 1 above	Adverse
	Sumner Library	Not applicable	Neutral
	Seed Academy and Wayman AME Church	Not applicable	Neutral
	Zion Baptist Church	Not applicable	Neutral
	Floyd B. Olson Memorial	Not applicable	Neutral
	Harrison Neighborhood gateway sculptures	Not applicable	Neutral
Golden Valley	KVP 3 (view to the northwest toward the existing BNSF tracks and proposed LRT tracks, from Farwell Avenue and Xerxes Avenue North)	KVP 3	Neutral
	KVP 4a (view to the west toward the proposed Plymouth Avenue Station and bridge, from Plymouth Avenue North and Washburn Avenue North)	KVP 4a	Adverse
	KVP 4b (view to the south toward the existing BNSF tracks and proposed LRT tracks, from the Plymouth Avenue North bridge)	KVP 4b	Adverse
	KVP 4c (view to the north toward the proposed Plymouth Avenue Station, from the Plymouth Avenue bridge)	KVP 4c	Adverse
	KVP 5 (view to the southeast toward the proposed Plymouth Avenue Station and bridge, from the Theodore Wirth Regional Park Chalet)	KVP 5	Adverse

Table 4.5-2. Summary of Impacts from Primary Project Visual Features and to Higher-Quality Visual Features

Landscape Unit	Description of View, Higher-Quality Visual Feature, or Primary Project Visual Feature	Photographic Documentation[1]	Level of Impact
	KVP 6a (view to the north toward the proposed Golden Valley Road Station, from the Theodore Wirth Regional Park Golf Course)	KVP 6a	Neutral
	KVP 6b (view to the northeast toward Bassett Creek and the proposed Golden Valley Road Station, from the Theodore Wirth Regional Park Golf Course)	KVP 6b	Adverse
	KVP 7 (view to the west toward the proposed Golden Valley Road Station, from Theodore Wirth Parkway near the intersection of Zenith Avenue)	KVP 7	Neutral
	KVP 8 (view to the west toward the proposed Golden Valley Road Station, from Golden Valley Road and Theodore Wirth Parkway)	KVP 8	Adverse
	KVP 8a (view to the west toward the proposed Golden Valley Road Station, from Theodore Wirth Parkway at Golden Valley Road)	KVP 8a	Adverse
	NW 1a (view to the northwest toward the proposed noise barrier on the east side of the alignment roughly across from the southern extent of Sochacki Park)	NW 1a	Potentially adverse
	NW 1b (view to the southeast toward the proposed noise barrier on the east side of the alignment roughly across from the southern extent of Sochacki Park)	NW 1b	Potentially adverse
	Plymouth Avenue bridge over Bassett Creek and BNSF rail corridor	See photographic documentation of KVPs 4a, 4b, 4c, and 5 above.	Neutral
	Theodore Wirth Regional Park and Golf Course	See photographic documentation of KVPs 5, 6a, and 6b above.	Adverse
	Bassett Creek and Bassett Creek Lagoons	Not applicable	Adverse
	Theodore Wirth Parkway	See photographic documentation of KVPs 7, 8, and 8a above.	Neutral
	Glenview Terrace/Valley View Park	Not applicable	Neutral
	Sochacki Park and South Halifax Park	Not applicable	Adverse

Table 4.5-2. Summary of Impacts from Primary Project Visual Features and to Higher-Quality Visual Features

Landscape Unit	Description of View, Higher-Quality Visual Feature, or Primary Project Visual Feature	Photographic Documentation[1]	Level of Impact
Robbinsdale/ Crystal	KVP 9 (view to the northwest toward downtown Robbinsdale, from 41st Avenue and Hubbard Avenue)	KVP 9	Neutral
	KVP 10 (view to the north toward the proposed Robbinsdale Station, from 41st Avenue)	KVP 10	Neutral
	KVP 11 (view to the east toward the proposed Robbinsdale Station, from 42nd Avenue)	KVP 11	Adverse
	KVP 12 (view to the southeast toward the proposed wall and fence, from the adjacent residential alley)	KVP 12	Adverse
	KVP 21 (view to the southeast toward the proposed Bass Lake Road station and pedestrian bridge, from Bottineau Boulevard)	KVP 21	Adverse
	KVP 22 (view to the northwest toward the proposed Bass Lake Road station and pedestrian bridge, from the southeast quadrant of the Bass Lake Road/Bottineau Boulevard intersection)	KVP 22	Adverse
	KVP 23 (view to the northeast toward the proposed Bass Lake Road pedestrian bridge, from the southwest quadrant of the Bass Lake Road/Bottineau Boulevard intersection)	KVP 23	Adverse
	NW 2a (view to the northwest toward the proposed noise barrier from 36th Avenue to 41st Avenue on the east side, and from 36th Avenue to the southern border of Lee Park on the west side)	NW 2a	Neutral (east) or potentially adverse (west)
	NW 2b (view to the southeast toward the proposed noise barrier from 36th Avenue to 41st Avenue on the east side)	NW 2b	Neutral
	NW 3a (view to the northwest toward the proposed noise barrier from West Broadway Avenue to Corvallis Avenue on the east side)	NW 3a	Neutral
	NW 3b (view to the southeast toward the proposed noise barrier toward from West Broadway Avenue to Corvallis Avenue on the east side)	NW 3b	Neutral
	Bass Lake Road pedestrian overpass	See photographic documentation of KVPs 21, 22, and 23 above.	Adverse
	Sacred Heart Catholic Church	Not applicable	Neutral

Table 4.5-2. Summary of Impacts from Primary Project Visual Features and to Higher-Quality Visual Features

Landscape Unit	Description of View, Higher-Quality Visual Feature, or Primary Project Visual Feature	Photographic Documentation[1]	Level of Impact
	Historic Robbinsdale Public Library	Not applicable	Neutral
	West Broadway Avenue and BNSF rail bridges over TH 100	Not applicable	Neutral
	Green boulevard on west side of West Broadway Avenue between 47th Avenue and TH 100	Not applicable	Adverse
	Bottineau Boulevard bridge over CP rail corridor	Not applicable	Neutral
	City of Crystal gateway area	Not applicable	Neutral
	Residential neighborhood between Bass Lake Road and 63rd Avenue	See **Appendix A**	Adverse
Brooklyn Park	KVP 13 (view to the south toward the proposed 63rd Avenue Station, from the trail adjacent to Bottineau Boulevard)	KVP 13	Adverse
	KVP 14 (view to the southeast toward the proposed 63rd Avenue Station, from the adjacent neighborhood west of 63rd Avenue)	KVP 14	Adverse
	KVP 15 (view to the north toward the proposed 73rd Avenue/Bottineau Boulevard bridge, from Bottineau Boulevard 81 at 71st Avenue)	KVP 15	Adverse
	KVP 16 (view to the northeast toward the proposed 73rd Avenue/Bottineau Boulevard bridge, from 71st Avenue)	KVP 16	Neutral
	KVP 17 (view to the north toward the proposed 73rd Avenue/Bottineau Boulevard bridge, from the southeast corner of Bottineau Boulevard and 71st Avenue)	KVP 17	Adverse
	KVP 18 (view to the south toward the proposed 73rd Avenue/Bottineau Boulevard bridge, from Bottineau Boulevard at 73rd Avenue)	KVP 18	Adverse
	KVP 19 (view to the east toward the proposed OMF, from 101st Avenue)	KVP 19	Adverse
	KVP 20 (view to the southwest toward the proposed OMF, from Rush Creek Regional Trail)	KVP 20	Adverse
	63rd Avenue park-and-ride	See photographic documentation of KVPs 13 and 14 above.	Adverse
	73rd Avenue/Bottineau Boulevard bridge	See photographic documentation of KVPs 15, 16, 17, and 18 above.	Adverse

Table 4.5-2. Summary of Impacts from Primary Project Visual Features and to Higher-Quality Visual Features

Landscape Unit	Description of View, Higher-Quality Visual Feature, or Primary Project Visual Feature	Photographic Documentation[1]	Level of Impact
	OMF	See photographic documentation of KVPs 19 and 20 above.	Adverse
	Interstate Highway 694 (I-694) bridge over BNSF rail corridor and Bottineau Boulevard	Not applicable	Neutral
	Shingle Creek	Not applicable	Neutral
	West Broadway Avenue bridge over TH 610	Not applicable	Neutral
	Rush Creek Regional Trail	Not applicable	Adverse

[1] A summary of photographic documentation locations is presented in **Table 4.5-1** for locations where a current condition photograph and a simulation exist. These photographs, simulations, and other photographic documentation can be found in **Appendix F – Visual Quality Technical Report**.

"Not applicable" indicates that photographic documentation was not developed for that particular feature.

Summary of Visual Impacts for the Minneapolis Landscape Unit

In the Minneapolis Landscape Unit, the proposed BLRT Extension project would run along Olson Memorial Highway, a highway that currently accommodates a relatively high amount of traffic. Although Olson Memorial Highway to the west of I-94 is envisioned as a "gateway" corridor to downtown Minneapolis, the *Minneapolis Near Northside Master Plan* (City of Minneapolis, 2000) envisioned that LRT could be accommodated within the median without sacrificing the overall desired character of the corridor. The construction of the transitway within the existing median would alter its existing green character, which is considered a "higher-quality visual feature," resulting in adverse impacts to visual quality in that location. Impacts to "higher-quality visual features" are described in detail in the *Visual Quality Technical Report*. Considering the existing industrial character of the visual context east of I-94 approaching downtown, the Council anticipates that neutral visual effects would occur in that area.

Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. However, the Council anticipates that station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. Coordination with stakeholders would continue throughout the project design process for stations and to address the siting of TPSSs to maintain neutral visual impacts. This process could include development of additional visual screening as required.

Impacts to the resources identified as "higher-quality visual features" of the Minneapolis Landscape Unit are described in detail in the *Visual Quality Technical Report*. Visual impacts to these resources as a result of the proposed BLRT Extension project would generally be neutral. However, where visual impacts would be adverse, mitigation measures would be implemented to further reduce the impacts of operation of the proposed BLRT Extension project on sensitive viewer groups in the proposed BLRT Extension project area.

Summary of Visual Impacts for the Golden Valley Landscape Unit

In the Golden Valley Landscape Unit, the proposed BLRT Extension project would use the existing BNSF right-of-way between 34th Avenue and Olson Memorial Highway. The transitway would closely parallel the existing rail corridor and, for this reason, would be an addition to an existing transportation corridor. Thus, the addition of LRT to this corridor would be compatible with the existing land use. The implementation of LRT would bring a substantially increased frequency of vehicles passing through the area.

Impacts to visual quality would range from neutral to adverse. In some locations, the tracks would be in a depressed cut section and shielded by the topography and vegetation. However, in other locations, residential and park areas on both the east and west sides of the corridor, areas which are considered "higher-quality visual features" as described in **Section 4.5.1.1**, have an increased visual connection based on their close proximity to each other and the varying degrees of openness of the existing vegetation. Both temporary and permanent impacts to the vegetation along the BNSF right-of-way could alter the views and degree of screening of adjacent neighborhoods and parks. At

locations where adverse visual effects are anticipated, transitway elements added to the rail corridor might be visually screened or softened using landscaping where adequate space permits.

Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. However, the Council anticipates that station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive view groups. Coordination with stakeholders would continue throughout the project design process for stations and to address the siting of TPSSs to maintain neutral visual impacts. This process could include development of additional visual screening as required.

Impacts to the resources identified as "higher-quality visual features" of the Golden Valley Landscape Unit are described in detail in the *Visual Quality Technical Report*. Visual impacts to these resources as a result of the proposed BLRT Extension project would generally be neutral. However, where visual impact would be adverse, mitigation measures would be implemented to reduce the impacts of operation of the proposed BLRT Extension project on sensitive viewer groups in the proposed BLRT Extension project area.

Summary of Visual Impacts for the Robbinsdale/Crystal Landscape Unit

In the Robbinsdale/Crystal Landscape Unit, the proposed BLRT Extension project would use the existing BNSF right-of-way. Impacts to visual quality would generally be neutral because the transitway would closely parallel the existing rail corridor and, for this reason, would be a modification to an existing dedicated rail corridor rather than the introduction of a new rail corridor. The implementation of LRT would bring a substantially increased frequency of vehicles passing through the area, and the effects on visual quality would generally be neutral. At locations where adverse visual effects are anticipated, including where sensitive receptors are located adjacent to the corridor as described in further detail later in this section, transitway elements added to the rail corridor could be visually screened or softened using landscaping where adequate space permits.

Where sensitive receptors are located adjacent to the corridor, existing views would be altered as a result of the increased frequency of vehicles passing through the area, the introduction of new sources of light from LRT vehicles and stations, and the altered viewshed for residents viewing the LRT corridor and vehicles. The ability for LRT users to view the residential land uses from passing LRT vehicles would also result in altered views. For example, in the City of Crystal between the proposed Bass Lake Road Station and the proposed 63rd Avenue Station, many existing residences already have a partial or full view of the existing rail corridor. Existing vegetation provides visual screening of the existing BNSF rail corridor and would also provide visual screening of the proposed LRT vehicles.

However, in order to construct the proposed LRT alignment, vegetation removal, such as tree clearing, would be required for portions of the BNSF right-of-way. Therefore, alteration of existing views for sensitive receptors at these locations would also result from the removal of vegetation, and impacts to visual quality would be adverse. For those areas outside the BNSF right-of-way,

coordination with the city of Crystal has been initiated by the Council and would continue throughout the project design process to address the need for revegetation and/or landscaping and other aesthetic treatments to soften or offset the visual effects of tree clearing. Where visual impacts would be adverse, mitigation measures would be implemented to further reduce the impacts of operation of the proposed BLRT Extension project on sensitive viewer groups in the proposed BLRT Extension project area.

For the majority of the LRT alignment, the trackway would be generally level with the adjacent land. However, at some locations, such as at the new bridges over the CP rail corridor and TH 100, the trackway would be elevated and would result in similar altered views for adjacent sensitive receptors (residential land uses) as described previously in this section. Where visual impacts would be adverse, mitigation measures would be implemented to further reduce the impacts of operation of the proposed BLRT Extension project on sensitive viewer groups in the proposed BLRT Extension project area.

Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. However, the Council anticipates that station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. Coordination with stakeholders would continue throughout the project design process for stations and to address the siting of TPSSs to maintain neutral visual impacts. This process could include development of additional visual screening as required. Some proposed BLRT Extension project features within the Robbinsdale/Crystal Landscape Unit would result in adverse effects on visual quality, such as the Bass Lake Road pedestrian overpass; impacts resulting from addition of this feature are described in the *Visual Quality Technical Report*. Where visual impacts would be adverse, mitigation measures would be implemented to further reduce the impacts of operation of the proposed BLRT Extension project on sensitive viewer groups in the proposed BLRT Extension project area.

Impacts to the resources identified as "higher-quality visual features" of the Robbinsdale/Crystal Landscape Unit are described in detail in the *Visual Quality Technical Report*. Visual impacts to these resources as a result of the proposed BLRT Extension project would generally be neutral. However, where visual impacts would be adverse, mitigation measures would be implemented to further reduce the impacts of operation of the proposed BLRT Extension project on sensitive viewer groups in the proposed BLRT Extension project area.

Summary of Visual Impacts for the Brooklyn Park Landscape Unit

In the Brooklyn Park Landscape Unit, the proposed BLRT Extension project would use the existing right-of-way of West Broadway Avenue. For much of the corridor, the transitway would be located in the center of the roadway and would have neutral effects on visual quality.

For the majority of the LRT alignment, the trackway would be generally level with the adjacent land. However, at some locations, such as at the new bridge over the 73rd Avenue/Bottineau Boulevard intersection, the trackway would be elevated, resulting in altered views for adjacent

sensitive receptors (residential land uses) as a result of the increased frequency of vehicles passing through the area, the introduction of new sources of light from LRT vehicles and stations, the altered viewshed for residents viewing the LRT corridor and vehicles, and the ability for LRT users to view the residential land uses from passing LRT vehicles. However, where visual impacts would be adverse, mitigation measures would be implemented to further reduce the impacts of operation of the proposed BLRT Extension project on sensitive viewer groups in the proposed BLRT Extension project area.

Neutral impacts are anticipated as a result of station and TPSS construction, since these features would be designed to complement their surroundings, with variations in design that are consistent with the context of each station and TPSS location. However, the Council anticipates that station features would also include passenger information displays, lighting, and security systems, which could alter the visual quality and character of the view for sensitive viewer groups. Coordination with stakeholders would continue throughout the project design process for stations and to address the siting of TPSSs to maintain neutral visual impacts. This process could include development of additional visual screening as required.

Some proposed BLRT Extension project features within the Brooklyn Park Landscape Unit would result in adverse effects on visual quality, features such as the 63rd Avenue park-and-ride, the 73rd Avenue/Bottineau Boulevard bridge, and the OMF; impacts resulting from addition of these features are described in the *Visual Quality Technical Report*. Where visual impacts would be adverse, mitigation measures would be implemented to further reduce the impacts of operation of the proposed BLRT Extension project on sensitive viewer groups in the proposed BLRT Extension project area. Further, the new OMF and related project elements, including landscaping and visual screening, would be designed in coordination with the city of Brooklyn Park and the Three Rivers Park District and in accordance with local zoning ordinances.

Impacts to the resources identified as "higher-quality visual features" of the Brooklyn Park Landscape Unit are described in detail in the *Visual Quality Technical Report*. Visual impacts to these resources as a result of the proposed BLRT Extension project would generally be neutral. Where visual impacts would be adverse, mitigation measures would be implemented to further reduce the impacts of operation of the proposed BLRT Extension project on sensitive viewer groups in the proposed BLRT Extension project area.

Construction-Phase (Short-Term) Impacts

The anticipated visual effects during construction of the proposed BLRT Extension project would be similar to the appearance of typical roadway projects, including the temporary presence of heavy equipment, traffic-control measures, and construction activities. Areas where construction activities for proposed BLRT Extension project features would be particularly noticeable to sensitive viewer groups include the following.

- The reconstruction of the Olson Memorial Highway Bridge over I-94 to create adequate width for the transitway would be highly visible to travelers along I-94 and Olson Memorial Highway.
- Users of Theodore Wirth Regional Park, Sochacki Park, and South Halifax Park would likely perceive construction activity as undesirable and not consistent with their anticipated recreational experience. The reconstruction of the westbound Olson Memorial Highway bridge over the BNSF rail corridor and depressed transitway with retaining walls curving onto Olson Memorial Highway would be highly visible to travelers along Olson Memorial Highway. Additionally, there might be temporary grading for the construction of retaining walls or other features that would affect slopes and vegetation.
- The reconstruction of the BNSF bridge over TH 100 to create adequate width for the transitway would be highly visible to travelers on northbound TH 100. Where the transitway passes along residential neighborhoods, the construction activity would likely be perceived as more visually disruptive to these typically peaceful residential settings.
- The construction of the new bridge for the transitway over TH 610 would be highly visible to travelers on eastbound TH 610.

In general, the short-term impacts that would occur during project construction would be associated with construction staging areas, concrete and form installation, removal of some of the existing vegetation, lights and glare from construction areas, and generation of dust and debris in the proposed BLRT Extension project area.

Temporary construction activities are anticipated by the Council to include partial or complete road and lane closures, vehicle and pedestrian detours, construction material deliveries, and transport of construction equipment. In general, construction staging areas would be located adjacent to the existing BNSF rail corridor and proposed BLRT Extension project corridor, where the presence of construction equipment and earthmoving activities are not anticipated to be visually intrusive and would be compatible with the surrounding landscape. Where the proposed BLRT Extension project would pass along recreation areas and residential neighborhoods, construction activities, such as grading, vegetation removal, and lighting of work areas, would likely be perceived as visually disruptive in those typically more peaceful residential settings.

Construction impacts would be temporary, and construction staging areas would be restored to pre-project conditions after construction is completed. At locations where greater visual effects are anticipated, the loss of existing vegetation on side slopes for grading or access purposes would be replaced to the extent feasible. Where applicable, mitigation measures would be implemented to further reduce the impacts of construction of the proposed BLRT Extension project on sensitive viewer groups in the proposed BLRT Extension project area.

Conclusions and Recommendations

The proposed BLRT Extension project would not cause a substantial change to the visual character of the proposed BLRT Extension project corridor as a whole. Neutral visual effects are anticipated to result from implementation of the proposed BLRT Extension project along most segments. However, adverse effects on visual quality would occur in some areas, such as the Olson Memorial Highway median and areas where recreational and residential uses are located along or in the vicinity of the proposed BLRT Extension project corridor. At locations where adverse visual effects are anticipated, project elements added to the rail corridor might be visually screened or softened using landscaping where adequate space permits, and the loss of existing vegetation on side slopes for grading or access purposes would be replaced to the extent feasible.

Several local plans address aesthetic and visual resources in the proposed BLRT Extension project area, and applicable policies include the establishment of design and landscape guidelines. The MPRB, the Three Rivers Park District, the Sochacki Park Joint Powers Board, and the affected communities would be involved in the selection of landscape treatments that would be consistent with applicable local policies and that would be compatible with the character of the parks and surrounding neighborhoods. In general, lost vegetation for disturbed areas outside of the BNSF right-of-way would be replaced with vegetation of a similar type where feasible, and, where new physical features of the proposed BLRT Extension project are introduced, efforts would be made to screen or soften the view.

4.5.5 Avoidance, Minimization, and Mitigation Measures

Implementation of Mitigation Measures 1 through 3, described below, would help to reduce the impacts of operation and construction of the proposed BLRT Extension project on sensitive viewer groups in the proposed BLRT Extension project area.

Operating-Phase (Long-Term) Mitigation Measures

Mitigation Measure 1: Minimize Operational Night Lighting

To minimize impacts to sensitive receptors resulting from nighttime operational lighting, to the extent feasible and consistent with safety and security, all permanent exterior lighting will be designed and installed so that (a) the lighting does not cause excessive reflected glare and (b) illumination of the proposed BLRT Extension project and its immediate vicinity is minimized.

Mitigation Measure 2: Visual Screening of Project Facilities

To the extent feasible, project facilities have been sited to avoid locations in proximity to residences, parks, or other sensitive visual receptors. Where avoidance is not feasible, or where greater visual or privacy effects are anticipated to result from the introduction of new physical features of the proposed BLRT Extension project, such as where the elevation of the LRT alignment would be higher than adjacent residences, efforts will be made to screen or soften the view using landscaping or walls where adequate space permits. Landscape treatments will be selected for consistency with applicable local policies, consideration for agency maintenance budgets and staffing, and compatibility with the character of the parks and surrounding neighborhoods.

The Council has prepared design guidelines for key structures throughout the proposed light rail alignment, focusing on bridges and retaining walls. Those guidelines are included within the *Visual Quality Guidelines for Key Structures*, part of the Metro Transit Light Rail Design Criteria (Council, 2015c). These guidelines were developed by the Council, reflecting various coordinating efforts with affected local jurisdictions. The guidelines have been used by the Council in the advancement of the proposed BLRT Extension project's design and development. The guidelines have and will help to ensure a consistent aesthetic element for key structures throughout the proposed BLRT Extension project alignment, while allowing for some flexibility in wall treatments.

Construction-Phase (Short-Term) Mitigation Measures

Mitigation Measure 3: Minimize Visual Disruption from Construction Activities

Follow the Council's design guidelines to address construction impacts where appropriate and practical; these include:

- Locate staging areas in places where their visibility will be minimal and provide temporary construction screens or barriers to limit views into them from nearby residential areas, community facilities, recreational areas and trails, or other public open spaces from which they will be seen by visually sensitive viewers
- Use construction methods that minimize the need to remove vegetation to accommodate construction activities
- Shield light sources used in nighttime construction to reduce lighting impacts for residential areas
- Restore areas disturbed during construction

4.6 Economic Effects

This section focuses on the local and regional effects of the proposed BLRT Extension project through economic impact analysis. Implementation of the proposed BLRT Extension project is anticipated by the Council to result in direct, indirect, and induced economic impacts related to the construction and long-term expenditures for operations and maintenance (O&M). These effects would be realized to varying degrees throughout the region in terms of increased economic output, earnings, and employment. A benefit/cost analysis was not performed.

4.6.1 Economic Conditions

The Major Capital Investment Projects – Final Rule (published in the Federal Register on January 9, 2013) specifically includes language for economic development as a selection criterion for fixed-guideway transit projects. The final rule calls for documentation of the degree to which a project would have a positive impact on local economic development as part of the FTA review process.

As described in **Chapter 1** of this Final EIS, the proposed BLRT Extension project study area, the cities of Minneapolis and St. Paul, and the region are experiencing significant population and employment growth, which is expected to continue through 2040. The proposed BLRT Extension project would provide increased mobility to both residents and visitors within the project study

area and is expected by the Council to contribute to this growth. New transportation capacity could create competitive advantages for businesses located in the project study area. The proposed BLRT Extension project would also provide a critical connection in the region's transportation system by providing an important link in Metro Transit's long-range plan. This would connect the City of Minneapolis and the region's northwestern communities with existing LRT on the METRO Green Line, future LRT on the METRO Green Line Extension, bus rapid transit on the METRO Red Line, the Northstar commuter rail line, and local and express bus routes.

The implementation and construction, continuing operation, and market reaction to the availability of this improved transit service would influence economic activity in the local economy. Construction of these facilities would expand local earnings for the duration of the proposed BLRT Extension project's construction cycle. Operating the proposed BLRT Extension project would also expand earnings, but, unlike the one-time construction impacts, the new jobs required to operate and maintain the proposed BLRT Extension project would have long-term recurring impacts. These jobs represent the direct effects of investment in the proposed BLRT Extension project. The earnings of these new construction and transit workers would translate into a proportional increase in consumer demand through the purchase of goods and services in the region. A further increase of new employment across a wide variety of industrial sectors and occupational classifications is expected by the Council as employers hire to meet this increase in local consumer demand. This type of hiring represents the proposed BLRT Extension project's indirect impact.

The proposed BLRT Extension project is also expected by the Council to have positive effects on commercial and residential development located near transit stations. The proposed BLRT Extension project would contribute positive economic impacts by encouraging and supporting higher-density residential and commercial land uses around transit stations. The Council expects that new development around station areas could also capture an increasing share of residential and employment growth as densities increase. Focused development in areas with existing infrastructure accrues benefits to the taxing jurisdictions. National experience with fixed-rail transit systems has demonstrated that transit investment has had positive effects on the residential and commercial development near the stations. National studies have shown that business output and personal income are positively affected by transit investment, growing rapidly over time. These transit investment impacts (see **Sections 4.6.3 and 4.6.4**) create savings to business operations and increase the overall efficiency of the economy, positively affecting business sales and household incomes.

4.6.2 Regulatory Context and Methodology

The area of economic effect selected for this analysis is the Minneapolis–St. Paul–Bloomington MSA. The economic effects associated with construction, operation, and maintenance expenditures for the proposed BLRT Extension project were measured using regional multipliers from the US Department of Commerce, Bureau of Economic Analysis (BEA). Derived from the Regional Input-Output Modeling System (RIMS II), multipliers measure the total change (direct plus indirect effects) in output, employment, and earnings that results from an incremental change relative to a particular industry. The data set was constructed by BEA to reflect the local Minneapolis–St. Paul–Bloomington MSA economy. The multipliers are based on the 2007 Benchmark Input-Output Table

for the nation and 2013 regional accounts data; they represent the version available at the time this analysis was prepared (BEA, 2015).

Tax revenue impacts (see **Section 4.6.5**) were quantified by examining the right-of-way needed for the proposed BLRT Extension project that would be permanently converted from private property to public property. This analysis assumes that transportation-network improvements included in the No-Build Alternative are also included in the proposed BLRT Extension project. Therefore, this section focuses only on the additional incremental economic impacts attributable to the proposed BLRT Extension project.

In addition, the short- and long-term impacts of the proposed BLRT Extension project were analyzed using the Council's REMI-PI[7] regional economic model. The REMI-PI model uses computable general equilibrium and new economic geography techniques to project forward time-series of economic and demographic outcomes. The REMI-PI projections are informed by data on the region's industry mix, costs and productivity, and analysis of regional competitiveness within the national economy. Employment, migration, and population outcomes directly flow from projected economic performance. The REMI-PI model was run to supplement the economic impacts analysis. Results of the REMI-PI analysis are discussed qualitatively as a relative comparison to the analysis conducted using the RIMS II multipliers, which was the primary economic impacts modeled considered for the proposed BLRT Extension project.

4.6.3 Output, Earnings, and Employment Effects from Capital Expenditures

This section describes the anticipated economic impacts from capital expenditures. Construction of the proposed BLRT Extension project represents substantial capital investment in the local economy. This spending would increase the employment, earnings, and output for the duration of the construction process. Capital cost estimates and construction values for this analysis are presented in 2015 dollars, thereby providing a common reference year for expenditures.

4.6.3.1 Capital Expenditures

The capital expenditures for construction of the proposed BLRT Extension project are shown in **Table 4.6-1**. The costs represent the gross capital expenditures for the proposed BLRT Extension project capital cost categories are represented differently in the analysis presented in **Section 4.6**. The analysis requires that certain costs associated with real estate acquisition be reclassified as professional service.

[7] REMI-PI is the Policy Insight economic model developed by Regional Economic Models, Inc., a tool used to predict the economic effects of policy decisions.

Table 4.6-1. Summary of Proposed BLRT Extension Project Capital Costs

In year-of-expenditure (YOE) dollars

General Construction Cost[1]	Vehicles	Right-of-Way[2]	Professional Services[3]	Finance Charges[4]	Total
$1,017,601,972	$136,245,070	$65,496,959	$247,086,752	$30,000,000	$1,496,430,753

Source: Council, 2016c

[1] Includes contingency costs.

[2] Right-of-way estimate is based on the Council appraisal estimates. This cost does not reflect true acquisition estimate. No add-on, relocation, or professional services costs are included. Other associated real estate costs are included in professional services.

[3] Professional services include real estate services, engineering, legal fees, and other agency costs.

[4] Finance charges include hedge costs, capitalized interest that accrues during the construction period, delay reserves, unavailability insurance, and costs of issuance.

Total capital expenditures are divided into the following five major categories:

- **General Construction:** guideway elements, stations, storage and inspection facilities, sitework, systems, and project contingencies.
- **Vehicles:** vehicle manufacturing and assembly.
- **Right-of-Way:** all rights-of-way, land, and existing improvements.
- **Professional Services:** real estate services, engineering and design, legal fees, and other agency costs.
- **Finance Charges:** the finance charges associated with the proposed BLRT Extension project include the hedge costs, capitalized interest that accrues during the construction period, delay reserves, unavailability insurance, and costs of issuance. These costs are paid over the life of the bonds.

The regional economic impact of these expenditures varies substantially by activity and depends on the amount of goods and services procured locally. Construction goods and services would be purchased in the local economy. Although not every building material required for the proposed BLRT Extension project is produced locally, the RIMS II multipliers reflect the supplier linkages for the industry and thus account for this leakage from the local economy. Leakage represents purchases made by local suppliers from sources outside the region.

The purchase of vehicles would not occur locally. Transit vehicles are not manufactured in the Minneapolis–St. Paul–Bloomington MSA, which limits the impact this purchase could have in the region. Since no local labor is assumed to produce the vehicles, no local impact generated by their purchase would be realized. There would likely be some assembly required upon delivery of the vehicles, and it is possible that a component of the vehicle would be made by a local supplier; however, these possibilities represent a negligible share of the vehicles' cost and are therefore excluded from this analysis.

Right-of-way expenditures shown are for real property only; the transaction costs, legal services, and required relocation assistance associated with these expenditures are included in the professional services (that is, engineering, design, and other agency costs) cost category. Labor is not associated with the right-of-way expenditures; therefore, there would be no economic impact to the pure land costs. Professional services costs would be purchased in the local economy and would have an impact in the region. Finance charges are included in the capital cost of the proposed BLRT Extension project. However, since the primary costs would not be purchased in the local economy, there would be no impact to the region. Consequently, only two types of capital expenditures are expected to affect the regional economy: construction and professional services costs.

4.6.3.2 Funding Sources

To isolate the economic effects of the proposed BLRT Extension project on the local economy, it is necessary to distinguish those resources that are new to the economy from local resources that would still be spent in the region. **Table 4.6-2** describes the funding sources and expenditure percentages that are planned for the proposed BLRT Extension project and indicates whether these funds represent new resources that would be invested in the region because of the proposed BLRT Extension project.

Federal and state funds originate from outside the City of Minneapolis's local economy and thus represent new resources. Because the local funds originate within the Minneapolis–St. Paul–Bloomington MSA, they are considered existing revenue sources and do not represent new resources. The funding share described in **Table 4.6-2** is the total project cost of $1.49 billion (YOE dollars) for this analysis. The federal funding share or "new resources" (49 percent) is based on this amount.

Table 4.6-2. Funding Sources for the Proposed BLRT Extension Project

In YOE dollars

Funding Source	Contributions	Funding Share	New or Existing Funding Source
Federal 5309 New Starts	$733,251,069	49%	New
State of Minnesota	$149,643,075	10%	New
Counties Transit Improvement Board (CTIB)	$463,893,533	31%	Existing
Hennepin County Regional Railroad Authority (HCRRA)	$149,643,075	10%	Existing
Total funding	**$1,496,430,753**	**100%**	—
Percentage new funding	**$882,894,144**	**59%**	—

Source: Council, 2016c

The capital costs representing expenditures that would accrue to the region (that is, construction and professional services costs) are adjusted to account only for new resources flowing into the region. Only funding levels that represent new resources flowing into the region would generate effects with the proposed BLRT Extension project. **Table 4.6-3** shows the level of funding for the

capital cost elements that would generate economic effects within the local Minneapolis economy. The expenditures with substantial local labor elements (that is, construction cost of $1.02 billion) that would yield impacts to the local economy are derived from the data in **Table 4.6-1** and represent the sum of expenditures on construction and professional services costs for the proposed BLRT Extension project. The amount of funding that represents new resources (that is, 59 percent or about $883 million) for the region is derived from **Table 4.6-2** and represents the sum of those sources designated as "new."

The amount of funding that represents "new funding" (59 percent federal/state share) is less than the total amount required for construction. This analysis assumes that the new funds would be spent on general construction expenditures. For the proposed BLRT Extension project, construction costs would be more than the anticipated federal participation in the project. Therefore, every single dollar of new resources is expected by the Council to yield a local economic impact. This assumption does not bias the analysis, since the multipliers for "construction" and for "professional, scientific, and technical services" (the multiplier that would be applied to the professional services cost category) are similar.

Table 4.6-3. Capital Costs Representing New Resources

In YOE dollars

Alternative	General Construction Cost[1]	Federal/State Share (59%)[2]
Proposed BLRT Extension project	$1,017,601,972	$882,894,144

Source: Council, 2016c

[1] Capital cost that would impact local economy

[2] Represents federal share (49%) and state share (10%) of total project cost

The interpretation of the multipliers shown in **Table 4.6-4** is as follows (US Department of Commerce BEA Regional Input-Output Modeling System, RIMS II 2015). The construction industry is used as an example.

- The final demand output multiplier represents the total-dollar change in output that occurs in all industries for each additional dollar of output delivered to final demand by the construction industry.
- The final demand earnings multiplier represents the total-dollar change in earnings of households employed by all industries for each additional dollar of output delivered to final demand by the construction industry.
- The final demand employment multiplier represents the total change in number of jobs that occurs in all industries for each $1 million of output delivered to final demand by the construction industry.
- The direct effect earnings multiplier represents the total-dollar change in earnings of households employed by all industries for each additional dollar of earnings paid directly to households employed by the construction industry.
- The direct effect employment multiplier represents the total change in number of jobs in all industries for each additional job in the construction industry.

Table 4.6-4. RIMS II Multipliers by Industry

Region	Industry	Multiplier				
		Final Demand			Direct Effect	
		Output ($)	Earnings ($)	Employment (Jobs)	Earnings ($)	Employment (Jobs)
Minneapolis–St. Paul–Bloomington, MSA	Construction	1.4959	0.4818	9.9251	1.374	1.4383
	Professional, scientific, and technical services	1.4343	0.5768	10.7839	1.3088	1.4458
	Transit and ground passenger transportation	1.6076	0.5819	20.2455	1.3851	1.186

Source: US Department of Commerce BEA, RIMS II 2015

Applying the final demand multipliers for the construction industry to the amount of new funding and resources that would be used for capital expenditures provides estimates of the net output, earnings, and employment impacts generated by the proposed BLRT Extension project in the short term. The results are summarized in **Table 4.6-5.** These one-time impacts would last for the duration of construction. *One job* is defined as a job for one person for one year. For example, a job for one person that lasts 4 years would equate to 4 person-year jobs.

Table 4.6-5. Net Effects of Construction (Short-Term) Activity

Economic Indicators	Proposed BLRT Extension Project
New capital expenditure	$882,894,144
Final Demand Multipliers	
Output	1.4959
Earnings	0.4818
Employment	9.9251
Direct Effects	
Output	$1,320,721,350
Earnings	$425,378,399
Employment (jobs)	8,763

Source: US Department of Commerce BEA, RIMS II 2015

4.6.3.3 Operating-Phase (Long-Term) Effects

Given that construction-related spending would last only for the duration of the proposed BLRT Extension project's construction cycle, long-term economic impacts from this spending are not anticipated. Impacts associated with construction related activities are discussed in each of the resource impact discussions elsewhere in **Chapter 4** and **Chapter 5**.

4.6.3.4 Construction-Phase (Short-Term) Effects

No-Build Alternative

The No-Build Alternative consists of the future programmed transportation system without the proposed BLRT Extension project. The output, earnings, and employment would be unchanged under the No-Build Alternative.

Proposed BLRT Extension Project

For the Minneapolis–St. Paul–Bloomington MSA, the effect of construction spending for the proposed BLRT Extension project is estimated to be $1.32 billion in output (2015 dollars). The Council estimates that the proposed BLRT Extension project would generate an estimated $425 million in net earnings and payroll expansion and would generate 8,763 person-year jobs in the Minneapolis–St. Paul–Bloomington MSA.

The Council used its REMI-PI model to supplement the results of the RIMS II model. The REMI-PI is a different type of modeling approach that can be used to understand the economic impacts resulting from changes in labor accessibility such as improved transit access or reduced roadway congestion. The results of the Council's REMI-PI analysis show that the proposed BLRT Extension project might cause similar short-term economic impacts beyond those estimated by the RIMS II model. The REMI-PI model projects similar levels of economic output, particularly in the construction industry earnings.

4.6.4 Output, Earnings, and Employment Effects from Operations and Maintenance Expenditures

The proposed BLRT Extension project would create jobs and additional earnings as a result of O&M expenditures. The projected O&M expenditures are calculated based on the existing light rail services. The analysis assumes that funding for O&M would be procured primarily from local funds and project-generated funds.

Although these expenditures would originate from local sources, they represent spending that would not take place except for the implementation of this service. The expansion of transit service associated with the proposed BLRT Extension project would expand economic activity in the counties of the Minneapolis–St. Paul–Bloomington MSA, thus generating recurring net economic impacts (long term). Other potential sources of federal funding for maintenance exist, since grants could be applied for to fund preventative maintenance in later years. If future federal funds are received and applied to maintenance activities, they could generate additional net economic effects on the local and state economies through increased employment and earnings.

The estimated net change in local earnings generated by the proposed BLRT Extension project is shown in **Table 4.6-6**. The table describes anticipated payroll expansion beyond implementation of the No-Build Alternative. This analysis uses only the direct effect multipliers to generate estimates of earnings impacts attributable to O&M activities because output measures are less reliable in the context of transit service where market prices are not available. The multipliers applied in this section of the analysis are for the industry labeled "Transit and Ground Passenger Transportation."

The increased earnings would result in positive economic impacts to the local economy, both through direct hiring to fill transit jobs and indirectly as these transit workers spend their earnings, thus creating additional consumer demand and jobs to meet that demand. The transit earnings are derived by multiplying the incremental O&M cost over the No-Build Alternative by the transit on-site labor percentage. The transit on-site labor percentage (76 percent) is derived from Metro Transit's O&M cost model. The final transit earnings do not include benefits, and only the wage element affects transit earnings.

Table 4.6-6. Net Earnings Impacts from Proposed BLRT Extension Project O&M Activities

In 2015 dollars

Alternative	Transit Earnings over No-Build Alternative[1]	Minneapolis–St. Paul–Bloomington MSA Earnings Multiplier[2]	Net Change in Local Earnings
Proposed BLRT Extension project	$16,546,818	1.3851	$22,918,997

Source: Council, 2016c

[1] Transit earnings are the incremental O&M costs multiplied by the on-site labor component

[2] RIMS II multiplier (transit and ground passenger transportation) direct effect earnings multiplier

4.6.4.1 Operating-Phase (Long-Term) Effects

No-Build Alternative

The No-Build Alternative consists of the future programmed transportation system without the proposed BLRT Extension project. The output, earnings, and employment would be unchanged under the No-Build Alternative.

Proposed BLRT Extension Project

For the Minneapolis–St. Paul–Bloomington MSA, the effect of local O&M spending for the proposed BLRT Extension project is estimated by the Council at $23 million in local annual wages and salaries (2015 dollars). With implementation of the proposed BLRT Extension project, the increased earnings would result in positive economic impacts to the local economy, both through direct hiring to fill transit jobs and indirectly as these transit workers spend their earnings, thus creating additional consumer demand and jobs to meet that demand.

The Council used its REMI-PI model to supplement the results of the RIMS II model. The REMI-PI is a different type of modeling approach that can be used to understand the economic impacts resulting from changes in labor accessibility such as improved transit access or reduced roadway congestion. The results of the Council's REMI-PI analysis show that the proposed BLRT Extension project might cause additional positive economic impacts beyond those estimated by the RIMS II model. Specifically, the REMI-PI model estimated greater gains in employment and economic output that are a result of improved labor accessibility for transit-dependent populations and also modest household budget savings as a result of greater transit use. If the proposed BLRT Extension

project were to cause improved livability in the region that attracts additional population and economic activity, additional economic benefits might be realized.

4.6.4.2 Construction-Phase (Short-Term) Effects

O&M expenditures would not create short-term effects. The earnings impacts generated by O&M expenditures would be long-term recurring positive economic impacts.

4.6.5 Tax Revenue Effects

Construction of the proposed BLRT Extension project would require the acquisition of some private land and/or improvements for easements, right-of-way, parking, and station facilities. These acquisitions would remove properties from the existing local tax base. The annual tax revenue associated with the loss of properties as a result of right-of-way purchase, displacement, and relocation was identified in the development of the proposed BLRT Extension project. The Council developed the preliminary right-of-way cost estimate for the analysis. This amount of right-of-way to be acquired is preliminary and is subject to change as the proposed BLRT Extension project proceeds into final design.

Table 4.6-7 summarizes the estimated value of the properties to be acquired and shows the expected annual tax revenue lost from removing properties from Hennepin County taxing jurisdictions' tax base for the proposed BLRT Extension project. **Section 4.3** provides greater detail about the number and type of properties needed for the proposed BLRT Extension project. The calculation of the lost annual property tax revenue associated with converting land from private to public use is estimated at $72,000. Special assessment district revenue loss associated with removing properties was not estimated.

Table 4.6-7. Right-of-Way Acquisition and Associated Loss of Tax Revenues (2015 Tax Year)

Alternative	Number of Parcels to be Acquired	Tax Assessed Value	Estimated Annual Lost Tax Revenue
Proposed BLRT Extension project	14	$2,419,600	$72,368

Source: Hennepin County Assessor's Offices, Council, 2016c

It is important to note that the estimated loss of annual revenue reported in this section is based on the assessed values prepared by the Hennepin County Assessor's Office. County assessments rely on their internal policy of developing property values and tend to undervalue the true cost of purchasing right-of-way. The property tax revenue lost described in **Table 4.6-7** is actual value that would be removed from the taxing jurisdictions' tax rolls. The right-of-way acquisition costs described in the project capital cost estimate (**Table 4.6-1**) are based on Council's recent experience in acquiring right-of-way and are substantially greater than the cost used in this analysis. These right-of-way acquisition costs assume that the property would be purchased for a price above the assessed value, since speculation and market forces increase the parcels' sales

price. There is a small and fixed amount of land along the proposed BLRT Extension project alignment that would be purchased.

4.6.5.1 Operating-Phase (Long-Term) Effects

No-Build Alternative

The No-Build Alternative would not require the acquisition of right-of-way for the proposed BLRT Extension project and would not affect tax revenue.

Proposed BLRT Extension Project

The lost tax revenues associated with the reduction in the tax base from the proposed BLRT Extension project would be a recurring loss on an annual basis. Partially offsetting these losses, however, would be an increase in other tax revenues. For example, the creation of new jobs and earnings associated with the recurring O&M spending could foster greater retail spending. The additional revenues from this spending would be recurring gains. The construction of the proposed BLRT Extension project is also expected by the Council to have positive effects on the value of residential and commercial properties within walking distance of a station. The increase in value translates into greater tax revenues and is expected to accrue to the local economy. Discussion on the potential development near the proposed BLRT Extension project stations is provided in **Chapter 6**.

4.6.5.2 Construction-Phase (Short-Term) Effects

The lost tax revenues associated with this reduction in the tax base will create a short-term reduction in tax collections. This loss is expected by the Council to diminish as the value of residential and commercial properties within walking distance of the station areas increases.[8] Therefore, the long-term positive effects of the proposed BLRT Extension project on the value of residential and commercial properties within walking distance of station areas is expected to offset any short-term effects of lost tax revenues attributable to right-of-way acquisition.

[8] There is substantial consensus within academic literature that the accessibility benefits of transit service increase real estate value gains near station areas. These benefits have not been quantitatively estimated for this project.

4.7 Safety and Security

This section describes the operating-phase (long-term) and construction-phase (short-term) effects of the proposed BLRT Extension project on safety and security. This section includes an overview of the regulatory context and methodology used for the analysis, an assessment of existing conditions related to safety and security, a description of the anticipated impacts of the proposed BLRT Extension project, and a description of mitigation measures to implement with the proposed BLRT Extension project.

4.7.1 Regulatory Context and Methodology

The Council, as the owner and operator of the proposed BLRT Extension project, follows safety and security policies that establish minimum requirements for facilities based on local, state, and federal codes or standards; the Council's guidance; and the *SSMP* for the proposed BLRT Extension project. These codes, standards, and guidance include, but are not limited to, the applicable parts of:

- National Fire Protection Association 130, *Standard for Fixed Guideway Transit or Passenger Rail Systems*
- International Fire Code, 2012 Edition, as amended
- 2015 Minnesota State Building Code, as amended by the cities of Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park
- National Fire Protection Association 101 Life Safety Code as well as International Organization for Standardization (ISO) standards
- American National Standards Institute (ANSI) and American Society for Testing and Materials (ASTM) Standards
- 49 CFR Parts 214, 219 220, 222, 225, 228, 233, 234, 235, and 236 and 49 CFR Part 229.125
- Minnesota Chapter 312 (House File 3172/Senate File 2785), *Safety and Operational Standards for Freight Rail Operations*
- Circular C5800.1, *Safety and Security Guidance for Recipients with Major Capital Projects*, governing the safety and security process from planning through commencement of revenue service
- The Council's *Regional Transitway Guidelines* (Council, 2012a)*, Station and Support Facility Design Guidelines User Guide Supplement* (Council, 2012b)*, and Metro Light Rail Transit Design Criteria,* (Council, 2015c), which provide technical guidance for the design of transitway facilities
- Metro Transit's *SSMP* for the proposed BLRT Extension project (for instructions on how to access this document, refer to Appendix D of the Draft EIS), which covers safety and security requirements and actions during operation of the proposed BLRT Extension project

FRA has provided a preliminary jurisdiction determination for the proposed BLRT Extension project on its regulatory role in implementing the proposed light rail at-grade crossings of roads in the vicinity of existing freight rail at-grade crossings (see Appendix D of the Draft EIS). The Council

would work with FRA on a final jurisdiction determination for the proposed BLRT Extension project during the proposed BLRT Extension project's Engineering phase.

4.7.2 Study Area

The study area for the safety and security evaluation includes planned facilities within the LOD for the proposed BLRT Extension project, as illustrated in the Engineering Drawings (see **Appendix E**).

4.7.3 Affected Environment

This section describes the existing conditions of the study area, including an overview of existing freight rail crossings and a summary of existing emergency service providers in the study area.

4.7.3.1 Emergency Service Providers

Public safety and security in the study area is provided by the police departments, fire departments, and emergency response units of the cities of Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park. Emergency medical services are located in each city. Through the municipal police and fire departments, each community in the study area has developed an Emergency Operations Plan for all types of emergencies.

Metro Transit Police currently provide roving security for the bus transit facilities in the Metro Transit service area (that is, the area with existing Metro Transit bus service). Transit police routinely patrol bus routes, bus stops, and transit centers. Transit police officers currently travel along the METRO Blue Line and METRO Green Line LRT lines to provide security at stations and on rail cars and would provide similar services for the proposed BLRT Extension project.

4.7.3.2 Freight Railroads

There are currently two active freight rail corridors in the study area: the BNSF rail corridor and the CP rail corridor (for more information on existing freight rail operations, see **Section 3.2.3**). As shown in **Table 4.7-1**, there are 11 existing locations in the study area where roads cross freight rail corridors.

Table 4.7-1. At-Grade Railroad Crossings (Existing Conditions and Proposed BLRT Extension Project)

Location	Existing Conditions		Proposed BLRT Extension Project	
	Crossing Type	Crossing Control	Crossing Type	Crossing Control
Olson Memorial Hwy/ 7th St N/6th Ave N	None	Not applicable	LRT	Traffic signal
Olson Memorial Hwy/ Border Ave	None	Not applicable	LRT	Traffic signal
Olson Memorial Hwy/ I-94 westbound ramps (E Lyndale Ave N)	None	Not applicable	LRT	Traffic signal
Olson Memorial Hwy/ I-94 eastbound ramps (W Lyndale Ave N)	None	Not applicable	LRT	Traffic signal
Olson Memorial Hwy/ Bryant Ave N	None	Not applicable	LRT	Traffic signal
Olson Memorial Hwy/ Van White Memorial Blvd	None	Not applicable	LRT	Traffic signal
Olson Memorial Hwy/ Humboldt Ave N	None	Not applicable	LRT	Traffic signal
Olson Memorial Hwy/ Pedestrian crosswalk at James Ave N	None	Not applicable	LRT	Traffic signal
Olson Memorial Hwy/ Morgan Ave N	None	Not applicable	LRT	Traffic signal
Olson Memorial Hwy/ Pedestrian crossing east of Oliver Ave N	None	Not applicable	LRT	Traffic signal
Olson Memorial Hwy/ Penn Ave N	None	Not applicable	LRT	Traffic signal
Olson Memorial Hwy/ Pedestrian crossing at Russell Ave N	None	Not applicable	LRT	Traffic signal
Olson Memorial Hwy/ Thomas Ave N	None	Not applicable	LRT	Traffic signal
39½ Ave N	Freight	Flashers and automatic gates	None (crossing to be closed)	Not applicable
41st Ave N	Freight	Flashers and automatic gates	Freight and LRT	Flashers and automatic gates
42nd Ave N	Freight	Flashers	Freight and LRT	Flashers and automatic gates
TH 100	Freight	Freight on bridge	Freight and LRT	Freight and LRT on separate bridges

Table 4.7-1. At-Grade Railroad Crossings (Existing Conditions and Proposed BLRT Extension Project)

Location	Existing Conditions		Proposed BLRT Extension Project	
	Crossing Type	Crossing Control	Crossing Type	Crossing Control
45½ Ave N	Freight	Flashers	Freight and LRT	Flashers and automatic gates
W Broadway Ave	Freight	Flashers	Freight and LRT	Flashers and automatic gates
Corvallis Ave N	Freight	Flashers	Freight and LRT	Flashers and automatic gates
Bass Lake Rd	Freight	Flashers and automatic gates; preemption of Bottineau Blvd/Bass Lake Rd traffic signal	Freight and LRT	Flashers and automatic gates; preemption of Bottineau Blvd/Bass Lake Rd traffic signal
63rd Ave N	Freight	Flashers and automatic gates; preemption of Bottineau Blvd/63rd Ave N traffic signal	Freight and LRT	Flashers and automatic gates; preemption of Bottineau Blvd/ 63rd Ave N traffic signal
Bottineau Blvd/W Broadway Ave/71st Ave N	Freight	Flashers and automatic gates; preemption of Bottineau Blvd/W Broadway Ave/71st Ave N traffic signal	Freight and LRT	Flashers and automatic gates; preemption of Bottineau Blvd)/W Broadway Ave/71st Ave N traffic signal
Bottineau Blvd/73rd Ave N	Freight	Flashers; preemption of Bottineau Blvd/73rd Ave N traffic signal	Freight and LRT	Freight – flashers and automatic gates; preemption of Bottineau Blvd/ 73rd Ave N traffic signal LRT – on bridge
W Broadway Ave/75th Ave N	None	Not applicable	LRT	Traffic signal
W Broadway Ave/76th Ave N	None	Not applicable	LRT	Traffic signal
W Broadway Ave/Brooklyn Blvd/ CSAH 152	None	Not applicable	LRT	Traffic signal
W Broadway Ave/ Candlewood Dr	None	Not applicable	LRT	Traffic signal
W Broadway Ave/ College Park Dr	None	Not applicable	LRT	Traffic signal
W Broadway Ave/ 85th Ave N	None	Not applicable	LRT	Traffic signal

Table 4.7-1. At-Grade Railroad Crossings (Existing Conditions and Proposed BLRT Extension Project)

Location	Existing Conditions		Proposed BLRT Extension Project	
	Crossing Type	Crossing Control	Crossing Type	Crossing Control
W Broadway Ave/ Maplebrook Pkwy	None	Not applicable	LRT	Traffic signal
W Broadway Ave/Setzler Pkwy	None	Not applicable	LRT	Traffic signal
W Broadway Ave/ 93rd Ave N	None	Not applicable	LRT	Traffic signal
W Broadway Ave/94th Ave N	None	Not applicable	LRT	Traffic signal
TH 610	None	Not applicable	LRT	LRT on bridge
W Broadway Ave/Main St	None	Not applicable	LRT	Traffic signal
W Broadway Ave/ Oak Grove Pkwy	None	Not applicable	LRT	Traffic signal (non-revenue track)

Freight rail operation safety is regulated by FRA through the Rail Safety Improvement Act of 2008 and resulting rules and regulations. The design and operations of the freight rail infrastructure to be constructed as part of the proposed BLRT Extension project would be subject to FRA regulations, including 49 CFR Parts 214, 219, 220, 222, 225, 228, 233, 234, 235, and 236 and 49 CFR Part 229.125, as well as the hours-of-service laws, at the points of connection between the proposed BLRT Extension project and the general railroad system.[9] MnDOT and the Minnesota Department of Public Safety also have oversight responsibilities for freight railroad operations related to at-grade crossings, railway inspections, and emergency response training and preparedness.

In addition, in March 2016, FTA issued a final rule for State safety oversight (SSO) of rail fixed guideway public transportation systems not regulated by FRA (49 CFR Part 674). This final rule replaces existing regulations and significantly strengthens state safety oversight agency (SSOA) authority to prevent and mitigate accidents and incidents on rail transit systems to help ensure the safety of riders and workers. Under this final rule, each SSOA is required to have the enforcement authority, legal independence and financial and human resources for overseeing the rail transit agencies within their jurisdiction. In addition, SSOAs must train and certify personnel responsible for performing safety oversight activities and will continue to conduct triennial audits of the safety programs established by each rail transit system. States have three years from the effective date of the final rule to implement an approved SSO Program. All Metro Transit LRT lines fall under the jurisdiction of the Minnesota SSOA, which is part of the Minnesota Department of Public Safety and are governed by 49 CFR Part 659.

Refer to **Section 3.2.3** for a description of the current ownership of each of the freight rail corridors in the study area. Final ownership of these rights-of-way would be determined as the proposed BLRT Extension project advances, but it is unlikely that portions of the rail corridors would be

[9] Refer to Appendix D of the Draft EIS for a copy of correspondence between the Council and FRA regarding FRA's jurisdictional determination.

transferred to public ownership. Responsibility for rail operations safety and maintenance of the freight rail infrastructure would be determined as part of the related agreements and construction permits.

4.7.4 Environmental Consequences

This section identifies the operating-phase (long-term) and construction-phase (short-term) impacts to safety and security from the proposed BLRT Extension project. As part of the operating-phase impacts for the proposed BLRT Extension project, this section includes a discussion of the general proposed BLRT Extension project design features related to safety and security and an evaluation of impacts related to new at-grade crossings, emergency vehicle response times, and LRT service in the vicinity of freight rail.

4.7.4.1 Operating-Phase (Long-Term) Impacts

This section describes proposed design elements and other measures to increase safety and security that would be implemented as part of the proposed BLRT Extension project. Long-term impacts associated with safety and security related to new at-grade crossings, emergency vehicle response times, and light rail service in the vicinity of freight rail are also discussed. Given adherence to Metro Transit design criteria and the oversight of security personnel, the proposed BLRT Extension project is not expected by the Council to cause adverse impacts related to safety and security.

The proposed BLRT Extension project would not change freight railroad operations. However, the proposed BLRT Extension project would include changes to freight rail facilities, including the realignment and reconstruction of freight railroad track, the placement of light rail tracks in relatively close proximity to freight rail tracks, and several shared at-grade light rail and freight railroad crossings of roads (that are currently only freight rail crossings). Given that the design modifications to freight rail facilities would comply with applicable safety design standards, including appropriate corridor protection features (see **Section 3.2.4**), the proposed BLRT Extension project is not expected to cause adverse impacts related to freight rail safety and security.

Station Design Elements

Avoidance of safety issues at new light rail stations related to the proposed BLRT Extension project would be achieved through implementation of the proposed BLRT Extension project's *SSMP* (Council, 2014a) and the *Metro Light Rail Transit Design Criteria* (Council, 2015c). The purpose of the *SSMP* is to consider safety and security when designing, constructing, and operating the proposed BLRT Extension project. The plan covers requirements for safety and security design criteria, hazard analyses, threat and vulnerability analyses, construction safety and security, operational staff training, and emergency response measures. These plans and programs also specify actions and requirements of the Council and Metro Transit Police to maintain safety and security during operation of the proposed BLRT Extension project.

Station areas would be designed according to the project design criteria, incorporating as appropriate best practices for safety and security, cognizant of project budget, stakeholder requirements, and technical constraints. Stations would include emergency equipment, public address systems, video cameras, emergency telephones, and closed-circuit television. The public address system, with both speakers and signs, would convey information to people with disabilities in compliance with Americans with Disabilities Act (ADA) requirements.

Lighting for proposed station areas and park-and-ride lots, as well as vehicular and pedestrian circulation areas, would be consistent with the *Metro Light Rail Transit Design Criteria* (Council, 2015c). Emergency lighting would be provided in all public areas, including platforms, pedestrian facilities, vehicular traffic areas, bus loading zones, and park-and-ride lots.

Fencing would be installed between the light rail alignment and freight rail alignment when adjacent to a trail or sidewalk. The OMF in the City of Brooklyn Park would be secured by perimeter fencing.

Safety and security within the proposed light rail right-of-way would be the joint responsibility of Metro Transit and local law enforcement authorities. Metro Transit has its own licensed police force to address public safety on and near the transit system. Transit police would routinely patrol the proposed stations and LRT alignment as well as nearby bus routes and bus stops. Transit police officers would provide security at light rail stations and in the light rail vehicles. In addition, the Three Rivers Park District Department of Public Safety and the Minneapolis Park Police Department are the law enforcement agencies responsible for providing a safe environment on the regional trails in the study area.

At-Grade LRT Crossings

As shown in **Table 4.7-1**, 24 new LRT crossings at-grade with existing roads would be introduced as part of the proposed BLRT Extension project. Controls for at-grade crossings are shown in **Table 4.7-1**. Light rail vehicles would also sound horns or bells when entering a station, and when approaching at-grade roadway crossings, except in locations where a Quiet Zone[10] is implemented. In these locations, additional safety measures (for example, non-traversable medians) would be installed in accordance with the Quiet Zone Final Rule (49 CFR Part 222). See **Section 3.2** for more information on freight and **Section 3.3** for more information on vehicular traffic.

In addition to the road crossings, three mid-block at-grade light rail crossings would be added on Olson Memorial Highway (see **Table 4.7-1**). These pedestrian crossings would be designed based on the *Metro Light Rail Transit Design Criteria* (Council, 2015c) and would include traffic signals with an audible warning to notify pedestrians of a train's arrival and detectable warnings and signs. Refer to **Section 3.4** for more information on pedestrian and bicycle facilities.

[10] Quiet Zones are locations, at least one-half mile in length, where the routine sounding of horns has been eliminated because of safety improvements at at-grade crossings, including modifications to the streets, raised median barriers, four quadrant gates, and other improvements designed and implemented as a part of the proposed BLRT Extension project and consistent with Quiet Zone readiness. Horns are sounded in emergency situations at these locations. Municipalities must apply to FRA for approval of Quiet Zones.

With the proposed BLRT Extension project, there would be 10 shared light rail and freight railroad at-grade crossings, as shown in **Table 4-7.1.** Proposed controls for all new or modified crossings are also shown in **Table 4.7.1**. Mid-block at-grade light rail crossings would be equipped with U-shaped crossings, which are a crossing safety control measure that promote slower crossing speeds and force sidewalk and trail users to face the direction that LRVs would come from before entering the crossing, and other safety features. The design of specific pedestrian and bicycle safety features would be made during the Engineering phase of the project and finalized prior to construction.

Emergency Vehicle Response Times

In locations where there would be at-grade light rail crossings of roads, emergency response times could increase as a result of delay to emergency vehicles while LRVs are in the crossing. During the peak weekday hour, up to 12 light rail trains (six in each direction) would pass through these at-grade crossings, causing about 50 seconds of delay per light rail train crossing. These delays could increase fire, emergency medical services, and police response times on routes using the crossings.

To help avoid or minimize delays, the Council would coordinate with emergency service providers by providing them with the light rail operating schedule and identifying alternative crossing routes. Additional coordination would occur through the Fire Life Safety and Security Committee (FLSSC), as described in the proposed BLRT Extension project's *SSMP* (Council, 2014a).

Light Rail Service in the Vicinity of Freight Rail Service

Between Olson Memorial Highway in the City of Minneapolis and the crossover to West Broadway Avenue in the City of Brooklyn Park between 71st Avenue North and 73rd Avenue North, the proposed light rail alignment would be located within the BNSF freight rail corridor, and the light rail alignment would generally be located parallel to the existing freight rail corridor.

The proposed BLRT Extension project was examined by the Council to reduce risks in the event of a freight or LRT derailment. This review included examining technical reports, research papers, and treatments used on other corridors where freight rail and LRT operate jointly.

LRT and freight rail located in a shared corridor is not an unusual occurrence in the United States. These are known as "Common Corridor Operations." The Council collected and documented information on these locations, including mitigation measures in place. Based on this research the following Light Rail Operators have Common Corridor Operations on portions of their lines: Port Authority Transit Corp (PATCO), Charlotte NC LYNX, Greater Cleveland Regional Transit Authority Blue and Green Lines, Dallas DART, Denver RTD, Jersey City NJT Hudson-Bergen LRT, Los Angeles LACMTA Green and Gold Lines, Sacramento CA, Sacramento RTD, St. Louis, Bi-State Development Agency, San Jose, VTA, Maryland Counties, Purple Line and Portland MAX Orange Line.

The Council contacted staff associated with these projects to identify the following common methods currently used or planned to be used after system build-out. Some of these projects and methods are still in development, but the following is a summary of these measures:

- Reliance on direct communication by internal radio systems and emergency telephone contact with the adjacent railway's dispatch center and vice-versa for notification of an accident that interferes with the other's operation
- Have established incident response protocols with the adjacent railway and first responders as part of their emergency preparedness programs
- Conduct emergency response exercises and drills as part of their training requirements. Many properties actively support "Operation Lifesaver" to reduce trespasser/transit rail accidents.
- Construct corridor protection walls between freight and light rail
- Install intrusion detection devices in areas between freight and light rail

All of these methods are also planned to be used on the proposed BLRT Extension project and will be incorporated into the construction and management documents, as applicable.

The Metro Transit *Light Rail Transit Design Criteria* (Council, 2015c), which includes design standards and specifications to provide security and/or enhance safety, includes safeguards to prevent LRT operational derailments including guardrails (i.e., a rail or other structure laid parallel with the running rails of the track to keep derailed wheels adjacent to the running rails). In addition, the proposed BLRT Extension project includes a combination of horizontal separation, vertical separation, and physical means to provide safe operations. Three specific corridor-protection treatments are proposed:

- The proposed BLRT Extension project ditch (used where the corridor width permits)
- A retained-fill option where the LRT tracks would be at a higher grade than freight rail tracks
- A wall

Typical sections representing these corridor-protection options are shown in **Chapter 3, Figures 3.2-2 through 3.2-4** following **Table 3.2-1**. In addition, where clearance between the centerline of the light rail tracks and the centerline of the freight tracks is less than 50 feet, intrusion detection for possible freight derailment will be installed, where appropriate. These corridor-protection treatments were closely coordinated with BNSF.

Further, the design of the proposed BLRT Extension project will include safeguards in the catenary system to help minimize the possibility of sparking occurring in the overhead catenary wires. Electrical sparks, or arcing, occurs when there is a gap between the overhead contact wire and the vehicles pantograph. Numerous safeguards are included in the design of the proposed BLRT Extension project to address and minimize electrical sparking. Ice cutters will be utilized to maintain positive contact between the contact wire and pantograph during winter weather. Additionally, Metro Transit will regularly inspect pantographs for grooves along the pantograph's carbon strip (as it does on its existing light rail lines), which could cause arcing. Included in the design of the proposed BLRT Extension project to minimize arcing are contact wire gradients, which meet or exceed American Railway Engineering and Maintenance-of-Way Association

(AREMA) recommendations, staggering or zig-zags of the contact wire to ensure even wear, and overlaps between power sections. Finally, the design accounts for the OSHA 10-foot zone of influence, and meets or exceeds National Electrical Safety Code requirements along the proposed shared light rail and freight rail corridor.

The Council's *Operations Emergency Management Plan* (*OEMP*) (Council, 2016e) for light rail was developed to help identify, respond to, and resolve emergency situations in an efficient, controlled, and coordinated manner. During normal revenue service emergency planning, the Council would plan, schedule, conduct, and evaluate at least one tabletop and one full-scale emergency preparedness exercise annually. In advance of operation of the proposed BLRT Extension project, a number of drills would be planned, conducted, and documented in an emergency preparedness exercise plan. Emergency preparedness training exercises would be designed to ensure rail equipment familiarization, situational awareness, passenger evacuation, coordination of functions, and hands-on instruction. Training exercises would be coordinated with public safety agencies and the freight railroads. Additional information is provided in the *SSMP* and the Council's *OEMP*.

In addition, the Council maintains an emergency preparedness exercise plan. The emergency preparedness exercise plan will be carried out by the Fire Life Safety and Security Committee (FLSSC). In advance of operation of the proposed BLRT Extension project, a number of drills will be planned, conducted, and documented in the emergency preparedness exercise plan. Emergency preparedness training exercises will be designed to address areas such as rail equipment familiarization, situational awareness, passenger evacuation, coordination of functions, communications, and hands-on instruction. The FLSSC will coordinate training exercises with the Council and the freight railroad owners and operators, as appropriate. During normal revenue service, the FLSSC will coordinate training exercises to evaluate emergency preparedness. The exact nature of emergency preparedness exercises will be developed in coordination with the FLSSC prior to construction, but could include one tabletop and one full-scale emergency preparedness exercise, on an annual basis.

4.7.4.2 Construction-Phase (Short-Term) Impacts

Construction activities would result in temporary increased congestion along adjacent roads as a result of temporary lane and road closures, shifts in roadway alignments, and detours. This temporary increase in roadway congestion could affect access and response times for emergency service providers. However, provisions would be made to maintain required access during established periods or to keep one lane of traffic open on main arterials. Increased delay for emergency response vehicles during construction would be minimized through coordination with the affected emergency service providers.

Both federal OSHA and Minnesota OSHA standards for safety of construction site personnel would be maintained in order to minimize and/or avoid injuries to construction workers. As appropriate, access to construction sites might be limited by fencing and security gates where practical to prevent inadvertent access by those without access clearance. Specific construction safety and security management activities are identified in the proposed BLRT Extension project's *SSMP* (Council, 2014a), which would be incorporated into construction contract specifications.

As part of the proposed BLRT Extension project, construction activities would occur close to active freight rail corridors. Short-term freight operations impacts and mitigation are addressed in **Section 3.2**. All contractors would prepare a project safety and health program along with a site-specific safety plan to ensure that, while on the work site and construction activities, contractor and subcontractor personnel comply with the specified safety practices, codes, and regulations as described in the proposed BLRT Extension project's *SSMP*.

4.7.5 Avoidance, Minimization, and/or Mitigation Measures

This section describes the measures the Council would implement to mitigate the proposed BLRT Extension project's long-term and short-term safety and security impacts. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures would address (see **Sections 4.7.3.1 and 4.7.3.2** for additional information on the identified safety and security impacts and avoidance measures).[11]

Operating-Phase (Long-Term) Mitigation Measures. The Council will implement the following mitigation measures as part of implementing the proposed BLRT Extension project:

- Conform to FTA's Rail Fixed Guideway Systems; State Safety Oversight Program for Safety and Security Guidance for Recipients with Major Capital Projects (Circular C 5800.1), covered under 49 CFR Part 633 – Project Management Oversight
- Implement the project's *SSMP* and the Metro Light Rail Transit Design Criteria to avoid potential safety issues at new light rail stations, including emergency equipment and appropriate lighting for public areas
- Install fencing near at-grade trail or sidewalk crossing, in station areas, and between light rail and freight rail alignment when adjacent to a trail or sidewalk, where possible
- Design at-grade LRT crossings of sidewalks and trails per the Metro Light Rail Transit Design Criteria to include flashing light signals with an audible warning to notify pedestrians of a train's arrival and detectable warnings and signs
- Design shared freight rail and light rail crossings to meet FRA requirements for at-grade crossings, including requirements for train horn quiet zones as described in the Train Horn Quiet Zone Final Rule (49 CFR Part 222), where applicable
- Maintain emergency vehicle access to areas within the vicinity of the proposed BLRT Extension project
- Coordinate with affected emergency service providers including identification of alternative crossing routes
- Implement safeguards from the Metro *Light Rail Transit Design Criteria* including emergency guardrails

[11] See **Section 3.2** for additional information on freight rail operations and related mitigation measures.

- Install intrusion detection for possible freight derailment where clearance between the centerline of the LRT tracks and the centerline of the freight tracks is less than 50 feet, with the exception of locations where a corridor protection wall is present
- Install corridor protection barriers between freight rail and light rail tracks where clearance between centerlines is less than 25 feet
- Include safeguards in the catenary system for the proposed BLRT Extension project to help minimize the possibility of sparking occurring in the overhead catenary wires
- Regularly inspect pantographs for grooves along the pantograph's carbon strip, which could cause arcing
- Where the light rail alignment will be adjacent to a freight rail alignment, the light rail alignment will be primarily on segregated right-of-way, in accordance with the National Electric Safety guidelines
- Participate in the planning, performance, and evaluation of emergency simulations on the system in coordination with the LRT FLSSC

Construction-Phase (Short-Term) Mitigation Measures. In order to mitigate temporary impacts resulting from construction activities, the Council will:

- Coordinate with emergency service providers to provide schedule for construction activities and identify detour routes to minimizing delay for emergency response vehicles
- Maintain required access during established periods or keep one lane of traffic open on main arterials as will be described in the *Construction Mitigation Plan*
- Maintain federal OSHA and Minnesota OSHA standards for safety of construction site personnel to minimize and/or avoid injury to construction workers
- Contractors will prepare a project safety and health program along with a site-specific safety plan to ensure that, while on the work site and construction activities, contractor and subcontractor personnel comply with the specified safety practices, codes, and regulations as described in the proposed BLRT Extension project's *SSMP*
- Develop and implement freight rail operation coordination plans to facilitate coordination between the proposed BLRT Extension project and the affected freight railroads during construction activities affecting freight rail operations

5 Physical and Environmental Analysis

This chapter presents results from the analysis of impacts on the physical environment in the project study area. Results are presented for the No-Build Alternative and the proposed METRO Blue Line Light Rail Transit (BLRT) Extension project. Operating-phase (long-term) and construction-phase (short-term) impacts are identified for the alternatives. The No-Build Alternative and the proposed BLRT Extension project are described and illustrated in **Chapter 2 – Alternatives**.

Changes to This Chapter since the Draft Environmental Impact Statement Was Published

This chapter updates the discussion in the *Bottineau Transitway Draft Environmental Impact Statement* (Draft EIS) (March 2014) on impacts to a number of physical and environmental resources: utilities; floodplains; wetlands and other aquatic resources; geology, soils, and topography; hazardous materials; noise; vibration; the biological environment; water quality and stormwater; air quality; and energy. Changes from the Draft EIS to these resources are highlighted as follows:

- **Section 5.1** – This section includes general information about existing public and private utilities and describes the potential effects of the No-Build Alternative and the revised definition of the proposed BLRT Extension project.
- **Section 5.2** – This section describes the existing floodplains in the study area and describes several factors that have caused floodplain impacts to change in the study area since publication of the Draft EIS. These factors include refinements to the footprint of the proposed BLRT Extension project and modifications to the mapping of the 100-year floodplain in the Bassett Creek area. This section also describes the impacts of the No-Build Alternative and the revised definition of the proposed BLRT Extension project on floodplains. Additional considerations responding to US Department of Transportation (USDOT) Order 5650.2, *Floodplain Management and Protection*, and Executive Order 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input* are included in this section.
- **Section 5.3** – This section describes the wetland types and wetland boundaries that have been identified and field delineated since publication of the Draft EIS in the study area according to the standards of the US Army Corps of Engineers (USACE) and the Minnesota Board of Water and Soil Resources (BWSR) and describes the impacts of the No-Build Alternative and the proposed BLRT Extension project on wetlands and other aquatic resources. Impacts to wetlands have been decreased through design refinements for the Operations and Maintenance Facility (OMF) and the crossing of Grimes Pond and the ponds north of Golden Valley Road. This section also includes the USACE and Wetlands Conservation Act (WCA) jurisdictional determinations and a discussion of the Section 404 permit application to USACE.
- **Section 5.4** – This section describes the existing geology, soils, and topography in the study area and the short-term impacts on geology, soils, and topography from constructing the proposed BLRT Extension project in light of additional geotechnical investigation that has occurred since the publication of the Draft EIS.

- **Section 5.5** – This section describes the properties in the study area that potentially contain hazardous or regulated materials based on the Modified Phase I Environmental Site Assessment (ESA)conducted since the publication of the Draft EIS. This section also describes the potential for encountering contaminated soil and/or groundwater during the construction of the proposed BLRT Extension project.
- **Section 5.6** – This section describes the existing noise environment in the study area and the long-term (operating-phase) and short-term (construction-phase) noise impacts of the No-Build Alternative and the revised definition of the proposed BLRT Extension project. Additional noise testing was conducted since the publication of the Draft EIS.
- **Section 5.7** – This section describes the existing vibration environment in the study area and the long-term (operating-phase) and short-term (construction-phase) vibration impacts of the No-Build Alternative and the revised definition of the proposed BLRT Extension project.
- **Section 5.8** – This section describes the preferred habitats of rare, threatened, and endangered species in the study area (including the northern long-eared bat) and the expected impacts to plants and animals and their habitat from the No-Build Alternative and the revised definition of the proposed BLRT Extension project.
- **Section 5.9** – This section describes the existing water quality and stormwater conditions in the study area and the stormwater impacts of the No-Build Alternative and the revised definition of the proposed BLRT Extension project in terms of changes to impervious surfaces.
- **Section 5.10** – This section describes the existing air quality in the study area and analyzes the air quality impacts of the No-Build Alternative and the revised definition of the proposed BLRT Extension project on criteria pollutants—a group of common air pollutants regulated by the US Environmental Protection Agency (EPA) on the basis of information on health and/or environmental effects of pollution. A discussion greenhouse gases (GHGs) has been added since the publication of the Draft EIS.
- **Section 5.11** – This section reports the estimated changes in regional energy consumption caused by the No-Build Alternative and the revised definition of the proposed BLRT Extension project.

The study area represents a geographic area used to identify resources, and it varies based on the resource being evaluated. The basis for each study area begins with the limits of disturbance (LOD), which is defined as the estimated area where construction would occur for the proposed BLRT Extension project. In some cases, the Metropolitan Council (Council) has extended the study area beyond the LOD in order to understand the extent of impacts on adjacent resources (for example, a wetland or waterway might extend beyond the LOD).

The study areas for each resource evaluated in this chapter are summarized in **Table 5.0-1**. More detail is provided in each section of this chapter. For reference, conceptual engineering plans, which include a depiction of the proposed BLRT Extension project's LOD, are provided in **Appendix E**.

Table 5.0-2 summarizes the effects of the proposed BLRT Extension project on the built and natural environment, as well as the Council's minimization and mitigation commitments that are a part of the proposed BLRT Extension project.

Table 5.0-1. Defined Study Areas for the Physical and Environmental Analysis

Resource Evaluated	Study Area Definition	Basis for Study Area
Utilities	Within or directly adjacent to the LOD	Captures utilities within the LOD as well as adjacent utilities that could also be affected
Floodplains	Within ¼ mile of the LOD	Captures floodplain impacts to upstream and downstream waters for a distance outside the LOD
Wetlands and Other Aquatic Resources	Within ¼ mile of the LOD	The distance captures the wetlands that are within and directly adjacent to the proposed BLRT Extension project; physical impacts to wetlands are not expected to extend beyond this distance
Geology, Soils, and Topography	Within and adjacent to the LOD	Estimated area where construction would occur for the proposed BLRT Extension project
Hazardous Materials Contamination	500 feet on either side of the proposed BLRT Extension project alignment	ASTM standards (E1527-13 and 40 CFR Part 312), as modified by the Minnesota Department of Transportation (MnDOT) for transportation corridors
Noise and Vibration	Based on the screening distances provided in Chapters 4 and 9 of the Federal Transit Administration (FTA) guidance manual *Transit Noise and Vibration Impact Assessment* (May 2006)	Based on the screening distances provided in Chapters 4 and 9 of the FTA guidance manual *Transit Noise and Vibration Impact Assessment* (May 2006)
Biological Environment (Wildlife Habitat and Endangered Species)	Within ¼ mile of the LOD	The distance captures the habitat that is directly adjacent to the footprint of the proposed BLRT Extension project and the wildlife that could be affected by the alternative
Water Quality and Stormwater	1 mile on either side of the proposed BLRT Extension project alignment for impaired waters; within the LOD for stormwater	National Pollutant Discharge Elimination System (NPDES) requirements for identifying impaired waters within or sensitive resources within 1 mile of a project
Air Quality/Greenhouse Gas Emissions	All roadway segments adjacent to and crossing the proposed BLRT Extension project including the proposed OMF	Established in cooperation with the Minnesota Pollution Control Agency (MPCA)
Energy	Anticipated changes in travel patterns and bus operations resulting from the proposed BLRT Extension project	Total energy consumption of the proposed BLRT Extension project measured in British thermal units (BTU) (industry standard)

Table 5.0-2. Summary of Effects and Minimization and Mitigation – Physical and Environmental Analysis

Category		Summary of Impacts and Mitigations
Utilities (Section 5.1)	Operating-Phase (Long-Term) Direct Impacts	■ Protective measures from stray current might be needed for some underground utilities; no other long-term impacts identified
	Construction-Phase (Short-Term) Impacts	■ Minor utility service disruptions would occur throughout construction to facilitate utility relocations ■ Potential unintentional damage causing service disruptions could occur during construction
	Mitigation Measures	**Construction-Phase (Short-Term):** ■ Relocate all conflicting utilities to avoid utility impacts to and to maintain utility service, in accordance with the proposed BLRT Extension project Utility Relocation and Management Plan ■ Include measures to minimize stray current and reduce amount of corrosion due to stray current ■ Prior to construction, determine necessary improvements to the electrical transmission systems along the corridor through consultation with Xcel Energy; necessary improvements will likely involve upgrading existing transmission facilities ■ Utility location excavations and preconstruction surveys will be performed ■ Utility contractors will be required to notify affected businesses and residences of any planned disruption of service due to construction activities; temporary service will be provided as appropriate ■ If previously unidentified lines are encountered, work will be discontinued, and appropriate utility companies and agencies will be contacted to identify the line(s); businesses and residents will be notified before line(s) are disturbed ■ Any wells, known or discovered during construction, within the proposed permanent right-of-way will be abandoned and sealed according to state and local regulations ■ Wells outside, but near, the proposed BLRT Extension project right-of-way will be avoided ■ For those locations where impacts to wells will interfere with the necessary supply of potable water or with monitoring groundwater conditions at a site, well replacement or other water supply provisions will be considered ■ Minnesota Department of Health guidance will be used to evaluate the feasibility of stormwater infiltration practices located in vulnerable Wellhead Protection Areas ■ Temporary dewatering during construction could require Minnesota Department of Natural Resources (DNR) groundwater appropriation permits

Table 5.0-2. Summary of Effects and Minimization and Mitigation – Physical and Environmental Analysis

Category		Summary of Impacts and Mitigations
Floodplains (Section 5.2)	Operating-Phase (Long-Term) Direct Impacts	■ Two floodplain areas would be affected by the construction of the proposed BLRT Extension project: • Bassett Creek: 16,800 cubic yards • Grimes Pond: 200 cubic yards
	Construction-Phase (Short-Term) Impacts	■ No temporary construction-phase (short-term) impacts to floodways or floodplains are anticipated since long-term floodplain mitigation sites will be constructed in advance of any filling in existing floodplains
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ Develop appropriate plans and obtain applicable permits for floodplains, as well as implement best management practices (BMPs) ■ Bassett Creek Floodplain: • A floodplain mitigation area has been identified in Theodore Wirth Regional Park (TWRP) between the Bassett Creek main stem and the proposed BLRT and BNSF Railway (BNSF) rail corridor • Mitigation will include excavating adjacent ground below the elevation of the Bassett Creek 100-year floodplain to provide compensatory floodplain storage for the fill placed in the floodplain ■ Grimes Pond Floodplain: • Some excavation of adjacent ground below the Grimes Pond 100-year floodplain elevation will provide compensatory floodplain storage for the fill placed in the floodplain • Impacts to floodplains associated with Grimes Pond were reduced with a design that elevates the light rail transit (LRT) tracks on a structure rather than on an embankment
Wetlands and Other Aquatic Resources (Section 5.3)	Operating-Phase (Long-Term) Direct Impacts	■ The proposed BLRT Extension project would impact about 13.19 acres of wetlands, about 9.96 acres of permanent impact and about 3.23 acres of temporary impact. About 4.16 acres of impacted wetlands under USACE jurisdiction (pursuant to Section 404 of the Clean Water Act) require compensatory mitigation. About 6.28 acres of the impacted wetlands under WCA jurisdiction require compensatory mitigation (note that some of the impacted wetlands are under both USACE and WCA jurisdiction). • Seasonally flooded basin (Type 1) ○ Total wetland impacts: 6.59 acres ○ WCA jurisdictional impacts requiring compensatory mitigation: 4.28 acres ○ USACE jurisdictional impacts requiring compensatory mitigation: 2.52 acres • Deep marsh (Type 4) ○ Total wetland impacts: 2.49 acres ○ WCA jurisdictional impacts requiring compensatory mitigation: 0.1 acre ○ USACE jurisdictional impacts requiring compensatory mitigation: 1.01 acres

Table 5.0-2. Summary of Effects and Minimization and Mitigation – Physical and Environmental Analysis

Category		Summary of Impacts and Mitigations
		• Open water (Type 5) ○ Total wetland impacts: 3.61 acres ○ WCA jurisdictional impacts requiring compensatory mitigation: 1.69 acres ○ USACE jurisdictional impacts requiring compensatory mitigation: 0.42 acre • Shrub-carr (Type 6) ○ Total wetland impacts: 0.50 acre ○ WCA jurisdictional impacts requiring compensatory mitigation: 0.21 acre ○ USACE jurisdictional impacts requiring compensatory mitigation: 0.21 acre ■ A portion of Bassett Creek, a stream reach of 450 feet total length near the Plymouth Avenue bridge would be relocated to accommodate the proposed BLRT Extension project
	Construction-Phase (Short-Term) Impacts	■ Construction-related wetland impacts typically associated with access roads needed to construct portions of the proposed BLRT Extension project are anticipated to be less than 2.5 acres
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ The OMF was designed to avoid wetland impacts ■ The proposed BLRT Extension project design accommodates the trackage on an elevated structure in the segment that bisects Grimes Pond/North Rice Pond ■ Compensatory wetland mitigation will be accomplished through a combination of on-site wetland mitigation and purchases of private wetland credits from existing mitigation banks in suitable major watersheds and bank service areas. An estimated 12 to 14 acres of compensatory wetland mitigation credit will be required **Construction-Phase (Short-Term):** ■ Appropriate BMPs will be implemented to protect wetlands and other aquatic resources that are downslope or downstream from areas disturbed as a result of earthmoving ■ Minimization of impact through use of BMPs followed by restoration to pre-construction conditions will be required for wetland areas disturbed during construction ■ Temporary disturbance of WCA-jurisdictional wetlands for longer than 180 days may require additional mitigation

Table 5.0-2. Summary of Effects and Minimization and Mitigation – Physical and Environmental Analysis

Category		Summary of Impacts and Mitigations
Geology, Soils, and Topography (Section 5.4)	Operating-Phase (Long-Term) Direct Impacts	■ No operating-phase (long-term) impacts are anticipated as a result of the proposed BLRT Extension project
	Construction-Phase (Short-Term) Impacts	■ Extensive soil correction would be required in areas of poor soils; primarily between Olson Memorial Highway and 36th Avenue ■ Short-term dewatering would be needed for open-trench subsurface work in areas of high groundwater
	Mitigation Measures	**Construction-Phase (Short-Term):** ■ Construction activity will follow appropriate standards and applicable permitting requirements of MPCA, MnDOT, and Hennepin County for grading and erosion control ■ Dewatering permits, if required, will be obtained from DNR ■ A Spill Prevention, Control and Countermeasures plan developed for the proposed BLRT Extension project by the construction contractor will include measures to avoid impacts to potential karst features ■ For areas of poor soils, the proposed BLRT Extension project design will incorporate geotechnical elements (load transfer platforms and lightweight fill) to provide a stable base for project components and to avoid differential settlement of soils
Hazardous Materials Contamination (Section 5.5)	Operating-Phase (Long-Term) Direct Impacts	■ None identified
	Construction-Phase (Short-Term) Impacts	■ The Modified Phase I ESA identified 271 parcels, 24 of which have a high potential for contamination and 135 of which have a medium potential in the proposed BLRT Extension project corridor; construction activities in these areas may encounter contaminated soil and/or groundwater ■ Potential spills of regulated materials during construction
	Mitigation Measures	**Construction-Phase (Short-Term):** ■ Conduct a Phase II ESA, in which a subsurface investigation will be conducted and soil and groundwater samples will be collected and then analyzed by a certified laboratory ■ Develop a Response Action Plan (RAP) to address proper handling of contaminated soil and groundwater encountered during construction ■ A Construction Contingency Plan will be developed as part of the RAP that will include proper handling and treating of contaminated soil and/or groundwater that could not be avoided during construction ■ The construction contractor will develop a Spill Prevention, Control and Countermeasures Plan to minimize the impact to surface water or groundwater in the event of a spill ■ Perform assessments for asbestos and other regulated materials prior to demolition of structures; develop a plan for management of asbestos and regulated materials

Table 5.0-2. Summary of Effects and Minimization and Mitigation – Physical and Environmental Analysis

Category		Summary of Impacts and Mitigations
Noise (Section 5.6)	Operating-Phase (Long-Term) Direct Impacts	■ Without mitigation: • 366 moderate and 618 severe noise impacts ■ With implementation of Quiet Zones: • 176 moderate and 120 severe noise impacts ■ With mitigation, the residual impacts would be: • 5 moderate and 2 severe noise impacts
	Construction-Phase (Short-Term) Impacts	■ Elevated noise levels from construction equipment ■ For residential land use, at-grade track construction noise impacts can extend 120 feet from the construction site ■ If nighttime construction is conducted, noise impacts from at-grade construction can extend 380 feet from the construction site
	Mitigation Measures	**Operation-Phase (Long-Term):** ■ The proposed BLRT Extension project will include the infrastructure required to make all at-grade freight rail and LRT crossings Quiet Zone ready ■ Interior testing to determine appropriate mitigation: • Olson Memorial Highway to Oak Park Avenue North (northbound [NB]) • Oak Park Avenue North to Plymouth Avenue North (NB) • Plymouth Avenue North to 16th Avenue North (NB) • 16th Avenue North to Golden Valley Road (NB) • 34th Avenue North to 36th Avenue North (southbound [SB]) • 42nd Avenue North to MN-100 (NB) ■ Noise barrier: • Golden Valley Road to 26th Avenue North (NB) • 26th Avenue North to 31½ Avenue North (NB) • 31½ Avenue North to 34th Avenue North (NB) • 34th Avenue North to 36th Avenue North (SB) • 36th Avenue North to 38th Avenue North (NB) • 36th Avenue North to 38th Avenue North (SB) • 38th Avenue North to 40½ Avenue North (NB)

Table 5.0-2. Summary of Effects and Minimization and Mitigation – Physical and Environmental Analysis

Category		Summary of Impacts and Mitigations
		■ Noise Barrier and interior testing to determine appropriate mitigation: • 38th Avenue North to 40th Avenue North (SB) ■ Wayside device and noise barrier: • 40½ Avenue North to 42nd Avenue North (NB) ■ Wayside device and interior testing to determine appropriate testing: • 40th Avenue North to 42nd Avenue North (SB) • MN-100 to 47th Avenue North (SB) ■ Wayside device, noise barrier, and interior testing to determine appropriate testing: • MN-100 to 47th Avenue North (NB) • 47th Avenue North to freight tracks (NB) **Construction-Phase (Short-Term):** ■ Contractors will prepare a detailed Noise Control Plan for the proposed BLRT Extension project's construction duration. A noise control engineer or acoustician will work with the contractor to prepare a Noise Control Plan in conjunction with the contractor's specific equipment and methods of construction. Key elements of this plan will include: • Contractor's specific equipment types • Schedule and methods of construction • Maximum noise limits for each piece of equipment with certification testing • Prohibitions on certain types of equipment and processes during the nighttime hours without local agency coordination and approved variances • Identification of specific sensitive sites where near construction sites • Methods for determining construction noise levels • Implementation of noise control measures where appropriate • Include a 24-hour construction hotline

Table 5.0-2. Summary of Effects and Minimization and Mitigation – Physical and Environmental Analysis

Category		Summary of Impacts and Mitigations
Vibration (Section 5.7)	Operating-Phase (Long-Term) Direct Impacts	■ The proposed BLRT Extension project would cause 28 vibration impacts at residential land uses
	Construction-Phase (Short-Term) Impacts	■ With the exception of impact pile driving, the potential for damage would be limited to buildings within 20 feet of construction activities ■ The distance for the potential for damage to buildings from impact pile driving is up to 40 feet.
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ 36th Avenue North to 38th Avenue North: 700-foot-long ballast mat ■ 38th Avenue North to 40½ Avenue North: 300-foot-long ballast mat ■ 47th Avenue North to BNSF freight tracks: 300-foot-long ballast mat **Construction-Phase (Short-Term):** ■ To mitigate vibration impacts from construction activities, the following measures will be applied, where feasible: • Limit high-vibration activities at night • Include limits on vibration in the construction specifications, especially at locations where high-vibration activities will occur • Minimize the use of impact and vibratory equipment, where possible and appropriate • Use truck haul routes that minimize exposure to sensitive receptors and minimize damage to roadway surfaces, where appropriate • Perform preconstruction surveys to document the existing conditions of the structures in the vicinity of sites where high-vibration construction activities will be performed • If a construction activity could exceed the damage criteria at any building, the contractor will be required to conduct vibration monitoring, and, if the vibration exceeds the limit, the activity must be modified or terminated

Table 5.0-2. Summary of Effects and Minimization and Mitigation – Physical and Environmental Analysis

Category		Summary of Impacts and Mitigations
Biological Environment (Wildlife Habitat and Endangered Species) (Section 5.8)	Operating-Phase (Long-Term) Direct Impacts	**Threatened and Endangered Species:** ■ "No Effect" on the Higgins eye pearlymussel and the Snuffbox mussel ■ "May Affect, Incidental Take Not Prohibited" on the northern long-eared bat (NLEB) ■ With adherence to DNR guidelines, no impacts to the Blanding's turtle are anticipated **Migratory Birds:** ■ With implementation of acceptable measures to minimize impacts, no impacts are anticipated from the proposed BLRT Extension project to species covered under the Migratory Bird Treaty Act (MBTA) **Habitat:** ■ The proposed BLRT Extension project would involve constructing physical barriers that could restrict the crossing of portions of the corridor by wildlife ■ Disturbed soils within the limits of disturbance could create conditions where infestation of noxious and invasive species can increase ■ Clearing of approximately 28 acres of forested lands
	Construction-Phase (Short-Term) Impacts	■ Construction-related physical and noise disturbances could temporarily disrupt wildlife habitat use; no effects on threatened and endangered species or migratory birds anticipated
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ Identify opportunities, where practicable, to facilitate wildlife crossings of the corridor through enhanced culvert crossings or other appropriate designs ■ Threatened and Endangered Species, Migratory birds: • None required ■ Habitat: • Infestations of noxious and invasive species can be controlled throughout the operating phase of the proposed BLRT Extension project through spot-spraying appropriate herbicides and the development and adherence to a vegetation management plan • Mitigation for tree impacts within the LOD of the proposed BLRT Extension project will be based on relevant city ordinances • Mitigation for unavoidable impacts to aquatic habitat will be accomplished through a combination of on-site wetland mitigation and purchasing suitable wetland credits from an established wetland mitigation bank

Table 5.0-2. Summary of Effects and Minimization and Mitigation – Physical and Environmental Analysis

Category		Summary of Impacts and Mitigations
		• Mitigation for unavoidable impacts to notable terrestrial habitat will be accomplished through tree plantings in and around TWRP and a few selected areas throughout the LOD of the proposed BLRT Extension project, as well as vegetation restoration in temporarily disturbed areas • Where effective and feasible, suitable wildlife crossings will be accommodated within proposed culverts to allow some wildlife species to cross from one side of the proposed BLRT Extension project/freight rail tracks to the other **Construction-Phase (Short-Term):** ■ To minimize wildlife habitat impacts, the proposed BLRT Extension project will use a bridge to cross Grimes Pond and ponds north of Golden Valley Road; pre-treat storm BMPs; on-site mitigation areas will be designed that will minimize impacts to forested areas and existing aquatic resources ■ Threatened and Endangered Species • Seasonal restrictions are placed on tree removal that is less than 0.25 mile from a known hibernacula entrance or less than 150 feet from a known maternity roost tree. • Implement DNR recommendations to avoid direct impacts to the Blanding's turtle ■ Migratory birds: • Bald eagle nest surveys will be conducted during the final design of the proposed BLRT Extension project to determine whether any nests are present at that time; if so, the standard guidelines will be followed, which include limiting construction activity within at least 330 feet from the nesting site, and limiting clearing of vegetation within 660 feet of the nest site during the nesting season (late January to July) • In compliance with the MBTA, perform bridge work before May 15 or after September 1 ■ Habitat: • Temporary construction access roads and construction staging areas will be restored to the pre-construction grade and replanted with suitable vegetation • Tree impacts in the proposed BLRT Extension project LOD will be minimized to the extent practicable

Table 5.0-2. Summary of Effects and Minimization and Mitigation – Physical and Environmental Analysis

Category		Summary of Impacts and Mitigations
Water Quality and Stormwater (Section 5.9)	Operating-Phase (Long-Term) Direct Impacts	■ The proposed BLRT Extension project would cause an 83 percent increase in the impervious area within the LOD
	Construction-Phase (Short-Term) Impacts	■ Construction activities would disturb soils and cause runoff that could erode slopes and drainageways, form gullies, and deposit sediment in storm drain systems and receiving waterbodies; these effects could destabilize slopes and reduce water quality if temporary BMPs, required through the permitting process, are not in place prior to a storm event
	Mitigation Measures	**Operating-Phase (Long-Term):** ■ Long-term mitigation measures will include designing and constructing permanent BMPs, such as detention and infiltration facilities, which will control and treat stormwater runoff caused by an increase in impervious surfaces as a result of the proposed BLRT Extension project **Construction-Phase (Short-Term):** ■ An NPDES Construction Stormwater Permit from MPCA will be required, and the NPDES Construction Stormwater Permit application must be submitted to MPCA at least 30 days prior to the start of construction ■ A Stormwater Pollution Prevention Plan, which must be submitted at the time of the permit application, will be developed and implemented during construction ■ Short-term mitigation measures will include developing erosion- and sediment-control plans to control runoff and reduce erosion and sedimentation during construction, and limiting the amount of sediment carried into lakes, streams, wetlands, and rivers by stormwater runoff

Table 5.0-2. Summary of Effects and Minimization and Mitigation – Physical and Environmental Analysis

Category		Summary of Impacts and Mitigations
Air Quality/ Greenhouse Gas Emissions (Section 5.10)	Operating-Phase (Long-Term) Direct Impacts	■ No impacts anticipated; annual regional vehicle-miles traveled with the proposed BLRT Extension project would be essentially the same as with the No-Build Alternative ■ No violations of air quality standards are predicted
	Construction-Phase (Short-Term) Impacts	■ During construction, traffic volumes and operations on roads in the proposed BLRT Extension project would be impacted resulting in traffic detours to parallel roads and temporarily increase in emissions and concentrations of air pollutants near homes and businesses ■ Construction equipment powered by fossil fuels emits the same air pollutants as highway vehicles ■ Exposed earthen materials can also produce increased particulate matter when they are moved or disturbed by wind ■ Construction phase greenhouse gas emissions estimated at 21,191 metric tons of carbon dioxide (CO_2) equivalents per year over a 3-year period
	Mitigation Measures	**Construction-Phase (Short-Term):** ■ Where applicable and prudent, implement EPA-recommended measures to reduce short-term construction impacts to air quality ■ BMPs will be implemented during construction to control dust, including: • Minimize land disturbance during site preparation • Use watering trucks to minimize dust • Cover trucks while hauling soil/debris off site or transferring materials. • Stabilize dirt piles if they are not removed immediately • Use dust suppressants on unpaved areas • Minimize unnecessary vehicle and machinery idling • Revegetate any disturbed land post-construction ■ Traffic-control measures will be developed in subsequent stages of the proposed BLRT Extension project to address detours and the flow of traffic

Table 5.0-2. Summary of Effects and Minimization and Mitigation – Physical and Environmental Analysis

Category		Summary of Impacts and Mitigations
Energy (Section 5.11)	Operating-Phase (Long-Term) Direct Impacts	■ None identified
	Construction-Phase (Short-Term) Impacts	■ Compared to the energy consumption of the entire Twin Cities metropolitan area, the construction of the proposed BLRT Extension project would not have a substantial impact on regional energy consumption
	Mitigation Measures	■ No mitigation has been identified or recommended

5.1 Utilities

The Council's design of the proposed BLRT Extension project included evaluating potential utility conflicts and determining what utilities could be affected by the proposed BLRT Extension project.

This section includes general information about existing public and private utilities and describes the potential effects of the No-Build Alternative and the proposed BLRT Extension project. Major utility[1] owners that service the proposed BLRT Extension project area were contacted for existing utility information. This section is not intended to identify every utility that provides service in the proposed BLRT Extension project area, but it does address those that could be affected by the proposed BLRT Extension project.

5.1.1 Regulatory Context and Methodology

5.1.1.1 Legal and Regulatory Context

The following is a representative summary of the laws, regulations, and guidelines that are associated with utility relocation and accommodation.

Federal

- US Code, Title 23, Sections 123 and 109(l)(1)
- US Code, Title 23, Code of Federal Regulations 645, Chapter I, Subchapter G, Part 645, Subparts A and B (Federal Highway Administration [FHWA] 2003)
- FTA's Project and Construction – Management Guidelines (2011), Appendix C – Utility Relocation Agreements

Railway

- BNSF Railway Utility Accommodation Policy

State

Minnesota Department of Transportation (MnDOT)

- MnDOT Policies – Utility Accommodation on Highway Right-of-Way
- MnDOT's Wireline Accommodation Policy and Procedures

Minnesota State Constitution

- Article 1, section 13, addresses just compensation associated with private property that is taken, destroyed, or damaged for public use.

[1] Major utilities include public potable water; wastewater and stormwater collection and distribution facilities; private wells and Wellhead Protection Areas; private electric transmission and distribution lines; telecommunications copper and fiber optic data (hardware and conduit) lines and facilities; and private energy (fuel) transmission and distribution lines.

Minnesota Statutes

- Section 161.20, subdivision 1, addresses the general powers of the commissioner to carry out the provisions of Article 14, section 2, of the Minnesota State Constitution regarding the public highway system. Subdivision 2 addresses the commissioner's power regarding acquisition of property.
- Section 161.45 addresses utilities within highway rights-of-way that require relocation. This section describes rulemaking authority and utility owner interests when real property is conveyed.
- Section 161.46 addresses reimbursement of utility owners for the relocation of facilities. The section includes definitions and reimbursement requirements and describes provisions associated with a lump-sum settlement, acquisition of substitute property in which to relocate a utility, and relocation work by the state.
- Section 222.37, subdivision 2, addresses pipeline relocations.
- Section 216D.04, addresses the Department of Public Safety's notice, plan, and locating requirements for excavation projects involving underground facilities.
- Section 216B, Public Utilities, addresses utilities that are located within right-of-way that is owned by cities. These utilities might be subject to an individual franchise agreement, which provides the terms for which the utility companies may operate in the public right-of-way.

Minnesota Rules

- Parts 8810.3100 through 8810.3600 address the utility permit process, standards for work conducted under permit, aerial lines, and underground lines.
- Chapter 4720.5100–4720.5590 sets standards for wellhead protection planning, which is administered by the Minnesota Department of Health's Well Management Program.

5.1.1.2 Methodology

The Council inventoried existing utilities in the study area using information provided by the utility owners (identified below) and field investigations. All underground utilities were field located to a Subsurface Utility Engineering (SUE) Quality Level B.

Information for sanitary sewer, storm sewer, and water mains was provided (in the form of geographic information systems [GIS] database files and engineering drawings), field surveyed, and compared to the alignment to identify conflicts for the following utility owners:

- City of Minneapolis
- City of Golden Valley
- City of Robbinsdale
- City of Crystal
- City of Brooklyn Park
- Hennepin County
- Metropolitan Council Environmental Services (MCES)
- MnDOT
- BNSF Railway

Private utility information was obtained directly from the following utility owners and compared to the proposed BLRT Extension project alignment to identify conflicts:

- Arvig
- AT&T Transmission
- Center Point Energy
- CenturyLink
- Comcast
- Enventis
- Integra Telecom Holdings
- NuStar Energy
- Rogers Telecom
- Sprint
- TDS Metrocom
- TTM Operating Corporation
- TW Telecom
- Verizon (MCI)
- Windstream
- Xcel Energy
- XO Communications
- Zayo

Wells in the project vicinity were identified from the Minnesota County Well Index database.

5.1.2 Study Area

The study area for utilities is defined as the area within and directly adjacent to the LOD for the proposed BLRT Extension project. The LOD are defined as the estimated area where construction would occur for the proposed BLRT Extension project.

5.1.3 Affected Environment

Several public and private utilities are present in the study area. The general locations of several of these utilities in relation to the proposed BLRT Extension project are shown in **Figure 5.1-1**.

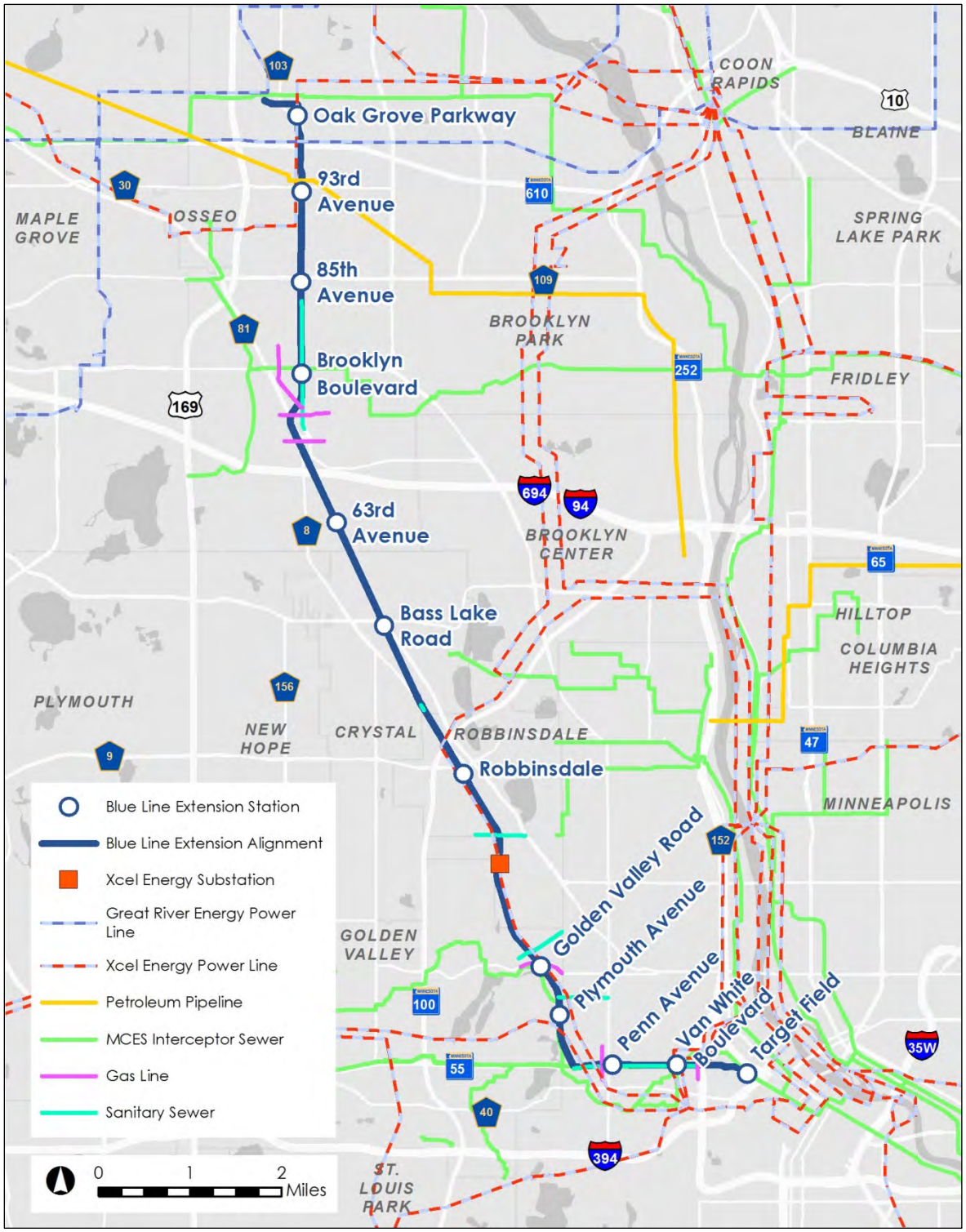
Existing Water Service

Existing water service in the study area is provided, maintained, and owned by the following entities:

- City of Minneapolis
- City of Golden Valley
- City of Robbinsdale
- City of Crystal
- City of Brooklyn Park
- Joint Water Commission[2]

[2] The cities of Crystal, Golden Valley, and New Hope formed a joint powers board in 1963 to manage drinking water supply for the three cities. Each of the three cities maintains its own distribution system, utility billing, meter reading, and water sampling functions.

Figure 5.1-1. Locations of Major Utilities



Sources: Metro Transit, Metro GIS; Minnesota Electric Transmission Mapping Project, modified based on field data

Water mains in the study area typically range from 6 to 16 inches in diameter. At some locations, including the following, a 24-inch or 48-inch water main crosses or runs parallel to the study area:

- 24-inch water main on West Broadway Avenue (County State-Aid Highway 103) at 89th Avenue and Maplebrook Parkway
- 24-inch water main on West Broadway Avenue south of 85th Avenue, parallel to the roadway
- 48-inch steel pipe water main north of Golden Valley Road, crossing under the existing BNSF rail corridor

Six private wells[3] are located in the study area. These wells are identified in **Table 5.1-1** and in **Figure 5.1-2**. Portions of the proposed BLRT Extension project are also located in Drinking Water Supply Management Areas and Wellhead Protection Areas, as shown in **Figure 5.1-3**.[4] Per the federal Homeland Security Act of 2002, the locations of wells that supply public water systems cannot be mapped.

Table 5.1-1. Known Private Wells in the Study Area

Minnesota Unique Well Number	Address	Well Type
415896	8249 101st Avenue North Brooklyn Park, MN 55445	Domestic water supply
405810	8924 West Broadway Avenue Brooklyn Park, MN 55445	Domestic water supply
203500	6221 56th Avenue North Crystal, MN 55429	Commercial water supply
203566	4900 West Broadway Avenue Crystal, MN 55429	Commercial water supply
461018	5421 Lakeside Avenue North Crystal, MN 55429	Monitoring well
727425	4522 Toledo Avenue North Robbinsdale, MN 55422	Monitoring well

Source: Minnesota Geological Survey, County Wells Index, 2011

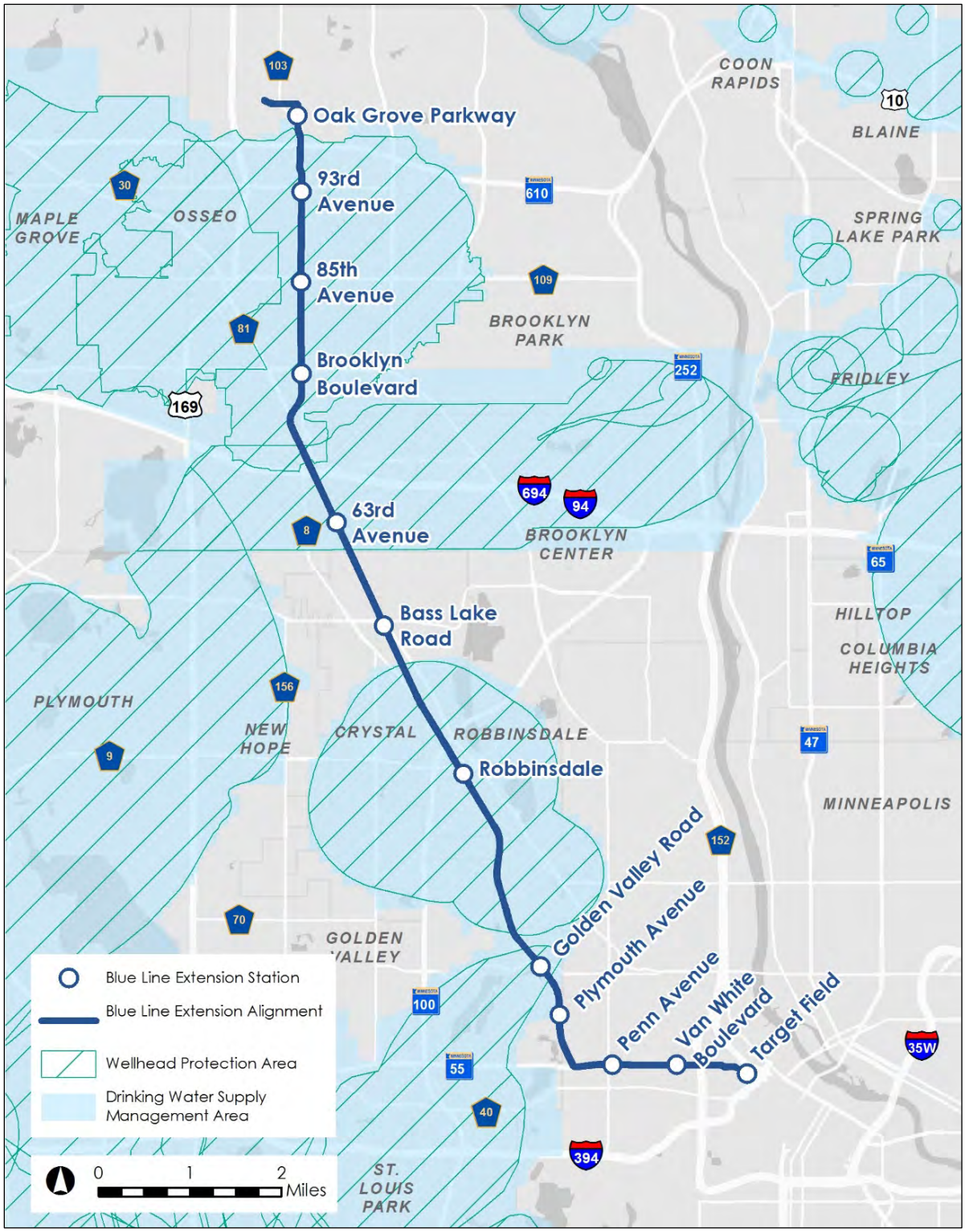
[3] Private wells are those that do not supply the public water system.

[4] The Drinking Water Supply Management Area is the Minnesota Department of Health–approved surface and subsurface area surrounding a public water supply well that completely contains the scientifically calculated Wellhead Protection Area and is managed by the entity identified in a wellhead protection plan. The boundaries of Drinking Water Supply Management Areas are delineated by identifiable physical features, landmarks, or political and administrative boundaries. A Wellhead Protection Area is the recharge area to a public well and is the area managed by the public water supplier, as identified in the wellhead protection plan, to prevent contaminants from entering public wells.

Figure 5.1-2. Private Well Locations

Source: Minnesota Geological Survey, County Wells Index, 2011

Figure 5.1-3. Drinking Water Supply Management Areas and Wellhead Protection Areas



Source: Minnesota Department of Health, 2015

Existing Sanitary and Storm Sewer Service

Sanitary and storm sewer services are owned and maintained by the public works divisions of the areas in which they are located, including:

- Cities of Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park,
- Hennepin County
- MCES

In addition, the BNSF rail corridor includes multiple culverts to convey stormwater across the rail embankment. Many of the BNSF culverts have been identified; culvert locations would be verified during the project design process.

Several publicly owned sanitary and storm sewer services run parallel to and intersect the proposed BLRT Extension project alignment. The sanitary sewers range in size from 8 to 86 inches in diameter, and storm sewers range in size from 9 to 144 inches in diameter, all varying in depth. An MCES interceptor sewer is also located in the study area.

Table 5.1-2 lists the sanitary sewer and MCES interceptor sewers in the study area. Existing storm sewers in the study area are described in detail in the *Preliminary Stormwater Management Plan Technical Memorandum* (Council, 2016a).

Existing Electric and Gas Lines

Xcel Energy provides electrical service in the study area using overhead and underground distribution power lines. Xcel Energy and Great River Energy have electric transmission lines that intersect and run parallel to the proposed BLRT Extension project. **Table 5.1-3** lists the overhead power lines that are in or adjacent to the LOD.

CenterPoint Energy owns several underground gas line utilities in the study area; many of these lines are part of the Belt Line, which supplies natural gas to distribution lines. These lines were reviewed by the Council using utility maps that were provided by CenterPoint Energy. A 12-inch gas line runs beneath Jolly Lane to the east of Bottineau Boulevard (County Road 81), and another 12-inch gas line runs east to west beneath 73rd Avenue as it crosses the BNSF rail corridor. A 24-inch gas line, which is part of the Belt Line, crosses under Bottineau Boulevard about 1,200 feet north of Interstate Highway 94 (I-94). A 20-inch gas line, which is part of the Belt Line, is located south of Golden Valley Road. A 24-inch gas line runs parallel to Queen Avenue, crossing under Olson Memorial Highway. A 16-inch gas line, which is part of the Belt Line, runs north to south and crosses Olson Memorial Highway just west of I-94. The Belt Line also crosses the existing BNSF rail corridor near Golden Valley Road and north of I-94.

One 8-inch steel pipe petroleum pipeline is located in the study area. It crosses West Broadway Avenue just north of 93rd Avenue, and then crosses 93rd Avenue east of West Broadway Avenue. This pipeline, which is owned by NuStar Energy, distributes refined petroleum.

Table 5.1-2. Sanitary and MCES Interceptor Sewers in the Study Area

Utility Type	Utility Location
Sanitary sewer	Sanitary sewer lines are located on the east side of West Broadway Avenue, south of 83rd Avenue, parallel to the roadway.
MCES interceptor sewer	54-inch MCES interceptor sewer located on the south side of 101st Avenue, running parallel to the roadway. 48-inch MCES interceptor sewer crosses West Broadway Avenue at Brooklyn Boulevard.
Sanitary sewer	A sanitary sewer line is located on the east BNSF right-of-way line between 48th Avenue and Byron Avenue, parallel to the freight rail tracks. Some sanitary sewer lines cross under the LRT and freight rail tracks.
Sanitary sewer	Sanitary sewer lines are located parallel to and cross the freight rail corridor at multiple locations, specifically near Kewanee Way, Manor Drive, and 16th Avenue.
MCES interceptor sewer	A 36-inch MCES interceptor sewer is located west of the freight rail corridor near TWRP, adjacent to the study area. South of 14th Avenue, continuing past Olson Memorial Highway, the interceptor runs north-south on the west side of the BNSF rail corridor.
Sanitary sewer	A sanitary sewer line is located on the south side of Olson Memorial Highway/ 6th Avenue.
MCES interceptor sewer	A 30-inch force main and a 42-inch force main are located on the south side of Olson Memorial Highway. At Dupont Avenue, the two force mains combine into one 84-inch pipe and then cross Olson Memorial Highway west of the Bassett Creek tunnel. A separate sanitary line of box culvert, 8 feet 6 inches by 6 feet, crosses Olson Memorial Highway under the Bassett Creek tunnel. This box carries only the city sanitary sewer and converges with the 84-inch pipe on the north side of Olson Memorial Highway.

Table 5.1-3. Overhead Power Lines in the Study Area

Owner	Type	Location
Xcel Energy	Distribution	South of 93th Avenue, west side of West Broadway Avenue and east side north of Trunk Highway (TH) 610.
Xcel Energy	Transmission	West side of West Broadway Avenue, north of 89th Avenue.
Great River Energy	Transmission	North side of TH 610, running parallel to TH 610 and crossing over the West Broadway Avenue/TH 610 interchange.
Xcel Energy	Distribution	East side of BNSF rail corridor, north of Bass Lake Road.
Xcel Energy	Transmission	West side of BNSF rail corridor, north of Lowry Avenue to TH 100, east side of freight rail corridor on steel lattice towers south of Lowry Avenue to Olson Memorial Highway. An electric power substation fed by both transmission lines is adjacent to the BNSF rail corridor near 34th Avenue.
Xcel Energy	Distribution	In the BNSF rail corridor between 36th Avenue and 40th Avenue on east side.
Xcel Energy	Distribution	In BNSF rail corridor between Canadian Pacific Railway crossing and Bass Lake Road on east side.

Existing Long-Distance Communication Service

TDS Metrocom has a fiber optic line that runs parallel to the BNSF rail corridor. At the Robbinsdale Station, the fiber optic line transitions from the east to the west side of the BNSF rail corridor. At Plymouth Avenue, the fiber optic line transitions back to the east side of the rail corridor.

5.1.4 Environmental Consequences

5.1.4.1 Operating-Phase (Long-Term) Impacts

Coordination with local and state agencies might be required to relocate specific utilities outside the proposed BLRT Extension project footprint. However, conflicts cannot be determined until the proposed BLRT Extension project's Engineering phase. Utilities located in the right-of-way and owned by cities could be subject to an individual franchise agreement as authorized by Minnesota Statute (Minn. Stat.) 216B, Public Utilities, which provides the terms for which the utility companies may operate in the public right-of-way.

Public and private utilities must conform to MnDOT's Procedures for Accommodation of Utilities on Highway Right-of-Way, which require owners to obtain a permit in order to place utility facilities on trunk highway right-of-way. Utility installations on, over, or under BNSF property would require review and approval by BNSF Railway, must conform to the requirements in the BNSF Utility Accommodation Policy, and would require a Utility License Agreement issued by BNSF Railway.

No-Build Alternative

There would be no operating-phase utility impacts from the No-Build Alternative.

Proposed BLRT Extension Project

The locations of private and public utilities that run parallel to or cross the transitway corridor would be identified during the project's Engineering phase to determine whether the utilities would be in conflict with the transitway corridor and would need to be relocated to avoid conflict with LRT operations.

Overhead Utilities

The horizontal and vertical locations of overhead electric and communication lines would be adjusted to provide adequate vertical and horizontal clearance for LRT vehicles and the overhead catenary system. It might be possible to relocate some overhead utilities to a different type of pole or place them underground. However, existing overhead electric transmission lines cannot be easily relocated underground because of the substantial cost of burying them (compared to reconstructing them above ground) and because of operational issues and constraints associated with the diminished ability of buried lines to dissipate heat compared to overhead lines.

The proposed BLRT Extension project would affect existing electrical transmission towers in the transitway corridor as a result of relocating the freight rail track and constructing the LRT track. Because of the distance between the proposed transitway corridor and existing transmission towers, some transmission towers would need to be shifted within the BNSF right-of-way. The

Council anticipates that these towers would likely be shifted (in coordination with Xcel Energy) to the western edge of the existing BNSF right-of-way. The two primary locations for transmission tower relocation are:

- **Xcel Energy transmission line between Olson Memorial Highway and the Indiana Substation (between 33rd and 34th avenues):** Existing steel lattice towers on the east side of the BNSF rail corridor would be shifted to the west side of the rail corridor. Because the existing lattice towers are obsolete, they would be replaced with a current pole type (likely steel monotube poles).
- **Xcel Energy transmission line north of TH 610:** Transmission towers would be relocated to the center of the proposed West Broadway Avenue Boulevard, east of the transitway corridor.

Underground Utilities

The Council anticipates impacts on underground utilities from the proposed BLRT Extension project. Underground utilities, both private and public, would be evaluated by the Council on a case-by-case basis to determine their condition, to determine their reaction to loading from the LRT and freight rail, and to verify that the utility meets the vertical clearance requirements for the utility owner, MnDOT, and BNSF Railway. Utility conflicts would be resolved by lowering the existing utility, encasing the utility for additional protection, or relocating the utility. Manholes and vaults that are in conflict with the transitway corridor and that limit access to the underground utilities would need to be relocated to provide adequate access.

The Council would need to evaluate whether existing ferrous metal utilities could be corroded by stray current from the LRT system. Protective measures might need to be considered for some underground utilities.

5.1.4.2 Construction-Phase (Short-Term) Impacts

No-Build Alternative

There would be no construction-phase utility impacts from the No-Build Alternative.

Proposed BLRT Extension Project

Construction-phase impacts to utilities are most likely to occur during excavation and grading, when placing structural foundations, and during work that requires large-scale equipment, which could affect overhead utilities. Disruptions in utility service would occur throughout construction to allow relocating utilities. The Council anticipates that these disruptions would be minor, with temporary connections provided, as the Council deems necessary, to customers before the utilities are permanently relocated. Utility owners would ultimately decide when and whether planned disruptions to service would be allowed.

Previously unidentified utilities could be encountered in the study area, and a utility could be unintentionally damaged during construction. Service disruptions could result.

5.1.5 Avoidance, Minimization, and/or Mitigation Measures

Long-Term Mitigation Measures. No long-term impacts to utilities are anticipated, since the relocation and reconstruction of utilities that would be conducted as part of the proposed BLRT Extension project would maintain current service levels. The Council will evaluate utilities in areas adjacent to proposed LRT electrification components for potential corrosion concerns; protective measures (such as cathodic protection) will be taken to protect utilities from corrosion if warranted.

Short-Term Mitigation Measures. Utility location excavations and pre-construction surveys will be performed in general accordance with the MnDOT policy of Subsurface Utility Engineering. These procedures will help minimize the number of unintended disruptions in utility service.

The Council will require the utility contractor to notify affected businesses and residents of any planned disruption in service as a result of construction. If utilities are discovered during construction that are not identified in the contract documents, the appropriate utility companies and agencies will be contacted to identify the line(s) and will be consulted on appropriate actions.

Any wells, either known or discovered during construction, that are within the proposed permanent right-of-way will be abandoned and sealed according to state and local regulations. Wells outside but near the proposed BLRT Extension project right-of-way will be avoided. For those locations where impacts to wells would interfere with a necessary supply of potable water or with monitoring groundwater conditions at a site, well replacement or other water supply provisions will be considered.

Minnesota Department of Health guidance will be used to evaluate the feasibility of stormwater infiltration practices located in vulnerable Wellhead Protection Areas.

Temporary dewatering during construction could require DNR groundwater appropriation permits.

5.2 Floodplains

The Council reviewed Federal Emergency Management Agency (FEMA) 100-year floodplains[5] and FEMA floodways[6] as part of the evaluation for the proposed BLRT Extension project. The floodplains and floodways were identified and evaluated based on current FEMA Flood Insurance Rate Maps (FIRM) and ancillary information.

This section describes the existing floodplains in the study area and describes several factors that have caused floodplain impacts to change in the study area since publication of the Draft EIS. These factors include refinements to the footprint of the proposed BLRT Extension project and modifications to the mapping of the 100-year floodplain in the Bassett Creek area. This section also describes the impacts of the No-Build Alternative and the proposed BLRT Extension project on floodplains.

The data in this section are based on the information in the *Preliminary Floodplain Impacts and Mitigation Strategies Technical Memorandum* (Council, 2016b), or *Floodplain Technical Memorandum*. The Council conducted the analysis for this section in coordination with USACE, DNR, and local watershed organizations (Bassett Creek Water Management Commission [BCWMC], Shingle Creek Watershed Management Commission [SCWMC], West Mississippi Water Management Commission [WMWMC], and Mississippi Watershed Management Organization [MWMO]) as described in the *Floodplain Technical Memorandum*. Wetlands are addressed separately in **Section 5.3**.

[5] According to 44 CFR Part 9.4, *100-year floodplain* (also known as *base floodplain*) means the floodplain "for the flood which has a one percent chance of being equaled or exceeded in any given year."

[6] According to 44 CFR Part 9.4, "*floodway* means that portion of the floodplain which is effective in carrying flow, within which this carrying capacity must be preserved and where the flood hazard is generally highest, i.e., where water depths and velocities are the greatest. It is that area which provides for the discharge of the base flood so the cumulative increase in water surface elevation is no more than one foot." In Minnesota, the floodway is defined as a cumulative increase in water surface elevations of no more than 6 inches. Local communities may designate more-restrictive definitions of the floodway.

5.2.1 Regulatory Context and Methodology

Floodplains[7] are protected by local, state, and federal legislation because of their ecological value and functionality. Regulatory and permitting authority for floodplain impacts falls to the local government unit (LGU), which is typically the municipality. Watershed management organizations (WMOs) also regulate floodplain impacts to waters within their jurisdictional authority. In addition to the LGUs and WMOs, FEMA, USDOT, and DNR play a role in floodplain management and impacts to water resources in the study area. Floodplain regulatory agencies that have jurisdictional authority in the study area include:

- FEMA[8]
- USDOT[9]
- DNR
- MWMO
- BCWMC
- SCWMC and WMWMC, respectively, or SCWM WMC when referred to in reference to their joint watershed management plan
- City of Minneapolis
- City of Golden Valley
- City of Robbinsdale
- City of Crystal
- City of Brooklyn Park

The floodplains in the study area are associated with Bassett Creek, Grimes Pond, and North Rice Pond. The floodplain and floodway areas are shown in **Figure 5.2-1**, which provides an overview of mapped floodplains in the study area. **Figure 5.2-2, Figure 5.2-3, and Figure 5.2-4** show a detailed view of mapped floodplains in the northern and southern portions of the study area.

Several factors have caused floodplain impacts to change in the study area since the publication of the Draft EIS. These factors include refinements to the footprint of the proposed BLRT Extension project and modifications to the mapping of the 100-year floodplain in the Bassett Creek area.

Executive Order 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input* (https://www.whitehouse.gov/the-press-office/2015/01/30/executive-order-establishing-federal-flood-risk-management-standard-and-), was implemented on January 30, 2015. Executive Order 13690 amends Executive Order 11988, *Floodplain Management*, and, based on informed climate science, it addresses the potential for increased severity and duration of weather events and resulting flood elevations. The designed profile elevation of the proposed BLRT Extension project and associated facilities is influenced by Executive Order 13690. The profile elevation must be above the predicted future flood elevations. The appended *Floodplain Technical Memorandum* (**Appendix F**) describes project-related floodplain data and regulation in more detail.

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[7] *Floodplains* are defined by Executive Order 11988 as "the lowland and relatively flat areas adjoining inland and coastal waters including floodprone areas of offshore islands, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year."

[8] FEMA approval of a Letter of Map Revision (LOMR) will be required if the floodplain mitigation site is constructed in advance of the construction of the proposed BLRT Extension project as anticipated.

[9] USDOT Order 5650.2, *Floodplain Management and Protection*

DNR has developed regulatory standards for floodplain development in the state. LGUs must, at a minimum, adopt these standards. The appended *Floodplain Technical Memorandum* (**Appendix F**) provides additional details. The floodplain requirements of each community and water management organization (WMO) located along the proposed BLRT Extension project corridor meet or exceed the minimum guidance provided by DNR.

Placing fill of any kind in a floodway or floodplain can impede the flow of water and increase flood elevations. Such activities are generally restricted and require mitigation in the form of compensatory storage and/or conveyance modifications to offset the lost floodway storage and/or conveyance. Any project that involves activity in a floodway must be reviewed to determine whether the project would increase the regulatory floodway elevations. A No-rise Certification would be issued by the LGU if hydraulic analyses demonstrate that the proposed BLRT Extension project would not increase flooding. The appended *Floodplain Technical Memorandum* (**Appendix F**) provides additional data. The No-rise Certification takes into account the balance of the proposed impacts as well as the proposed mitigation for the impacts.

Once the project has been constructed and as-builts of the proposed impacts and mitigation for the impacts have been completed, the Letter of Map Revision (LOMR) documentation will be submitted to FEMA for approval. The LOMR is FEMA's modification to an effective FIRM. In this case, the modification will result in inclusion of the mitigation area to be within the floodplain.

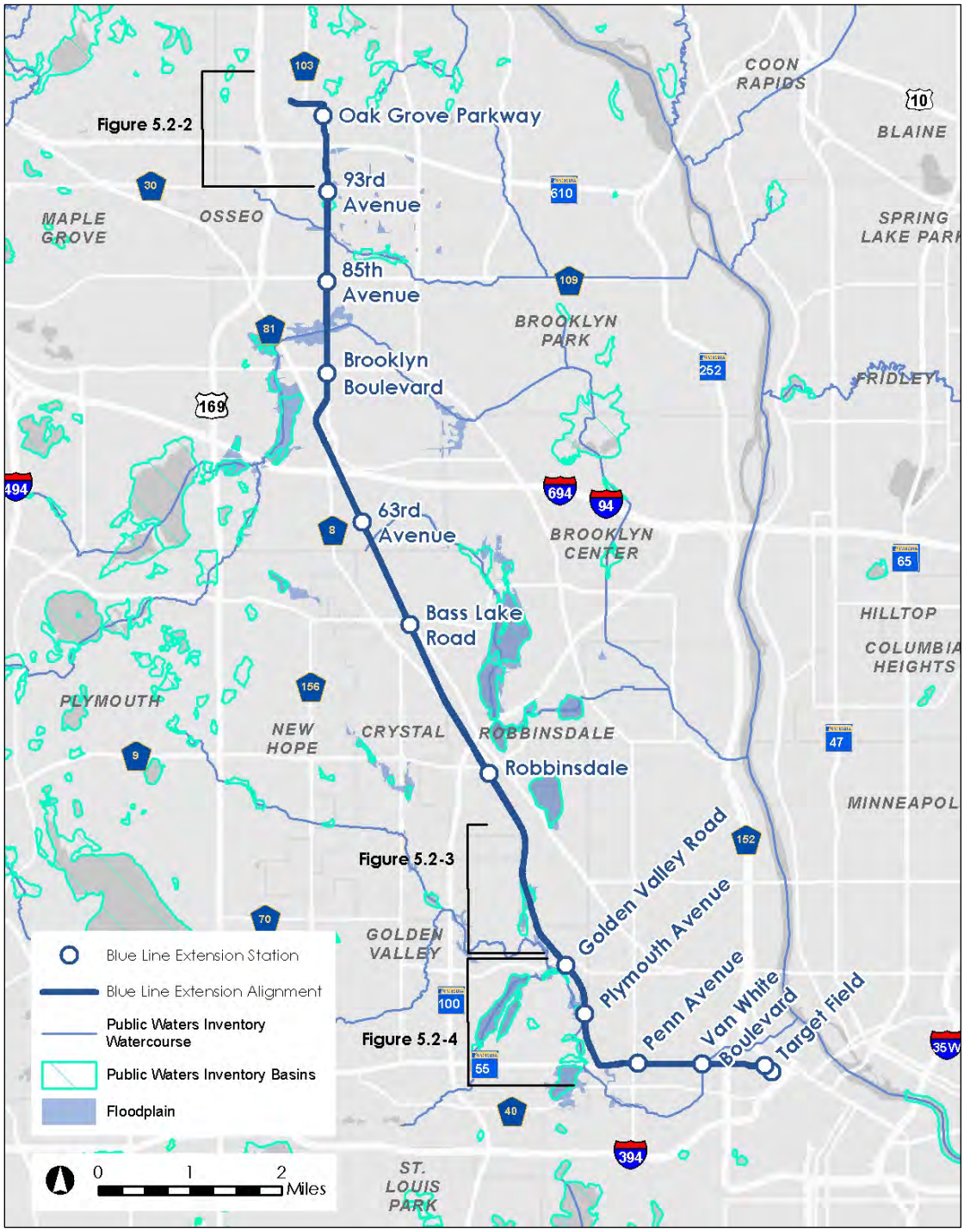
5.2.2 Study Area

The study area for 100-year floodplain and floodway impacts is defined as the area coinciding with the LOD of the proposed BLRT Extension project, including associated facilities (OMF and park-and-rides). The study area also includes several areas adjacent to the proposed BLRT Extension project that could provide suitable floodplain mitigation.

5.2.3 Affected Environment

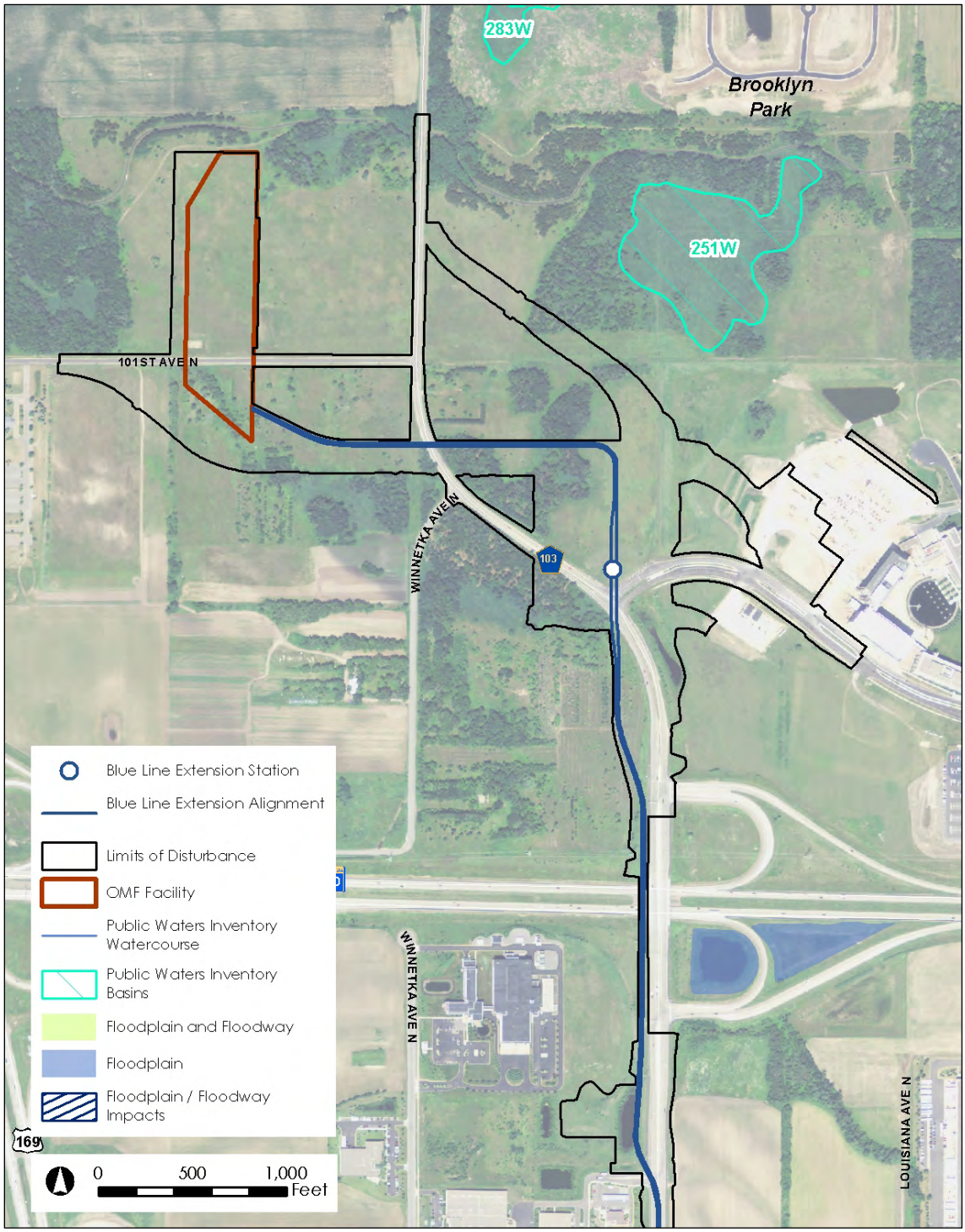
The land use in the study area adjacent to the proposed BLRT Extension project is characterized by commercial, industrial, and residential development. The floodplains in the study area are associated with Bassett Creek, Grimes Pond, and North Rice Pond. **Figure 5.2-1 through Figure 5.2-4** show the floodways and 100-year floodplain boundaries in the study area and impacts within the LOD.

Figure 5.2-1. Overview of Mapped Floodplains near the Proposed BLRT Extension Project



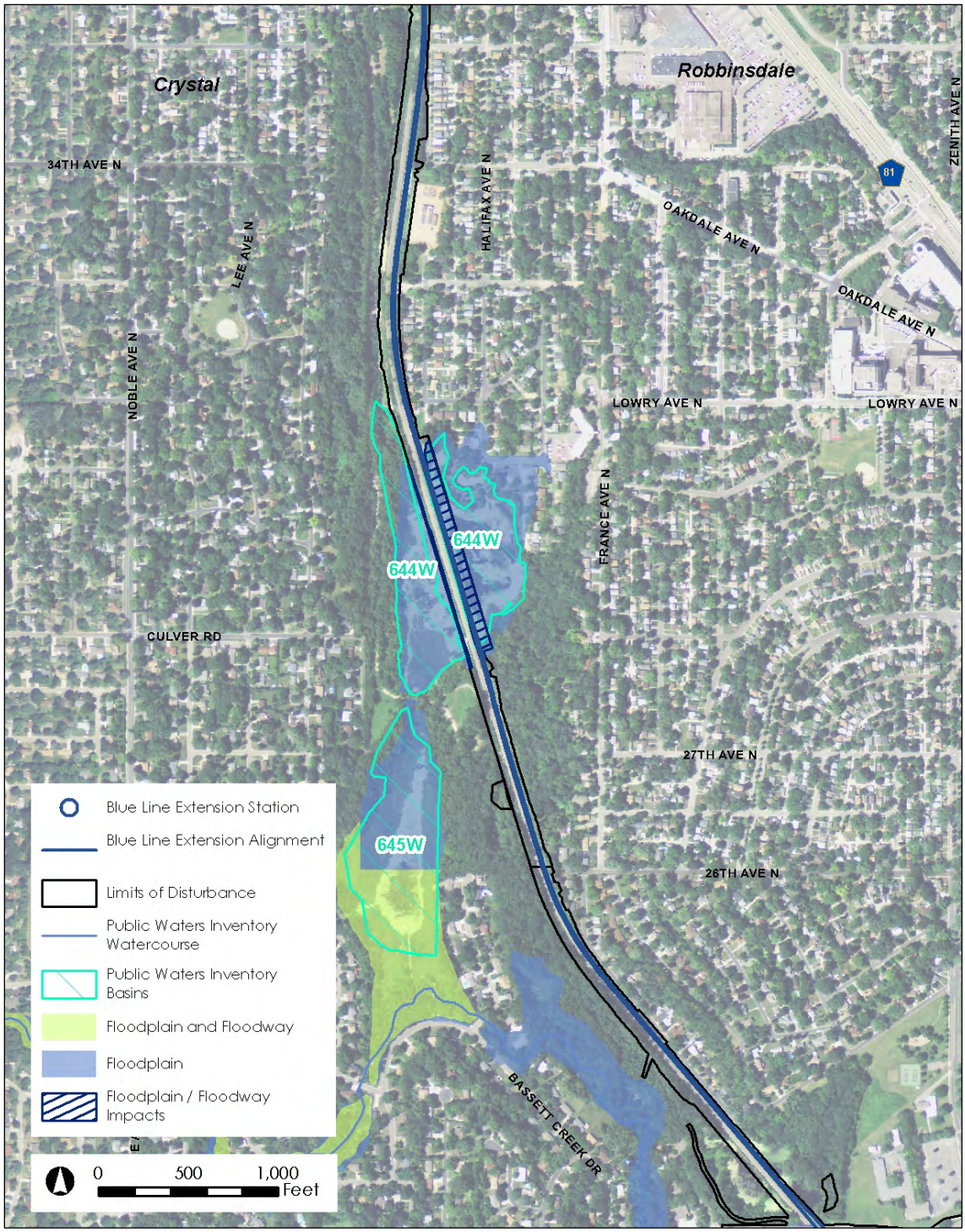
Sources: Aerial: 2013 Hennepin County NAIP US Department of Agriculture; Floodplain: Federal Emergency Management Agency GIS 2010 (modified by Council, 2015); DNR Public Waters Inventory: DNR, 2008

Figure 5.2-2. Detail of Mapped Floodplains near the Northern Portion of the Proposed BLRT Extension Project



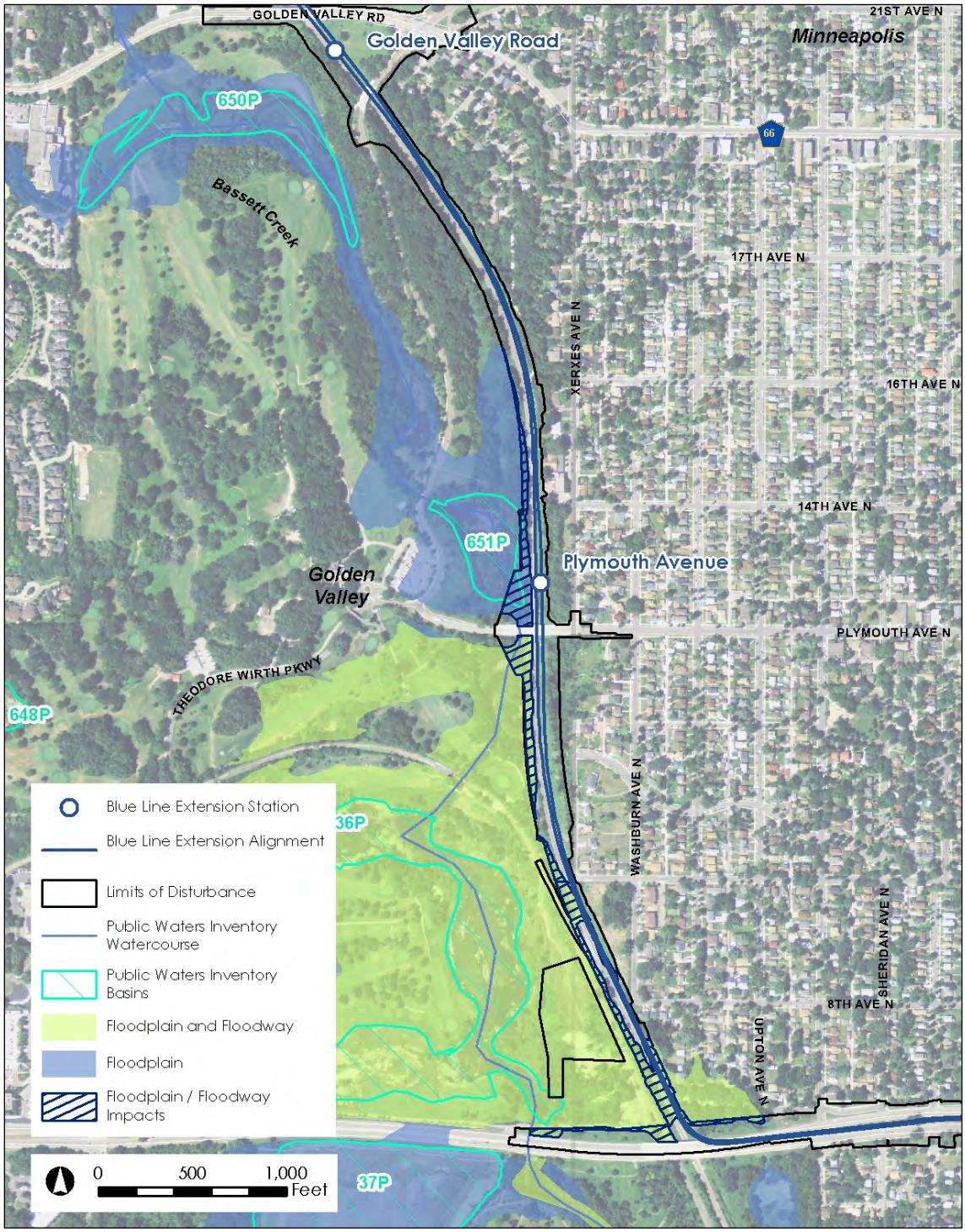
Sources: Aerial: 2013 Hennepin County NAIP US Department of Agriculture; Floodplain: Federal Emergency Management Agency GIS 2010 (modified by Council, 2015); DNR Public Waters Inventory: DNR, 2008

Figure 5.2-3. Detail of Mapped Floodplains near the Southern Portion of the Proposed BLRT Extension Project – Robbinsdale/Golden Valley



Sources: Aerial: 2013 Hennepin County NAIP US Department of Agriculture; Floodplain: Federal Emergency Management Agency GIS 2010 (modified by Council, 2015); DNR Public Waters Inventory: DNR, 2008

Figure 5.2-4. Detail of Mapped Floodplains near the Southern Portion of the Proposed BLRT Extension Project – Golden Valley/Minneapolis



Sources: Aerial: 2013 Hennepin County NAIP US Department of Agriculture; Floodplain: Federal Emergency Management Agency GIS 2010 (modified by Council, 2015); DNR Public Waters Inventory: DNR, 2008

5.2.4 Environmental Consequences

5.2.4.1 Operating-Phase (Long-Term) Impacts

No-Build Alternative

There would be no operating-phase impacts to floodplains and floodways from the No-Build Alternative, nor would any known future developments affect floodplains or floodways as a result of the No-Build Alternative.

Proposed BLRT Extension Project

The proposed BLRT Extension project would affect several floodplains in the study area. Floodplain impacts are determined by the loss or gain in flood storage volume. Floodplain impacts were estimated based on a conceptual (10-percent) design of the proposed BLRT Extension project corridor.

The expected impacts to floodplains and floodways from the proposed BLRT Extension project are shown in **Table 5.2-1**. Impact areas are illustrated above in **Figure 5.2-2** through **Figure 5.2-4.** Segments of the proposed BLRT Extension project corridor without impacts might not be included in these figures. The impacts summarized in **Table 5.2-1** include floodplain and floodway impacts. The boundaries of the floodway are the same as the floodplain associated with Bassett Creek, and include the conveyance and the storage elements due to the flood control structure that was constructed downstream. The floodway and floodplain boundaries have been administratively determined by the Bassett Creek Flood Control Commission, DNR, the city of Golden Valley, and FEMA as part of a management "envelope" to limit development within areas necessary for flood control.

Table 5.2-1. Impacts on Floodplains from the Proposed BLRT Extension Project

In cubic yards

Floodplain	100-Year Floodplain Impacts			
	Alignment/ Station Impacts	Park-and-Ride Impacts	OMF Impacts	Total Impacts
Bassett Creek	16,800	—	—	**16,800**
Grimes Pond	200	—	—	**200**
North Rice Pond	—	—	—	—
Total	**17,000**	**—**	**—**	**17,000**

BCWMC is currently performing a study to update the existing floodplain and floodway elevations; this study could modify the floodplain and floodway boundaries adjacent to Bassett Creek. The Council will continue to coordinate with the city of Golden Valley and BCWMC to confirm the floodplain impacts based on the outcome of this study. Additional hydraulic analysis would be required to determine actual floodplain and floodway impacts caused by the proposed construction; this determination cannot be made until the design of the proposed BLRT Extension project is further refined and final construction limits are established.

Traction Power Substations (TPSS)

None of the proposed TPSSs would affect floodplains in the study area.

5.2.4.2 Construction-Phase (Short-Term) Impacts

Construction-phase impacts are activities that would be in excess of the impacts described in the previous **Proposed BLRT Extension Project** section and that would occur for a short period at the same time as installing and constructing the proposed BLRT Extension project.

No-Build Alternative

There would be no construction-phase impacts to floodplains or floodways from the No-Build Alternative.

Proposed BLRT Extension Project

Floodplain mitigation sites will be constructed in advance of the proposed BLRT Extension project construction. This will create the necessary compensatory flood storage prior to the anticipated temporary and permanent placement of fill in floodplain areas. Therefore, there would be no temporary construction-phase impacts to floodways or floodplains from the proposed BLRT Extension project and associated facilities. Some construction activities would result in the loss or disturbance of soils and vegetation, which would increase the likelihood of temporary erosion and sedimentation in floodplains. The Council will develop appropriate plans and obtain applicable permits for floodplains, as well as implement appropriate wildlife-friendly BMPs, to avoid erosion and sedimentation impacts to floodplains during construction.

TPSS

Several TPSSs are proposed throughout the proposed BLRT Extension project alignment. None of the proposed TPSSs are located in mapped 100-year floodplains or in areas within a 2-foot freeboard higher in elevation than the mapped 100-year floodplains. The Council does not anticipate any temporary construction-phase impacts to floodplains or floodways from TPSS sites.

5.2.5 Avoidance, Minimization, and/or Mitigation Measures

Complete avoidance of floodplain impacts throughout the study area was not feasible. Therefore, in compliance with Executive Order 11988, as amended, answers to four floodplain questions are required in order to demonstrate that the proposed project would not cause any significant floodplain impacts. These four questions concern (1) potential flood-related disruption of emergency services, (2) significant adverse impacts on natural and beneficial floodplain values, (3) increased risk of flooding, and (4) encouragement of incompatible floodplain development. Environmental analyses conducted as part of the proposed BLRT Extension project demonstrate that the impacts of the proposed BLRT Extension project would be below the threshold of significance for each of these concerns. See the appended *Floodplain Technical Memorandum* (**Appendix F**) for additional details.

Impacts to floodplains associated with Grimes Pond were minimized considerably with a design that elevates the LRT tracks on a structure rather than on an embankment. Thus, with the current design, floodplain impacts would be the cumulative volume of structural support piers and abutments rather than the continuous fill of an embankment.

Long-Term Mitigation Measures. Impacts to locally regulated floodplains shall be mitigated by appropriate compensatory storage within or adjacent to the affected waterbody. The Council will use the following methods to create compensatory storage: excavating upland adjacent to existing floodplains, excavating existing floodplains, and constructing stormwater BMPs with the capacity for storage. The final design of the proposed BLRT Extension project shall include the appropriate compensatory storage required by applicable local agencies. Based on coordination with constituent municipalities and BCWMC, floodplain mitigation must occur within the same hydraulic modeling reach (that is, culvert to culvert) as the proposed floodplain impacts. The Council identified the following areas that meet these criteria for suitable floodplain mitigation:

- **Bassett Creek Floodplain Mitigation.** The floodplain mitigation area between the main stem of Bassett Creek and the LRT and BNSF rail corridor (partially in TWRP and partially on private property; initially identified in the Draft EIS) has been further refined. The mitigation will include excavating adjacent ground below the 100-year floodplain elevation to provide compensatory floodplain storage for the fill placed in the floodplain.
- **Grimes Pond Floodplain Mitigation.** As a result of using an elevated structure for the LRT tracks, floodplain impacts at Grimes Pond would be minor (200 cubic yards). Some excavation of adjacent ground below the 100-year floodplain elevation will provide compensatory floodplain storage for the fill placed in the floodplain.

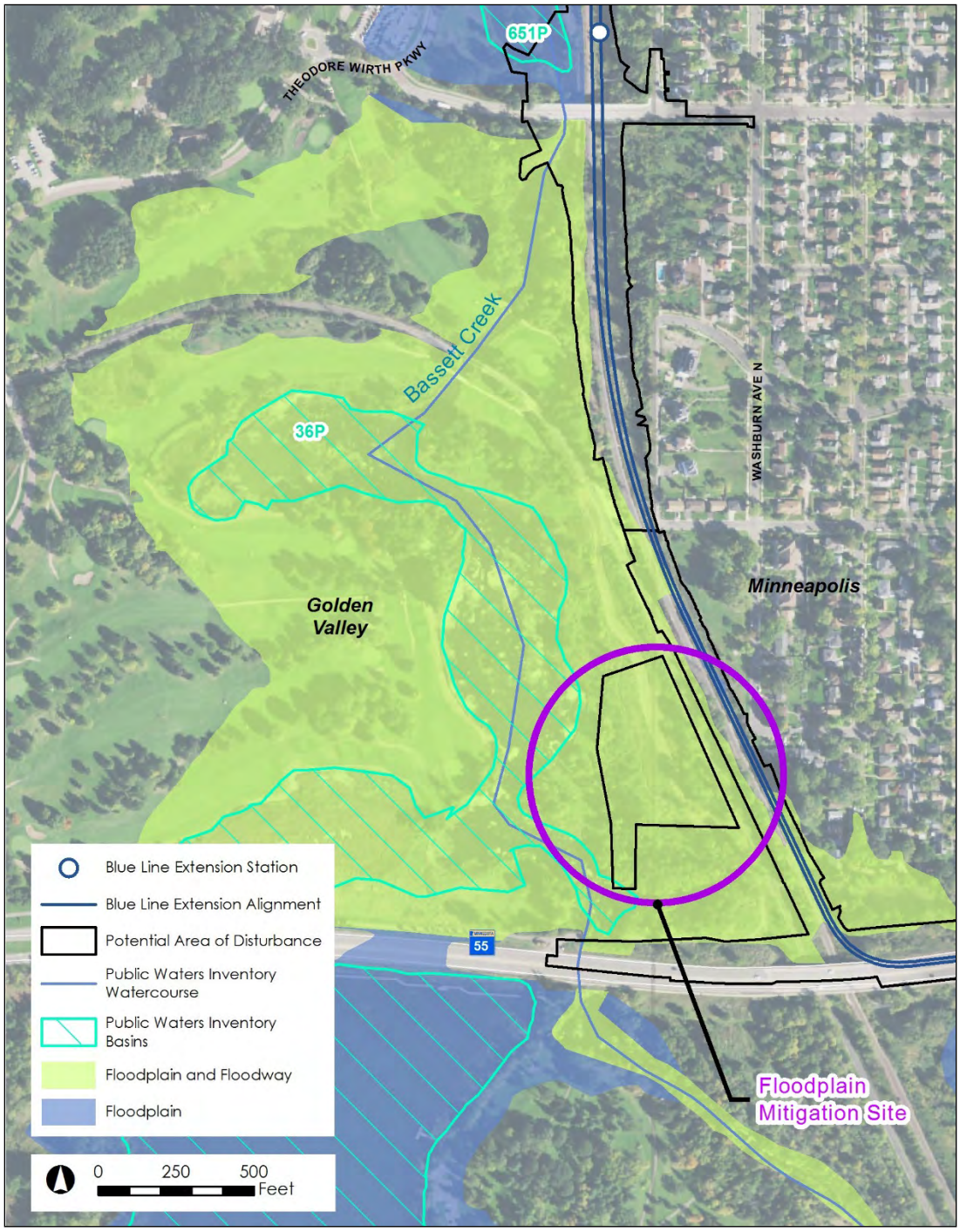
Figure 5.2-5 shows the Bassett Creek floodplain mitigation site near the proposed BLRT Extension project.

The city of Minneapolis will be the owner of the perpetual easements relevant to the proposed Bassett Creek floodplain mitigation site. The city of Robbinsdale will be the owner of the perpetual easements relevant to floodplain mitigation associated with Grimes Pond.

Floodplain mitigation adjacent to the proposed BLRT Extension project will require approval from the city of Golden Valley, which will issue a permit to the Council for the proposed work. As part of that permitting process, both the city of Golden Valley and BCWMC will be provided the opportunity to review and provide comments on the proposed floodplain mitigation to verify that all of the pertinent requirements have been met prior to issuing the permit. Further details regarding the agencies involved in floodplain review are provided in the appended *Floodplain Technical Memorandum* (**Appendix F**). Additional information is provided in the *Preliminary Stormwater Management Plan Technical Memorandum* (Council, 2016a) (**Appendix F**).

Short-Term Mitigation Measures. No short-term mitigation measures are anticipated, because the construction of floodplain mitigation will occur prior to the placement of construction fill in floodplain areas to avoid temporary impacts.

Figure 5.2-5. Bassett Creek Floodplain Mitigation Site near the Proposed BLRT Extension Project



Sources: Aerial: 2013 Hennepin County NAIP US Department of Agriculture; Wetland: National Wetland Inventory Update for Minnesota 2015 (modified by Council, 2015); Floodplain: Federal Emergency Management Agency GIS 2010 (modified by Council, 2015); DNR Public Waters Inventory: DNR, 2008

5.3 Wetlands and Other Aquatic Resources

This section describes the wetland types and wetland boundaries that have been identified and delineated in the study area according to the standards of USACE and BWSR and describes the impacts of the No-Build Alternative and the proposed BLRT Extension project on wetlands and other aquatic resources.

The information in this section is based on information in the *Wetlands Technical Report* (Council, 2016c) (see **Appendix F**). The analysis for this section was conducted in coordination with USACE as part of the National Environmental Policy Act (NEPA)/404 merger process, as discussed in **Section 5.3.1** and **Chapter 9 – Consultation and Coordination**. Floodplains are addressed separately in **Section 5.2**.

For this Final EIS, wetland types and wetland boundaries have been identified and delineated within and near the proposed BLRT Extension project and associated facilities according to USACE and BWSR standards. Wetland boundaries and types have been approved by representatives of the WCA LGU and USACE.

Wetland impacts (see **Section 5.3.4**) are estimated based on the known construction footprint of the current level of design for the proposed BLRT Extension project and on the wetland jurisdictional determinations made by USACE and the WCA LGU.

5.3.1 Regulatory Context and Methodology

Wetlands are protected by local, state, and federal legislation because of their ecological and functional value. The federal Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and for regulating quality standards for surface waters. EPA oversees state implementation of the CWA and reviews and comments on Individual 401 Water Quality Certifications associated with applications for Section 404 Individual Permits.

Section 404 of the CWA establishes a program to regulate the discharge of dredged or fill material into waters of the United States. Section 404 of the CWA is under the purview of USACE (for the proposed BLRT Extension project, the USACE St. Paul District) and requires a permit to be issued by USACE prior to the placement of any dredged or fill material into any waters of the United States, including wetlands. Transportation projects that would cause more than 5 acres of impacts require an Individual Permit and a public comment period.

Lakes, rivers, streams, and wetlands are regulated by DNR if they have been identified by the State as public waters or public waters wetlands. Public waters and public waters wetlands are all water basins and water courses that meet the criteria in Minn. Stat., Section 103G.005, subdivision 15, and that are identified on Public Waters Inventory (PWI) maps (Minn. Stat., Section 103G.201). Proposed impacts involving a change in the course, current, or cross-section of public waters (including streams) and public waters wetlands would require a Public Waters Work Permit from DNR. Utilities work in public waters or public waters wetlands could require a utilities crossing license from DNR.

WCA, under the purview of BWSR and LGUs, establishes the goal of no net loss of wetlands (Minnesota Rule 8420). WCA requires that anyone proposing to drain or fill a wetland must try to avoid disturbing the wetland. If avoidance cannot be achieved, WCA requires that impacts be minimized to the extent possible and any impacted areas be replaced with suitable and acceptable mitigation.

The designated LGU would need to determine the need for and requirements of a WCA wetland replacement plan for the project. As a consequence of the proposed BLRT Extension project being a linear project, the proposed BLRT Extension project crosses through several cities and four WMO boundaries: SCWMC, WMWMC, BCWMC, and MWMO.

NEPA/404 Merger Process

The analysis completed for this section includes the Council and USACE coordination for obtaining permit approval under Section 404 of the CWA. Coordination with USACE also included FTA and Council participation in a merger process between the NEPA and the CWA Section 404 permitting processes. The NEPA/404 merger process provided USACE with an opportunity to review and comment on four sequential concurrence points at key milestones during project development: (1) purpose and need, (2) array of alternatives and alternatives carried forward, (3) identification of the Preferred Alternative, and (4) design phase impact minimization. The goal of the NEPA/404 merger process is to achieve an orderly, concurrent NEPA/404 review process and to ensure that the project being reviewed is likely to succeed in obtaining a Section 404 permit.

USACE provided concurrence to the first two milestones on June 19, 2013. On October 1, 2013, USACE provided concurrence on the identification of the proposed BLRT Extension project (Concurrence Point 3). As part of providing concurrence to the third milestone, USACE identified the Least Environmentally Damaging Practicable Alternative from among those that meet USACE's overall project purpose and determined that the proposed BLRT Extension project is likely to be permittable under the CWA. Documentation of USACE's concurrence with each milestone is provided in Appendix D of the Draft EIS.

The fourth milestone has been documented in the Section 404 permit application (see **Appendix I**), which includes a comprehensive description of the design avoidance and minimization efforts for each aquatic resource in the wetland study area and proposed mitigation. USACE has provided concurrence to the fourth and final milestone in a letter dated June 16, 2016.

On May 16, 2016, the Council submitted the Section 404 CWA permit application to USACE (see **Appendix I**). This application included the following items: (1) applicant and site location information, (2) a detailed summary of impacted aquatic resources, (3) supporting information for activities not requiring mitigation, (4) a detailed description of the Council's avoidance and minimization efforts known to date, and (5) a summary of the replacement/compensatory mitigation that would be provided for this project. The public notice period for this permit application will be concurrent with the circulation of the Final EIS. The Section 404 CWA permit would be issued prior to construction of the proposed BLRT Extension project.

5.3.2 Study Area

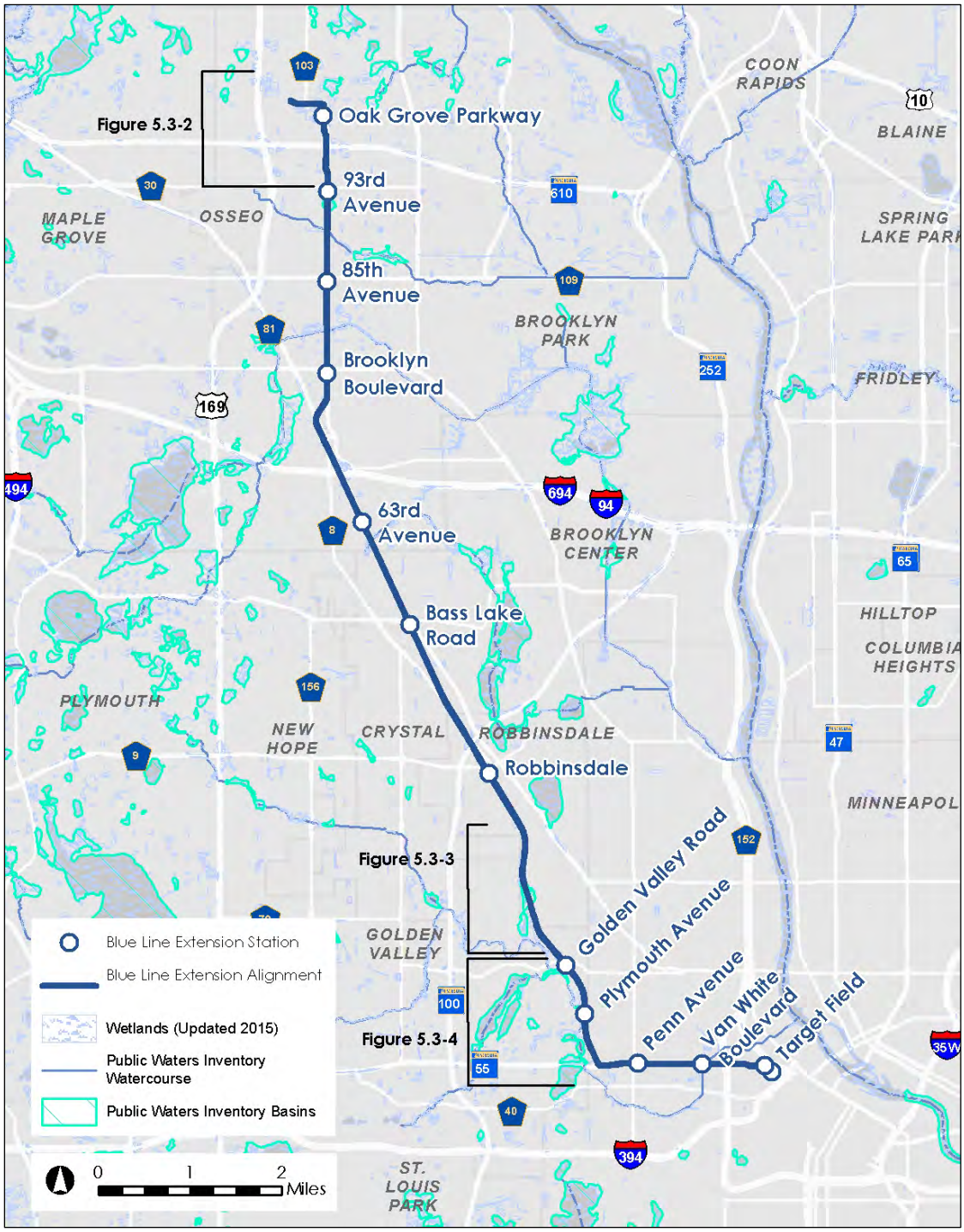
The study area for wetlands is defined as the area adjacent to the proposed BLRT Extension project tracks and associated facilities such as the OMF, the local road network, park-and-rides, and proposed stormwater management areas and mitigation areas. This study area captures wetlands near the proposed BLRT Extension project that could be affected. The study area on West Broadway Avenue between about 94th Avenue and Candlewood Drive is more limited in its extent because Hennepin County is implementing mitigation associated with reconstructing West Broadway Avenue as described in a separate Environmental Assessment Worksheet for the West Broadway Avenue Reconstruction project.

5.3.3 Affected Environment

Much of the study area is characterized by commercial, industrial, and residential development. The segment of the study area from the Target Field Station westward along Olson Memorial Highway is completely developed, and wetlands are not present. The study area along the BNSF freight rail tracks from Olson Memorial Highway north to 36th Avenue North in Robbinsdale has abundant wetlands generally associated with Bassett Creek and its backwaters, Grimes Pond, and North Rice Pond. The study area from 36th Avenue North (in Robbinsdale) north to Candlewood Drive (in Brooklyn Park) is highly urbanized, and wetlands are generally lacking. The portion of the study area north of TH 610 is a mix of urbanizing rural land with isolated remnants of wetland remaining.

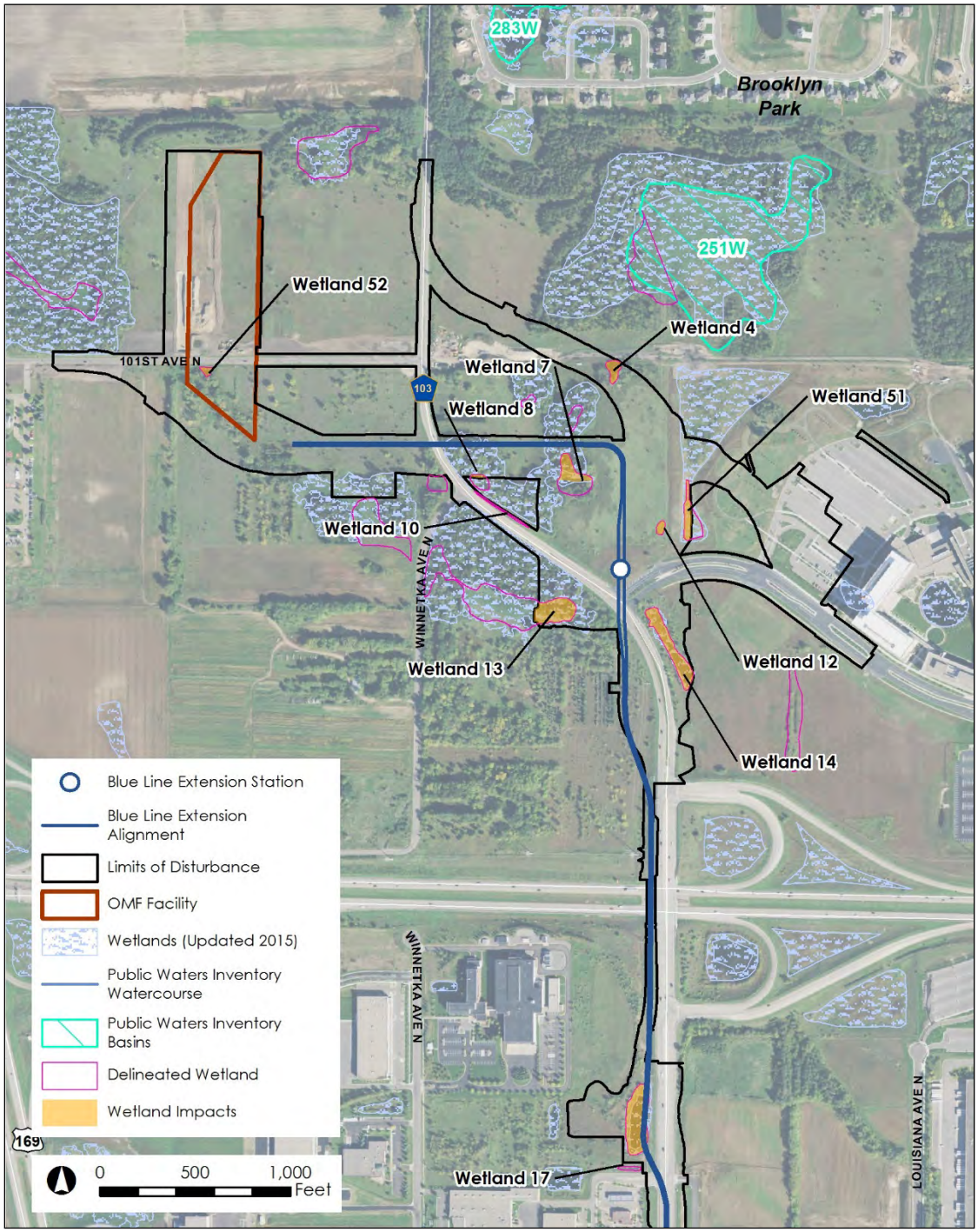
Wetlands were delineated along the proposed BLRT Extension project and associated facilities during the spring and summer of 2015. An overview of delineated basins along the proposed BLRT Extension project is provided in **Figure 5.3-1**. Details of delineated wetlands in the northern and southern portions of the proposed BLRT Extension project are shown in **Figure 5.3-2 through Figure 5.3-4**. For this analysis, delineated basins are divided into two categories: stormwater ponds and natural wetland basins.

Figure 5.3-1. Overview of Delineated Wetlands Near the Proposed BLRT Extension Project



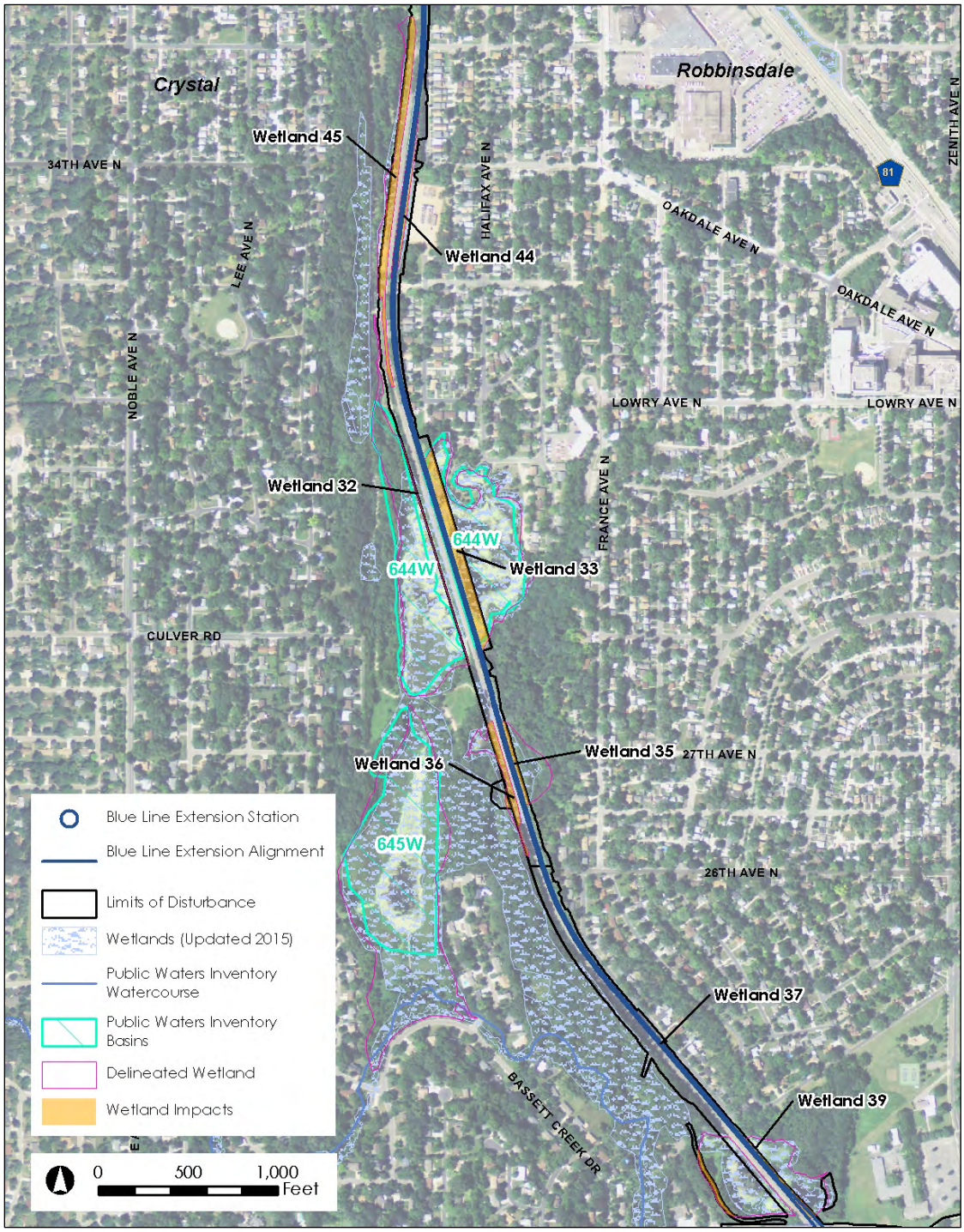
Source: Sources: Aerial: 2013 Hennepin County NAIP US Department of Agriculture; Wetland: National Wetland Inventory Update for Minnesota 2015 (modified by SEH, 2015), Delineated Basins (SEH, 2015); DNR Public Waters Inventory: DNR, 2008

Figure 5.3-2. Detail of Wetlands near the Northern Portion of the Proposed BLRT Extension Project



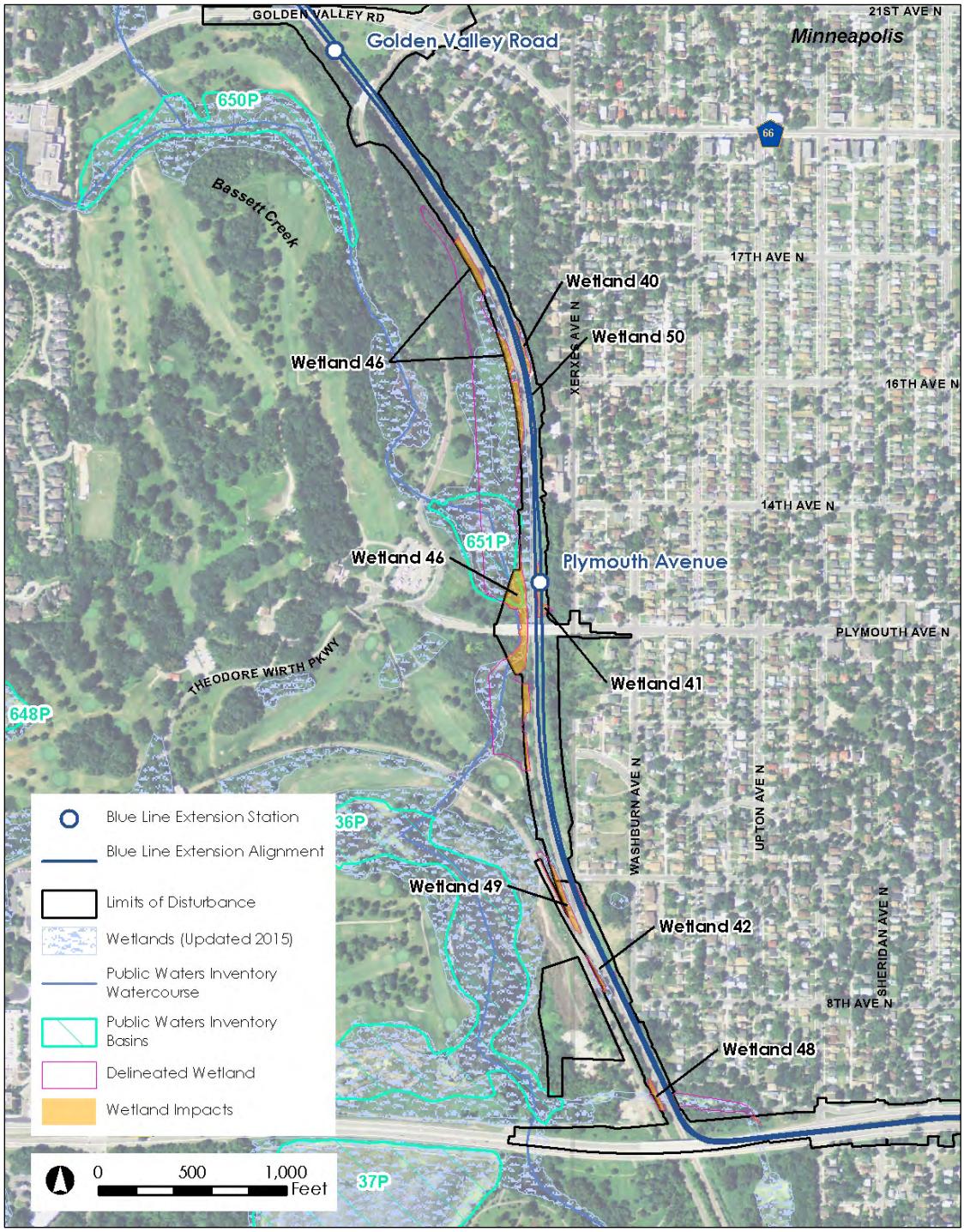
Source: Source: Sources: Aerial: 2013 Hennepin County NAIP US Department of Agriculture; Wetland: National Wetland Inventory Update for Minnesota 2015 (modified by SEH, 2015), Delineated Basins (SEH, 2015); DNR Public Waters Inventory: DNR, 2008

Figure 5.3-3. Detail of Wetlands near the Southern Portion of the Proposed BLRT Extension Project – Robbinsdale/Golden Valley



Source: Source: Sources: Aerial: 2013 Hennepin County NAIP US Department of Agriculture; Wetland: National Wetland Inventory Update for Minnesota 2015 (modified by SEH, 2015), Delineated Basins (SEH, 2015); DNR Public Waters Inventory: DNR, 2008

Figure 5.3-4. Detail of Wetlands near the Southern Portion of the Proposed BLRT Extension Project – Golden Valley/Minneapolis



Source: Source: Sources: Aerial: 2013 Hennepin County NAIP US Department of Agriculture; Wetland: National Wetland Inventory Update for Minnesota 2015 (modified by SEH, 2015), Delineated Basins (SEH, 2015); DNR Public Waters Inventory: DNR, 2008

Table 5.3-1 summarizes the extent of various wetland types in the study area. Stormwater ponds have generally been extensively excavated in order to enhance stormwater management. Those basins designated as natural wetland basins generally have not been extensively excavated and are underlain by mapped hydric soils.

Table 5.3-1. Extent of Wetland Types in the Study Area

Wetland Type		Total Extent (acres)	
Circular 39[1]	Eggers and Reed[2]	Natural Wetland Basins	Stormwater Ponds
Type 1	Seasonally flooded basin	>38.29	1.04
Type 3	Shallow marsh	0.00	1.02
Type 4	Deep marsh	17.51	2.34
Type 5	Open water	13.36	1.20
Type 6	Shrub carr	1.39	1.13
	Total	**>70.55**	**6.73**

[1] Plant communities classified based on US Fish and Wildlife Circular 39.

[2] Plant communities classified based on *Wetland Plants and Plant Communities of Minnesota and Wisconsin* by Eggers and Reed (1997) (USACE St. Paul District).

5.3.3.1 Notable Aquatic Habitats

Four wetland complexes in the study area were identified by the Council as notable aquatic habitats. Notable aquatic habitats are generally larger complexes of diverse wetland types. Notable aquatic habitats can be natural wetlands or wetlands excavated in the distant past; however, a variety of wetland functions have developed over time.

These notable aquatic habitats provide refuge for a variety of frogs and toads, turtles, snakes, and bird species.

- **North and South Rice Ponds,** located in Robbinsdale and Golden Valley on the west side of the existing BNSF tracks. The total size of this wetland complex is about 25 acres.
- **Grimes Pond,** located in Robbinsdale on the east side of the existing BNSF tracks. The total size of this wetland complex is about 7 acres.
- **Golden Valley Ponds,** located on the north side of Golden Valley Road on both sides of the existing BNSF tracks. The total size of these ponds is about 5 acres.
- **TWRP (Bassett Creek and backwaters),** located north and south of the Plymouth Avenue bridge on the west side of the existing BNSF tracks. The total size of this wetland complex is more than 12 acres.

Bassett Creek and its associated backwaters flow through and near a large portion of the study area from North Rice Pond south to Olson Memorial Highway. The headwaters of Bassett Creek is Medicine Lake in Plymouth, and its terminus is the confluence with the Mississippi River in Minneapolis. The entire length of Bassett Creek is currently listed on the MPCA's 303(d) List of

Impaired Waters. Aquatic recreation is impaired as a result of high fecal coliform. Aquatic life is impaired as a result of high chloride and stressors affecting the fish community in the creek.

Table 5.3-2 summarizes the delineated wetlands and aquatic resources in the study area that are designated as DNR public waters, public waters wetlands, or public watercourses.

Table 5.3-2. DNR Public Waters, Public Waters Wetlands, and Public Watercourses in the Study Area

Public Waters ID[1]	Wetland Basin ID[2]	Notes
644W	Wetlands 32 and 33	North Rice Pond and Grimes Pond
651P	Wetland 46	Backwaters of Bassett Creek near Plymouth Avenue
36P	Wetland 48	Backwaters of Bassett Creek near Olson Memorial Highway
Bassett Creek	Adjacent to Wetland 46	Channel of Bassett Creek

Source: DNR Public Waters Inventory

[1] W indicates DNR public waters wetlands, P indicates public waters, and unnumbered waterbodies indicate public watercourses.

[2] Wetland basin IDs (identifiers) are described in the *Wetlands Technical Memorandum*.

5.3.4 Environmental Consequences

5.3.4.1 Operating-Phase (Long-Term) Impacts

No-Build Alternative

There would be no operating-phase impacts to wetlands or other aquatic resources from the No-Build Alternative.

Proposed BLRT Extension Project

The expected wetland impacts of the proposed BLRT Extension project are summarized in **Table 5.3-3** by wetland type. The table describes total permanent and temporary impacts to wetlands, as well as impacts that are under the jurisdiction of USACE and WCA. Impact areas are shown above in **Figures 5.2-2 and 5.2-3**. Impacts to each delineated basin within and near the proposed BLRT Extension project are further described and depicted in the appended *Wetlands Technical Memorandum* (**Appendix F**).

Standard erosion-control BMPs will be used for work within adjacent wetland and aquatic resources where necessary, thereby minimizing impacts to the waterbodies downslope and to aquatic wildlife.

Table 5.3-3. Impacts to Delineated Basins from the Proposed BLRT Extension Project by Wetland Type

Wetland Type		Impacts (acres)				
Circular 39[1]	Eggers and Reed[2]	Permanent Impacts	Temporary Impacts	Total Impacts	USACE Jurisdictional Impacts	WCA Jurisdictional Impacts
Type 1	Seasonally flooded basin	5.33	1.26	6.59	2.52	4.28
Type 3	Shallow marsh	—	—	—	—	—
Type 4	Deep marsh	2.44	0.05	2.49	1.01	0.10
Type 5	Open water	1.69	1.92	3.61	0.42	1.69
Type 6	Shrub carr	0.50	—	0.50	0.21	0.21
	Total	**9.96**	**3.23**	**13.19**	**4.16**	**6.28**

[1] Plant communities classified based on US Fish and Wildlife Circular 39.

[2] Plant communities classified based on *Wetland Plants and Plant Communities of Minnesota and Wisconsin* by Eggers and Reed (1997) (USACE St. Paul District).

A portion of Bassett Creek, a stream reach of about 450 feet total length, near the Plymouth Avenue bridge will be relocated to accommodate the proposed BLRT Extension project and associated infrastructure. The upstream limit of the stream relocation is about 200 feet north of the Plymouth Avenue centerline, and the downstream limit is about 250 feet south of the Plymouth Avenue bridge centerline. This reach of Bassett Creek would be moved about 20 feet west. The final design of the creek realignment will include considerations for construction staging to ensure that flow rates are managed and to ensure safe discharge of the flows during construction. These considerations could include diversion and pumping and scheduling the construction during winter when the flows are typically low.

The permanent impact to Bassett Creek is quantified in the permit application (see Section 5.4 of the Section 404 permit application in **Appendix I**). Restoration activities on the relocated reach of stream would be specified in the issued permit and would be considered mitigation for the relocation.

OMF

The OMF configuration was modified to minimize impacts to wetlands. Construction of the proposed OMF will impact approximately 0.05 acre of wetland.

TPSS

No impacts to wetlands in the study area are anticipated from TPSS. If refined design of the proposed BLRT Extension project requires unavoidable impacts to wetlands, the impacts would be minimized using features such as retaining walls, steep fill slopes, and appropriate anti-erosion measures consistent with USACE and BWSR minimization guidance.

5.3.4.2 Construction-Phase (Short-Term) Impacts

No-Build Alternative

There would be no construction-phase impacts to wetlands or other aquatic resources from the No-Build Alternative.

Proposed BLRT Extension Project

Typically, construction-related wetland impacts are caused by building temporary access roads. Temporary wetland impacts are anticipated in portions of Sochacki Park to allow construction of the Grimes Pond bridge. Several other small areas of temporary impacts to wetlands at various locations throughout the proposed BLRT Extension project area would be necessary. These temporary impacts are associated with construction access and staging activities. Total temporary wetland impacts would be about 3.23 acres associated with five separate delineated wetlands. Temporary access roads would be designed to avoid or minimize wetland impacts to the extent practicable. Temporarily disturbed wetland areas would be restored to pre-construction conditions as required by permit stipulations.

Grading and disturbing soil during construction could cause temporary erosion and sedimentation of disturbed areas. These temporary construction-phase impacts would be minimized to the extent possible by using BMPs for erosion control. All disturbed areas would be graded and reseeded to stabilize the soil. Measures such as silt fences, erosion-control blankets, and other soil-stabilization measures would be implemented to maintain water quality.

TPSS

There would be no temporary construction-phase impacts to wetlands from constructing and installing TPSSs as part of the proposed BLRT Extension project.

5.3.5 Avoidance, Minimization, and/or Mitigation Measures

Complete avoidance of wetland impacts from the proposed BLRT Extension project and associated facilities is not feasible; therefore, several measures to reduce wetland impacts from the proposed BLRT Extension project and associated facilities have been incorporated into the design. The Council used the following measures to minimize wetland impacts in the study area:

- **Operating-Phase (Long-Term) Impacts**
  - **OMF Configuration.** Several configurations of the OMF north of TH 610 were examined to minimize the wetland impacts reported in the Draft EIS. One conceptual north-south configuration would have had a large wetland impact. Another east-west configuration also would have had a large wetland impact. The OMF in the proposed BLRT Extension project north-south design (see **Figure 2.5-4**) would have an impact of about 0.05 acre on one small wetland.
  - **BLRT on Elevated Structure across Grimes Pond and ponds near Golden Valley Road.** The proposed BLRT Extension project design accommodates the LRT tracks on an elevated structure in the segment that bisects Grimes Pond/North Rice Pond, as well as the segment that bisects the ponds north of Golden Valley Road. The Draft EIS conceptual designs used a continuous embankment of fill in Grimes Pond to support the LRT tracks. The current design reduces wetland impacts because the total wetland fill with the elevated structure would be the cumulative footprint of the piers and bridge abutments rather than of continuous fill.
- **Construction-Phase Impacts**
  - **BMPs for Erosion Control.** Appropriate BMPs will be implemented to protect wetlands and other aquatic resources that are downslope of or downstream from areas disturbed as a result of earthmoving. Such BMPs could include silt fencing, silt curtains, erosion mats, and rapid revegetation of disturbed areas.

Long-Term Mitigation Measures. The proposed BLRT Extension project shall require coordination and permitting from local, state, and federal water resource agencies. The Council coordinated with the Wetlands Technical Evaluation Panel regarding mitigation strategies prior to submitting the WCA and CWA Section 404 permit applications. The Council's analysis of preliminary mitigation strategies included establishing project-specific permittee-responsible mitigation sites and purchasing wetland mitigation bank credits. Based on this analysis, the Council determined that wetland impacts from the proposed BLRT Extension project shall be mitigated through a combination of on-site wetland mitigation and purchases of private wetland credits from existing mitigation banks in suitable major watersheds and Bank Service Areas.

Based on the USACE St. Paul District Policy for Wetland Compensatory Mitigation in Minnesota (USACE, 2009), the current replacement ratio for wetland credits in this area of Minnesota is 2.5 to 1 (mitigation to impacts), although, if mitigation is constructed prior to impacting wetlands (such as with wetland mitigation banks) and is of the same type as the impacted wetlands, the ratio is typically reduced to 2 to 1. For on-site wetland mitigation, various amounts of wetland credit are

allocated depending on the mitigation activity undertaken, such as wetland creation versus wetland restoration.

Given the urbanized and rapidly urbanizing nature of the study area, opportunities for on-site wetland mitigation could be limited. Several open areas of drained hydric soils in Brooklyn Park north and south of TH 610 could provide some on-site wetland mitigation opportunities. Other opportunities might be feasible farther south in TWRP within the proposed floodplain mitigation area associated with Bassett Creek (see **Section 5.2.5**). Final on-site mitigation site selection and design will be completed in accordance with the requirements of the WCA mitigation plan approval and CWA Section 404 permit.

The Council will purchase wetland mitigation bank credits from established and approved wetland bank accounts in accordance with the applicable USACE, WCA, and LGU siting priority requirements prior to the construction of the proposed BLRT Extension project. The proposed BLRT Extension project alignment is entirely within the seven-county metro area, Major Watershed 20 (Mississippi River – Twin Cities), and Bank Service Area 7. Thus, the Council will first seek purchases of private wetland mitigation credits within the seven-county metro area, Bank Service Area 7, and Major Watershed 20. The Council will expand the search for suitable private wetland credits to adjacent Bank Service Areas and major watersheds if needed, though a mitigation ratio higher than 2 to 1 will typically apply in that case.

Short-Term Mitigation Measures. Wetland areas affected on a temporary basis during construction will be restored to their existing grade and hydrology (to existing conditions when applicable) and reseeded with an appropriate native wetland species seed mix, as required by the WCA and the CWA. The restoration details associated with each short-term wetland impact will be identified in the WCA and CWA permit applications. The Council will consult with USACE to determine whether purchase of wetland mitigation bank credits for CWA regulated wetlands will be required for temporary impacts lasting longer than 180 days.

5.4 Geology, Soils, and Topography

This section describes the existing geology, soils, and topography in the study area and the short-term impacts on geology, soils, and topography from constructing the proposed BLRT Extension project.

5.4.1 Regulatory Context and Methodology

In Minnesota, geologic resources are rarely regulated, with the exceptions of groundwater dewatering and mining activities. A permit from the DNR is required to dewater in excess of 1.0 million gallons per year or 10,000 gallons a day.

The discharge from dewatering is regulated under the NPDES permit that is required for construction activities. If the water is contaminated, an individual NPDES permit must be obtained from MPCA, or the groundwater can be discharged to the sanitary sewer system if approved by MCES.

The geologic resources listed in this section are not isolated and can affect or be affected by other water resources discussed in **Sections 5.2 and 5.3**.

The Council consulted the Geologic Atlas of Hennepin County (Minnesota Geological Survey, 1989) and the Minnesota Geospatial Information Office for information regarding surface geology, bedrock geology, and groundwater resources.

5.4.2 Study Area

The study area for geology, soils, and topography is defined as the area within and adjacent to the LOD of the proposed BLRT Extension project.

5.4.3 Affected Environment

5.4.3.1 Geology

The unconsolidated sediments in the study area were deposited primarily by glacial ice and meltwater during the last glaciation (Wisconsinan Stage). Sediments along the majority of the study area can be attributed to the advancement and retreat of the Superior lobe, the Grantsburg sublobe of the Des Moines lobe, and meltwater from these lobes. The underlying sandstone and carbonate bedrock are deeply cut with a branched network of valleys carved out by meltwater streams that drain toward master streams, such as the modern-day Mississippi River. Middle- and upper-terrace deposits of sand, gravelly sand, and loamy sand dominate much of the study area. Small areas of sandy to loamy till from the Des Moines lobe and Grantsburg sublobe are also present.

Lakes and wetlands throughout the region formed in low-lying areas created by the presence of underlying bedrock valleys or as a result of ice block melting as the glaciers were breaking up and retreating.

Karst features such as springs, caverns, and sinkholes are typically found in areas where carbonate bedrock is overlain by a thin cover of glacial material. The majority of the study area is mapped as *buried karst* (over 100 feet of sediment over carbonate bedrock). Small areas of *transition karst*

(between 50 and 100 feet of sediment) and *active karst* (less than 50 feet of sediment) have also been identified in the study area.

An area designated as active karst has been mapped along the proposed BLRT Extension project between downtown Minneapolis and the BNSF rail corridor (see **Figure 5.4-1**). No actual karst features have been mapped in the study area, but two springs are located about 1 mile to the southwest.

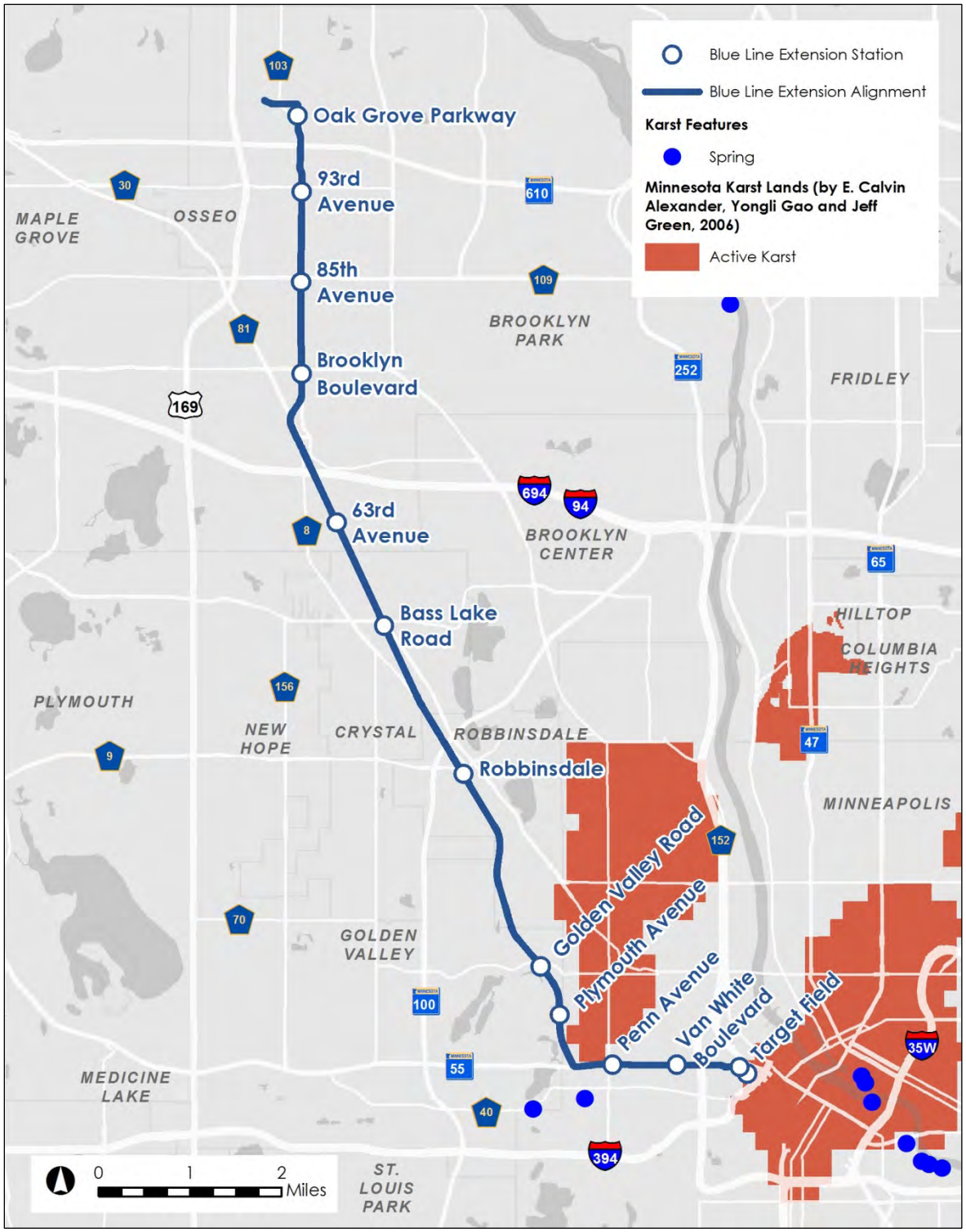
5.4.3.2 Soils

Soil types vary in the study area. Soil data were obtained from digital soil surveys of Hennepin County distributed by the Council. Digital soil data and descriptions for Hennepin County were gathered from the April 1974 Soil Survey of Hennepin County, Soil Conservation Service (now Natural Resources Conservation Service [NRCS]) soil maps produced for eastern Hennepin County in 1983, and NRCS Mylar Maps of the Hennepin County Soil Survey.

The majority of the study area is located on previously developed land and includes soils that have been highly disturbed. The major soil types within the LOD for the proposed BLRT Extension project are as follows:

- Sandy loams and loamy sands that range from poorly drained soils to well-drained soils. The poorly drained soils are associated with the wetlands and floodplain areas in the study area. Individual soil complexes include:
  - Forada sandy loam
  - Anoka and Zimmerman soils
  - Duelm loamy sand
  - Isan sandy loam
  - Soderville loamy fine sand
- Soils that are considered highly disturbed by human activity. These soils are generally classified as well drained to excessively drained. Individual soil complexes include:
  - Urban land – Hubbard Complex
  - Urban land – Udipsamments
  - Urban land – Lester complex
  - Urban land – Dundas complex
- Soils located in filled areas that were previously marshes, river floodplains, or swamps (wet areas). These soils are considered poorly drained. Individual soil complexes include:
  - Udorthents, wet substratum

Figure 5.4-1. Active Karst Areas



Sources: University of Minnesota, Department of Geology and Geophysics; DNR – Division of Waters

Areas of poor soils have been identified along the study area. Poor soils are defined in the context of the proposed BLRT Extension project as soils that have low strength and high compressibility. These soils are susceptible to large, non-uniform settlement. Such soils are often described as peats, organic clays, soft clays, and swamp deposits. The largest area of poor soils identified in the study area is located between Olson Memorial Highway and 36th Avenue (**Figure 5.4-2**). Geotechnical borings have been concentrated along this stretch to better understand subsurface conditions. Areas of poor soils down to depths over 100 feet have been identified.

5.4.3.3 Topography

The general topography of the study area consists of gently rolling hills. Land surface elevation ranges from 812 feet to 905 feet throughout the study area based on LIDAR data (a remote sensing method that uses light in the form of a pulsed laser to measure variable distances to the Earth) received from DNR (2012). The general grade along the proposed BLRT Extension project decreases to the south and east. Low-lying areas in the study area, relative to the surrounding land, were noted in the vicinity of wetlands and natural areas that abut the proposed BLRT Extension project alignment in Golden Valley and Robbinsdale.

5.4.4 Environmental Consequences

5.4.4.1 Operating-Phase (Long-Term) Impacts

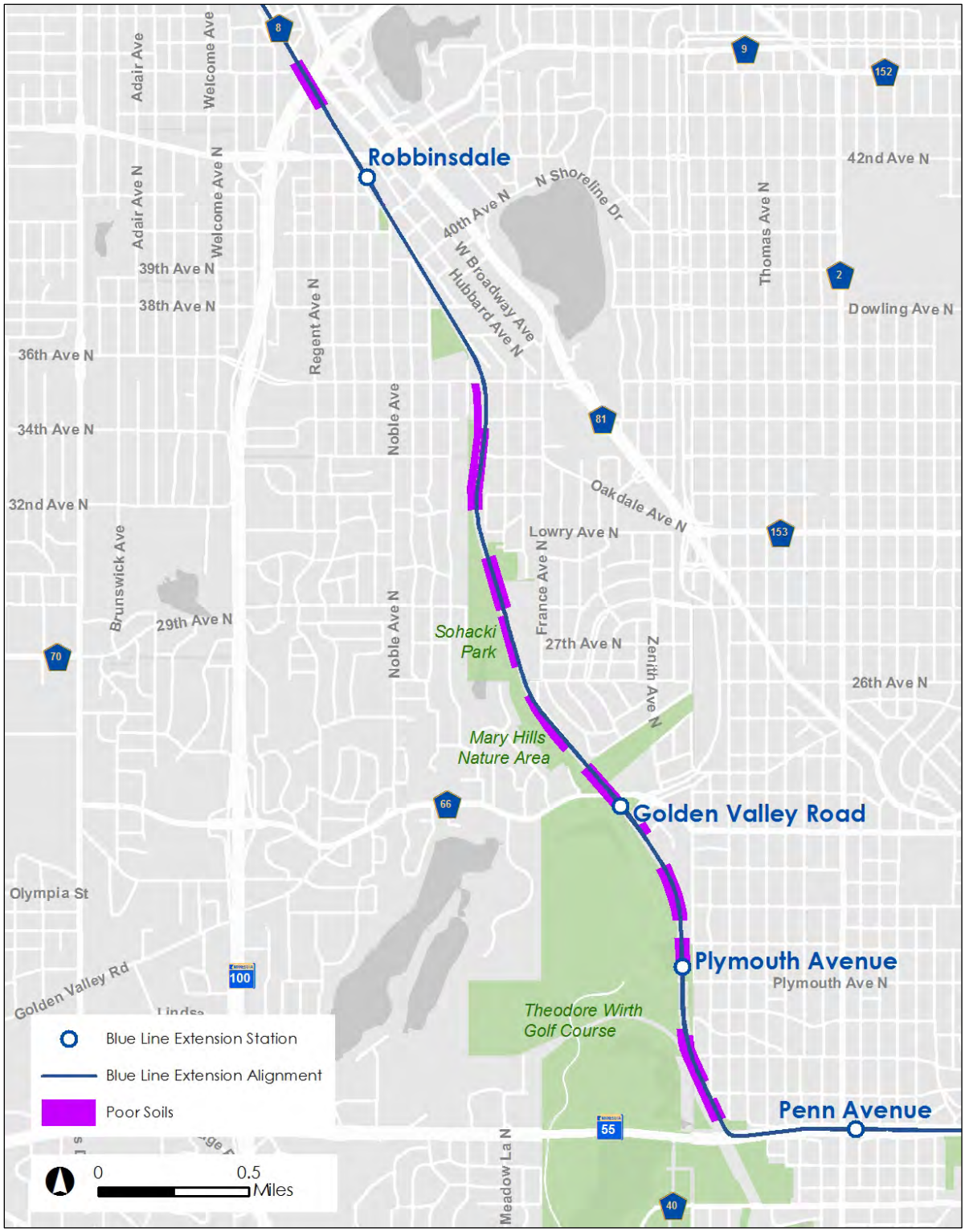
No-Build Alternative

There would be no operating-phase impacts to geology, soils, or topography from the No-Build Alternative.

Proposed BLRT Extension Project

Impacts from the proposed BLRT Extension project to geology and soils would occur solely during construction; therefore, no operating-phase (long-term) impacts are anticipated from the proposed BLRT Extension project.

Figure 5.4-2. Areas of Poor Soils



5.4.4.2 Construction-Phase (Short-Term) Impacts

No-Build Alternative

There would be no construction-phase impacts to geology, soils, or topography from the No-Build Alternative.

Proposed BLRT Extension Project

No geologic features or hazards were identified in the study area; however, a portion of the proposed BLRT Extension project is located in an area identified as active karst. Two springs were mapped 1 mile southwest of the study area. Though no karst features have been identified along the proposed BLRT Extension project, a small segment of the study area has a high probability for karst, as shown in **Figure 5.4-1**. The design and operation of project infrastructure could be affected if subsurface features are encountered during construction. The presence of karst could also exacerbate the spread of contamination if spills or releases of hazardous materials were to occur in this area. Details regarding releases of hazardous materials in karst areas are discussed further in **Section 5.5.5**.

Individual locations of limited dewatering for utility construction or similar short duration installations may occur, however there are no planned areas of large scale, long duration dewatering.

Areas of poor soils complicate the design and construction phases of the proposed BLRT Extension project. Poor soils in the study area could allow non-uniform settlement of built infrastructure if the soils are not adequately accommodated for in the design phase. The most concentrated area of poor soils is along the BNSF rail corridor between Olson Memorial Highway and 36th Avenue in Golden Valley and Robbinsdale. In order to address this concentrated area of poor soils, the Council has evaluated a range of mitigation alternatives from a relatively expensive conventional bridge structure spanning the poor soils to low-cost wick drains. The Council selected load transfer platforms supported by vertical elements on a grid spacing likely between 6 and 8 feet on center. The load transfer platform is a built-up layered system of geogrid and stone aggregate approximately 3 feet thick. The vertical elements would likely be piles or rigid inclusions.

Since the majority of the proposed BLRT Extension project would follow existing freight tracks or roads at similar elevations, substantial grading is not needed to work around steep slopes or other topographic extremes. Short-term dewatering would be needed for open-trench subsurface work in areas of high groundwater, but specific needs would be better defined as the final design of the proposed BLRT Extension project advances.

5.4.5 Avoidance, Minimization, and/or Mitigation Measures

Long-Term Mitigation Measures. No mitigation measures are warranted for long-term or short-term impacts to geology or soils, because the effectiveness of identified avoidance measures (load transfer platforms) and BMPs would prevent any adverse impacts.

Short-Term Mitigation Measures. All project-related construction activity will adhere to the appropriate standards and applicable permitting requirements of MPCA, MnDOT, and Hennepin

County for grading and erosion control. Dewatering permits, if required, would be obtained from DNR. See **Section 5.5.5** for mitigation of the increased risk to groundwater resources from spills in karst areas.

For areas of poor soils, the proposed BLRT Extension project design will incorporate geotechnical elements to provide a stable base for project components (for example, track and station platforms) and to avoid differential settlement of soils. Geotechnical design elements include load transfer platforms and lightweight fill. Specifically, the ground improvements to allow the proposed BLRT and freight construction over top of the poor soils would be in-situ and therefore would be contained within the existing BNSF right-of-way. The ground improvement method would be a load transfer platform that strengthens and bridges the existing soil strata without ground settlement along with some use of lightweight fill that offsets any additional soil loading by displacing existing heavier soil with lightweight fill.

5.5 Hazardous Materials Contamination

This section describes the properties in the study area that potentially contain hazardous or regulated materials and describes the potential for encountering contaminated soil and/or groundwater during construction of the proposed BLRT Extension project. The analysis is based on information in the Modified Phase I ESA conducted by the Council for the proposed BLRT Extension project along the proposed BLRT Extension project, including an OMF north of the Oak Grove Parkway park-and-ride.

5.5.1 Regulatory Context and Methodology

MPCA oversees regulations pertaining to approvals for cleanup plans for contaminated soil, groundwater, and waste; registration and removal of petroleum underground storage tanks; and NPDES permitting. Additionally, the Minnesota Department of Health regulates asbestos abatement and disposal of lead-based paint. Activities that encounter contaminated materials must follow state requirements for safe handling and disposal under the purview of MPCA.

There is no single, comprehensive source of information available that identifies known or potential sources of environmental contamination. Therefore, to identify and evaluate properties that potentially contain hazardous or regulated materials (such as petroleum products) or other sources of contamination, the Council completed a Modified Phase I ESA in conformance with EPA, All Appropriate Inquiry, and American Society for Testing and Materials (ASTM) 1527-13, as modified by MnDOT for transportation projects. The Modified Phase I ESA is an accepted industry practice for transportation projects and consists of the following key components for evaluating properties for the likelihood of contamination: (1) site reconnaissance, (2) records review, (3) historical review, and (4) interviews with representatives from local government.

The Modified Phase I ESA is a qualitative review that evaluates the risk of encountering contamination during construction based on the key components listed above for properties along the proposed BLRT Extension project. It does not measure the severity of any potential hazardous materials found on site. The following rankings were used to evaluate potentially contaminated properties:

- **Low potential for contamination properties** include properties that are hazardous waste generators, properties that are light industrial facilities, and possibly some properties where site reconnaissance showed poor housekeeping or soil disturbance.
- **Medium potential for contamination properties** include properties with closed leaking underground or aboveground storage tanks (LUASTs), all properties with underground or aboveground storage tanks (USTs or ASTs), all properties with historic or current vehicle and/or auto body repair activities and petroleum use or storage, and properties with unintentional releases of hazardous materials.
- **High potential for contamination properties** include all active and inactive Voluntary Investigation and Cleanup (VIC) Program sites; all active Petroleum Brownfields Program (PBP) sites; Minnesota Environmental Response and Liability Act (MERLA) sites; all heavy industry sites; all active and inactive dumpsites; all Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) sites; and all active LUAST sites.

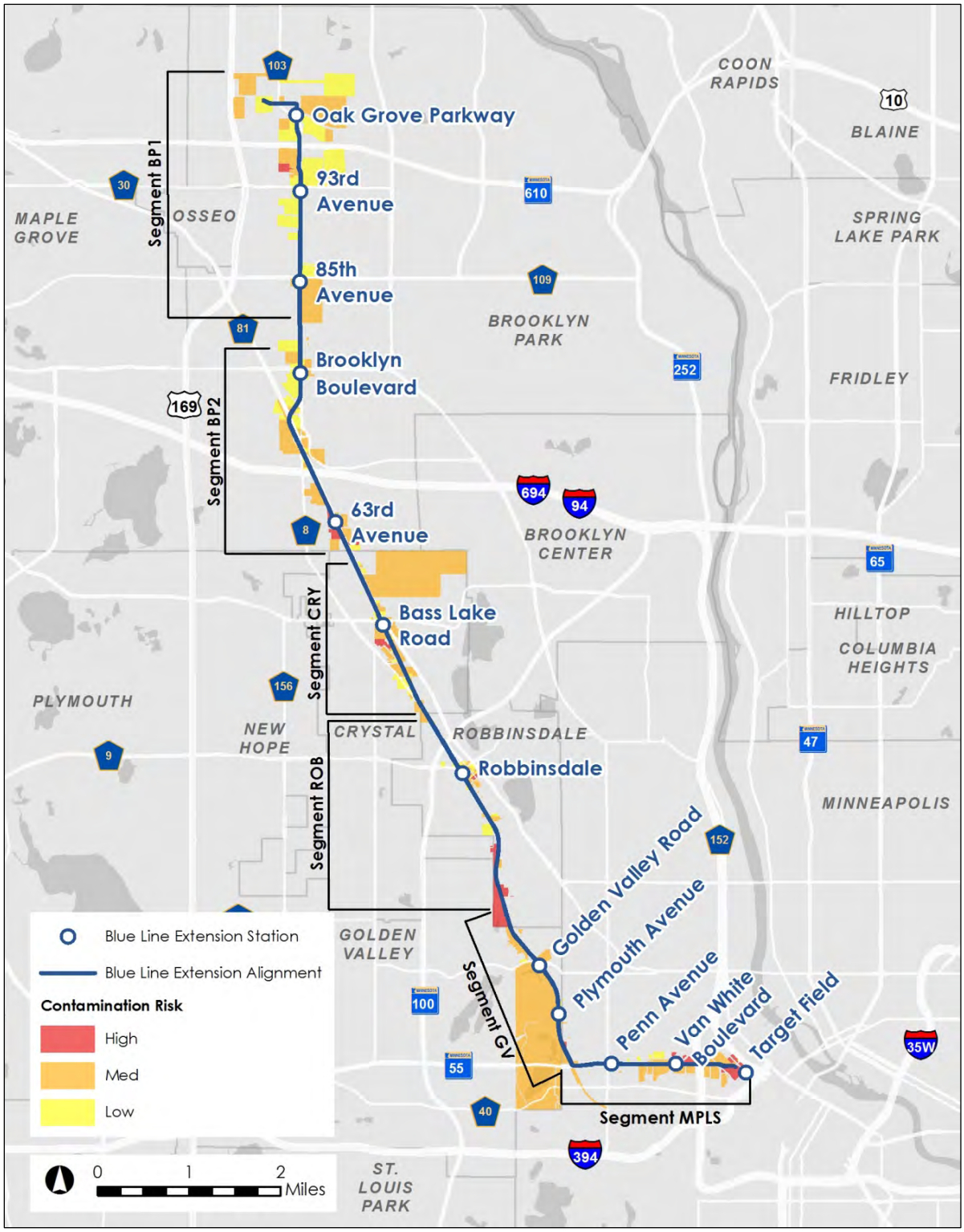
5.5.2 Study Area

The study area for hazardous materials contamination includes potentially contaminated properties or regulated material facilities within 500-feet of the proposed BLRT Extension project and the OMF.

For the discussion in the following sections, the study area was divided into six segments that generally correspond with the cities along the proposed BLRT Extension project. These segments are listed below and shown in **Figure 5.5-1**:

- **Segment MPLS**, located in the City of Minneapolis, a segment about 2 miles long
- **Segment GV**, located in the City of Golden Valley, a segment about 1.4 miles long
- **Segment ROB**, located in the City of Robbinsdale, a segment about 2.6 miles long
- **Segment CRY**, located in in the City of Crystal, a segment about 1.9 miles long
- **Segment BP2**, located in the City of Brooklyn Park, a segment about 2.6 miles long
- **Segment BP1**, located in the City of Brooklyn Park, a segment about 2.4 miles long

Figure 5.5-1. Locations of Potentially Contaminated Properties



Source: Modified Phase I ESA, September 2015, prepared by Braun Intertec

5.5.3 Affected Environment

Potentially contaminated properties are often found in previously developed industrial and commercial areas. These types of land uses are common throughout the study area, and there is a potential to encounter contaminated soils, groundwater, and materials based on prior use and development along the proposed BLRT Extension project alignment.

Table 5.5-1 summarizes the potentially contaminated properties that were identified in the study area (by segment) as identified in the Modified Phase I ESA. The properties are also shown in **Figure 5.5-1**.

Table 5.5-1. Number of Recorded Properties with Potential Contamination by Segment

Segment	Properties with Low Potential for Contamination	Properties with Medium Potential for Contamination	Properties with High Potential for Contamination	Total
Minneapolis	9	28	10	**47**
Golden Valley	3	6	0	**9**
Robbinsdale	37	23	7	**67**
Crystal	20	41	2	**63**
Brooklyn Park 2	24	26	4	**54**
Brooklyn Park 1	19	11	1	**31**
Total	**112**	**135**	**24**	**271**

5.5.4 Environmental Consequences

5.5.4.1 Operating-Phase (Long-Term) Impacts

No-Build Alternative

There is no likelihood of encountering contamination from hazardous or regulated materials as a result of the No-Build Alternative.

Proposed BLRT Extension Project

No hazardous or regulated materials would be produced by the proposed BLRT Extension project during its operating phase. No permanent storage tanks would be installed for this project. The long-term operation of the proposed OMF would require responsible management and containment of hazardous materials that are used and stored onsite, consistent with applicable regulatory standards (principally Minnesota Rules Chapter 7045). Oils, grease, and other waste materials generated during vehicle maintenance and repair activities would be collected and disposed of in accordance with recognized industry BMPs for rail transit maintenance facilities.

Acquiring land that is contaminated or that contains hazardous or regulated materials creates risk in the form of potential liability for investigation and cleanup costs. The extent of that risk would be based on the type and extent of the contamination. Therefore, the Council would avoid, to the extent

possible, acquiring land with known contamination that cannot be easily remediated or contained by conducting a more-detailed investigation of the potential for contamination as the proposed BLRT Extension project advances into further stages of project development.

5.5.4.2 Construction-Phase (Short-Term) Impacts

No-Build Alternative

There is no likelihood of encountering contaminated or regulated materials as a result of the No-Build Alternative. Therefore, no positive or negative impacts are expected.

Proposed BLRT Extension Project

The Modified Phase I ESA identified 271 properties in the study area that have a potential for contamination based on the ranking criteria in **Section 5.5.1**. The number of potentially contaminated properties in each segment of the study area is summarized above in **Table 5.5-1**. Construction activities involving subsurface disturbance can spread or release existing contamination that is present along the proposed BLRT Extension project. Encountering unknown contaminated materials can also pose a threat to human health and the environment.

5.5.4.3 Summary of Impacts

As shown above in **Table 5.5-1**, 24 high-potential and 135 medium-potential properties were identified in the study area. The segment with the largest number of high-potential properties (10 properties) was Segment MPLS (City of Minneapolis). This area has been developed since the 1880s, which is at least 50 years prior to the development in other segments. The segment with the largest number of potentially contaminated properties is Segment ROB (City of Robbinsdale), but the majority (37) of these properties are ranked as low potential. Segment CRY (City of Crystal) has a total of 41 properties that are ranked as medium potential for contamination.

Table 5.5-2 describes the 24 properties in the study area that are identified in **Table 5.5-1** as having the highest potential for contamination.

Table 5.5-2. High-Potential Properties in the Study Area by Segment

Segment	Phase I ESA ID[1]	Name	Rationale for Ranking	Disturbance Probable (Y/N)
Minneapolis	1	Ford Center	ASTs, closed LUST, closed spill, inactive VIC site, hazardous waste generator	N
Minneapolis	2	Be The Match	AST, closed LUST, closed spill, active VIC site, active PBP site, hazardous waste generator	N
Minneapolis	3	Hennepin County Energy Recovery Center and Caribou Coffee	Past filling stations and auto repair facilities, ASTs, USTs, closed LUST, closed spill, inactive VIC site, inactive PBP site, inactive CERCLIS site, hazardous waste generator	Y
Minneapolis	5	Property under construction	ASTs, USTs, closed LUST, active VIC site, active PBP site, hazardous waste generator	N
Minneapolis	7	Weather Rite	Past and commercial uses including machine shop, metal manufacturing, waste (garbage) management, and automotive repair and junkyard; USTs; closed LUST; inactive VIC site; active state assessment site (SAS); hazardous waste generator	N
Minneapolis	8	Junction Flats	Past auto repair and junkyard, ASTs, USTs, active VIC site, inactive PBP site, active site response section (SRS), hazardous waste generator	N
Minneapolis	12	Sharing and Caring Hands	Past auto repair and filling stations, UST, closed LUST, inactive VIC site, hazardous waste generator	N
Minneapolis	17	Velocity Express	ASTs, USTs, closed LUST, closed spill site, active VIC site, hazardous waste generator	Y
Minneapolis	21	Heritage Park II	Past commercial uses, USTs, closed LUST, closed spill, inactive VIC site, hazardous waste generator	Y
Minneapolis	47	Undeveloped properties	Inactive VIC site	Y
Robbinsdale	58	Walter Sochacki Community Park	Unpermitted dump site, active SAS, closed spill site	Y
Robbinsdale	59	South Halifax Park	Inactive VIC site, inactive SRS site, restrictive covenant	Y
Robbinsdale	75	Walgreens	Past commercial uses include filling station and auto repair facilities, ASTs, USTs, closed LUST, PBP site, inactive VIC site, hazardous waste generator	N
Robbinsdale	76	Broadway Court Apartments	Former gasoline station and dry cleaner, USTs, closed LUST, inactive VIC site, inactive CERCLIS site, inactive Superfund site, hazardous waste generator	Y

Table 5.5-2. High-Potential Properties in the Study Area by Segment

Segment	Phase I ESA ID[1]	Name	Rationale for Ranking	Disturbance Probable (Y/N)
Robbinsdale	88	Wuollet Bakery & Espresso	Past and current commercial uses, former dry cleaner, inactive VIC site	Y
Robbinsdale	90	Hubbard Market Place	Past auto repair activities, USTs, inactive VIC site	Y
Robbinsdale	107	The Steinhauser Group	Past dry cleaner, inactive VIC site	Y
Crystal	162	Commercial building	USTs, closed spill site, active PBP site, hazardous waste generator, machine shops	Y
Crystal	172	Cell tower and undeveloped land	Former gasoline station and auto repair, inactive VIC site, inactive PBP site, hazardous waste generator	Y
Brooklyn Park 2	190	Former Latzke Iron Works	Inactive VIC site	N
Brooklyn Park 2	192	Waterford Senior Townhomes	ASTs, USTs, inactive VIC site	Y
Brooklyn Park 2	195	Stormwater pond	USTs, closed LUST, closed spill site, active PBP site, active VIC site, hazardous waste generator, exterminating company	N
Brooklyn Park 2	196	Metro Transit Bottineau & 63rd Park-and-Ride	ASTs, USTs, closed LUST, closed PBP site, inactive VIC site, hazardous waste generator	Y
Brooklyn Park 1	258	Undeveloped land	USTs, closed LUST, PBP site, VIC site, hazardous waste generator	N

[1] See Modified Phase I Environmental Site Assessment in **Appendix F**.

Both high- and medium-risk properties have been identified in the Modified Phase I ESA as having a greater known risk of existing contamination. Potential construction-phase impacts include the time and expense of identifying, testing, and removing the contaminated materials found within the LOD.

The Council would use the results of the Modified Phase I ESA to plan the next phase of investigation, known as a Phase II ESA, in which a subsurface investigation is conducted and soil and groundwater samples are collected and then analyzed by a certified laboratory. This subsurface investigation provides a quantitative measurement of existing contamination in areas of proposed ground disturbance in the area of the identified high- and medium-risk properties. The results of the Phase II ESA would identify areas of contamination above regulatory standards that could require special handling and/or disposal during construction. Health and safety considerations might also need to be addressed in areas that exceed published levels of acceptable exposure for construction workers.

5.5.5 Avoidance, Minimization, and/or Mitigation Measures

The results of the Phase II ESA would be reviewed during design activities for the proposed BLRT Extension project, and impacts to areas of contaminated soil and/or groundwater will be avoided or minimized to the extent practicable.

Long-Term Mitigation Measures. No mitigation measures are warranted for long-term hazardous and contaminated materials impacts, because there would be no adverse impacts due to the effectiveness of identified avoidance measures.

Short-Term Mitigation Measures. The Council will enroll the proposed BLRT Extension project in the MPCA Brownfield Program, prior to the start of construction. As the proposed BLRT Extension project advances, it will be further refined to avoid disturbance to properties with known contaminants, as possible. In cases where the disturbance of hazardous and contaminated material cannot be avoided, the Council will conduct site remediation in accordance with the MPCA Brownfield Program regulatory framework and the approved RAPs for the project.

A Phase II ESA shall be completed, to address subsurface disturbance within areas identified as higher risk in the Modified Phase I ESA, after the publication of the Final EIS but prior to the start of construction. Based on the results of the Phase II ESA, the Council shall develop a Response Action Plan (RAP), approved by the MPCA prior to the start of construction that would address proper handling and treating of contaminated soil and/or groundwater that could not be avoided during construction.

A Construction Contingency Plan (CCP) shall be developed as part of the RAP for properly handling, treating, storing, and disposing of solid wastes, hazardous materials, petroleum products, and other regulated materials and wastes that are used or generated during construction and for managing previously unknown hazardous materials discovered during construction.

A Spill Prevention, Control, and Countermeasures (SPCC) Plan will be prepared by the contractor, and approved by MPCA. This plan will establish protocols to minimize impacts to soils and groundwater if a release of hazardous substances were to occur during construction. Areas of active karst, as discussed in **Section 5.4**, will be highlighted in the SPCC Plan as being more sensitive to spills and releases, since travel times from the surface to the underlying water table can be considerably faster in areas with karst features. Special considerations for spill prevention and response would be made for these areas.

In addition to contaminated soil and groundwater, the potential exists for structures on acquired land to contain asbestos, lead paint, or other hazardous materials. Any existing structures on acquired land will be surveyed for the presence of hazardous/regulated materials prior to their demolition or modification. Potentially hazardous materials will be handled and managed in compliance with all applicable regulatory standards and will be disposed in accordance with all Hazardous Materials Abatement Plans for in-place hazardous/regulated materials, and the RAP/CCP for hazardous/regulated materials in the site soils.

5.6 Noise

This section describes the existing noise environment in the study area and the long-term (operating-phase) and short-term (construction-phase) noise impacts from the No-Build Alternative and the proposed BLRT Extension project (for a description of cumulative effects, see **Chapter 6 – Indirect Impacts and Cumulative Effects**). This section provides an overview of the regulatory context and methodology used for the analysis, an assessment of existing noise conditions, a description of the expected noise impacts, and a description of mitigation measures to be implemented with the proposed BLRT Extension project. A technical report has also been prepared in support of this section (see **Appendix F**).

5.6.1 Regulatory Context and Methodology

5.6.1.1 Regulatory Context

This section describes the methodology used to assess predicted noise impacts and to develop mitigation strategies. Noise has been assessed in accordance with guidelines specified in FTA's *Transit Noise and Vibration Impact Assessment* guidance manual (FTA, 2006). The FTA guidance manual is the primary source for the noise assessment methodology. Noise impacts were evaluated using the Detailed Noise Assessment methodology in Chapter 6 of the FTA guidance manual (FTA, 2006).

5.6.1.2 Methodology

The noise assessment methodology for assessing noise impacts from LRT operations included the following steps:

1. Identify noise-sensitive land uses in the study area using aerial photographs, GIS data, and field surveys, typically within 300 feet of the proposed BLRT Extension project.
2. Measure existing noise levels in the study area near sensitive receptors.
3. Predict future project noise levels from transit operations using preliminary engineering plans and information on speeds, headways, track type, vehicle type, and grade-crossing operations for the proposed BLRT Extension project. The project noise level assessment included LRT operations, horns, and bells at grade crossings and stations; associated roadway improvements; and changes in feeder bus operations at selected stations. Details regarding the information used to predict future project noise levels are provided in **Appendix F**.
4. Assess the impact of the proposed BLRT Extension project by comparing the projected future noise levels with existing noise levels using the FTA noise impact criteria in Chapter 3 of the FTA guidance manual.
5. Recommend mitigation at locations where projected future noise levels exceed the FTA impact criteria.

In addition, the Council conducted a construction noise impact assessment using the methodology in Chapter 12 of the FTA guidance manual.

5.6.1.3 Understanding Noise

Sound is defined as small changes in air pressure above and below the standard atmospheric pressure. *Noise* is usually considered to be unwanted sounds. The three parameters that define noise are:

- **Level.** The level of sound is the magnitude of air pressure change above and below atmospheric pressure and is expressed in decibels (dB). Typical sounds fall within a range between 0 dB (the lower limits of human hearing) and 120 dB (the highest sound levels experienced in the environment). A 3-dB change in sound level is perceived as a barely noticeable change outdoors, and a 10-dB increase (or decrease) in sound level is perceived as a doubling (or halving) of the sound level.
- **Frequency.** The frequency (pitch or tone) of sound is the rate of air pressure changes. It is expressed in cycles per second, or Hertz (Hz). Human ears can detect a wide range of frequencies from around 20 Hz to 20,000 Hz. However, human hearing is not effective at high and low frequencies, and the A-weighting system (dBA) is used to correlate noise measurements with human response to noise. The A-weighted sound level has been widely adopted by acousticians as the most appropriate descriptor for environmental noise.
- **Time Pattern.** Because environmental noise is constantly changing, it is common to condense this information into a single number, called the "equivalent" sound level (L_{eq}). The L_{eq} represents the changing sound level over a period of time, typically 1 hour or 24 hours in transit noise assessments. The common noise descriptor used for LRT and freight rail projects is the day-night sound level (L_{dn}). This descriptor has been adopted by most agencies as the best way to describe how people respond to noise in their environment. L_{dn} is a 24-hour cumulative A-weighted noise level that includes all noises that happen within a day, with a 10-dB penalty for nighttime noise (10 p.m. to 7 a.m.). This nighttime penalty means that any noise events at night are equivalent to 10 similar events during the day. Typical L_{dn} values for various transit and freight operations are shown in **Figure 5.6-1**.

5.6.1.4 Noise Criteria

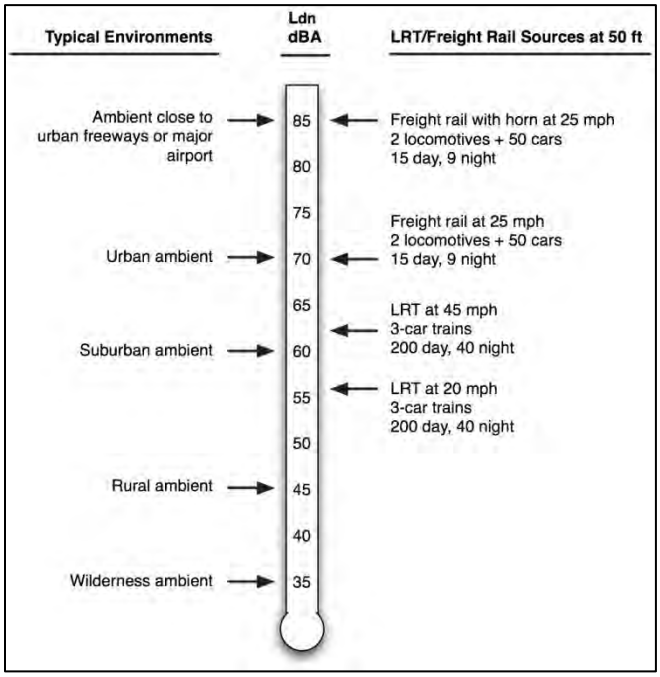
This section describes FTA and MPCA noise impact criteria and their applicability to this noise assessment.

FTA Noise Criteria

FTA's noise impact criteria are described in Chapter 3 of the FTA noise and vibration guidance manual (FTA, 2006). FTA's noise impact criteria are based on well-documented research on community response to noise, existing noise levels, and the change in noise exposure caused by a transit project. The FTA noise criteria compare project noise levels to existing noise levels (not to noise levels with the No-Build Alternative).

FTA's noise criteria are based on the land-use category of the sensitive receptor. The L_{dn} descriptor is used to assess transit-related noise at residential land uses where overnight sleep occurs (Category 2), and the L_{eq} descriptor is used to assess transit-related noise at other land uses, as shown in **Table 5.6-1**.

Figure 5.6-1. Typical Noise Levels from LRT and Freight Rail



Source: CSA, 2015

Table 5.6-1. Land-Use Categories and Metrics for Transit Noise Impact Criteria

Land-Use Category	Noise Metric (dBA)	Description of Land Use Category
1	Outdoor $L_{eq}(h)$ [1]	Tracts of land where quiet is an essential element in their intended purpose. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheaters and concert pavilions, as well as National Historic Landmarks with significant outdoor use. Also included are recording studios and concert halls.
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 $L_{eq}(h)$ [1]	Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds, and recreational facilities can also be considered to be in this category. Certain historical sites and parks are also included.

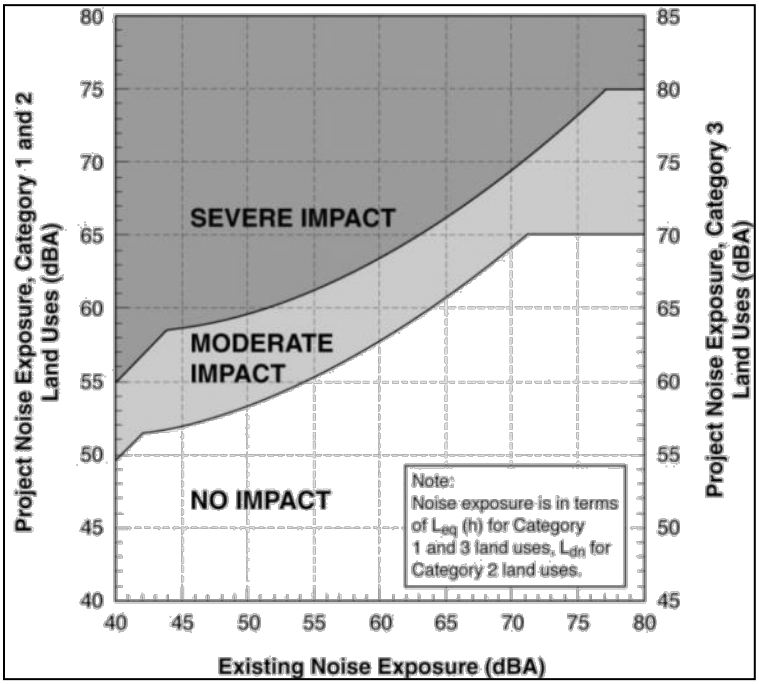
Source: FTA, 2006

[1] L_{eq} for the noisiest hour of transit-related activity during hours of noise sensitivity.

The noise impact criteria are defined by the two curves shown in **Figure 5.6-2**. The figure illustrates existing noise exposure and project-related noise exposure and demonstrates that FTA's noise impact thresholds vary with existing noise levels. FTA's noise impact criteria include the following three levels of impact (**Figure 5.6-2**):

- **No Impact.** In this range, the proposed project is considered to have no impact since, on average, the introduction of the project insignificantly increases the number of people who are highly annoyed by the new noise from the project.
- **Moderate Impact.** At the moderate impact range, changes in the cumulative noise level are noticeable to most people but might 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, factors such as the existing noise level, the projected level of increase over existing noise levels, and the types and numbers of noise-sensitive land uses that would be affected.
- **Severe Impact.** At the severe impact range, a significant percentage of people are highly annoyed by the new noise from the project. Noise mitigation is applied for severe impact areas unless it is not feasible or reasonable (that is, unless there is no practical method of mitigating the impact).

Figure 5.6-2. FTA Noise Impact Criteria



Source: FTA, 2006

MPCA Noise Criteria

MPCA has an established set of noise standards (Minnesota Rules, Chapter 7030) that provide limits on environmental noise using the L_{10} and L_{50} descriptors, which represent the noise level exceeded 10 percent (6 minutes) and 50 percent (30 minutes) of the time, respectively, during an hour. The standards include both daytime and nighttime limits for three different categories of land use or noise area classification, with residential land included in noise area classification 1. Classifications 2 and 3 are generally for commercial and industrial land uses, respectively (**Table 5.6-2**).

Table 5.6-2. MPCA Noise Standards

Noise Area Classification	Daytime		Nighttime	
	L_{10} (dBA)	L_{50} (dBA)	L_{10} (dBA)	L_{50} (dBA)
1	65	60	55	50
2	70	65	70	65
3	80	75	80	75

Source: Minnesota Rules, Chapter 7030, Noise Pollution

Because of the time limit component of the MPCA noise standards, the proposed BLRT Extension project would not exceed the standards under the proposed operating conditions. Light rail vehicles would pass by a location for about 10 seconds 12 times an hour (based on the operating assumptions of 10-minute headways in each direction) for a total of 120 seconds, or 2 minutes. Because the duration of exposure to LRT noise would not exceed the L_{10} (6-minute) and L_{50} (30-minute) time components, there is no potential for the proposed BLRT Extension project to exceed MPCA thresholds. Because the proposed BLRT Extension project would not exceed the MPCA thresholds, the FTA noise impact criteria described previously are more protective than the MPCA standards and have been used to assess and mitigate noise impacts.

Information regarding existing noise levels in the study area and any existing exceedances of the MPCA standards is provided in **Appendix F**.

FTA Construction Noise Criteria

The Council used FTA's construction noise criteria, summarized in **Table 5.6-3**, for the analysis of short-term noise impacts. FTA's construction noise criteria provide adequate protection for short-term noise impacts and allow reasonable mitigation measures to be applied to the proposed BLRT Extension project. Additionally, MPCA noise criteria were evaluated for the proposed BLRT Extension project, and the Council will work with local jurisdictions to ensure that reasonable measures are taken to limit construction noise.

5.6.2 Study Area

The study area for noise is generally defined as those properties within 300 feet of the proposed BLRT Extension project alignment.

Table 5.6-3. FTA Construction Noise Criteria

Land Use	8-hour L_{eq}, dBA		Noise Exposure, dBA
	Day	Night	30-day Average
Residential	80	70	75
Commercial	85	85	80
Industrial	90	90	85

Source: FTA, 2006

5.6.3 Affected Environment

This section describes existing noise-sensitive land uses and noise levels in the study area.

5.6.3.1 Noise-Sensitive Land Uses

The Council identified noise-sensitive land uses based on aerial photographs, project drawings, and a site survey. Information regarding noise-sensitive land uses by city in the study area is provided in **Appendix F**.

5.6.3.2 Existing Noise Measurements

In order to supplement the existing noise measurements conducted for the Draft EIS, the Council conducted a series of noise measurements in May 2015 at nine locations along the proposed BLRT Extension project to refine the existing noise levels and to respond to comments received on the Draft EIS.

Because the thresholds for impact in FTA's noise criteria are based on existing noise levels, measuring the existing noise and characterizing noise levels at sensitive locations in the study area is an important step in the impact assessment. The noise measurements included both long-term (24-hour) and short-term (1-hour) monitoring of the A-weighted sound level at noise-sensitive locations near the proposed BLRT Extension project.

Table 5.6-4 summarizes the measurements of existing noise, and **Figure 5.6-3** shows the locations of the 21 long-term noise-monitoring sites (LT) and eight short-term noise-monitoring sites (ST) for the proposed BLRT Extension project. The long-term noise measurements were used to characterize the existing noise at residential locations because the FTA assessment methodology uses L_{dn} (24-hour noise descriptor) for all residential locations, and the short-term noise measurements were used to characterize the existing noise at non-residential locations because the FTA assessment methodology uses L_{eq} (1-hour noise descriptor) for all non-residential locations.

At each site, the measurement was conducted at the approximate setback of the building or buildings relative to the proposed BLRT Extension project's location. The Council used the existing noise measurements to determine the existing noise levels for all the noise-sensitive locations. The noise measurement results at each site (which are identified by letters) are described in **Appendix F**. See the Draft EIS *Noise and Vibration Technical Report* for information regarding the Draft EIS noise measurement results (which are identified by numbers).

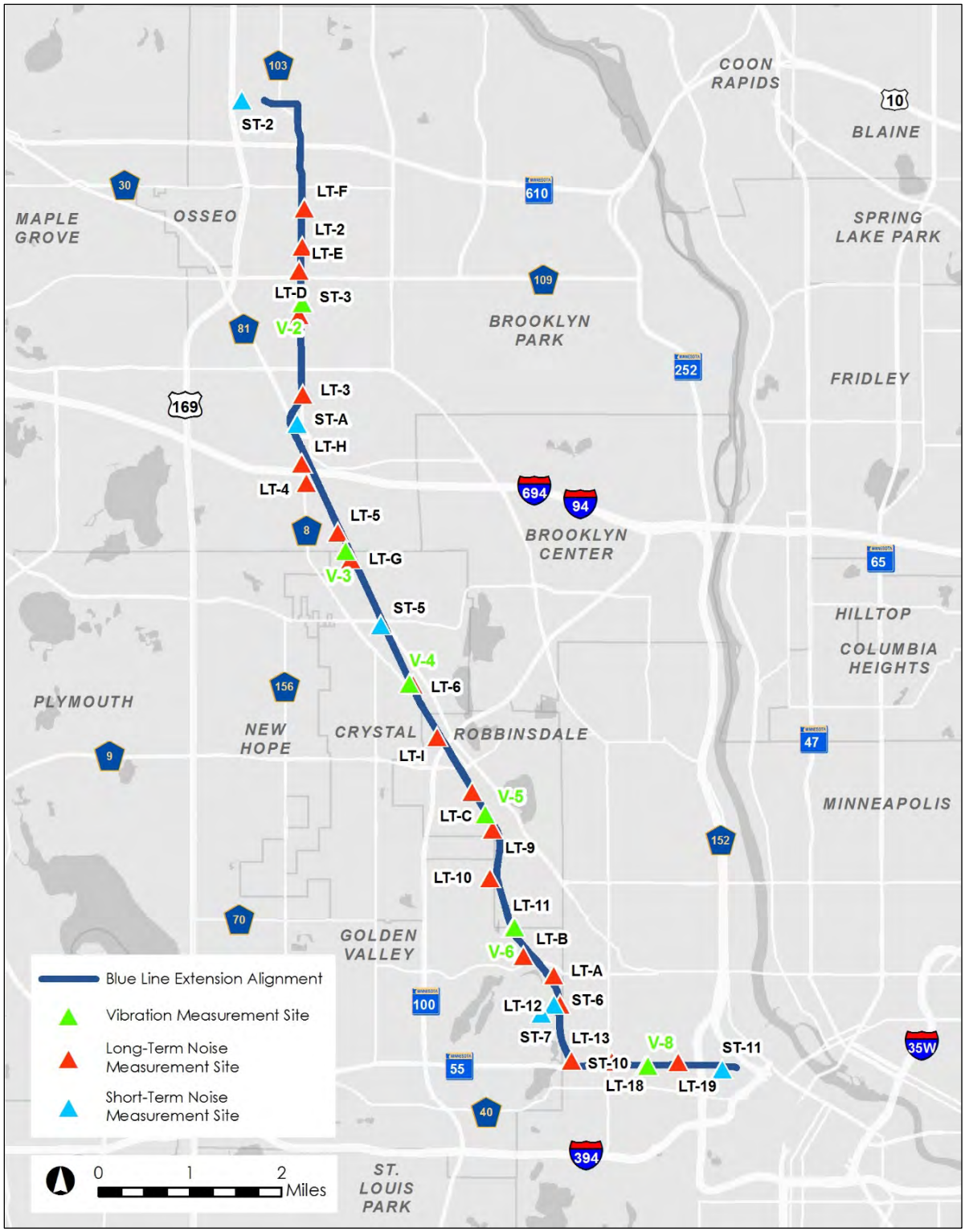
Table 5.6-4. Existing Noise Measurements in the Study Area

Site No.	City	Measurement Location	Draft EIS/ Final EIS	Measurement Start		Meas. Dur. (hr)	Noise Level (dBA)[1]	
				Date	Time		L_{dn}	L_{eq}
ST-11	Minneapolis	Mary My Hope Children's Center	DEIS	5/17/12	16:09	1	65	67
LT-19	Minneapolis	1000 Olson Memorial Highway Heritage Park	DEIS	5/15/12	18:00	24	65	61
ST-10	Minneapolis	Harrison Education Center	DEIS	5/15/12	16:07	1	60	62
LT-18	Minneapolis	611 Oliver Avenue North	DEIS	5/17/12	12:00	24	62	59
LT-13	Minneapolis	623 Vincent Avenue North	DEIS	5/16/12	17:00	24	56	50
ST-6	Golden Valley	TWRP	DEIS	5/18/12	10:01	1	47	49
ST-7	Golden Valley	The Chalet at TWRP	DEIS	5/18/12	11:20	1	53	55
LT-12	Golden Valley	1501 Xerxes Avenue North	DEIS	7/14/11	16:00	24	55	50
LT-A	Golden Valley	1821 York Avenue	FEIS	5/11/15	16:00	24	54	47
LT-B	Golden Valley	2145 Bonnie Lane	FEIS	5/11/15	16:00	24	53	50
LT-11	Robbinsdale	3912 26th Avenue North	DEIS	7/13/11	16:00	24	50	45
LT-10	Golden Valley	3230 Kyle Avenue North	DEIS	5/5/12	14:00	24	51	45
LT-9	Robbinsdale	4400 36th Avenue North	DEIS	5/15/12	15:00	24	54	48
LT-C	Robbinsdale	3954 Noble Avenue	FEIS	5/11/15	17:00	24	55	52
LT-I	Robbinsdale	4416 Toledo Avenue North	FEIS	5/13/15	18:00	24	61	59
LT-6	Crystal	5001 Welcome Avenue North	DEIS	7/14/11	15:00	24	54	48
ST-5	Crystal	Becker Park	DEIS	5/17/12	13:51	1	54	56
LT-G	Crystal	6102 Hampshire Avenue North	FEIS	5/13/15	16:00	24	62	61
LT-5	Brooklyn Park	6288 Louisiana Court North	DEIS	5/14/12	12:00	24	63	58
LT-4	Brooklyn Park	6648 West Broadway Avenue	DEIS	5/15/12	13:00	24	61	61
LT-H	Brooklyn Park	7501 Myers Avenue	FEIS	5/13/15	16:00	24	69	68
ST-A	Brooklyn Park	Prince of Peace Lutheran Church	FEIS	5/12/15	08:38	1	60	62
LT-3	Brooklyn Park	7428 75th Circle North	DEIS	5/14/12	13:00	24	60	55
LT-D	Brooklyn Park	8220 Quebec Court North	FEIS	5/12/15	14:00	24	65	62
ST-3	Brooklyn Park	North Hennepin Community College	DEIS	5/14/12	15:33	1	58	60
LT-E	Brooklyn Park	8558 S. Maplebrook Circle	FEIS	5/12/15	17:00	24	65	62
LT-2	Brooklyn Park	8745 Oregon Avenue North	DEIS	7/14/11	10:00	24	66	62
LT-F	Brooklyn Park	9125 Nevada Court	FEIS	5/12/15	18:00	24	57	51
ST-2	Brooklyn Park	Grace Fellowship Church	DEIS	5/14/12	17:00	1	55	57

Sources: CSA, 2015; HMMH, 2012

[1] L_{dn} is used for Category 2 (residential) land use, and L_{eq} is used for Category 3 (institutional) land use.

Figure 5.6-3. Locations for Measurements of Existing Noise and Vibration



Sources: CSA, 2015; HMMH, 2012

5.6.4 Environmental Consequences

This section identifies the long-term and short-term noise impacts from the No-Build Alternative and the proposed BLRT Extension project. Long-term impacts are those that would continue after construction is complete, while short-term impacts would be temporary and would be associated with the proposed BLRT Extension project's construction activities. (For a description of cumulative effects, see **Chapter 6**.) The evaluation of long-term noise impacts considers the increase in noise levels for sensitive receptors closest to the proposed light rail stations and track as a result of the operation of light rail.

5.6.4.1 Operating-Phase (Long-Term) Impacts

No-Build Alternative

There would be no operating-phase noise impacts from the No-Build Alternative.

Proposed BLRT Extension Project

This section describes the long-term noise impacts from the proposed BLRT Extension project. The Council conducted a detailed noise analysis (for more information, see **Appendix F**). A summary of the analysis results is presented in **Tables 5.6-5 and 5.6-6** for residential and institutional (for example, churches and schools) land uses, respectively.

The tables include a tabulation of location information for each sensitive receptor group, the existing noise levels from all sources, the project noise levels from LRT operations, the FTA impact criteria (moderate or severe), and the type and number of noise impacts, without the implementation of mitigation measures.

As shown in **Table 5.6-5**, the proposed BLRT Extension project would cause 366 moderate noise impacts and 618 severe noise impacts at residential noise receptors (homes and apartment buildings; see **Figure 5.6-4**) because of LRT horns. The impacts represent the number of affected units (including those in multi-family buildings), not the number of buildings. The majority of the noise impacts would be because of LRT horns being sounded at Federal Railroad Administration (FRA)-shared at-grade crossings along the proposed BLRT Extension project. With the proposed implementation of Quiet Zones[10] at all FRA-shared at-grade crossings, the proposed BLRT Extension project would cause 176 moderate noise impacts and 120 severe noise impacts, as shown in parentheses in **Table 5.6-5**. **Appendix F** presents a summary of each residential location with a projected noise level that would exceed the FTA criteria.

[10] Quiet Zones are locations, at least one-half mile in length, where the routine sounding of horns has been eliminated because of safety improvements at at-grade crossings, including modifications to the streets, raised median barriers, four quadrant gates, and other improvements designed and implemented as a part of the proposed BLRT Extension project and consistent with Quiet Zone readiness. Horns are sounded in emergency situations at these locations. Municipalities must apply to FRA for approval of Quiet Zones. If the municipality fails to apply for a Quiet Zone or FRA fails to approve the Quiet Zone, the proposed BLRT Extension project may result in residual noise impacts.

As shown in **Table 5.6-6**, the proposed BLRT Extension project would cause two moderate noise impacts and five severe noise impacts at institutional land uses (for a summary figure of project noise impacts without Quiet Zones, see **Figure 5.6-4**). All of the noise impacts would be due to LRT horns being sounded at FRA-shared at-grade crossings along the proposed BLRT Extension project. With the implementation of Quiet Zones as proposed, there would be no remaining impacts at institutional locations. **Appendix F** presents a summary of each institutional location with a projected noise level that would exceed the FTA criteria.

Should any of the municipalities decide not to apply to FRA for Quiet Zones, the proposed BLRT Extension project would result in the moderate and severe noise impacts detailed in **Table 5.6-5** and in **Appendix F**.

Table 5.6-5. Noise Impacts at Residential Land Uses, with and without Quiet Zones

Location	City	Side of Track	Near Track Distance (ft)	Speed (mph)	Existing Noise Level L_{dn} (dBA)[1]	Project Noise Levels – L_{dn} (dBA)			Type and Number of Impacts[3]	
						Project[1,2]	FTA Criteria		Moderate	Severe
							Moderate	Severe		
I-94 to Humboldt Ave N	Minneapolis	NB	95	20	65	62	61	66	16	0
I-94 to Humboldt Ave N	Minneapolis	SB	130	40	65	55	61	66	0	0
Humboldt Ave N to Penn Ave N	Minneapolis	NB	100	40	62	62	59	64	9	0
Humboldt Ave N to Penn Ave N	Minneapolis	SB	190	40	62	57	59	64	0	0
Penn Ave N to Upton Ave N	Minneapolis	NB	145	35	56	54	56	62	0	0
Penn Ave N to BNSF freight tracks	Minneapolis	SB	160	40	56	53	56	62	0	0
Olson Memorial Hwy to Oak Park Ave N	Minneapolis	NB	35	35	56	61	56	62	1	0
Oak Park Ave N to Plymouth Ave N	Minneapolis	NB	60	55	55	61	55	61	3	0
Plymouth Ave N to 16th Ave N	Golden Valley	NB	220	20	55	56	55	61	9	0
16th Ave N to Golden Valley Rd	Golden Valley	NB	30	45	54	64	55	61	1	0
Golden Valley Rd to 26th Ave N	Golden Valley	NB	80	55	50	65	53	60	9	14
26th Ave N to 31½ Ave N	Robbinsdale	NB	90	55	50	59	53	60	3	0
31½ Ave N to 34th Ave N	Robbinsdale	NB	20	55	50	70	53	60	4	12
34th Ave N to 36th Ave N	Robbinsdale	NB	60	55	54	62	55	61	20	5
34th Ave N to 36th Ave N	Robbinsdale	SB	140	55	54	56	55	61	1	0
36th Ave N to 38th Ave N	Robbinsdale	NB	40	55	54	91	55	61	8	27
36th Ave N to 38th Ave N	Robbinsdale	SB	295	55	54	68	55	61	15 (4)	7 (0)
38th Ave N to 40½ Ave N	Robbinsdale	NB	35	55	55	92	55	61	22 (3)	66 (20)
38th Ave N to 40th Ave N	Robbinsdale	SB	70	45	55	87	55	61	37 (20)	68 (5)
40½ Ave N to 42nd Ave N	Robbinsdale	NB	65	45	55	87	55	61	0 (5)	57 (2)
40th Ave N to 42nd Ave N	Robbinsdale	SB	130	30	55	78	55	61	34 (13)	40 (2)
42nd Ave N to MN-100	Robbinsdale	NB	115	30	61	78	59	64	9 (2)	28 (0)
42nd Ave N to MN-100	Robbinsdale	SB	100	40	61	81	59	64	14 (2)	10 (1)
MN-100 to 47th Ave N	Robbinsdale	NB	95	55	61	84	59	64	12 (10)	20 (1)
MN-100 to 47th Ave N	Robbinsdale	SB	80	55	61	82	59	64	19 (8)	39 (0)

Table 5.6-5. Noise Impacts at Residential Land Uses, with and without Quiet Zones

Location	City	Side of Track	Near Track Distance (ft)	Speed (mph)	Existing Noise Level L_{dn} (dBA)[1]	Project Noise Levels – L_{dn} (dBA)			Type and Number of Impacts[3]	
						Project[1,2]	FTA Criteria		Moderate	Severe
							Moderate	Severe		
47th Ave N to freight tracks	Crystal	NB	35	55	54	94	55	61	35 (10)	93 (31)
47th Ave N to freight tracks	Crystal	SB	120	55	54	81	55	61	26 (0)	24 (0)
Freight tracks to 56th Ave N	Crystal	NB	795	55	62	58	59	64	0 (0)	0 (0)
Freight tracks to 56th Ave N	Crystal	SB	80	25	62	52	59	64	0 (0)	0 (0)
56th Ave N to 60th Ave N	Crystal	NB	440	20	62	63	59	64	5 (0)	0 (0)
56th Ave N to 60th Ave N	Crystal	SB	160	35	62	76	59	64	4 (0)	2 (0)
60th Ave N to 63rd Ave N	Crystal	NB	200	35	63	73	60	65	1 (0)	1 (0)
60th Ave N to 63rd Ave N	Crystal	SB	125	40	63	77	60	65	24 (0)	84 (0)
63rd Ave N to I-694	Brooklyn Park	NB	315	25	63	68	60	65	1 (0)	18 (0)
63rd Ave N to I-694	Brooklyn Park	SB	140	35	63	52	60	65	0 (0)	0 (0)
I-694 to 73rd Ave N	Brooklyn Park	NB	700	40	60	59	58	63	8 (0)	0 (0)
I-694 to 73rd Ave N	Brooklyn Park	SB	170	55	69	74	64	69	2 (0)	3 (0)
73rd Ave N to Brooklyn Blvd	Brooklyn Park	NB	80	35	60	59	58	63	4	0
Brooklyn Blvd to Shingle Creek	Brooklyn Park	NB	85	45	65	59	61	66	0	0
Shingle Creek to 85th Ave N	Brooklyn Park	SB	70	40	65	65	61	66	5	0
85th Ave N to 89th Ave N	Brooklyn Park	NB	85	45	66	58	61	67	0	0
85th Ave N to 89th Ave N	Brooklyn Park	SB	90	45	66	59	61	67	0	0
89th Ave N to 93rd Ave N	Brooklyn Park	NB	120	45	57	57	56	62	5	0
								Total	**366 (176)**	**618 (120)**

Source: CSA, 2015

[1] Reported noise levels are rounded to the nearest decibel.

[2] The predicted project noise level at each location is the highest predicted noise level at any receptor for that location. Predicted noise levels at other receptors for each location are lower.

[3] The "Type and Number of Impacts" column identifies whether the LRT noise level would exceed FTA's moderate or severe noise impact criteria thresholds, which are found in the "Project Noise Levels" column. It also reports the number of units that would experience a moderate or severe noise impact. The numbers in parentheses are the number of impacts remaining after Quiet Zones are implemented.

Table 5.6-6. Noise Impacts at Institutional Land Uses

Location	City	Side of Track	Near Track Distance (ft)	Speed (mph)	Existing Noise Level L_{eq} (dBA)[1]	Project Noise Levels – L_{eq} (dBA)			Type and Number of Impacts	
						Project[1]	FTA Criteria		Moderate	Severe
							Moderate	Severe		
Sumner Library	Minneapolis	NB	110	20	62	50	64	70	0	0
Wayman AME Church	Minneapolis	NB	135	30	62	47	64	70	0	0
Seed Academy	Minneapolis	NB	135	40	62	52	64	70	0	0
Summit Academy	Minneapolis	SB	225	20	62	54	64	70	0	0
Zion Baptist Church	Minneapolis	NB	185	40	62	55	64	70	0	0
Le Creche Early Childhood Center	Minneapolis	NB	135	40	62	52	64	70	0	0
The Family Partnership	Golden Valley	NB	55	35	50	54	58	65	0	0
TWRP[2]	Golden Valley	SB	230	35	49	44	53	59	0	0
The Chalet[2]	Golden Valley	SB	925	20	55	31	56	61	0	0
Bethel World Outreach	Robbinsdale	NB	520	55	52	52	59	65	0	0
Elim Lutheran Church	Robbinsdale	NB	800	50	52	46	59	65	0	0
Sacred Heart Church	Robbinsdale	NB	300	35	52	68	59	65	0	1
Robbins Gallery	Robbinsdale	SB	110	20	52	77	59	65	0	1
Washburn McReavy Funeral Home	Crystal	NB	255	25	52	67	59	65	0	1
Masonic Lodge	Robbinsdale	NB	455	30	59	56	62	68	0	0
Redeemer Lutheran Church	Robbinsdale	SB	505	40	59	54	62	68	0	0
Glen Haven Memorial Gardens	Crystal	SB	610	55	48	58	58	64	1	0
Crystal Medical Center	Crystal	NB	180	30	61	71	63	69	0	1
Little Folks Daycare	Crystal	SB	85	25	56	80	61	66	0	1

Table 5.6-6. Noise Impacts at Institutional Land Uses

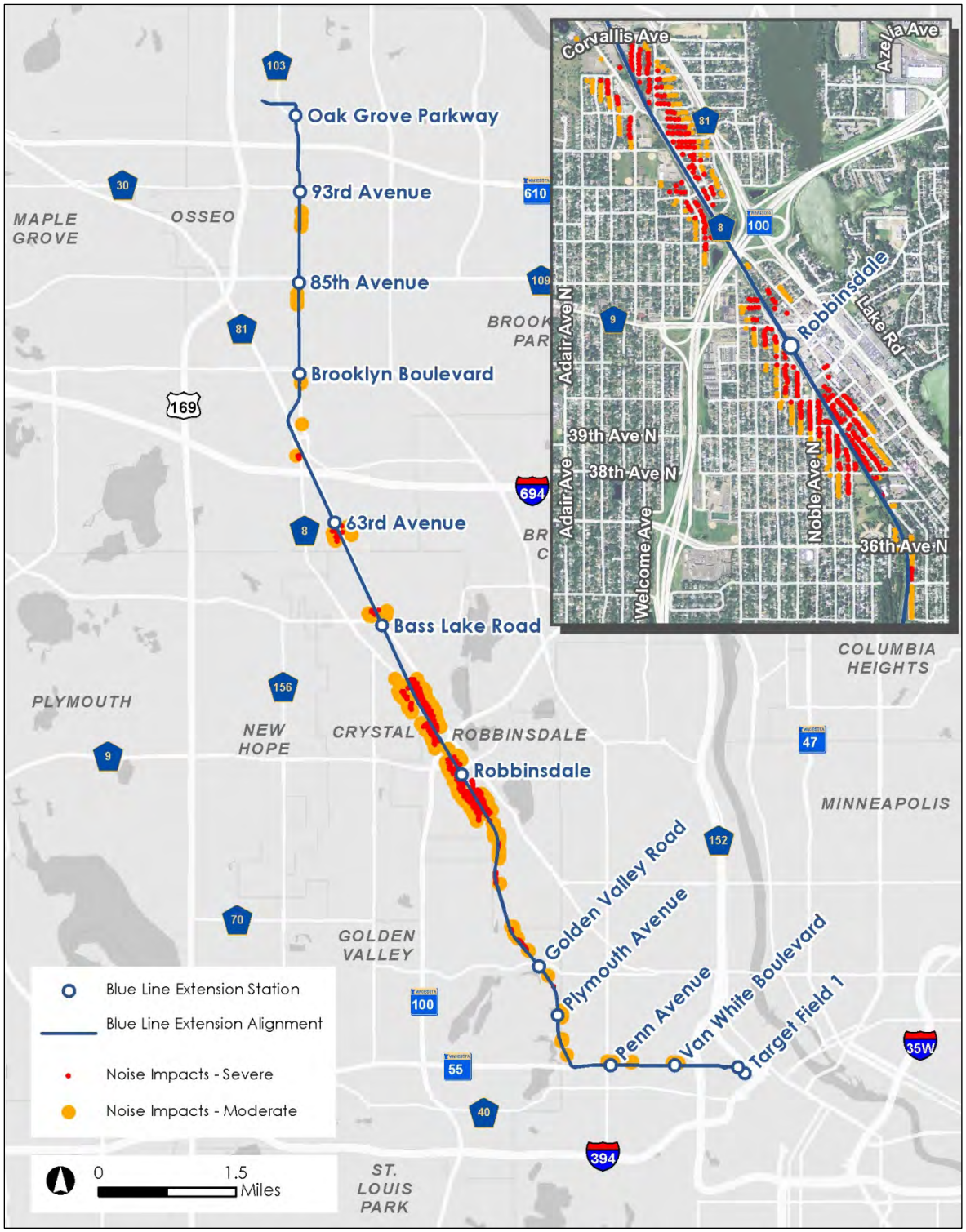
Location	City	Side of Track	Near Track Distance (ft)	Speed (mph)	Existing Noise Level L_{eq} (dBA)[1]	Project Noise Levels – L_{eq} (dBA)			Type and Number of Impacts	
						Project[1]	FTA Criteria		Moderate	Severe
							Moderate	Severe		
Brooklyn Crystal Cemetery	Brooklyn Park	NB	385	35	55	52	60	66	0	0
Prince of Peace Lutheran Church	Brooklyn Park	NB	385	35	62	63	64	70	0	0
Brooklyn Park Evangelical Free Church	Brooklyn Park	SB	145	45	60	51	63	68	0	0
North Hennepin Community College	Brooklyn Park	NB	75	20	60	61	63	68	0	0
Step by Step Montessori School	Brooklyn Park	SB	285	25	60	51	63	68	0	0
Berean Baptist Church	Brooklyn Park	SB	80	45	62	55	64	70	0	0
Ebenezer Community Church	Brooklyn Park	NB	135	20	51	58	59	65	0	0
								Total	**1**	**5**

Source: CSA, 2015

[1] Reported noise levels are rounded to the nearest decibel.

[2] The receiver was assessed as land use category 1.

Figure 5.6-4. Locations of Noise Impacts



Source: CSA, 2015

5.6.4.2 Construction-Phase (Short-Term) Impacts

No-Build Alternative

There would be no construction-phase noise impacts from the No-Build Alternative.

Proposed BLRT Extension Project

This section describes the short-term (construction-phase) noise impacts of the proposed BLRT Extension project.

Construction noise levels are subject to local noise ordinances and noise rules administered by MPCA (Minnesota Rules, Chapter 7030). MPCA administers these noise rules to establish maximum allowable noise levels; where applicable, MPCA procedures allow for the issuance of noise variances. To address both the applicable local noise ordinances and the MPCA noise rules, the Council will develop a Noise Control Plan. The Noise Control Plan will contain information regarding when advanced notice of construction activities will be provided to affected communities. The Noise Control Plan will also contain other stipulations to help avoid or minimize construction noise impacts. For example, the Noise Control Plan will require that construction equipment used by contractors be properly muffled and in proper working order. Most of the construction will consist of site preparation and laying new tracks, which should occur primarily during daytime hours, except when required and allowable within local noise ordinance procedures.

Construction noise varies greatly depending on the type of construction activities, equipment used, staging of the construction process, the layout of the construction site, and the distance to sensitive receptors. Elevated noise levels during construction are, to a degree, unavoidable for this type of project, and short-term noise during construction of the proposed BLRT Extension project can be intrusive to residents near the construction sites. For most construction equipment, diesel engines are typically the dominant noise source. For other activities, such as impact pile driving and jackhammering, noise generated by the actual process dominates. The contractor will provide specific information on equipment and methods as a part of the Noise Control Plan for construction of the proposed BLRT Extension project. The contractor will also indicate whether or not the proposed BLRT Extension project would pursue a noise variance in any municipality along the proposed BLRT Extension project corridor. The Council will review noise variance requests prior to submittal to MPCA for approval.

Affected communities would be given advance notice of any planned abnormally loud construction activities. In general, construction would occur within daytime hours. However, night construction could sometimes be required; for example, to reduce traffic impacts or improve safety. A nighttime construction mitigation plan will be developed if nighttime construction were necessary.

For residential land use, short-term noise impacts from at-grade track construction can extend to about 120 feet from the construction site. However, if nighttime construction is conducted, short-term noise impacts from at-grade track construction can extend to about 380 feet from the construction site. For more information about the construction noise impact assessment, see **Appendix F**.

For more information regarding the Council's approach to construction noise mitigation, see **Section 5.6.5**.

5.6.5 Avoidance, Minimization, and/or Mitigation Measures

This section describes the measures the Council will implement to mitigate the proposed BLRT Extension project's long-term and short-term noise impacts. FTA guidance states that severe noise impacts need to be mitigated, unless there are no feasible or practical means to do so (FTA, 2006). For moderate noise impacts, discretion should be used, and project-specific factors should be included in the consideration of mitigation. The project-specific factors can include both the existing noise levels and the projected increase in noise levels, the types and number of noise-sensitive land uses with impacts, existing sound insulation of buildings, and the cost-effectiveness of providing noise mitigation.

The Council used a mitigation approach (described in **Appendix F**) that specifies moderate impacts that qualify for mitigation. The mitigation guidelines state that, in locations with moderate impacts, where the existing noise levels exceed 65 dBA L_{dn} or where there is an increase in noise due to the proposed BLRT Extension project of three dB or greater, mitigation is required where it is reasonable and feasible.

Long-Term Mitigation Measures. Several noise mitigation measures have been evaluated based on the source, path, or receiver, which are further described in **Appendix F**. Additionally, **Table 5.6-7** provides a summary of the mitigation measures that will be implemented. At select locations, more-detailed interior testing is required prior to the identification of a mitigation measure. In addition to the specific noise mitigation measures listed below in **Table 5.6-7**, the proposed BLRT Extension project will employ several best practice methods to minimize noise project-wide. These measures include using wheel skirts (panels over the wheels) to reduce wheel/rail noise and continuously welded rail to eliminate gaps in the tracks that generate additional noise. Wheel truing (to keep the wheels smooth and round) and rail grinding (to remove corrugations) will also be conducted on a regular basis, which helps to control the noise and vibration levels for the system. Where appropriate and as needed, lubrication may be employed to limit noise. Throughout the design process, noise-generating elements (e.g., crossovers) have been located, where possible, away from sensitive locations. Finally, the Quiet Zones identified below would also have the added benefit of eliminating horn blowing from the existing freight trains in the proposed BLRT Extension corridor. The results shown in **Table 5.6-7** indicate that residential noise impacts at two locations (Golden Valley Road to 26th Avenue North and 31½ Avenue North to 34th Avenue North) are not mitigated, and that residual noise impacts would remain at these locations after mitigation.

Quiet Zones, which allow the use of LRT bells instead of horns at at-grade crossings, would eliminate many of the proposed BLRT Extension project's noise impacts. The Quiet Zones would have the additional benefit of eliminating the existing freight horns as well. Several noise mitigation measures have been evaluated based on the source, path, or receiver; measures which are further described in **Appendix F**. However, if the municipality fails to apply to FRA for Quiet Zone or if FRA fails to approve the Quiet Zone, the proposed BLRT Extension project would result in residual noise impacts at the associated locations.

Table 5.6-7 lists the residential mitigation measures that will be used after Quiet Zones are implemented. The results in **Table 5.6-7** indicate that the majority of residential noise impacts would be eliminated with the proposed mitigation measures. More-detailed descriptions of the noise mitigation measures at selected locations are provided in **Appendix F**.

The results of the noise assessment indicate that all institutional noise impacts would be eliminated with the proposed mitigation measures, which include the Quiet Zones discussed above in this section.

Table 5.6-7. Residential Noise Mitigation Measures after Implementation of Quiet Zones

Location	City	Side of Track	Type and Number of Impacts without Mitigation[1]		Noise Level Increase[2] (dB)	Proposed Mitigation Measure[3]	Residual Impacts with Mitigation	
			Moderate	Severe			Moderate	Severe
I-94 to Humboldt Ave N	Minneapolis	NB	16	0	0 to 1.8	None[4]	N/A	N/A
Humboldt Ave N to Penn Ave N	Minneapolis	NB	9	0	0 to 2.9	None[4]	N/A	N/A
Olson Memorial Hwy to Oak Park Ave N	Minneapolis	NB	1	0	0.1 to 5.8	Interior testing to determine mitigation measure[5]	0	0
Oak Park Ave N to Plymouth Ave N	Minneapolis	NB	3	0	1.3 to 6.8	Interior testing to determine mitigation measure[5]	0	0
Plymouth Ave N to 16th Ave N	Golden Valley	NB	9	0	0.1 to 5.6	Interior testing to determine mitigation measure[5]	0	0
16th Ave N to Golden Valley Rd	Golden Valley	NB	1	0	0.2 to 3.5	Interior testing to determine mitigation measure[5]	0	0
Golden Valley Rd to 26th Ave N	Golden Valley	NB	9	14	0.9 to 15.2	Noise barrier E-2: 10 feet tall, 2,540 feet long	1	1
26th Ave N to 31½ Ave N	Robbinsdale	NB	3	0	3.8 to 9.6	Noise barrier E-2: 10 feet tall, 2,540 feet long	0	0
31½ Ave N to 34th Ave N	Robbinsdale	NB	4	12	1.8 to 19.4	Noise barrier E-3: 10 feet tall, 1,200 feet long	4	1
34th Ave N to 36th Ave N	Robbinsdale	NB	20	5	0.7 to 8.3	Noise barrier E-4: 8 feet tall, 1,325 feet long	0	0
34th Ave N to 36th Ave N	Robbinsdale	SB	1	0	2.7 to 4.1	Interior testing to determine mitigation measure[5]	0	0
36th Ave N to 38th Ave N	Robbinsdale	NB	8	27	0.9 to 16.7	Noise barrier E-6: 8 feet tall, 3,110 feet long	0	0
36th Ave N to 38th Ave N	Robbinsdale	SB	4	0	0.1 to 9.0	Noise barrier W-5: 6 feet tall, 650 feet long	0	0
38th Ave N to 40½ Ave N	Robbinsdale	NB	3	20	0 to 16.6	Noise barrier E-6: 8 feet tall, 3,110 feet long	0	0
38th Ave N to 40th Ave N	Robbinsdale	SB	20	5	0 to 11.1	Noise barrier W-7: 6 feet tall, 1,850 feet long and interior testing to determine mitigation measure	0	0
40½ Ave N to 42nd Ave N	Robbinsdale	NB	5	2	0.1 to 11.6	Wayside device and noise barrier E-6: 8 feet tall, 3,110 feet long	0	0
40th Ave N to 42nd Ave N	Robbinsdale	SB	13	2	0 to 7.3	Wayside device and interior testing to determine mitigation measure[5]	0	0
42nd Ave N to MN-100	Robbinsdale	NB	2	0	0 to 3.4	Interior testing to determine mitigation measure[5]	0	0
42nd Ave N to MN-100	Robbinsdale	SB	2	1	0 to 4.6	Wayside device	0	0

Table 5.6-7. Residential Noise Mitigation Measures after Implementation of Quiet Zones

Location	City	Side of Track	Type and Number of Impacts without Mitigation[1]		Noise Level Increase[2] (dB)	Proposed Mitigation Measure[3]	Residual Impacts with Mitigation	
			Moderate	Severe			Moderate	Severe
MN-100 to 47th Ave N	Robbinsdale	NB	10	1	0.1 to 5.0	Wayside device and noise barrier E-10: 10 feet tall, 1,300 feet long and interior testing to determine mitigation measure	0	0
MN-100 to 47th Ave N	Robbinsdale	SB	8	0	0 to 3.6	Wayside device and interior testing to determine mitigation measure[5]	0	0
47th Ave N to freight tracks	Crystal	NB	11	31	0 to 18.5	Wayside device, noise barrier E-10: 10 feet tall, 1,300 feet long, noise barrier E-11: 10 feet tall, 1,100 feet long, and interior testing to determine mitigation measure	0	0
47th Ave N to freight tracks	Crystal	SB	0	0	0.1 to 1.8	None required	0	0
56th Ave N to 60th Ave N	Crystal	NB	0	0	0 to 0.4	None required	0	0
56th Ave N to 60th Ave N	Crystal	SB	0	0	0 to 4.6	None required	0	0
60th Ave N to 63rd Ave N	Crystal	NB	0	0	0 to 0.7	None required	0	0
60th Ave N to 63rd Ave N	Crystal	SB	0	0	0 to 1.1	None required	0	0
63rd Ave N to I-694	Brooklyn Park	NB	0	0	0 to 0.3	None required	0	0
I-694 to 73rd Ave N	Brooklyn Park	NB	0	0	0 to 0.6	None required	0	0
I-694 to 73rd Ave N	Brooklyn Park	SB	0	0	0 to 0.7	None required	0	0
73rd Ave N to Brooklyn Blvd	Brooklyn Park	NB	4	0	0 to 2.4	None[4]	N/A	N/A

Table 5.6-7. Residential Noise Mitigation Measures after Implementation of Quiet Zones

Location	City	Side of Track	Type and Number of Impacts without Mitigation[1]		Noise Level Increase[2] (dB)	Proposed Mitigation Measure[3]	Residual Impacts with Mitigation	
			Moderate	Severe			Moderate	Severe
Shingle Creek to 85th Ave N	Brooklyn Park	SB	5	0 (0)	0 to 2.9	None[4]	N/A	N/A
89th Ave N to 93rd Ave N	Brooklyn Park	NB	5	0 (0)	0.3 to 0.8	None[4]	N/A	N/A

Source: CSA, 2015

[1] The number of impacts without mitigation reflects the implementation of Quiet Zones. Quiet Zones are locations, at least one-half mile in length, where the routine sounding of horns has been eliminated because of safety improvements at at-grade crossings, including modifications to the streets, raised median barriers, four quadrant gates, and other improvements designed and implemented by the proposed BLRT Extension project and consistent with Quiet Zone readiness. Horns are sounded in emergency situations at these locations. Municipalities must apply to FRA for approval of Quiet Zones.

[2] The reported noise level increases are the range of increases in noise levels (without mitigation) due to the project for each location.

[3] If the proposed noise mitigation does not meet the reasonableness criteria as defined in the Regional Transitways Guidelines (March 2016) (see **Appendix F**), or if the property owner(s) does not approve sound insulation, the proposed BLRT Extension project would result in additional residual noise impacts.

[4] The moderate impacts at these locations do not meet the threshold for mitigation as defined by the Regional Transitways Guidelines (March 2016) (see **Appendix F**).

[5] The Council has determined that a noise barrier at these locations would not meet the reasonableness criteria for noise mitigation as defined in the Regional Transitways Guidelines (March 2016); specifically, a noise barrier at these locations does not meet cost-effectiveness criteria. As such, no noise barrier will be constructed to mitigate impacts to these residences. Final determination of mitigation measures for these residences will be assessed with on-site testing to determine if the residences meet the interior noise level criteria. Based on the results, the Council will identify the noise mitigation to be implemented for these residences during Engineering and once on-site measurements are completed. If an exceedance of interior noise level is identified at these locations, the Council will work with property owners on applicable mitigation. This could include implementation of sound insulation, which would still require approval by the property owner(s).

N/A = not applicable

Short-Term Mitigation Measures. The primary means of mitigating noise from construction activities is to require the contractor to prepare a detailed Noise Control Plan. A noise control engineer or acoustician will work with the contractor to prepare a Noise Control Plan in conjunction with the contractor's specific equipment and methods of construction. Key elements of a Noise Control Plan include:

- Contractor's specific equipment types
- Schedule and methods of construction
- Maximum noise limits for each piece of equipment with certification testing
- Prohibitions on certain types of equipment and processes during the nighttime hours without local agency coordination and approved variances
- Identification of specific sensitive sites near construction sites
- Methods for projecting construction noise levels
- Implementation of noise-control measures where appropriate
- Methods for responding to community complaints

5.7 Vibration

This section describes the existing vibration in the study area and the long-term (operating-phase) and short-term (construction-phase) vibration impacts from the No-Build Alternative and the proposed BLRT Extension project. This section provides an overview of the regulatory context and methodology used for the analysis, an assessment of existing vibration measurements, a description of the expected vibration impacts, and a description of mitigation measures to implement with the proposed BLRT Extension project. A technical report has been prepared in support of this section (see **Appendix F**).

5.7.1 Regulatory Context and Methodology

5.7.1.1 Regulatory Context

This section describes the methodology used to assess predicted vibration impacts and to develop mitigation strategies. Vibration has been assessed in accordance with guidelines specified in FTA's *Transit Noise and Vibration Impact Assessment* guidance manual (FTA, 2006).

The FTA guidance manual is the primary source for the vibration assessment methodology. Vibration impacts were evaluated using the Detailed Vibration Assessment methodology in Chapter 11 of the FTA guidance manual (FTA, 2006).

5.7.1.2 Methodology

The vibration assessment methodology for assessing vibration impacts from LRT operations included the following steps:

1. Identify vibration-sensitive land uses in the study area using aerial photographs, GIS data, and field surveys, typically within 300 feet of the proposed BLRT Extension project (see **Section 5.7.3.1**).
2. Measure vibration-propagation characteristics of the soil in the study area near sensitive receptors (see **Section 5.7.3.2**).
3. Predict future project vibration levels from transit operations and information on speeds, headways, track type, and vehicle vibration characteristics. Details regarding the information used to predict future project vibration levels are provided in **Appendix F**.
4. Assess the impact of the proposed BLRT Extension project by comparing the projected future vibration levels with the FTA vibration impact criteria in Chapter 8 of the FTA guidance manual.
5. Recommend mitigation at locations where projected future vibration levels exceed the FTA impact criteria.

In addition, the Council conducted a construction vibration impact assessment using the methodology in Chapter 12 of the FTA guidance manual.

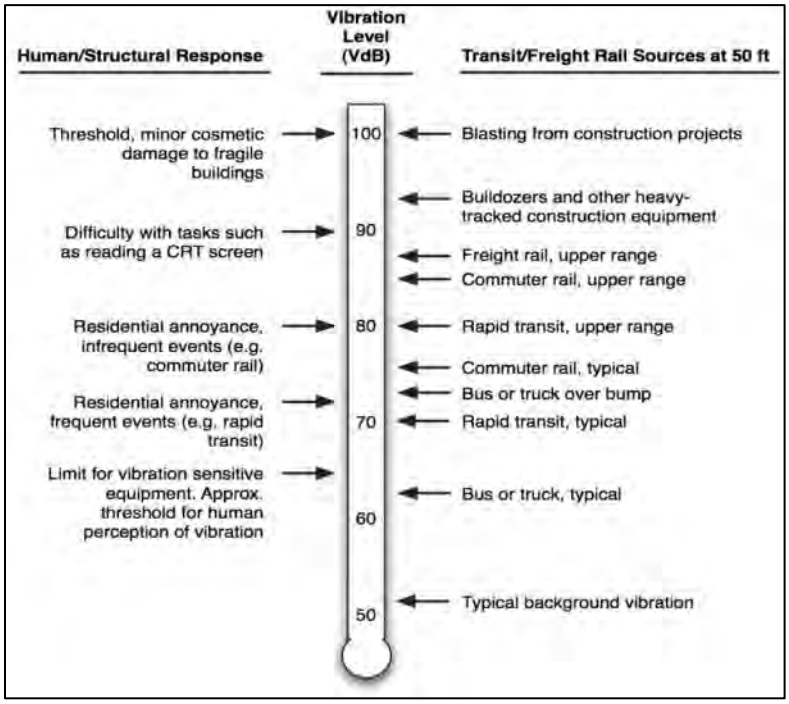
5.7.1.3 Understanding Vibration

Ground-borne vibration is the motion of the ground transmitted into a building that can be described in terms of displacement, velocity, or acceleration. Vibration velocity is used in transit and freight rail and is defined by the following:

- **Level.** Vibration is expressed in terms of vibration velocity level using vibration decibels (VdB) with a reference of 1 micro-inch per second. The level of vibration represents how much the ground is moving. The threshold of human perception to transit and freight rail vibration is about 65 VdB, and annoyance begins to occur for frequent events at vibration levels over 70 VdB.
- **Frequency.** Vibration frequency is expressed in Hz. Human response to vibration is typically from about 6 Hz to 200 Hz.
- **Time Pattern.** Environmental vibration changes all the time, and human response is roughly correlated to the number of vibration events during the day. The more events that occur, the more sensitive people are to the vibration.

Figure 5.7-1 illustrates typical ground-borne vibration levels for transit and freight projects as well as the corresponding human and structural responses to vibration.

Figure 5.7-1. Typical Vibration Levels from LRT and Freight Rail



Source: CSA, 2015

5.7.1.4 Vibration Criteria

The vibration impact criteria used for the proposed BLRT Extension project are based on the information in Chapter 8 of the FTA guidance manual. The criteria for a general vibration assessment are based on land use and train frequency, as shown in **Table 5.7-1**. Some buildings, such as concert halls, recording studios, and theaters, can have a higher sensitivity to vibration (or ground-borne noise) but do not fit into the three categories listed in **Table 5.7-1**. Because of the sensitivity of these buildings, special attention is paid to these buildings during the environmental assessment of a project. **Table 5.7-2** shows the FTA criteria for acceptable levels of vibration for several types of special buildings.

Tables 5.7-1 and 5.7-2 include additional criteria for ground-borne noise, which is a low-frequency noise that is radiated from the motion of room surfaces, such as walls and ceilings, in buildings due to ground-borne vibration. Ground-borne noise is defined in terms of dBA, which emphasizes middle and high frequencies, which are more audible to human ears. The criteria for ground-borne noise are much lower than for airborne noise to account for the low-frequency character of ground-borne noise; however, because airborne noise typically masks ground-borne noise for above-ground (at-grade or elevated) transit systems, ground-borne noise is assessed only for operations in tunnels, where airborne noise is not a factor, or at locations such as recording studios, which are well-insulated from airborne noise.

Table 5.7-1. Ground-Borne Vibration and Ground-Borne Noise Impact Criteria for General Assessment

Land Use Category	Ground-Borne Vibration Impact Levels (VdB re 1 micro-inch/sec)			Ground-Borne Noise Impact Levels (dBA re 20 micro-Pascals)		
	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]
Category 1: Buildings where vibration would interfere with interior operations	65[4]	65[4]	65[4]	N/A[5]	N/A[5]	N/A[5]
Category 2: Residences and buildings where people normally sleep	72	75	80	35	38	43
Category 3: Institutional land uses with primarily daytime use	75	78	83	40	43	48

Source: FTA, 2006

[1] *Frequent events* is defined as more than 70 vibration events from the same source per day. Most rapid transit projects are in this category.

[2] *Occasional events* is defined as between 30 and 70 vibration events from the same source per day. Most commuter trunk lines have this many operations.

[3] *Infrequent events* is defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.

[4] This criterion limit is based on levels that are acceptable for most moderately sensitive equipment, such as optical microscopes. Vibration-sensitive manufacturing or research would require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the heating, ventilating, and air conditioning (HVAC) systems and stiffened floors.

[5] Vibration-sensitive equipment is generally not sensitive to ground-borne noise.

Table 5.7-2. Ground-Borne Vibration and Ground-Borne Noise Impact Criteria for Special Buildings

Type of Building or Room	Ground-Borne Vibration Impact Levels (VdB re 1 micro-inch/sec)		Ground-Borne Noise Impact Levels (dBA re 20 micro Pascals)	
	Frequent Events[1]	Occasional or Infrequent Events[2]	Frequent Events[1]	Occasional or Infrequent Events[2]
Concert halls	65	65	25	25
TV studios	65	65	25	25
Recording studios	65	65	25	25
Auditoriums	72	80	30	38
Theaters	72	80	35	43

Source: FTA, 2006

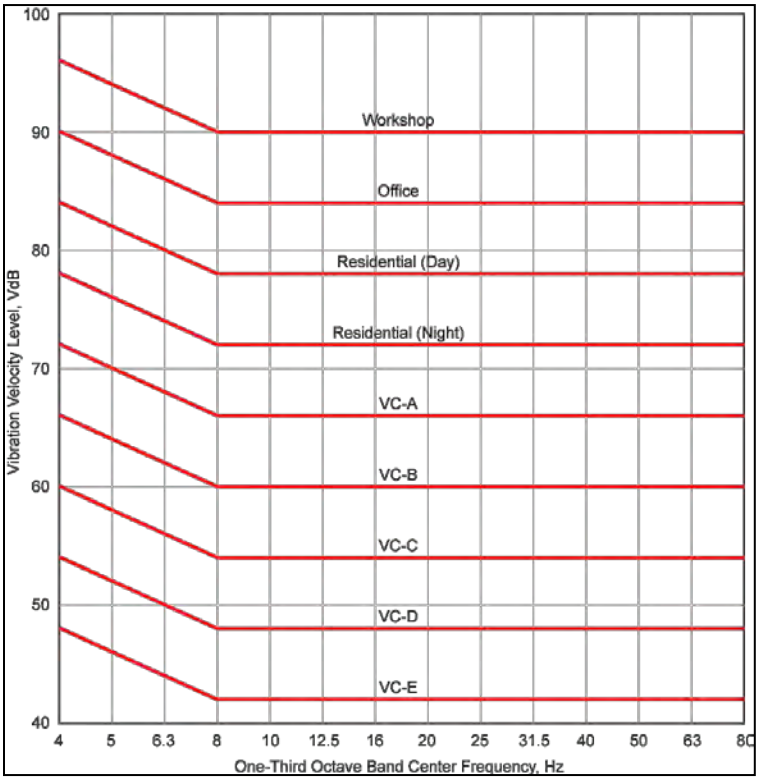
[1] *Frequent events* is defined as more than 70 vibration events per day. Most rapid transit projects are in this category.

[2] *Occasional or infrequent events* is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems. If the building would rarely be occupied when the trains are operating, there is no need to consider impact. As an example, consider locating a commuter rail line next to a concert hall. If no commuter trains would operate after 7 p.m., it should be rare that the trains interfere with the use of the hall.

The criteria that the Council used to conduct a detailed vibration assessment are shown in **Figure 5.7-2**, and descriptions of the curves are shown in **Table 5.7-3**. The curves in **Figure 5.7-2** were applied to the projected vibration spectrum for the proposed BLRT Extension project. If the vibration level at any one frequency exceeds the criteria, there would be a vibration impact. Conversely, if the entire projected vibration spectrum of the proposed BLRT Extension project is below the curve, there would be no vibration impact.

For the proposed BLRT Extension project, the general vibration assessment criteria were used at special buildings. The detailed vibration assessment criteria were used to assess LRT ground-borne vibration.

Figure 5.7-2. Detailed Vibration Criteria



Source: FTA, 2006

Table 5.7-3. Interpretation of Vibration Criteria for Detailed Analysis

Criterion Curve (see Figure 5.7-2)	Max Level (VdB)[1]	Description of Use
Workshop	90	Distinctly feelable vibration. Appropriate to workshops and nonsensitive areas.
Office	84	Feelable vibration. Appropriate to offices and nonsensitive areas.
Residential day	78	Barely feelable vibration. Adequate for computer equipment and low-power optical microscopes (up to 20×).
Residential night, operating rooms	72	Vibration not feelable, but ground-borne noise might be audible inside quiet rooms. Suitable for medium-power optical microscopes (100×) and other equipment of low sensitivity.
VC-A	66	Adequate for medium- to high-power optical microscopes (400×), microbalances, optical balances, and similar specialized equipment.
VC-B	60	Adequate for high-power optical microscopes (1,000×) and inspection and lithography equipment to 3-micron line widths.
VC-C	54	Appropriate for most lithography and inspection equipment to 1-micron-detail size.
VC-D	48	Suitable in most instances for the most demanding equipment, including electron microscopes operating to the limits of their capability.
VC-E	42	The most demanding criterion for extremely vibration-sensitive equipment.

Source: FTA, 2006

[1] As measured in one-third-octave bands of frequency over the frequency range eight to 80 Hz.

5.7.2 Study Area

The study area for vibration is generally defined as properties within 300 feet of the proposed BLRT Extension project alignment.

5.7.3 Affected Environment

This section describes vibration-sensitive land uses and existing vibration measurements in the study area.

5.7.3.1 Vibration-Sensitive Land Uses

The Council identified vibration-sensitive land uses based on aerial photographs, project drawings, project outreach to businesses to identify sensitive uses within buildings, and a site survey. Information regarding vibration-sensitive land uses by city is provided in **Appendix F**.

5.7.3.2 Existing Vibration Measurements

The existing vibration measurements for the project were conducted during the Draft EIS phase of the project. Specific information regarding instrumentation, procedures, analysis methods, and measurement locations are available in the Draft EIS *Noise and Vibration Technical Report*. Detailed information regarding the vibration propagation measurement results are provided in the appendices of this report.

The vibration measurements conducted for the Draft EIS were used to characterize the response of the soil at locations in the proposed BLRT Extension project corridor. At each site, vibration propagation tests were conducted by impacting the ground with an instrumented weight and measuring the response of the soil and/or building foundations at various distances (line source transfer mobility). The results of the vibration propagation tests were combined with the force density (vehicle input force) to predict vibration levels from LRT operations at locations along the proposed BLRT Extension project. The locations of the six vibration measurement sites used for this Final EIS are shown in **Figure 5.6-3** in **Section 5.6**.

5.7.4 Environmental Consequences

This section identifies the long-term and short-term vibration impacts from the No-Build Alternative and the proposed BLRT Extension project. Long-term vibration impacts would be a result of the operation of light rail vehicles. Short-term vibration impacts are those that would be temporary and that would be associated with the proposed BLRT Extension project's construction activities.

5.7.4.1 Operating-Phase (Long-Term) Impacts

No-Build Alternative

There would be no operating-phase vibration impacts from the No-Build Alternative.

Proposed BLRT Extension Project

This section describes the long-term vibration impacts for the proposed BLRT Extension project. The Council conducted a detailed vibration analysis. Summaries of the analysis results are presented in **Tables 5.7-4 and 5.7-5** for residential and institutional (for example, church and school) land uses, respectively.

The tables include a tabulation of location information for each sensitive receptor group, the projections of future vibration levels, the impact criteria, and whether there would be vibration impacts. The tables also show the total number vibration impacts for each location, without mitigation measures.

As shown in **Table 5.7-4**, the proposed BLRT Extension project would cause 28 vibration impacts at residential receptors (homes and apartment buildings; for the locations of impacts, see **Figure 5.7-2** following the table). **Appendix F** summarizes each residential location that would experience vibration impacts.

Table 5.7-4. Vibration Impacts at Residential Land Uses

Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Project Vibration Levels (VdB)		Number of Impacts
					Project	FTA Impact Criterion	
I-94 to Humboldt Ave N	Minneapolis	NB	205	30	54	72	0
I-94 to Humboldt Ave N	Minneapolis	SB	170	30	55	72	0
Humboldt Ave N to Penn Ave N	Minneapolis	NB	100	40	58	72	0
Humboldt Ave N to Penn Ave N	Minneapolis	SB	190	40	55	72	0
Penn Ave N to Upton Ave N	Minneapolis	NB	110	35	48	72	0
Penn Ave N to BNSF freight tracks	Minneapolis	SB	155	40	46	72	0
Olson Memorial Hwy to Oak Park Ave N	Minneapolis	NB	35	35	58	72	0
Oak Park Ave N to Plymouth Ave N	Minneapolis	NB	60	55	49	72	0
Plymouth Ave N to 16th Ave N	Golden Valley	NB	265	45	43	72	0
16th Ave N to Golden Valley Rd	Golden Valley	NB	30	45	55	72	0
Golden Valley Rd to 26th Ave N	Golden Valley	NB	80	55	56	72	0
26th Ave N to 31½ Ave N	Robbinsdale	NB	90	55	45	72	0
31½ Ave N to 34th Ave N	Robbinsdale	NB	20	55	66	72	0
34th Ave N to 36th Ave N	Robbinsdale	NB	60	55	67	72	0
34th Ave N to 36th Ave N	Robbinsdale	SB	140	55	54	72	0
36th Ave N to 38th Ave N	Robbinsdale	NB	35	55	77	72	26
36th Ave N to 38th Ave N	Robbinsdale	SB	75	55	63	72	0

Table 5.7-4. Vibration Impacts at Residential Land Uses

Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Project Vibration Levels (VdB)		Number of Impacts
					Project	FTA Impact Criterion	
38th Ave N to 40½ Ave N	Robbinsdale	NB	35	55	76	72	1
38th Ave N to 40th Ave N	Robbinsdale	SB	70	45	64	72	0
40½ Ave N to 42nd Ave N	Robbinsdale	NB	90	45	60	72	0
40th Ave N to 42nd Ave N	Robbinsdale	SB	130	30	57	72	0
42nd Ave N to MN-100	Robbinsdale	NB	90	50	61	72	0
42nd Ave N to MN-100	Robbinsdale	SB	70	40	61	72	0
MN-100 to 47th Ave N	Robbinsdale	NB	120	55	68	72	0
MN-100 to 47th Ave N	Robbinsdale	SB	80	55	62	72	0
47th Ave N to freight tracks	Crystal	NB	35	55	72	72	1
47th Ave N to freight tracks	Crystal	SB	120	55	58	72	0
Freight tracks to 56th Ave N	Crystal	NB	735	40	55	72	0
Freight tracks to 56th Ave N	Crystal	SB	80	25	57	72	0
56th Ave N to 60th Ave N	Crystal	NB	695	30	51	72	0
56th Ave N to 60th Ave N	Crystal	SB	165	55	55	72	0
60th Ave N to 63rd Ave N	Crystal	NB	180	55	55	72	0
60th Ave N to 63rd Ave N	Crystal	SB	135	55	56	72	0
63rd Ave N to I-694	Brooklyn Park	NB	280	55	54	72	0
63rd Ave N to I-694	Brooklyn Park	SB	140	35	53	72	0
I-694 to 73rd Ave N	Brooklyn Park	NB	735	55	51	72	0
I-694 to 73rd Ave N	Brooklyn Park	SB	170	55	63	72	0
73rd Ave N to Brooklyn Blvd	Brooklyn Park	NB	75	35	57	72	0
Brooklyn Blvd to Shingle Creek	Brooklyn Park	NB	80	45	60	72	0
Shingle Creek to 85th Ave N	Brooklyn Park	SB	70	40	71	72	0
85th Ave N to 89th Ave N	Brooklyn Park	NB	85	45	59	72	0
89th Ave N to 93rd Ave N	Brooklyn Park	NB	70	45	62	72	0
						Total	**28**

Source: CSA, 2015

The vibration levels for each location are the highest levels projected for that location. Vibration projections at other receptors within each location are lower. The threshold of human perception to LRT vibration is about 65 VdB or less, and annoyance begins to occur for frequent events at vibration levels over 70 VdB.

Figure 5.7-3. Locations of Vibration Impacts

Source: CSA, 2015

As shown in **Table 5.7-5**, the proposed BLRT Extension project would not cause any vibration impacts at institutional land uses.

Table 5.7-5. Vibration Impacts at Institutional Land Uses

Location	City	Side of Track	Near Track Dist. (ft)	Speed (mph)	Project Vibration Levels (VdB)		Number of Impacts
					Project	FTA Impact Criterion	
Sumner Library	Minneapolis	NB	110	20	45	78	0
Wayman AME Church	Minneapolis	NB	135	30	46	78	0
Seed Academy	Minneapolis	NB	135	40	47	78	0
Summit Academy	Minneapolis	SB	225	20	41	78	0
Zion Baptist Church	Minneapolis	NB	185	40	55	78	0
Le Creche Early Childhood Center	Minneapolis	NB	135	40	47	78	0
The Family Partnership	Golden Valley	NB	55	35	46	78	0
The Chalet	Golden Valley	SB	925	20	38	78	0
Bethel World Outreach	Robbinsdale	NB	520	55	51	78	0
Elim Lutheran Church	Robbinsdale	NB	800	50	51	78	0
Sacred Heart Church	Robbinsdale	NB	300	35	53	78	0
Robbins Gallery	Robbinsdale	SB	110	20	53	78	0
Washburn McReavy Funeral Home	Crystal	NB	255	25	51	78	0
Masonic Lodge	Robbinsdale	NB	455	30	51	78	0
Redeemer Lutheran Church	Robbinsdale	SB	505	40	55	78	0
Doug Stanton Ministries	Crystal	SB	365	55	55	78	0
Crystal Medical Center	Crystal	NB	180	30	51	78	0
Little Folks Daycare	Crystal	SB	85	25	53	78	0
Prince of Peace Lutheran Church	Brooklyn Park	NB	385	35	39	78	0
Brooklyn Park Evangelical Free Church	Brooklyn Park	SB	145	45	52	78	0
North Hennepin Community College	Brooklyn Park	NB	75	20	56	78	0
Step by Step Montessori School	Brooklyn Park	SB	285	25	47	78	0
Berean Baptist Church	Brooklyn Park	SB	80	45	60	78	0
Ebenezer Community Church	Brooklyn Park	NB	135	20	49	78	0

Source: CSA, 2015.

The vibration levels for each location are the highest levels projected for that location. Vibration projections at other receptors within each location are lower. The threshold of human perception to LRT vibration is about 65 VdB or less, and annoyance begins to occur for frequent events at vibration levels over 70 VdB.

5.7.4.2 Construction-Phase (Short-Term) Impacts

No-Build Alternative

There would be no construction-phase vibration impacts from the No-Build Alternative.

Proposed BLRT Extension Project

Vibration related to construction activities would result from the operation of heavy equipment (pile driving, vibratory hammers, hoe rams, vibratory compaction, and loaded trucks) needed to construct bridges, retaining walls, roads, and park-and-ride facilities. Most limits on construction vibration are based on reducing the effects on nearby structures. Although construction vibrations are temporary, it is appropriate to assess the potential for human annoyance and damage.

Most of the buildings along the proposed BLRT Extension project alignment are typical engineered concrete and masonry, or reinforced-concrete, steel or timber construction. The Council used a vibration criterion of 98 VdB to assess the potential for damage impacts (for more information on construction vibration, see **Appendix F**) and a vibration criterion of 72 VdB to assess vibration annoyance from construction activities.

With the exception of impact pile driving, the potential for damage would be limited to buildings within 20 feet of construction activities. The distance for the potential for damage to buildings from impact pile driving is up to 40 feet. For more information about the construction vibration impact assessment, see **Appendix F**.

5.7.5 Avoidance, Minimization, and/or Mitigation Measures

This section describes the measures the Council will implement to mitigate the proposed BLRT Extension project's long-term and short-term vibration impacts. Vibration impacts that exceed the FTA criteria are considered significant and should be mitigated unless there are no feasible or practical means to do so. Vibration mitigation is primarily applied at the source, generally the track structure, and depends on the frequency content of the vibration and any resonances of the materials. **Appendix F** describes the most common vibration mitigation measures.

Long-Term Mitigation Measures. **Table 5.7-6** presents the mitigation measures for the operating-phase (long-term) vibration impacts. Ballast mats or the equivalent would eliminate the vibration impacts at all locations. Detailed descriptions of the vibration mitigation measures are provided in **Appendix F**.

Table 5.7-6. Residential Vibration Mitigation Measures

Location	City	Number of Impacts without Mitigation	Proposed Mitigation Measure	Number of Residual Impacts with Mitigation
36th Ave N to 38th Ave N	Robbinsdale	26	700-foot ballast mat	0
38th Ave N to 40½ Ave N	Robbinsdale	1	300-foot ballast mat	0
47th Ave N to freight tracks	Crystal	1	300-foot ballast mat	0
	Total	**28**	**1,300-foot ballast mat**	**0**

Source: CSA, 2015

Short-Term Mitigation Measures. The most effective methods for reducing the impact from construction vibration are to limit the use of high-vibration activities, such as impact pile driving and vibratory rolling, and to include vibration limits in the construction specifications. To mitigate vibration impacts from construction activities, the following measures will be applied, where feasible:

- **Limit Construction Hours.** Limit high-vibration activities at night.
- **Construction Specifications.** Include limits on vibration in the construction specifications, especially at locations where high-vibration activities would occur.
- **Alternative Construction Methods.** Minimize the use of impact and vibratory equipment, where possible and appropriate.
- **Truck Routes.** Use truck haul routes that minimize exposure to sensitive receptors and minimize damage to roadway surfaces, where appropriate.
- **Pre-construction Surveys.** Perform pre-construction surveys to document the existing conditions of the structures in the vicinity of sites where high-vibration construction activities would be performed.
- **Vibration Monitoring.** If a construction activity could exceed the damage criteria at any building, the contractor will be required to conduct vibration monitoring. If the vibration exceeds the limit, the activity must be modified or terminated.

5.8 Biological Environment (Wildlife Habitat and Endangered Species)

This section describes the preferred habitats of rare, threatened, and endangered species in the study area and the expected impacts to plants and animals and their habitat from the No-Build Alternative and the proposed BLRT Extension project. The information in this section is based on the information in the *Biological Environment Technical Report* (Council, 2016e). The analysis completed for this section was conducted in coordination with the US Fish and Wildlife Service (USFWS) and DNR regarding the presence of, and potential impacts to, threatened or endangered species and other biological resources in the study area.

This section is divided into four parts: endangered and threatened species, wildlife habitat, migratory birds, and noxious weeds.

5.8.1 Regulatory Context and Methodology

5.8.1.1 Endangered and Threatened Species

Section 7 of the Endangered Species Act of 1973 (16 USC §§ 1531–1544) requires that all federal agencies consider and avoid, if possible, adverse impacts to federally listed threatened or endangered species or their critical habitats that could result from their direct, regulatory, or funding actions. USFWS is responsible for compiling and maintaining the federal list of threatened and endangered species. Section 7 of the Endangered Species Act also prohibits the taking of any federally listed species by any person without prior authorization. The term *taking* is broadly defined at the federal level and explicitly extends to any habitat modification that could significantly impair the ability of that species to feed, reproduce, or otherwise survive.

Potential impacts to federally listed species require coordination with USFWS in a Section 7 consultation. The result of the Section 7 consultation is one of the following determinations for each species evaluated:

- **No Effect.** No impacts, whether positive or negative, on the species.
- **May Affect, Not Likely to Adversely Affect.** Any impacts would be beneficial, insignificant, or discountable.
- **May Affect, Likely to Adversely Affect.** Any impacts would be negative and beyond an insignificant or discountable level.

Minnesota's endangered species law (Minn. Stat., Section 84.0895) and associated rules (Minnesota Rules 6212.1800–6212.2300) regulate the taking, importation, transportation, and sale of state endangered or threatened species. DNR administers the state law and manages the listing of state rare, threatened, and endangered species. Species listed as Special Concern by DNR have no protections afforded to them.

The Council reviewed the USFWS Endangered Species Program website (www.fws.gov/endangered) to determine whether any federally listed threatened or endangered species have been documented or have critical habitat in Hennepin County or the study area. Additionally, project biologists

initiated coordination with USFWS concerning federally listed species or designated critical habitat in the study area.

Northern long-eared bats (NLEB; listed as federally threatened in May 2015) might use forested habitat statewide (including in the study area) as summer roosting habitat. The Interim 4(d) Guidelines, published by USFWS, summarize the habitat requirements of NLEBs and measures to reduce impacts to this listed species. Additionally, bald eagles (recently delisted from the federal Endangered Species Act) have been known to nest near the proposed BLRT Extension project alignment. Though delisted, bald eagles are still monitored and are still protected under other federal laws, including the Bald and Golden Eagle Protection Act.

The Council evaluated the proposed BLRT Extension project LOD, including LRT tracks, stations, TPSS locations and auxiliary project infrastructure, and the OMF site for preferred habitats of rare species in coordination with state and local agencies and in accordance with Minnesota's endangered species law.

The Council used the DNR Natural Heritage Information System (NHIS) Database to identify federal and state listed species, rare plant communities, animal aggregation areas (such as colonial waterbird nesting areas), and other features known to be present in and near the study area. Per the stipulations of the NHIS program, known locations of listed species and other rare features cannot be specifically described or depicted in public documents. Rather, locations of rare species and features can be described and depicted only in a general manner. **Section 5.8.3** discusses specific rare species and features that have been documented in and near the study area.

5.8.1.2 Wildlife Habitat

Wildlife species that inhabit terrestrial or aquatic habitat in the study area are generalist species adapted to urban conditions. These species are generally more tolerant of human presence and activities, including traffic (pedestrian, rail, and vehicle) and have demonstrated by their presence that they adapt readily to the human environment.

Notable Terrestrial Habitats. The Council identified notable terrestrial habitats in the study area by collecting data from the Minnesota Land Cover Classification System (MLCCS) and field visits. The Council identified MLCCS forest polygons within about 0.25 mile of the proposed BLRT Extension project alignment. The Council compared these polygons to recent (2013) aerial photographs to identify areas where forest had been cleared after the MLCCS data were gathered and trimmed the MLCCS polygons accordingly. The Council then classified large, contiguously forested areas as notable terrestrial habitats.

Notable Aquatic Habitats. The notable aquatic habitats identified in the study area provide refuge for a variety of frogs, toads, turtles, snakes, waterfowl, and songbirds. The total acreage of notable aquatic habitat in the study area is about 49 acres. Notable aquatic habitats in the study area were identified by the Council through fieldwork conducted in the spring and summer of 2015 using standard wetland identification criteria (see **Section 5.3**).

5.8.1.3 Migratory Birds

The Migratory Bird Treaty Act (MBTA) of 1918 (16 USC §§ 703–712) governs the taking, killing, possession, transportation, and importation of migratory birds including eggs, parts, and nests. Such actions are prohibited unless authorized under a valid permit. The MBTA was enacted as a way to protect migratory bird populations from over-harvesting. This law applies to migratory birds native to the United States and its territories. It does not apply to non-native migratory birds or resident species that do not migrate on a seasonal basis.

USFWS oversees and enforces the MBTA and issues depredation permits for destroying active nests of species covered under the MBTA. A depredation permit is not needed for destroying nests that are not active. DNR also has permit authority over destroying active nests.

Bald eagles are native migratory birds protected under the MBTA and by the Bald Eagle and Golden Eagle Protection Act of 1940 (16 USC §§ 668–668d, 54 Stat. 250), which prohibits the taking, possession, or commerce of these species.

5.8.1.4 Noxious Weeds

Noxious weed species are regulated by federal and state laws. The Federal Noxious Weed Act, Title 7, Chapter 61, Section 2803, regulates federally listed noxious weeds through the US Department of Agriculture. Under this rule, the sale, purchase, exchange, or receipt of federal noxious weeds is illegal.

The Minnesota Noxious Weed Law (Minn. Stat., Sections 18.75–18.91) defines a *noxious weed* as an annual, biennial, or perennial plant that the Commissioner of Agriculture designates to be injurious to public health, the environment, public roads, crops, livestock, or other property. Prohibited noxious weeds must be controlled or eradicated as required in Minn. Stat., Section 18.78.

The Council identified noxious weed concentrations in the study area during fieldwork in the spring and fall of 2015. The Council used the Minnesota and Federal Noxious and Prohibited Weed List (updated May 15, 2014) to verify the status of observed noxious weeds.

5.8.2 Study Area

The study area for rare, threatened, and endangered species and other features included in the DNR NHIS Database is defined as a 1-mile buffer around the LOD of the proposed BLRT Extension project and associated facilities.

5.8.3 Affected Environment

5.8.3.1 Endangered and Threatened Species

The Council reviewed the DNR NHIS Database, which includes state and federally listed species, and coordinated with USFWS staff. This research revealed that three federally listed species or their habitat are known to be present in the study area. These species are the NLEB, the bald eagle (delisted though still monitored), and the dwarf trout lily. These federally listed species, as well as

their status, habitat requirements, and generalized locations, are described below and summarized in **Table 5.8-1**.

Northern Long-Eared Bat (*Myotis septentrionalis*). Forested areas in the study area provide summer roosting habitat for NLEBs (federally threatened). Therefore, this species is discussed further in **Section 5.8**.

Bald Eagle (*Haliaeetus leucocephalus*). Bald eagles (delisted though still monitored) have been documented to nest about 1 mile east of the proposed BLRT Extension project and associated facilities. Therefore, suitable nesting habitat may be present in the study area and nest locations may have changed with time. Therefore, bald eagles are discussed further in **Section 5.8**.

Dwarf Trout Lily (*Erythronium propullans*). Dwarf trout lilies have been documented in TWRP southwest of the proposed BLRT Extension project and associated facilities (south of Olson Memorial Highway). However, this documented population of dwarf trout lilies was transplanted to the Eloise Butler Wildflower Sanctuary (part of Theodore Wirth Park about ½ to ¾ mile southwest of the proposed BLRT Extension project) early in the 20th century from a population in southern Minnesota. Dwarf trout lilies require rich maple basswood forest and associated floodplain dominated by elm and cottonwood. Forested habitats in the study area are highly disturbed and are not suitable for dwarf trout lilies. Because of the disturbed habitat, this rare species is not likely to be present in the study area; therefore, it is not discussed further in **Section 5.8**.

Table 5.8-1. Federally Listed Species Documented in the Study Area

Species	Federal Status	Notes
Northern long-eared bat (*Myotis septenrtionalis*)	Threatened	Listed per the Endangered Species Act in May 2015. Forested areas throughout Minnesota could be used for summer roosting habitat.
Bald eagle (*Haliaeetus leucocephalus*)	Watchlist	Delisted from the federal list of threatened and endangered species; population is still monitored. Documented nest about 1 mile east of the proposed BLRT Extension project.
Dwarf trout lily (*Erythronium propullans*)	Endangered	Rediscovered in 2005 in TWRP (south of Olson Memorial Highway) southwest of the proposed BLRT Extension project alignment.

Source: DNR NHIS Database, Licensing Agreement 722_2014

State Special Concern and State Watchlist Species and Other Rare Features

The Council reviewed the DNR NHIS Database, which provides information about Minnesota's Special Concern and State Watchlist plants and animals, native plant communities, and other sensitive rare natural resource features. Species of State Special Concern and species on the State Watchlist have no specific legal protections under state endangered species law. Similarly, inventoried native plant communities have no specific legal protection. Other rare natural resource features could include colonial waterbird nesting areas; for example, a heron or cormorant rookery. Colonial waterbirds are not specifically protected under state endangered species law, but they are federally protected under the MBTA. These rare species, as well as their status, habitat requirements, and general locations, are described below and summarized in **Table 5.8-2**.

Long-Bearded Hawkweed (*Heiracеum longipilum*). Long-bearded hawkweed (State Watchlist) could be present in dry old-field habitat north of TH 610. However, it is not a state-listed species, so it is not discussed further in **Section 5.8**.

Water Willow (*Decodon verticillatus*). Water willow (State Special Concern) is not likely present in the study area, and it is not a state-listed species; therefore, it is not discussed further in **Section 5.8**.

Least Darter (*Etheostoma microperca*). Least darters (State Special Concern) are not likely present in the study area, and it is not a state-listed species; therefore, this species is not discussed further in **Section 5.8**.

Hooded Warbler (*Setophaga citrina*). Hooded warblers (State Special Concern) could be present in the study area. However, it is not a state-listed species, so it is not discussed further in **Section 5.8**.

Bullfrog (*Lithobates catesbeiana*). Bullfrogs (State Watchlist) could be present in the study area. However, it is not a state-listed species, so it is not discussed further in **Section 5.8**.

Peregrine Falcon (*Falco peregrinus*). Peregrine falcons (State Special Concern) are not likely present in the study area and it is not a state-listed species, so it is not discussed further in **Section 5.8**.

Table 5.8-2. State-Listed and Special-Concern Species Documented in the Study Area

Species	State Status	Notes
Long-bearded hawkweed (*Hieracium longipilum*)	State Watchlist	Known from two dry prairie/old-field locations north and east of the northern end of the study area.
Water willow (*Decodon verticillatus*)	Special Concern	Observed in the 1940s and 1950s in two lakes in Robbinsdale outside (east) of the study area.
Least darter (*Etheostoma microperca*)	Special Concern	Observed in 1931 in a lake in Robbinsdale outside (east) of the study area.
Hooded warbler (*Setophaga citrina*)	Special Concern	Observed during the breeding season in 1979 in TWRP.
Bullfrog (*Lithobates catesbeianus*)	State Watchlist	Observed in 2003, 2008, and 2011 in a shallow pond connected to Bassett Creek.
Peregrine falcon (*Falco peregrinus*)	Special Concern	Observed nesting in 2000, 2003, and 2011 in downtown Minneapolis on several skyscrapers.

Source: DNR NHIS Database, Licensing Agreement 722_2014

Other rare features documented in the DNR NHIS Database that are present in the study area are described below and summarized in **Table 5.8-3**.

Colonial Waterbird Nesting Areas. Two colonial waterbird nesting areas have been documented west and east of the study area. Colonial waterbird nesting areas are not currently present in the study area; however, rookery locations do change over time, so locations would be monitored. Locations of colonial waterbird nesting areas are not discussed further in **Section 5.8**. Rookeries, typically occupied by great blue herons and double-crested cormorants, are quite obvious when

active, so rookery locations would be monitored throughout the project planning and construction phases.

Tamarack Swamp (Southern) Type. A tamarack swamp (southern) type has been documented in the DNR NHIS Database in part of TWRP southwest of the study area. The Council also concludes that the tamarack swamp identified in the NHIS Database is not located in the study area; therefore, it is not discussed further in **Section 5.8**.

Table 5.8-3. Other Elements Documented in the Study Area

Element	State Status	Notes
Colonial waterbird nesting area	Tracked by DNR Natural Heritage Program	Two locations observed in 1997, 1998, and 2010 outside (east and west) of the study area.
Tamarack swamp (southern) type	Tracked by DNR Natural Heritage Program	Observed in 1998 in TWRP outside (southwest) of the study area.

Source: DNR NHIS Database, Licensing Agreement 722_2014

State Threatened or Endangered Species

The Council reviewed the DNR NHIS Database, which provides information about Minnesota's threatened and endangered species. The threatened or endangered species known to be present in the study area, as well as their status, habitat requirements, and general locations, are summarized below and in **Table 5.8-4**.

Valerian (*Valerian edulis* var. *ciliata*). Valerian (State Threatened), last observed in 1891 near but outside the study area, is not likely present; therefore, it is not discussed further in **Section 5.8**.

Blanding's Turtle (*Emydoidea blandingii*). Blanding's turtles (State Threatened) could be present in the study area. Therefore, this species is discussed further in **Section 5.8**.

Table 5.8-4. State Threatened or Endangered Species Documented in the Study Area

Species	State Status	Notes
Valerian (*Valeriana edulis* var. *ciliata*)	Threatened	Last observed in 1891 outside (southwest) of the study area.
Blanding's turtle (*Emydoidea blandingii*)	Threatened	A dead female Blanding's turtle was observed in 2000 on Olson Memorial Highway near TWRP.

Source: DNR NHIS Database, Licensing Agreement 722_2014

5.8.3.2 Wildlife Habitat

General Habitat. The proposed BLRT Extension project is proposed to be constructed mainly in areas that have been previously disturbed or developed with impervious surfaces and buildings. However, the proposed BLRT Extension project and associated facilities would affect aquatic and terrestrial wildlife habitat. The size and quality of these natural areas or open spaces determines the likelihood of their supporting terrestrial and aquatic wildlife. (The following section discusses notable terrestrial and aquatic habitats.)

Generally, the study area is characterized as urbanized from downtown Minneapolis west and north to TH 610 and as urbanizing rural north of TH 610. The portion of the study area from downtown Minneapolis westward along Olson Memorial Highway into TWRP is highly urbanized with no natural habitat types present.

The large central portion of the study area from Olson Memorial Highway to about 36th Avenue North (in the cities of Minneapolis, Golden Valley, and Robbinsdale) is characterized by abundant parkland with a mosaic of forested habitat types and aquatic resources.

The portion of the study area from 36th Avenue North to TH 610 (in Robbinsdale, Crystal, and Brooklyn Park) is highly urbanized. Land north of TH 610 is a mosaic of agricultural fields, abandoned old fields, and landscaped corporate campuses.

Habitat in the study area is highly disturbed as a result of urbanization, historical road and railroad ditch and embankment work, dumping of concrete rubble, and historical vegetation clearing. Much of the forested habitat in the study area is young to submature second-growth disturbed deciduous forest. Several small, scattered areas of parkland near the study area have been recently been cleared of forest and planted with a prairie seed mix.

Vegetated open land (forest land, shrubland, and forb and grassland), such as the parkland in the study area, provides important loafing and feeding habitat for migratory songbirds. Songbirds might also nest in these disturbed habitats, but, given the fragmented condition of the habitat and the fact that invasive species survive better in a fragmented habitat, many of the nests are taken over by invasive species such as brown-headed cowbirds and other aggressive species.

Disturbed habitats in the study area provide suitable conditions for generalist wildlife species adapted to urban conditions. Generalist mammal species include white-tailed deer, raccoons, opossums, grey squirrels, and chipmunks. Common generalist bird species that are well-adapted to these conditions are robins, cardinals, blue jays, crows, brown-headed cowbirds, grackles, starlings, and English sparrows. Disturbed aquatic habitat in and near the study area supports a variety of common generalist amphibian species, such as frogs and toads, and reptiles, such as turtles and snakes.

Notable Terrestrial and Aquatic Habitats. Ten forest complexes, containing about 269 acres of notable terrestrial habitat, were identified in the study area. Four areas of notable aquatic habitat, containing about 49 acres, were identified in the study area (**Table 5.8-5**). The field data that the Council collected during 2015 verified the disturbed nature of habitats in the study area.

Table 5.8-5. Total Extent of Notable Terrestrial and Aquatic Habitats in the Study Area

Notable Habitat Type	Total Size (acres)
Terrestrial	269 acres
Aquatic	49 acres

Sources: MLCCS; field data from Council (2015)

The notable aquatic habitats summarized above in **Table 5.8-5** provide refuge for a variety of frogs, toads, turtles, snakes, and birds. Additionally, the notable terrestrial habitats summarized in the table could provide summer roosting habitat for NLEBs, a federally threatened species.

The appended *Biological Environment Technical Report* (Council, 2016e) (**Appendix F**) provides additional information about notable terrestrial and aquatic habitats.

5.8.3.3 Migratory Birds

A large number of migratory bird species are covered under the MBTA. These species might pass through or nest in or near the study area as part of their seasonal migrations. Some migratory bird species might nest in vegetated habitats, and others, such as barn swallows and cliff swallows, have adapted to building mud nests under bridges and other human-made structures.

The Council examined bridges and structures during the summer of 2015 for the presence of barn and cliff swallows and nests. Several nests were observed on the underside of bridges in the study area; however, the number of nests was low. One nest (on Plymouth Avenue Bridge) was evidently occupied and being guarded by a swallow. **Table 5.8-6** summarizes swallow nest locations and characteristics in the study area.

Table 5.8-6. Observed Swallow Nests on Bridge Structures in the Study Area

Bridge	Number of Nests Observed	Notes
Golden Valley Road bridge	2	Bridge observed on June 10, 2015. No swallows were present.
Theodore Wirth Parkway bridge	0	Bridge observed on June 10, 2015. No nests or swallows were present.
Plymouth Avenue bridge	1	Bridge observed on June 10, 2015. Swallow observed sitting on electrical conduit next to nest.
36th Avenue bridge	0	Bridge observed on June 10, 2015. No nests or swallows were present.

Source: Field data from Council (2015)

5.8.3.4 Noxious Weeds

The Council reviewed the Minnesota and Federal Noxious and Prohibited Weed List (updated May 15, 2014) to determine the status of invasive species encountered during fieldwork in the study area in the spring and summer of 2015. **Table 5.8-7** summarizes common noxious plant species, their status, and general locations observed during fieldwork.

Table 5.8-7. Noxious Plant Species in the Study Area

Plant Species	Noxious Status[1]	Notes
Garlic mustard (*Alliaria petiolata*)	RN	Ubiquitous in forested plant communities throughout the study area.
Spotted knapweed (*Centaurea stoebe* ssp. *micranthos*)	SN	Common on railroad ballast and adjacent dry ditches.
Canada thistle (*Cirsium arvense*)	SN	Common throughout the study area.
Leafy spurge (*Euphorbia esula*)	SN	Common on railroad ballast and adjacent dry ditches.
Wild parsnip (*Pastinaca sativa*)	SN	Common on disturbed embankments throughout the study area.
Japanese knotweed (*Polygonum cuspidatum*)	SN	Observed in highly disturbed forest.
European buckthorn (*Rhamnus cathartica*)	RN	Ubiquitous in the herbaceous, shrub, and tree strata of forested areas throughout the study area.
Poison ivy (*Toxicodendron radicans*)	SN	Common in vegetated areas throughout the study area.

Sources: Council field data (2015); Minnesota and Federal Noxious and Prohibited Weed List (updated May 15, 2014)
[1] RN = restricted noxious weed, SN = state noxious weed

5.8.4 Environmental Consequences

5.8.4.1 Operating-Phase (Long-Term) Impacts

No-Build Alternative

There would be no operating-phase impacts to biological resources from the No-Build Alternative.

Proposed BLRT Extension Project

Endangered and Threatened Species

Forest complexes in the study area could provide suitable summer roosting habitat for NLEBs, a federally threatened species. Table 5.8-8 summarizes the total extent of and total impacts to forest complexes in the study area.

Table 5.8-8. Total Extent and Total Impacts to Notable Terrestrial and Aquatic Habitats in the Study Area

Notable Habitat Type	Total Extent (acres)	Total Impacts (acres)
Terrestrial (forest complexes)	269	**17.9**
Aquatic	49	**4.33**

Sources: MLCCS; recent (2013) aerial photographs; Council field data (2015)

Wildlife Habitat

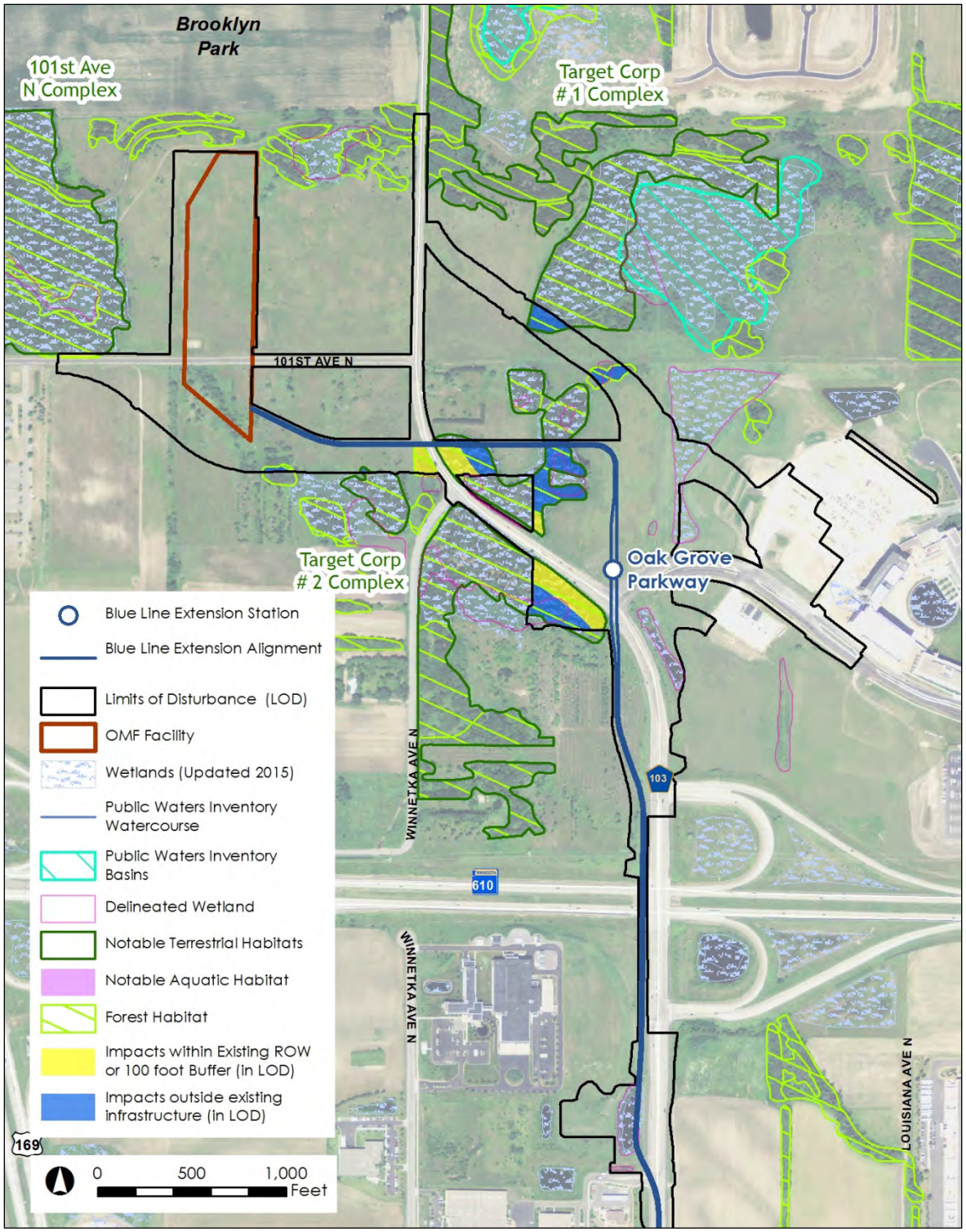
Because of the urban setting of the proposed BLRT Extension project, the wildlife that inhabits these areas are generalist species adapted to urban conditions. These species are generally more tolerant of human presence and activities, including traffic (pedestrian, rail, and vehicle) and have demonstrated by their presence that they adapt readily to the human environment. **Table 5.8-8** above lists the total impacts to notable terrestrial and aquatic habitats; these impacts are shown in **Figure 5.8-1 through Figure 5.8-5**.

The proposed BLRT Extension project could restrict the crossing of the rail corridor by wildlife compared to conditions with the existing transportation infrastructure (roads and freight rail tracks). The proposed station areas, which would generally be less than 600 feet long, could include barriers to prevent people from crossing the tracks for limited distances. The proposed corridor-protection features between the freight rail and light rail tracks include segments of wall and retained embankment that could impede the movement of wildlife. However, these segments would not be continuous along the BNSF rail corridor, and wildlife would be able to cross unimpeded at multiple locations.

Migratory Birds

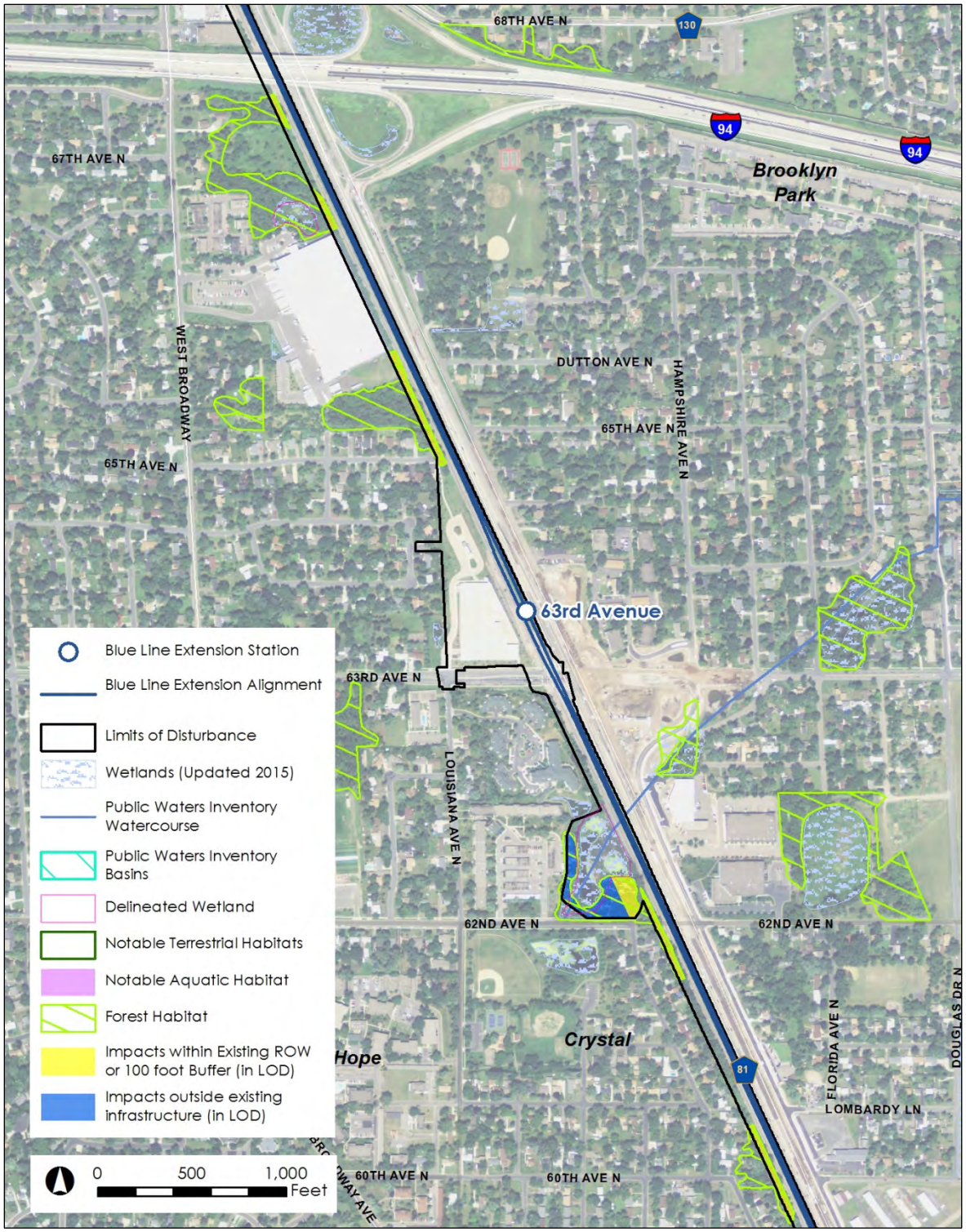
Impacts to migratory birds would be minor and limited to the loss of habitat within the LOD of the proposed BLRT Extension project.

Figure 5.8-1. Biological Environment in the Study Area (1 of 5)



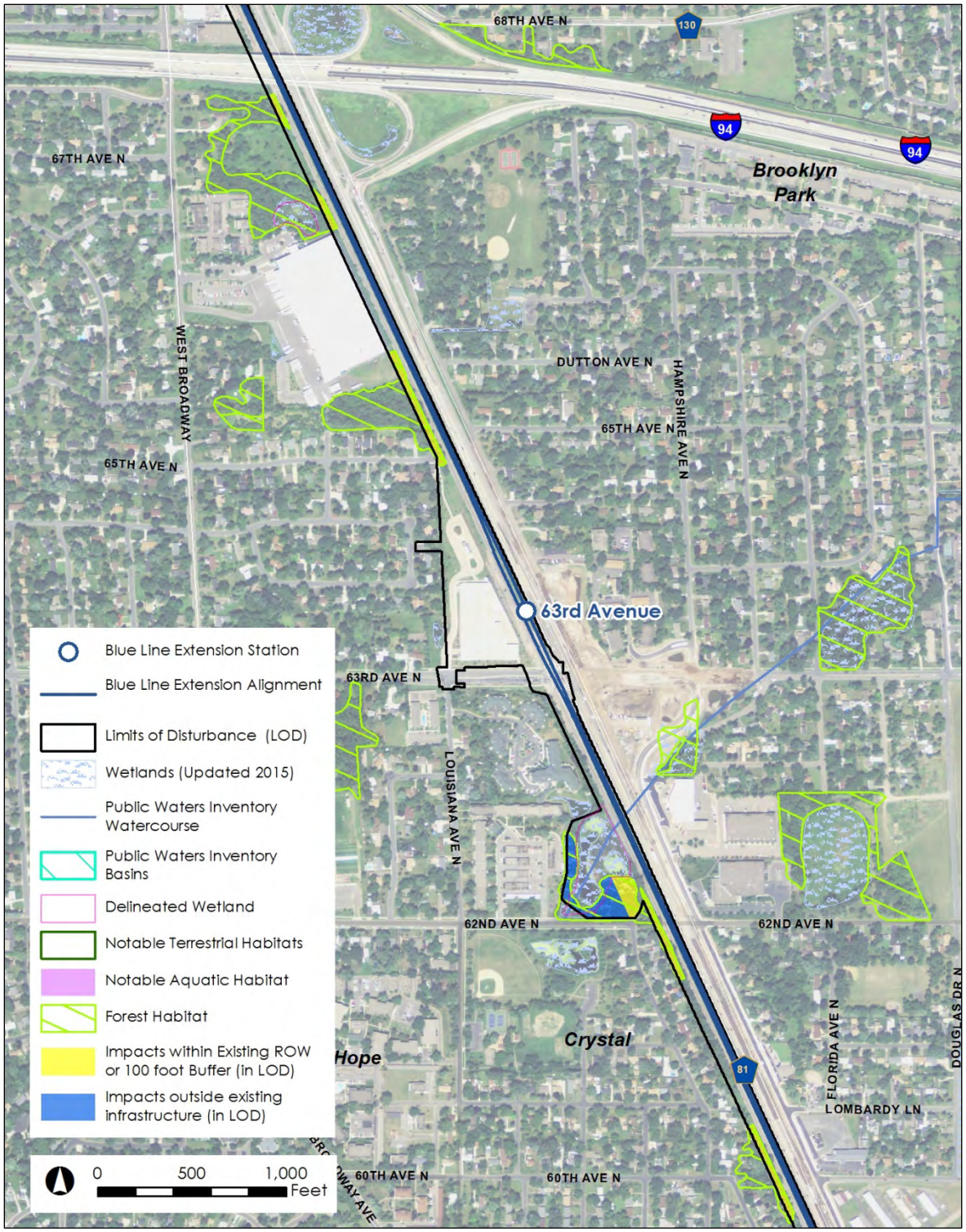
Sources: Aerial: Minnesota Geospatial Information Office, 2010; Wildlife Habitat: MLCCS (DNR), and field data (Council, 2015)

Figure 5.8-2. Biological Environment in the Study Area (2 of 5)



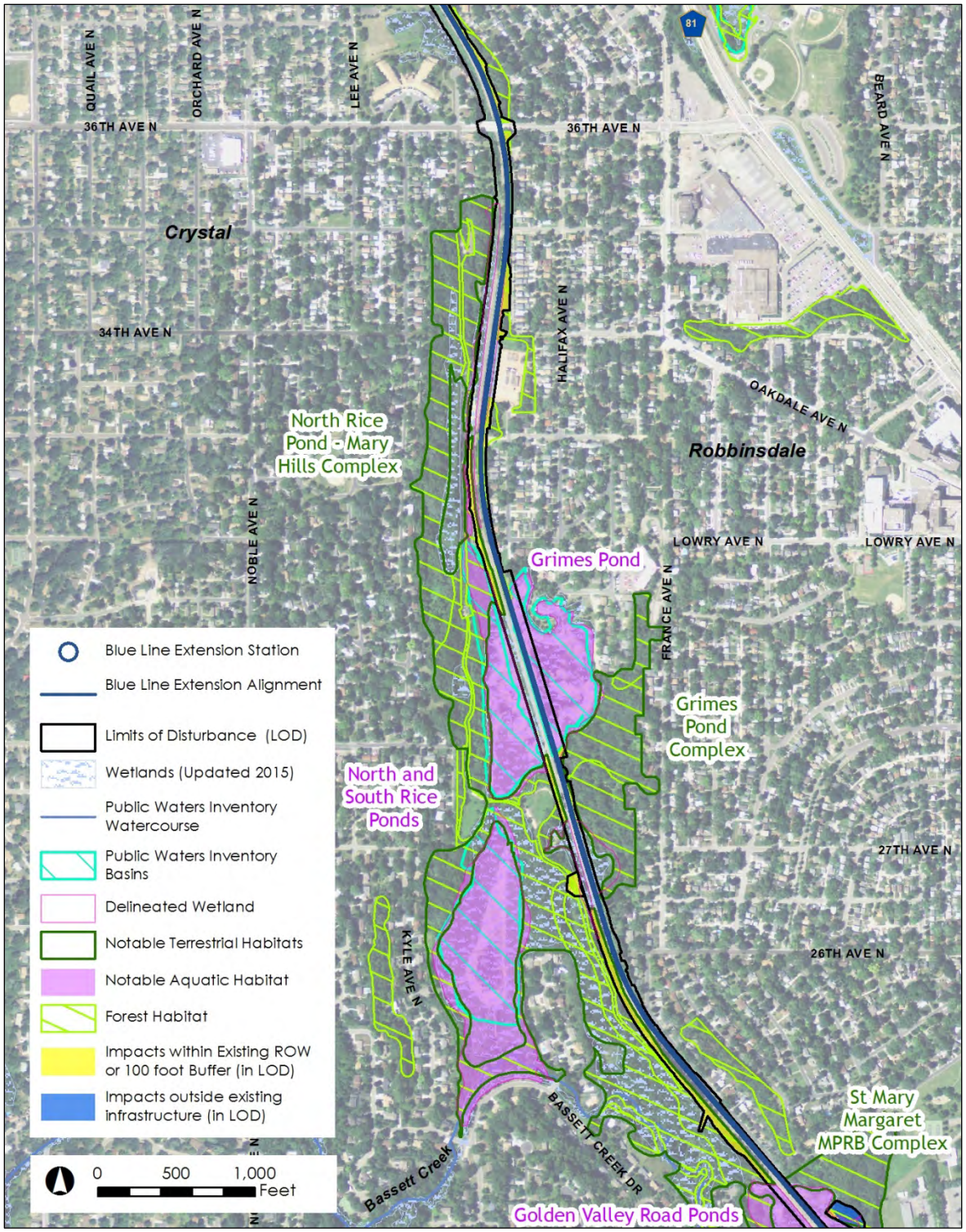
Sources: Aerial: Minnesota Geospatial Information Office, 2010; Wildlife Habitat: MLCCS (DNR), and field data (Council, 2015)

Figure 5.8-3. Biological Environment in the Study Area (3 of 5)



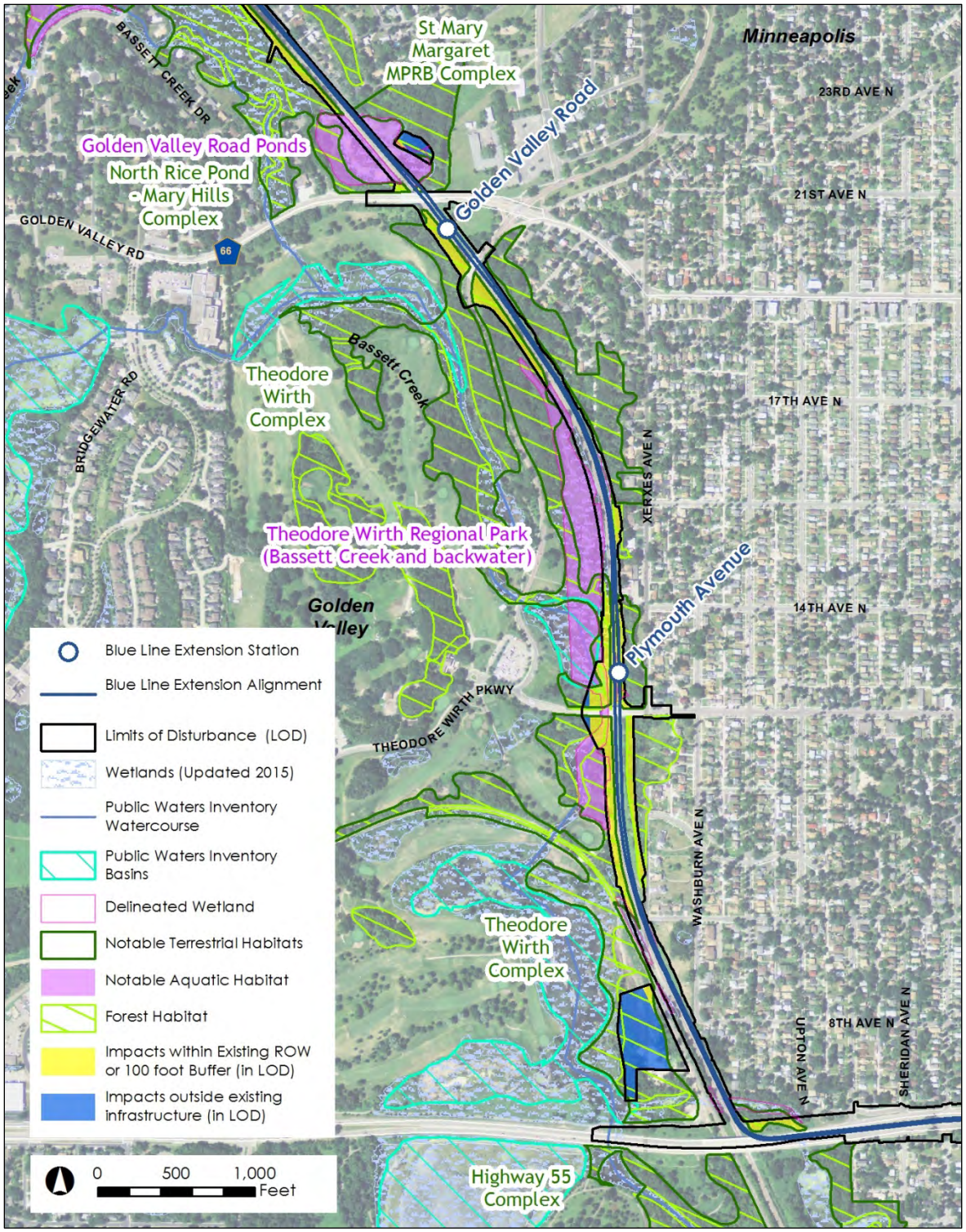
Sources: Aerial: Minnesota Geospatial Information Office, 2010; Wildlife Habitat: MLCCS (DNR), and field data (Council, 2015)

Figure 5.8-4. Biological Environment in the Study Area (4 of 5)



Sources: Aerial: Minnesota Geospatial Information Office, 2010; Wildlife Habitat: MLCCS (DNR), and field data (Council, 2015)

Figure 5.8-5. Biological Environment in the Study Area (5 of 5)



Sources: Aerial: Minnesota Geospatial Information Office, 2010; Wildlife Habitat: MLCCS (DNR), and field data (Council, 2015)

Noxious Weeds

Eight species of noxious weeds (see **Table 5.8-7** above) were observed along many areas within the LOD. Infestations are also present outside the LOD. Disturbed soils can create conditions in which infestation of noxious and invasive species can increase. Infestations could be controlled during the operating phase of the project by spot-spraying appropriate herbicides.

OMF

The OMF north of 101st Avenue would have no impacts to wetlands or forested habitat. The OMF would impact highly disturbed non-native grassland that was previously agricultural.

TPSS

TPSS sites would be placed within the existing railroad right-of-way or on publicly owned land where possible. The Council does not anticipate impacts to wooded areas, wetlands, or grassland.

No known state or federally listed species have been documented in the vicinity of the proposed TPSS sites. The Council does not anticipate that TPSS locations would affect the preferred habitats of listed species or of more common generalist wildlife species.

5.8.4.2 Construction-Phase (Short-Term) Impacts

No-Build Alternative

There would be no construction-phase impacts to biological resources from the No-Build Alternative.

Proposed BLRT Extension Project

Construction-phase impacts to the biological environment could include temporary physical disturbances such as construction of access roads, creation of construction staging areas, and dewatering in some areas. Construction-related noise could include pile driving and noise from the engines of heavy equipment. Such physical and noise disturbances can temporarily disrupt wildlife use of habitat. The typical wildlife species that use such urban habitats are resilient habitat generalists, and they can successfully occupy habitats a safe distance from construction-related disturbances.

Temporary access roads and staging areas for construction would be restored to the pre-construction grade and replanted with suitable vegetation. Construction-related noise can be reduced with properly functioning engine muffling.

5.8.5 Avoidance, Minimization, and/or Mitigation Measures

5.8.5.1 Federally Listed Species and Federal Watchlist Species

Measures to Avoid and Minimize Impacts

Northern Long-Eared Bat. Impacts to NLEBs summer roosting habitat can be reduced by avoiding tree clearing and grubbing. The Final 4(d) Rule for the NLEB, published on January 14, 2016, and in effect as of February 16, 2016, states that there would be no seasonal restrictions placed on tree

removal that is greater than 0.25 mile from a known hibernacula entrance or greater than 150 feet from a known maternity roost tree. The Council is working closely with USFWS to ensure that impacts to NLEBs are minimized to the extent practicable. USFWS has concurred with FTA's determination the proposed BLRT Extension project may affect the NLEB, and an incidental take would not be prohibited.

Bald Eagle. Though bald eagles have been delisted from the Endangered Species Act, they are still protected under several other federal laws. Bald eagles are particularly vulnerable during the nesting season, which extends from late January to late July. The non-nesting season is from August to mid-January. Bald eagle nest locations change over time, and bald eagles could nest in the study area. Nest locations will be monitored throughout the planning and construction phases of the proposed BLRT Extension project. If new bald eagle nests are observed close to the LOD of the proposed BLRT Extension project during the planning and construction phases, the Council will consult USFWS to determine which actions or restrictions apply.

Standard guidelines for avoiding impacts to bald eagle nesting sites include limiting construction activity within at least 330 feet from the nesting habitat and limiting clearing of vegetation within 660 feet of the nest site during the nesting season (late January–July). Bald eagle nest surveys will be conducted during the final design of the proposed BLRT Extension project to determine whether any nests are present at that time. If they are, the standard guidelines would be followed.

Unavoidable Impacts and Mitigation

Northern Long-Eared Bat. Based on its analysis of proposed tree clearing in the study area and adherence to the Final "4(d) Rule," USFWS has concurred with FTA's determination that the proposed BLRT Extension project merits a determination of "may affect, Incidental Take Not Prohibited" with respect to the NLEB.

Bald Eagle. With ongoing nest reconnaissance and adherence to acceptable permit provisions and seasonal work windows, the proposed BLRT Extension project is not likely to negatively affect bald eagles.

5.8.5.2 Migratory Bird Treaty Act

Measures to Avoid and Minimize Impacts

Generally, USFWS and DNR require seasonal work windows in order to comply with the MBTA and the DNR General Permit 2004–0001 provisions. The following measures are acceptable to USFWS and DNR:

- Bridge work may be performed (started and finished) outside the nesting season; that is, before May 15 or after September 1. No permit would be required for this activity.
- Bridge work may begin before May 15, and nest completion can be prevented by removing the nests (at least three times per week) as they are being built, or through the use of barriers to prevent nests from being established. The success of this measure depends on the number of nests on a bridge and the ability to restrict access. If the bridge has only a few nests, the birds

should be easily deterred from nesting. Removing unfinished nests is acceptable to USFWS, which considers this to be nonlethal harassment. No permits would be required for this activity.

Very few swallow nests were observed on bridge structures in the study area. Therefore, it should be feasible to remove existing nests or prevent new nests from being established during a seasonal period when nests are inactive. During construction of the proposed BLRT Extension project, nest building will be prevented on the underside of bridge structures by removing nests as they are built, if needed.

Unavoidable Impacts and Mitigation

With the implementation of acceptable measures to minimize impacts, there would be no impacts from the proposed BLRT Extension project to species covered under the MBTA.

5.8.5.3 State-Listed Species and Other Element Occurrences

Measures to Avoid and Minimize Impacts

DNR has issued guidelines on measures to minimize impacts to Blanding's turtles. These measures include provisions such as observing seasonal work windows, installing and removing silt fences, and distributing educational materials to use at the construction site to inform the contractor and workers what to look for and how to handle any turtles that are present.

Unavoidable Impacts and Mitigation

Blanding's Turtle. Blanding's turtles could be present in the study area. With adherence to the DNR guidelines concerning minimization of impacts to Blanding's turtles, impacts to this species would likely be negligible.

Other Element Occurrences. The proposed BLRT Extension project would not affect any rare plant communities or animal aggregation areas (that is, colonial waterbird nesting areas) that have been inventoried by DNR.

5.8.5.4 Noxious Weeds

Given the urban and highly disturbed nature of the study area, noxious weeds are ubiquitous. Some measures, such as spot-spraying with appropriate herbicides and cleaning equipment as it enters and exits the construction area, can be used to control invasive species within construction areas and staging areas; a vegetation management plan will be developed to include measures like these to control noxious weeds along the proposed BLRT Extension project. However, permanent eradication of invasive or noxious weeds in the study area would not be feasible.

5.8.5.5 Wildlife Habitat

Measures to Avoid and Minimize Impacts

Complete avoidance of impacts to notable terrestrial and aquatic habitats in the study area is not feasible. The following opportunities to reduce impacts are being considered by the Council in the design process:

- **Elevated LRT rail platform across Grimes Pond and ponds north of Golden Valley Road.** The proposed BLRT Extension project will use a bridge to cross these ponds, which are identified notable aquatic resources. The Draft EIS design concept would have used a continuous embankment of fill, which would have caused considerably more impacts to this aquatic resource.
- **Pretreatment storm BMPs.** Several BMPs, such as infiltration, retention, and detention, will be part of the proposed BLRT Extension project. These BMPs would improve the water quality of downslope or downstream aquatic resources.
- **Design of on-site mitigation areas that would reduce impacts to forested areas and existing aquatic resources.** Two onsite mitigation areas have been identified that have the potential to restore aquatic habitat that has been lost as a result of fill or diminished hydrology. These areas would also have the potential for floodplain mitigation. These areas would require negligible tree clearing. One area is located within TWRP, and the other area is located along the east side of West Broadway Avenue. Both sites have the potential to provide on-site wetland mitigation.

Unavoidable Impacts and Mitigation

- Unavoidable impacts to aquatic habitat will be mitigated by a combination of on-site wetland mitigation and purchasing suitable wetland credits from an established wetland mitigation bank.
- Unavoidable impacts to notable terrestrial habitat will be mitigated by restoring vegetation in and around TWRP and other notable habitats to be determined during design efforts.
- Where effective and feasible, suitable wildlife crossings will be accommodated within proposed culverts to allow wildlife species to cross from one side of the LRT/freight rail tracks to the other.

5.9 Water Quality and Stormwater

This section describes the existing water quality and stormwater conditions in the study area and the stormwater impacts of the No-Build Alternative and the proposed BLRT Extension project in terms of changes to impervious surfaces. The water quality and stormwater information in this section is based on information in the *Preliminary Stormwater Management Plan Technical Memorandum* (Council, 2016a) (see **Appendix F**). The analysis for this section was conducted in coordination with BCWMC, MWMO, SCWMC, WMWMC, MnDOT, and the cities of Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park.

5.9.1 Regulatory Context and Methodology

5.9.1.1 Approach

Stormwater impacts are studied by quantifying the changes to impervious surfaces as a result of implementing a project. Impervious surfaces are typically road and parking lot pavements, sidewalks, rooftops, and other hard surfaces that are impenetrable to water and therefore eliminate rainwater infiltration and natural groundwater and surface water recharge. Rain and snowmelt water runs off these surfaces and can pick up pollutants before it enters nearby waterbodies.

For this analysis, in order to account for the worst-case scenario in calculating impacts, the Council assumed that LRT guideway segments that include ballasted track are impervious. Track ballast is crushed stone used to support the track and facilitate drainage. However, the stormwater runoff calculations developed for the proposed BLRT Extension project assume that the ballast is slightly less impervious than asphalt or concrete pavement, because it can store more rainfall in the spaces between the crushed stones. The Council would need to coordinate with the regulating WMOs and cities to determine whether ballasted track is considered impervious or pervious surface for regulatory purposes.

Regulatory and permitting authority for stormwater management falls to the municipalities, MPCA, and the WMOs. Each watershed organization is governed by a Joint Powers Agreement that is held between the watershed organization and the member communities whose jurisdictions are located within the boundaries of the WMO. Regulations change from time to time, and the proposed BLRT Extension project would be subject to the regulations that are in effect when the project design is submitted for approval by the permitting authorities. The stormwater management system for the proposed BLRT Extension project corridor was designed to meet the most stringent requirements for that particular segment. In all cases except for the OMF and park-and-ride structures, the WMO rules were the most stringent requirements. For the OMF and the park-and-ride structures, the rate- and volume-control requirements of the Minnesota B3 Guidelines[11] are more stringent and would be applied to those sites.

[11] B3 Guidelines refer to the *Buildings, Benchmarks, & Beyond Tools and Programs for Sustainable Buildings in Minnesota* (www.b3mn.org).

5.9.1.2 Agencies

Several agencies play a role in stormwater management. The specific agencies that have jurisdiction in the study area are listed below. **Table 5.9-1** lists the specific requirements of each agency.

- MPCA
- MWMO
- BCWMC
- SCWMC and WMWMC, or SCWM WMC when referred to in reference to their joint watershed management plan
- Cities of Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park

Table 5.9-1. Regulatory Matrix of Stormwater Requirements

WMC/WMO	Rate Control[1]	Water Quality[1]	Volume Control[1]
BCWMC	2-, 10-, and 100-year storm peak discharge rate < pre-development rates	The greater of: ■ 0.55 inch of runoff from the new and fully reconstructed impervious surfaces, or ■ 1.1 inches of runoff from the net increase in impervious area	The greater of: ■ 0.55 inch of runoff from the new and fully reconstructed impervious surfaces, or ■ 1.1 inches of runoff from the net increase in impervious area
SCWMC/ WMWMC	2-, 10-, and 100-year storm peak discharge rate < pre-development rates	Remove 60% of phosphorus and 85% of total suspended solids (TSS) National Urban Runoff Program (NURP) Ponds or infiltrate all runoff from 1.3-inch event NURP pond storage must equal runoff from 2.5-inch storm event over the contributing drainage area	1.0 inch of runoff from impervious surfaces or 1.3 inches if using infiltration to also perform water quality treatment
MWMO[2]	2-, 10-, and 100-year storm peak discharge rate < pre-development rates	Remove 90% of TSS from 95th-percentile daily rainfall total over entire study area	A volume standard would be put into place in the future
MPCA	5.66 cubic feet per second, per acre of surface area for the water quality event	Water quality volume of 1 inch of runoff must be retained on site. If infiltration is infeasible, must use other methods to retain water If wet sedimentation pond is used, dead storage requirement is 1,800 cubic feet per acre of surface area drained; the water quality volume of 1 inch of runoff from the net new impervious is in addition to the permanent pool	1.0 inch of runoff from the new impervious surfaces created by the project

Table 5.9-1. Regulatory Matrix of Stormwater Requirements

WMC/WMO	Rate Control[1]	Water Quality[1]	Volume Control[1]
City of Minneapolis	Maintain discharge rates at or below existing rates	Remove 70% of TSS	Not applicable
City of Golden Valley	Must meet BCWMC standards (see above)	Must meet BCWMC standards (see above)	Must meet BCWMC standards (see above)
City of Robbinsdale	Must meet SCWMC and BCWMC standards (see above)	Must meet SCWMC and BCWMC standards (see above)	Must meet SCWMC and BCWMC standards (see above)
City of Crystal	2-, 10-, and 100-year storm peak discharge rate < pre-development rates	If infiltration is infeasible, permanent pond surface area = 2% of impervious area draining to pond, or 1% of entire area draining to pond, whichever is greater; or, permanent pool volume should be greater than runoff from 2.0 inch rainfall for fully developed event	City ordinances should be revised to include volume-control standard in line with most restrictive between SCWMC and MPCA
City of Brooklyn Park	Must meet SCWMC standards (see above)	Must meet SCWMC standards (see above)	Must meet SCWMC standards (see above)

[1] For rate/volume control and treatment, detention may be used as a BMP only when infiltration is infeasible because of poor soils or because of shallow depth to groundwater or bedrock, or when the detention pond is located in karstic areas, Drinking Water Management Supply Areas, Wellhead Protection Areas, or areas with contaminated soils. Detention BMPs may also be used as pretreatment upstream of infiltration or filtration practices.

[2] MWMO does not review plans and relies on the city of Minneapolis to enforce its stormwater ordinances.

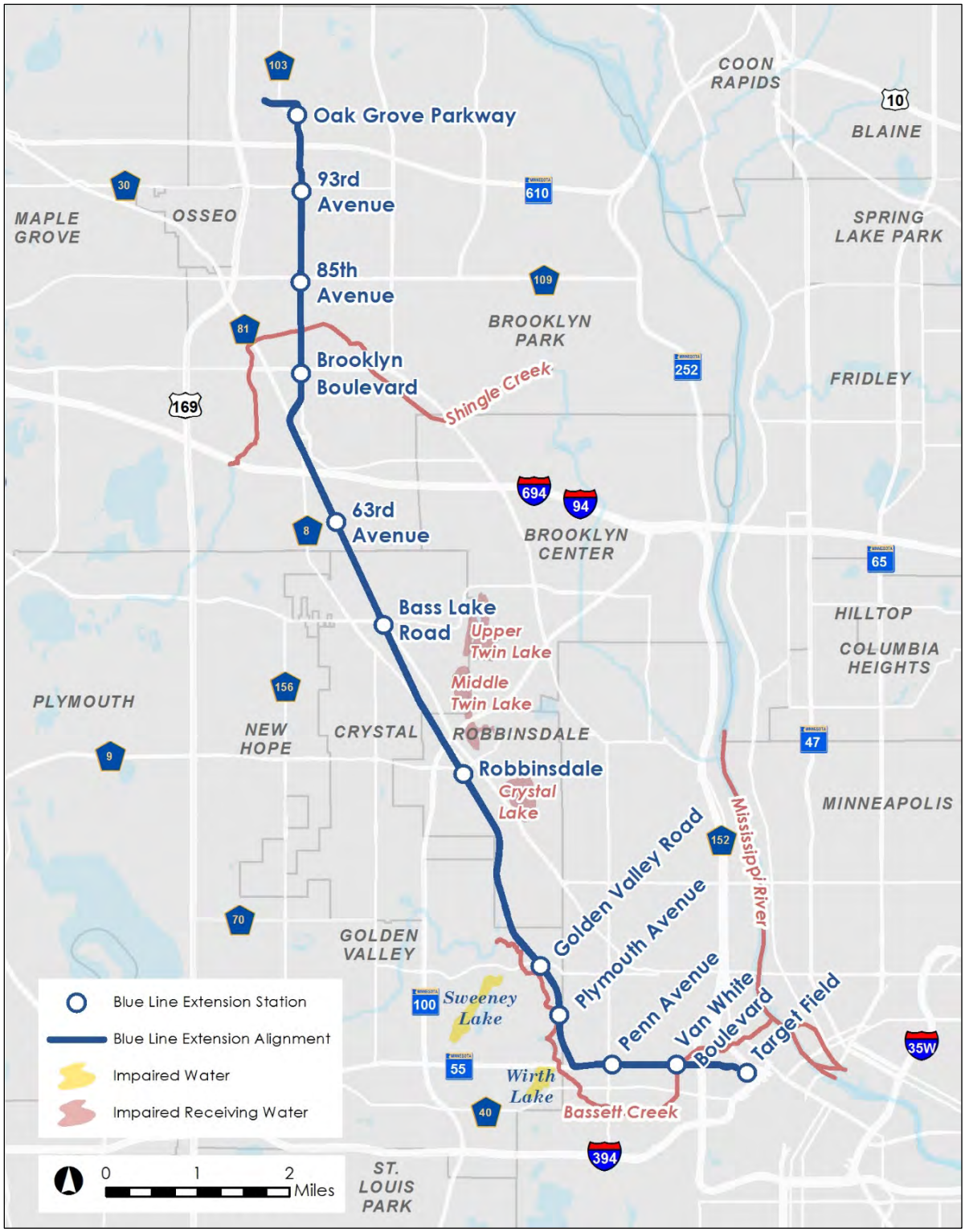
5.9.2 Study Area

The study area for stormwater is defined as the LOD for the proposed BLRT Extension project and the receiving waters within and immediately adjacent to the proposed BLRT Extension project alignment. The study area includes impaired waters that are located within 1 mile on either side of the proposed BLRT Extension project alignment and that would receive stormwater discharge from the proposed BLRT Extension project alignment as per state regulation and as shown in **Table 5.9-2** and **Figure 5.9-1**.

Table 5.9-2. Downstream Impaired Waters within 1 Mile of the Proposed BLRT Extension Project

Impaired Receiving Water	Impairments	Total Maximum Daily Load (TMDL) Status
Mississippi River	Mercury In fish tissue; fecal coliform; polychlorinated biphenyls (PCB) in fish tissue	*Upper Mississippi River Bacteria TMDL and Protection Plan* (2014)
Bassett Creek	Chloride; fecal coliform; fishes bioassessments	Included in the above TMDL plan
Crystal Lake	Nutrient/eutrophication biological indicators	*Crystal Lake Nutrient TMDL Implementation Plan* (2009)
Twin Lakes: Lower, Middle, and Upper	Mercury in fish tissue; nutrient/ eutrophication biological indicators; PCB in fish tissue; perfluorooctane sufonate (PFOS) in fish tissue	*Twin and Ryan Lakes Nutrient TMDL* (2007); plans are required for mercury, PCB, and PFOS
Shingle Creek	Aquatic macroinvertebrate bioassessments; chloride; dissolved oxygen	*Shingle and Bass Creeks Biota and Dissolved Oxygen TMDL Implementation Plan* (2012); *Shingle Creek Chloride TMDL Implementation Plan* (2007)

Figure 5.9-1. Receiving and Impaired Waters



Sources: Minnesota Pollution Control Agency 2014; Council 2015

5.9.3 Affected Environment

The study area is generally urbanized, is highly altered compared to natural conditions, and is characterized by commercial, industrial, and residential development. The intensity of development ranges from suburban to urban and also includes farmland in the northern part of the study area. **Figure 5.9-1** above identifies the receiving waters (including impaired waters) in the study area, including the Mississippi River; Bassett Creek; Crystal Lake; Lower, Middle, and Upper Twin Lakes; Twin Creek; and Shingle Creek. Additional smaller receiving waters include Heritage Park South Pond, North and South Rice Ponds, Grimes Pond, Setzler Pond, Century Channel, and the TH 610 Ponds. **Table 5.9-2** above provides specific information on the impairment and total maximum daily load (TMDL) status of these waterbodies.

Currently, the majority of the study area has no formal stormwater treatment to meet current water quality regulatory requirements. Within the BNSF rail corridor, stormwater typically flows directly into surrounding vegetated ditches, which provide water quality benefits such as stabilizing sediment and filtering out waterborne sediments, and into existing wetlands, thereby conveying the water into adjacent watercourses, some of which are impaired (**Figure 5.9-1** above). Within the Olson Memorial Highway and West Broadway Avenue corridors, stormwater is collected in storm sewer systems and conveyed directly to receiving waters, frequently with little or no water quality treatment or flow rate attenuation.

A few existing stormwater management and treatment facilities are near the proposed BLRT Extension project corridor. These include but are not limited to:

- Target Field stormwater management
- South Treatment System at the Heritage Park redevelopment project
- Hydrodynamic separators at the intersection of Xerxes Avenue and 14th Avenue North in the City of Minneapolis
- Crystal Airport infiltration basin
- Cub Foods/Target parking lot BMPs (southwest quadrant of the West Broadway Avenue/ Brooklyn Boulevard intersection)
- Brooklyn Park wetland regrading and outlet structure improvement (just north of the West Broadway Avenue/Candlewood Drive intersection; primarily intended to mitigate wetland and floodplain fill impacts immediately to the south)
- Setzler Pond, a regional rate-control pond (south and west of the West Broadway Avenue/ 93rd Avenue intersection)
- A stormwater quality pond in the northwest quadrant of 94th Avenue and West Broadway Avenue
- A stormwater quality pond in the southeast quadrant of Oak Grove Parkway and West Broadway Avenue
- Target North Campus BMPs

Table 5.9-1 above summarizes the water management commission (WMC), WMO, and municipal regulatory requirements. Detailed descriptions of the regulatory requirements of the various agencies are provided in the *Preliminary Stormwater Management Plan Technical Memorandum* (Council, 2016a) (see **Appendix F**).

5.9.4 Environmental Consequences

5.9.4.1 Operating-Phase (Long-Term) Impacts

No-Build Alternative

There would be no operating-phase impacts to stormwater from the No-Build Alternative.

Proposed BLRT Extension Project

The proposed BLRT Extension project would increase the impervious area within the LOD by 83 percent (**Table 5.9-3**). The impervious surfaces constructed would include ballasted track, platforms, park-and-ride facilities, an OMF, aerial structures for the LRT guideway, roadway, and sidewalk improvements. These additional impervious surfaces and drainage systems (that is, curb, gutters, and storm drain pipes) would increase the volume of stormwater runoff from the sites within the proposed BLRT Extension project footprint. Several culvert extensions would also be necessary to accommodate the proposed BLRT Extension project. The Council would coordinate these extensions with the appropriate jurisdictional agency.

Table 5.9-3. Increase in Impervious Surface by Segment

Alternative	Segment	Total Area (acre)	Existing		Proposed		Increase in Impervious
			Impervious Area (acre)	Percent Impervious	Impervious Area (acre)[1]	Percent Impervious	
No-Build Alternative	—	245	103	42%	103	42%	0%
Proposed BLRT Extension project	Total	245	103	42%	189	77%	83%
Proposed BLRT Extension project (by segment)	Minneapolis	44	30	68%	36	82%	20%
	Golden Valley	21	6	29%	16	76%	167%
	Robbinsdale	36	18	50%	28	78%	56%
	Crystal	29	8	28%	21	72%	163%
	Brooklyn Park 2	45	20	44%	33	73%	65%
	Brooklyn Park 1	70	21	30%	55	79%	162%

[1] The impervious surface acreage includes proposed ballasted track areas.

TPSS

There are 17 potential TPSS locations along the proposed BLRT Extension project. The majority of the TPSSs would be located on the east side of the proposed LRT tracks, with some associated with the LRT platforms and stations. Individually, TPSS sites would generally not need to meet the various watershed requirements because of the small size of the sites (less than 10,000 square feet). TPSSs are included as part of the overall proposed BLRT Extension project when considering various WMO and/or city requirements for addressing stormwater.

5.9.4.2 Construction-Phase (Short-Term) Impacts

No-Build Alternative

There would be no construction-phase impacts to stormwater from the No-Build Alternative.

Proposed BLRT Extension Project

Construction activities associated with constructing utilities, the LRT guideway, track platforms, park-and-ride facilities, an OMF, aerial structures for the LRT guideway, roadway, and sidewalk improvements for the proposed BLRT Extension project would disturb soils and cause runoff that could erode slopes and drainageways, form gullies, and deposit sediment in storm drain systems and receiving waterbodies. This could destabilize slopes and reduce water quality if temporary BMPs, which are required through the permitting process, are not in place prior to a storm event.

5.9.5 Avoidance, Minimization, and/or Mitigation Measures

Long-Term Mitigation Measures will include the design and construction of permanent BMPs, such as detention and infiltration facilities, which would control and treat stormwater runoff caused by an increase in impervious surfaces as a result of the proposed BLRT Extension project. Various BMPs, including ponds and infiltration areas, are described below.

Stormwater treatment ponds provide rate control and water quality treatment. To the extent practicable, ponds will be sited near low points or adjacent to outfalls within the proposed right-of-way. The Council might consider opportunities to collaborate with corridor cities on combined stormwater management as specific mitigation needs are refined. A wet detention pond, also commonly called a NURP (National Urban Runoff Program) pond, is an example of this type of BMP. In locations where surface ponds are not practicable, underground storage can provide rate control.

Infiltration BMPs are used to provide volume control and water quality treatment. Certain areas might be suitable for infiltration BMPs based on soil types at the site. Based on the National Cooperative Soil Survey from NRCS, a large portion of the proposed BLRT Extension project corridor contains soils appropriate for this type of BMP. Infiltration basins and infiltration trenches that are integrated into the guideway and sidewalk areas in urban areas will be considered in final design. In areas where infiltration is not feasible (areas with contaminated soils, shallow and/or sensitive groundwater resources, or low soil porosity), filtration BMPs will be considered instead of infiltration. Examples of infiltration BMPs include bioinfiltration basins, bioswales, ditch treatment using ditch blocks, tree trenches, and underground infiltration systems.

Filtration BMPs can be used in locations where poorly draining soils or proximity to groundwater preclude the use of infiltration BMPs. They can also be used at treatment pond locations by using the 10-foot bench above the normal water level as a filtration bench. This would allow a certain volume of water in the pond to filtrate through engineered soils and collect in a drain tile that flows to the pond outfall. Soil borings will be taken during design to determine where infiltration or filtration BMPs are being considered. Examples of filtration BMPs include biofiltration basins, ditch treatment using ditch blocks and perforated underdrains, and underground sand or media filtration systems.

Outside ditches along the proposed railway corridor can be used for infiltration or filtration of stormwater. Ditch blocks will be installed along the east side of the railway corridor to provide storage capacity and encourage infiltration or filtration. The Council proposes that the corridor protection ditches located between the BNSF tracks and the LRT tracks be used for infiltration or filtration of stormwater.

Table 5.9-4 includes a summary of BMPs and their locations by segment of the proposed BLRT Extension project alignment. **Tables 5.9-5 through 5.9-10** include a more detailed description of the BMPs being considered, the water quality volume required, and the size and volume of the BMPs being considered. **Figure 5.9-2** also shows the locations of major stormwater treatment facilities for the proposed BLRT Extension project.

Short-Term Mitigation Measures. An NPDES Construction Stormwater Permit from MPCA will be required because the proposed BLRT Extension project would disturb 1 acre or more of land. Since the proposed BLRT Extension project would disturb more than 50 acres of land and would produce discharges within 1 mile of impaired waters, the Council will submit the NPDES Construction Stormwater Permit application to MPCA at least 30 days prior to the start of construction. Other Minnesota agencies requiring permits could include watershed districts, municipalities, and soil and water conservation districts. The NPDES permit requires development of a Stormwater Pollution Prevention Plan (SWPPP), which must be submitted at the time of the permit application, and implemented during construction.

Short-term mitigation measures will include developing erosion- and sediment-control plans to control runoff and reduce erosion and sedimentation during construction and to limit the amount of sediment carried into lakes, streams, wetlands, and rivers by stormwater runoff. These plans, in combination with the SWPPP, will identify how to control runoff, stabilize slopes and exposed soils, and limit the movement of soils into drainage systems and natural areas. Construction activities would be phased in so as to disturb as small an area as possible at any one time.

Table 5.9-4. Proposed Stormwater BMPs

Segment	Section[1]	Proposed BMPs
Minneapolis (M)[2]	Olson Memorial Highway	Construct pond or underground detention and bioinfiltration or biofiltration BMPs to meet rate control, volume control, and water quality requirements. Proposed improvements have a discharge point within 1 mile of, and flow to, the Mississippi River and could require additional BMPs as required by the NPDES permit.
Golden Valley (GV)	BNSF rail corridor	Construct infiltration or filtration areas within adjacent ditches depending on the underlying soils and depth to groundwater. Proposed improvements have a discharge point within 1 mile of, and flow to, Bassett Creek and could require additional BMPs as required by the NPDES permit.
Crystal (C) and Robbinsdale (R)	Bass Lake Road park-and-ride	Construct hydrodynamic separator and underground detention and/or filtration facilities beneath park-and-ride lot. Proposed improvements have discharge points within 1 mile of, and flow to, Crystal and/or Twin Lakes and could require additional BMPs as dictated by the NPDES permit.
	Robbinsdale park-and-ride	Construct hydrodynamic separator and underground detention BMPs to meet rate control, volume control, and water quality requirements. Proposed improvements have discharge points within 1 mile of, and flow to, Crystal and/or Twin Lakes and could require additional BMPs as dictated by the NPDES permit.
	BSNF rail corridor	Construct infiltration areas within adjacent ditches; avoid existing well areas near the Robbinsdale Station. Proposed improvements have discharge points within 1 mile of, and flow to, Crystal and/or Twin Lakes and could require additional BMPs as dictated by the NPDES permit.
Brooklyn Park (BP1 and BP2)	101st Avenue OMF	Construct wet pond filtration and/or infiltration BMPs to meet rate control, volume control, and water quality requirements.
	Oak Grove Parkway park-and-ride	Construct filtration or infiltration BMPs to meet rate control, volume control, and water quality requirements.
	Roadways north of 93rd Avenue	Construct on-site pond and infiltration BMPs to meet rate control, volume control, and water quality requirements and to compensate for an existing pond being eliminated at 94th Avenue.
	Roadway section between 93rd Avenue and Candlewood Drive	BMPs for the roadway and LRT guideway would be considered as part of the Hennepin County roadway project.

Table 5.9-4. Proposed Stormwater BMPs

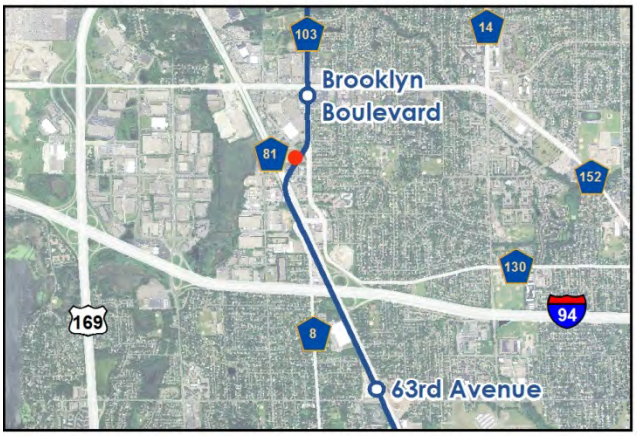
Segment	Section[1]	Proposed BMPs
	Roadway section south of Candlewood Drive	Use existing West Broadway Avenue BMPs to the extent feasible and construct additional BMPs (such as bioinfiltration basins and tree trenches) to meet rate control, volume control, and water quality requirements. Proposed improvements have a discharge point within 1 mile of, and flow to, Shingle Creek and could require additional BMPs as dictated by the NPDES permit.
	BNSF rail corridor	Construct infiltration areas within adjacent ditches. Proposed improvements have discharge points within 1 mile of, and flow to, Shingle Creek and could require additional BMPs as dictated by the NPDES permit. Modifying a wetland/stormwater basin at 62nd Avenue would be necessary.
	63rd Avenue park-and-ride	No additional construction anticipated at this location, so no additional BMPs are anticipated.

[1] Erosion-control and sediment-control BMPs would be required at all locations to meet the requirements of the cities and MPCA NPDES permits.

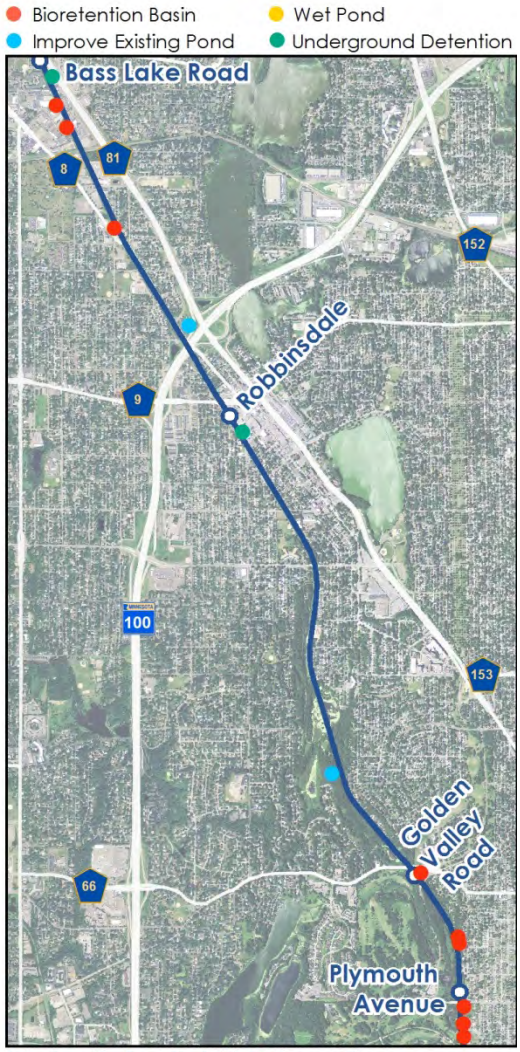
[2] Because of the right-of-way constraints, infiltration trenches within the LRT guideway and adjacent sidewalk areas will be considered to provide additional infiltration capacity.

Figure 5.9-2. Major Proposed Stormwater Treatment Facilities

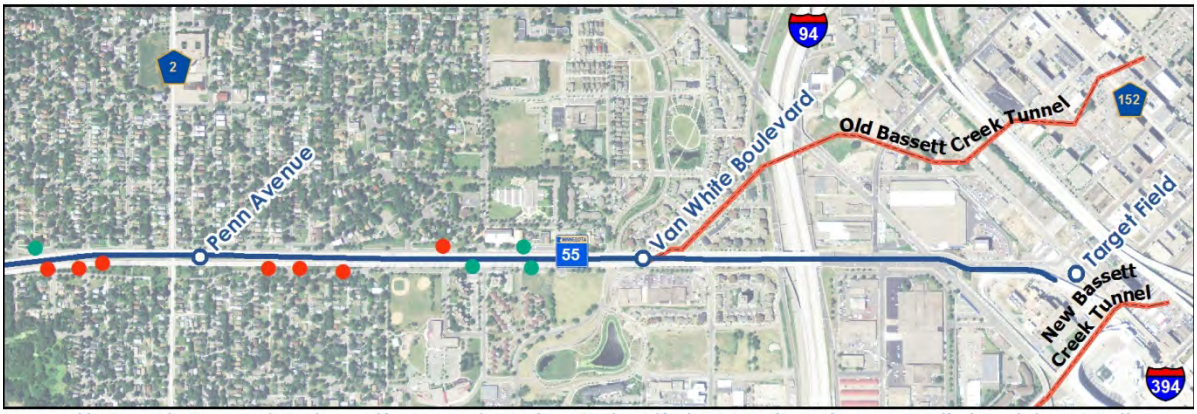
Major Potential BMP Locations Northern End



Major Potential BMP Locations in Brooklyn Park



Major Potential BMP Locations



Bassett Creek Tunnel Relocation and Major Potential BMPs in Minneapolis/Golden Valley

Table 5.9-5. Potential Stormwater BMP Strategies in Segment M – City of Minneapolis

Receiving Water/Location	Water Quality Volume Required[1] (acre-feet)	BMP Options Considered	BMP Surface Area (square feet)	BMP Volume Provided (acre-feet)
Old Bassett Creek tunnel at 7th St (east of I-94)	0.24	Tree trenches	16,850	0.31
Old Bassett Creek tunnel at Olson Memorial Hwy (west of I-94)	0.90	Bioretention Wet pond Underground detention Hydrodynamic separator	30,500 37,120 N/A N/A	0.91 0.80 1.03 N/A
Heritage Park south pond	0.09	Bioretention	4,050	0.10
East-channel Bassett Creek	0.28	Bioretention Underground storage Hydrodynamic separator	13,350 N/A N/A	0.27 0.17[3] N/A
East-channel Bassett Creek[1]	0.12	Corridor protection ditch	N/A[2]	0.05

[1] The Water Quality Volume Required calculation includes the approximate impervious area that would be added by an expansion in operational capacity by BNSF. Total impervious area associated with the future BNSF track in segment M is about 0.4 acre.

[2] The treatment BMP is incorporated into the ditches that are part of the typical section for the proposed BLRT Extension project; therefore, the surface area is not provided as a separate number.

[3] This BMP is designed for rate control only.

Table 5.9-6. Potential Stormwater BMP Strategies in Segment GV – City of Golden Valley

Receiving Water/Location	Water Quality Volume Required[1] (acre-feet)	BMP Options Considered	BMP Surface Area (square feet)	BMP Volume Provided (acre-feet)
Bassett Creek/south of Golden Valley Rd	0.61	Corridor protection ditch Biofiltration basin (Sta 2112 to Sta 2122) Biofiltration basin (Sta 2136 to Sta 2139)	2,100 18,000 3,600	0.02 1.10 0.29
Golden Valley Rd wetlands	0.22	Additional treatment volume would be provided in other portions of the segment	—	—
Bassett Creek/north of Manor D[2]	0.25	Corridor protection ditch	N/A[3]	0.05

[1] The Water Quality Volume Required calculation includes the approximate impervious area that would be added by an expansion in operational capacity by BNSF. Total area of impervious associated with the future BNSF track in segment GV is about 2 acres.

[2] Some of this area drains to the Robbinsdale (R) segment.

[3] The treatment BMP is incorporated into the ditches that are part of the typical section for the proposed BLRT Extension project; therefore, the surface area is not provided as a separate number.

Table 5.9-7. Potential Stormwater BMP Strategies in Segment R – City of Robbinsdale

Receiving Water/Location	Water Quality Volume Required[1] (acre-feet)	BMP Options Considered	BMP Surface Area (square feet)	BMP Volume Provided (acre-feet)
Bassett Creek	0.22	Treatment ditch	1,660	0.22
Grimes and Rice Ponds	0.38	Treatment ditch Corridor protection ditch	3,620 N/A[2]	0.48 0.31
Crystal Lake	0.76	Treatment ditch Underground detention	12,320 5,530	1.32 0.41
Middle Twin Lake	0.15	Corridor protection ditch Treatment ditch	N/A[2] 1,210	0.48 0.13

[1] The Water Quality Volume Required calculation includes the approximate impervious area that would be added by an expansion in operational capacity by BNSF. Total impervious area associated with the future BNSF track in segment R is about 3 acres.

[2] The treatment BMP is incorporated into the ditches that are part of the typical section for the proposed BLRT Extension project; therefore, the surface area is not provided as a separate number.

Table 5.9-8. Potential Stormwater BMP Strategies in Segment C – City of Crystal

Receiving Water/Location	Water Quality Volume Required[1] (acre-feet)	BMP Options Considered	BMP Surface Area (square feet)	BMP Volume Provided (acre-feet)
Twin Lakes/Steve O's Bar and Grill	0.32[2]	Bioretention	8,520	0.30
Twin Lakes/Corvallis Ave area	0.43	Bioretention	15,730	0.54
Twin Creek/Bass Lake Rd park-and-ride	0.33	Underground detention (filtration)	13,125	0.36
Shingle Creek/north of Bass Lake Rd	0.60[3]	Treatment ditch	N/A[4]	0.88

[1] The Water Quality Volume Required calculation includes the approximate impervious area that would be added by an expansion in operational capacity by BNSF. Total impervious area associated with the future BNSF track in segment C is about 1.6 acres.

[2] Some of this area drains to the Robbinsdale (R) segment.

[3] Some of this area drains to the Brooklyn Park 2 (BP2) segment.

[4] The treatment BMP is incorporated into the ditches that are part of the typical section for the proposed BLRT Extension project; therefore, the surface area is not provided as a separate number.

Table 5.9-9. Potential Stormwater BMP Strategies in Segment BP2 – City of Brooklyn Park 2

Receiving Water/Location	Water Quality Volume Required[1] (acre-feet)	BMP Options Considered	BMP Surface Area (square feet)	BMP Volume Provided (acre-feet)
Twin Creek/south of I-94	0.56	Treatment ditch	N/A[2]	0.61
Shingle Creek/north of I-94	0.38	Treatment ditch	N/A[2]	0.59
Shingle Creek/crossover section	0.26	Bioretention	1,800	0.05
Shingle Creek/West Broadway Ave: 75th Ave N to Brooklyn Blvd	0.50	Tree trenches	Maximize available boulevard space	0.76
Shingle Creek/north of Brooklyn Blvd	0.56	See Table 5.9-10	See Table 5.9-10	See Table 5.9-10

[1] The Water Quality Volume Required calculation includes the approximate impervious area that would be added by an expansion in operational capacity by BNSF. Total impervious area associated with the future BNSF track in segment BP2 is about 1.4 acres.

[2] The treatment BMP is incorporated into the ditches that are part of the typical section for the proposed BLRT Extension project; therefore, the surface area is not provided as a separate number.

Table 5.9-10. Potential Stormwater BMP Strategies in Segment BP1 – City of Brooklyn Park 1

Receiving Water/Location	Water Quality Volume Required (acre-feet)	BMP Options Considered	BMP Surface Area (square feet)	BMP Volume Provided (acre-feet)
Shingle Creek	See note 1	See note 1	See note 1	See note 1
Century Channel	See note 1	See note 1	See note 1	See note 1
TH 610/West Broadway Ave to existing Oak Grove Pkwy	1.13	Bioretention	38,335	1.31
West Broadway Ave north of existing Oak Grove Pkwy	1.48	Bioretention	49,660	1.72
TH 610/Baxter property, southwest of TH 610	2.68	Wet pond	32,121	2.68
Reconstructed Oak Grove Pkwy west of existing West Broadway Ave	1.16	Wet pond	16,012	1.16
Southern OMF property	1.11	Wet pond	15,444	1.11
Northern OMF property	0.33	Wet pond	6,167	0.33

[1] Stormwater runoff from the proposed BLRT Extension project corridor would drain to the BMPs being constructed as part of the Hennepin County West Broadway Avenue project. For more information, see the Environmental Assessment Worksheet for that project.

5.10 Air Quality/Greenhouse Gas Emissions

Motorized vehicles affect air quality by emitting airborne pollutants. Changes in traffic volumes, travel patterns, and roadway locations affect air quality by changing the number of vehicles and the congestion levels in a given area.

This section describes the existing air quality in the study area and analyzes the air quality impacts of the No-Build Alternative and the proposed BLRT Extension project on criteria pollutants—a group of common air pollutants regulated by EPA on the basis of information on their health and/or environmental effects—and on greenhouse gases (GHGs).

A carbon monoxide (CO) hot-spot screening assessment has been performed to satisfy the requirements of federal transportation conformity air quality rules (40 CFR Part 93, Subpart A). A qualitative evaluation of mobile-source air toxics (MSATs) has also been performed for this project in accordance with FHWA guidance. The scope and methods of these analyses were developed by the Council in collaboration with MPCA, Hennepin County, MnDOT, and FHWA.

5.10.1 Regulatory Context and Methodology

Air quality is evaluated as part of the NEPA review process for large projects receiving federal funding or approvals. This is done in accordance with the federal Clean Air Act (CAA) of 1970 and the Clean Air Act Amendments (CAAA) of 1977 and 1990. EPA regulates air quality and delegates this authority to the State of Minnesota, and MPCA monitors air quality and regulates emissions of air pollutants.

Air quality impacts are defined as an exceedance of established regulatory thresholds for certain pollutants. The criteria pollutants identified by EPA are ozone, particulate matter, carbon monoxide, nitrogen dioxide, lead, and sulfur dioxide. The Council assessed the air quality impacts of the proposed BLRT Extension project by comparing the projected pollutant concentrations with the No-Build Alternative and the proposed BLRT Extension project to the National Ambient Air Quality Standards (NAAQS).

EPA designates geographic areas based on measurements of criteria pollutant concentrations compared to the NAAQS. An *attainment* designation means that concentrations in the area are below the NAAQS, a *nonattainment* designation means that concentrations in the area are exceeding the NAAQS, and *maintenance areas* are areas that have been redesignated within the prior 20 years from nonattainment to attainment.

No areas in Minnesota are designated as nonattainment for criteria pollutants. Hennepin County, where the proposed BLRT Extension would be located, is designated as a maintenance area for CO. As a result, the Transportation Conformity Rule (40 CFR Part 93) requires the Council to demonstrate that the proposed BLRT Extension project would be in compliance with the State Implementation Plan (SIP) and would maintain compliance with the NAAQS for CO. Therefore, an evaluation of CO impacts has been performed.

For this Final EIS, the Council did not analyze the impacts of criteria pollutants other than CO. For projects affecting highway vehicle emissions, CO has historically been the only pollutant of

significance. However, with lowered particulate matter standards for fine particles (particles under 2.5 microns in diameter, or $PM_{2.5}$), greater concern has recently been focused on both $PM_{2.5}$ and PM_{10} emissions from highways, with FHWA now recommending hot-spot analyses in nonattainment areas for these pollutants if the project involves significant increases in diesel truck traffic. Because the proposed BLRT Extension project would not increase diesel truck traffic, and because the proposed BLRT Extension project area is also not in nonattainment or maintenance status for $PM_{2.5}$ or PM_{10}, no hot-spot analysis is needed for these particulate matter components. The other criteria pollutants—nitrogen oxides (NO_x), sulfur dioxide (SO_2), ozone (O_3), and lead (Pb)—are not substantial concerns given the nature of the proposed BLRT Extension project and study area, and therefore they have not been analyzed for this Final EIS.

In addition to the criteria air pollutants, EPA also regulates air toxics. Seven compounds with significant contributions from mobile sources are identified by EPA as MSATs: acrolein, benzene, 1,3-butadiene, diesel particulate matter (PM) plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. As agreed to by FTA, the Council has applied to this project the FHWA guidance for assessing MSAT effects for transportation projects in the NEPA process.

5.10.2 Study Area

The study area for evaluating air quality effects from the proposed BLRT Extension project was established in cooperation with MPCA. The analysis performed includes consideration of CO and MSATs. The evaluation of these pollutants is typically considered in the immediate proposed BLRT Extension project area where traffic volumes, travel patterns, and roadway locations could affect air quality. Therefore, the study area for air quality includes all roadway segments adjacent to and crossing the proposed transitway.

In addition to traffic-related emissions, there would be minor amounts of emissions from a proposed OMF to be located near the northern end of the proposed BLRT Extension project. Therefore, the study area for air quality also includes the OMF.

5.10.3 Affected Environment

Air quality is evaluated based on impacts to humans in the affected environment. Humans experience air quality impacts by breathing unsafe concentrations of airborne pollutants. Exposure to CO and MSATs emitted from motor vehicles, the pollutants of primary focus for this project, can occur in homes, businesses, and recreation facilities located adjacent to affected roadway segments or on pedestrian facilities along project-area roads.

5.10.4 Environmental Consequences

5.10.4.1 Operating-Phase (Long-Term) Impacts

National Ambient Air Quality Standards (NAAQS)

The Council assessed the impacts from criteria pollutants by applying a CO hot-spot screening methodology to determine whether CO concentrations would exceed the NAAQS. The CO analysis is described below in the section **Hot-Spot Screening for CO**.

Carbon Monoxide (CO)

CO is a traffic-related pollutant that has been of concern in the Twin Cities Metropolitan Area. In 1999, EPA redesignated all of Hennepin, Ramsey, and Anoka Counties and portions of Carver, Scott, Dakota, Washington, and Wright Counties as maintenance areas for CO. This means that these counties were previously classified as nonattainment areas but were found to be in attainment and are now classified as maintenance areas. Maintenance areas are required to have actions undertaken to demonstrate continuing compliance with CO standards. Since the proposed BLRT Extension project would be located in Hennepin County, an evaluation of CO for assessing air quality impacts is required in NEPA documents.

Greenhouse Gases (GHG) and Climate Change

GHGs are different from other air pollutants evaluated in environmental reviews. Their impacts are not assessed on a local or regional basis because their effects are long-term as they disperse into the global atmosphere. Global climate change can be caused by many factors, including the cumulative effects of numerous and varied emissions sources (in terms of both absolute numbers and types), each of which makes a relatively small addition to global atmospheric GHG concentrations. It is difficult to isolate and quantify the GHG emission impacts for a particular project. Furthermore, presently there is no generally accepted scientific methodology for attributing specific climatological changes to a particular project's emissions. Therefore, the GHG and climate change analysis for this Final EIS is based on the expected emission changes in GHG emissions at a regional level instead of the project level.

Currently, neither EPA nor FTA has adopted quantitative GHG emission thresholds applicable to this project. Nevertheless, the Council estimated GHG emissions associated with regional commuting activity based on changes in the vehicle-miles traveled (VMT) because of the project operation (*Travel Demand Modeling/Transit Ridership Technical Memorandum*; Council, 2015b). GHG emissions were calculated by multiplying the VMT of each type of vehicle by the carbon dioxide (CO_2) emission factors taken from the *New and Small Starts Evaluation and Rating Process Final Policy Guidance* (FTA, 2013) based on projected carbon dioxide equivalent (CO_2e) emission factors for the planning horizon for the proposed BLRT Extension project (2040).

Table 5.10-1 shows the estimated Twin Cities area (seven counties) emissions of transportation-related GHG, expressed as CO_2e, in 2040 (freight rail and aviation are not included). Note that the light rail GHG emissions are due to generating electricity to supply power for light rail operation. The proposed BLRT Extension project would decrease transportation-related GHG emissions in the

metropolitan area by about 0.05 percent compared to the transportation-related GHG emissions with the No-Build Alternative.

Table 5.10-1. Regional Transportation CO_2 GHG Emissions in 2040

Travel Mode	Emission Factor (grams/VMT)	Vehicle-Miles Traveled (VMT)		GHG (Metric Tons of CO_2e)	
		No-Build Alternative	Proposed BLRT Extension Project	No-Build Alternative	Proposed BLRT Extension Project
Light rail	4,574	9,218	12,050	42,163	55,116
Heavy-duty vehicle (truck)	1,587	1,164,926	1,164,926	1,849,207	1,849,207
Bus (diesel)	2,721	71,684	71,856	195,052	195,520
Passenger car	397	36,303,648	36,250,920	14,412,548	14,391,615
	Total[1]	**37,549,475**	**37,499,751**	**16,498,970**	**16,491,458**

Sources: Based on VMT data provided by Council (2015) and CO_2e emission factors from FTA (2013) except for trucks. Truck emission factor calculated from BTU/VMT factor in *Transportation Energy Data Book: Edition 31* (2012), US Department of Energy Oak Ridge National Laboratory; and No. 2 oil emission factor and heating value provided by EPA in 40 CFR Part 98, Table C-1.

[1] Totals will not always match exactly the summed values, due to rounding of each of the summed values as shown in the table.

Air Quality Conformity

The 1990 CAAA require that SIPs must demonstrate how states with nonattainment and maintenance areas would meet federal air quality standards.

EPA issued final rules on transportation conformity (40 CFR Part 93, Subpart A), which describe the methods required to demonstrate that transportation projects comply with the SIP. The final rules require that transportation projects must be part of a conforming Long-Range Transportation Plan (LRTP) and 4-year Transportation Improvement Program (TIP). The proposed BLRT Extension project is part of the 2040 Transitway System shown in the Council's *2040 Transportation Policy Plan* (*2040 TPP*, adopted January 14, 2015). The proposed BLRT Extension project is included in the latest version (2016–2019) of the TIP (September 23, 2015). The *2040 TPP* was found to be in conformity by FHWA and FTA on March 13, 2015.

The *2040 TPP* supports expanding transit services as a means of improving regional air quality. Chapter 4, Transportation Finance, of the *2040 TPP* describes federal funding policies that lead to coordinated investments in transportation infrastructure to mitigate congestion and improve air quality through fewer vehicle-miles traveled in private cars. Appendix E, Additional Air Quality Information, of the *2040 TPP* demonstrates that the plan conforms to the requirements of the CAA. In summary, the proposed transitway improvements are consistent with the Council's goal of improving regional air quality.

On November 8, 2010, EPA approved a request for a limited maintenance plan for the Twin Cities maintenance area. Under a limited maintenance plan, EPA has determined that there is no

requirement to estimate projected emissions over the maintenance period and that "emissions budgets in limited maintenance plan areas may be treated as essentially not constraining for the length of the initial maintenance period because it is unreasonable to expect that such an area will experience so much growth in that period that a violation of the CO NAAQS would result" (EPA, 1995).

Therefore, no regional modeling analysis for the LRTP and TIP is required. However, federally funded and state-funded projects are still subject to isolated intersection-level, or "hot-spot," analysis requirements. The limited maintenance plan adopted in 2010 determined that the level of CO emissions and resulting ambient concentrations in the Twin Cities maintenance area will continue to demonstrate attainment of the CO NAAQS. Therefore, the Council did not perform regional emissions modeling as part of the evaluation for this Final EIS. However, the Council did perform a hot-spot screening assessment, as required, which is summarized below.

Hot-Spot Screening for CO

CO is assessed by evaluating the worst-operating (hot-spot) intersections in the proposed BLRT Extension project area. EPA has approved a screening method developed by MnDOT to determine which intersections need hot-spot analysis (dotapp7.dot.state.mn.us/edms/download?docId=647184). The hot-spot screening method uses a traffic volume threshold of 79,400 entering vehicles per day (vpd) for signalized intersections affected by a project. If an affected intersection exceeds this threshold in the design year, or if a project affects one of 10 specific intersections in the Twin Cities area, then a quantitative CO hot-spot analysis is required. If an affected intersection is not one of the listed 10, and if the total traffic through the intersection is less than the 79,400-vpd benchmark, then the intersection screens out of quantitative analysis and is considered to be no threat to the area's attaining the NAAQS.

The signalized intersections that would be affected by the proposed BLRT Extension project are not among the 10 listed intersections in the approved MnDOT hot-spot screening procedure. To determine whether any intersections would exceed the 79,400-vpd benchmark, the Council obtained the traffic projections for 2040 for the three busiest intersections along the proposed BLRT Extension project for comparison. The intersections and the 2040 vehicles-per-day projections (see the proposed BLRT Extension project *Traffic and Park-and-Ride Forecast Technical Memorandum*) for each intersection are listed below.

- West Broadway Avenue and Brooklyn Boulevard: 40,200 vpd
- Bottineau Boulevard and Bass Lake Road: 46,600 vpd
- Olson Memorial Highway and Penn Avenue: 39,250 vpd

None of the above intersections would meet or exceed the screening threshold of 79,400 vpd in 2040. Given that the screening criteria indicate no potential for CO hot spots that could approach or exceed the NAAQS, quantitative hot-spot analysis is not required for transportation conformity purposes.

Table 5.10-2 lists recent (2014) monitored CO concentrations at Twin Cities monitors. Improvements in vehicle technology and in motor fuel regulations continue to result in reductions in vehicle emission rates of CO and other pollutants. The EPA MOVES emissions model estimates that CO and other pollutant emission rates will continue to fall from existing rates through 2040. Consequently, year 2040 vehicle-related CO concentrations in the study area are likely to be lower than existing concentrations, even after considering the projected increases in development-related and background traffic.

Table 5.10-2. Monitored 2014 Carbon Monoxide Concentrations vs. NAAQS

In parts per million

Monitor Site	1-Hour (2nd Maximum)	8-Hour (2nd Maximum)
9399 Lima St, Blaine	0.9	0.7
12821 Pine Bend Trail, Rosemount	0.6	0.5
2142 120th St E, Inver Grove Heights	1.0	0.9
528 Hennepin Ave, Minneapolis	1.8	0.9
1444 18th St E, Minneapolis	1.6	1.2
1088 West University Ave, St. Paul	2.7	1.6

Source: EPA AirData (www3.epa.gov/airdata) – NAAQS compliance based on 2nd maximum

The CO screening assessment and existing monitoring data show that the proposed BLRT Extension project would not cause CO concentrations that exceed state or federal standards.

Mobile-Source Air Toxics (MSATs)

Controlling air toxic emissions became a national priority with the passage of the CAAA of 1990, whereby Congress mandated that EPA regulate 188 air toxics, also known as hazardous air pollutants. EPA has assessed this list in its latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007) and identified a group of 93 compounds emitted from mobile sources that are listed in its Integrated Risk Information System (www.epa.gov/ncea/iris).

In addition, EPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from its 1999 National Air Toxics Assessment (www.epa.gov/ttn/atw/nata1999). These are acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter.

FHWA provides guidance on evaluating MSATs for highway projects as part of the NEPA process, which FTA is applying to the proposed BLRT Extension project. This guidance specifies a tiered approach for MSAT evaluation.

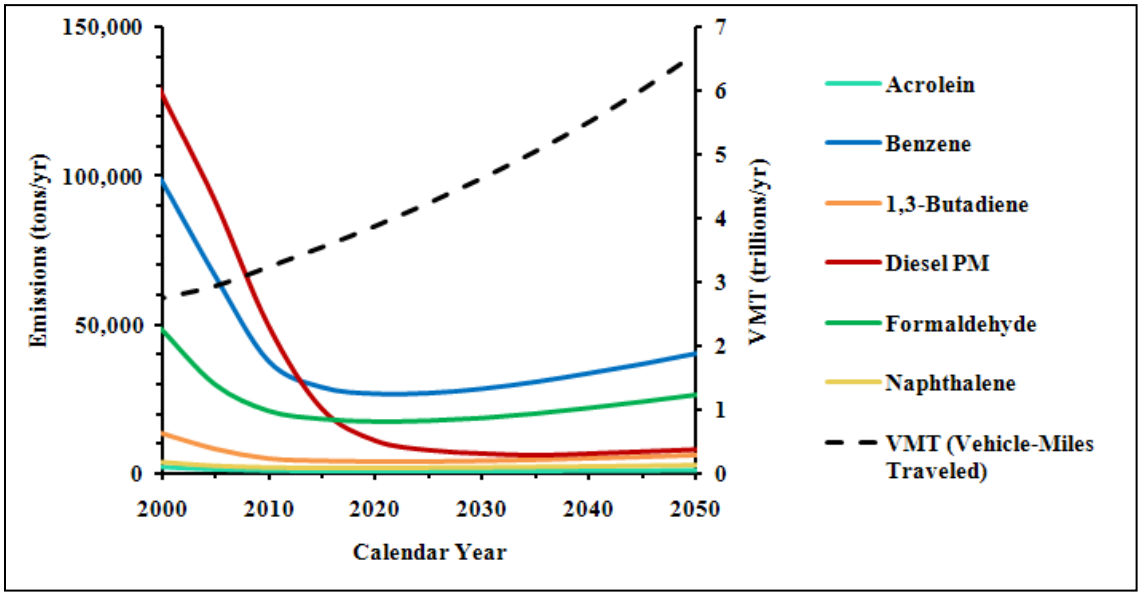
- No analysis is required for projects with no meaningful MSAT effects. These are projects qualifying as a categorical exclusion under 23 CFR Part 771.117(c), that are exempt under the CAA conformity rule, or that would have no meaningful impacts on traffic volumes or vehicle mix.
- Qualitative analysis is prescribed for projects with low potential MSAT effects. Most projects fall into this category if they do not meet the criteria for the other two categories.
- Quantitative analysis is required for major highway-capacity projects on facilities with more than 140,000 to 150,000 vpd or for intermodal freight terminal projects with high levels of diesel particulate matter.

The Council performed a qualitative evaluation of MSAT impacts for the proposed BLRT Extension project according to the FHWA guidance. This is appropriate based on the scope of improvements contemplated as part of this project, particularly modifications to roads and intersections through the proposed BLRT Extension project area. FHWA guidance states that the qualitative assessment should compare, in narrative form, the expected effects of the project on traffic volumes, vehicle mix, or routing of traffic and the associated changes in MSATs for the project alternatives, including the No-Build Alternative, based on traffic volumes, vehicle mix, and speed. The assessment should also discuss national trend data projecting substantial overall reductions in emissions because of stricter engine and fuel regulations issued by EPA.

Summary of MSAT Information

The 2007 EPA rule further requires controls that would dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis using EPA's MOBILE6.2 model, even if vehicle activity (VMT) were to increase by 145 percent as assumed, a combined reduction of 72 percent in the total annual emission rate for the priority MSATs is projected from 1999 to 2050, as shown in **Figure 5.10-1**.

Figure 5.10-1. National MSAT Emission Trends for 1999–2050 from EPA's MOBILE6.2 Model for Vehicles Operating on Roads



Source: US Environmental Protection Agency, MOBILE6.2 model run, August 20, 2009

Note 1 Annual emissions of polycyclic organic matter are projected to be 561 tons/year for 1999, decreasing to 373 tons/year in 2050.

Note 2 Trends for specific locations might be different, depending on locally derived information on VMT, vehicle speeds, vehicle mix, fuels, emission-control programs, meteorology, and other factors.

Air toxics analysis is a continuing area of research. Although much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how the potential health risks posed by MSAT exposure should be factored into project-level decision-making within the context of NEPA.

Information is incomplete or unavailable to credibly predict project-specific health impacts that could occur as a result of changes in MSAT emissions associated with a proposed set of transportation alternatives. FHWA, EPA, the Health Effects Institute, and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions associated with transportation projects. However, technical tools are not available to predict the project-specific health impacts of MSAT emissions. In compliance with 40 CFR Part 1502.22(b), FHWA has provided a discussion demonstrating that scientific techniques, tools, and data are not sufficient to accurately estimate human health impacts that could result from a transportation project in a way that would be useful to decision-makers.

Qualitative MSATs Analysis

There are two ways that highway vehicle MSAT emissions would change, as compared to the No-Build Alternative, if the proposed BLRT Extension project were implemented. One is that the passing light rail trains would briefly impede traffic near at-grade rail-highway crossings, causing more MSAT emissions in these locations because of vehicle idling, acceleration, and deceleration. The second is that, by having people ride the light rail system instead of driving to their destinations, the MSAT emissions from highway travel would tend to decrease. The second effect would outweigh the first effect, meaning that regional MSAT emissions would decrease for the proposed BLRT Extension project as compared to the No-Build Alternative.

While regional MSAT emissions would decrease with project implementation, localized emissions would tend to increase in the vicinity of at-grade rail-highway crossings. However, given that the light rail trains pass very quickly, emissions associated with idling, accelerating, or decelerating highway vehicles near these crossings should be far less than MSAT emissions near typical signalized intersections on busy streets in urban areas. (For an analysis of traffic operations at intersections along the proposed BLRT Extension project alignment, see **Section 3.3**.)

With the No-Build Alternative and the proposed BLRT Extension project, MSAT emissions would likely be lower than present levels in the design year (2040) as a result of EPA's national control programs, which are projected to reduce annual MSAT emissions by 72 percent between 1999 and 2050. On a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than they are today. The magnitude of the EPA-projected reductions is so great (even after accounting for traffic growth) that MSAT emissions in the study area are likely to be lower under a wide variety of future conditions.

5.10.4.2 Construction-Phase (Short-Term) Impacts

No-Build Alternative

Construction of the proposed BLRT Extension project would have the potential to emit GHGs from construction equipment and vehicles. The short-term GHG emissions during the construction period of the proposed BLRT Extension project would be temporary, and implementation of BMPs (such as using energy-efficient construction equipment and vehicles, and limiting equipment and vehicle idling time during construction) would reduce GHG emissions from construction activities.

The FHWA Infrastructure Carbon Estimator (ICE) model was used by the Council to estimate construction and maintenance GHG emissions. The ICE model estimates the lifecycle energy and GHG from the construction and maintenance of transportation facilities.

Construction activities for the proposed BLRT Extension project are planned between 2018 and 2021, with the majority of heavy construction occurring in 2018 through 2020. Therefore, the Council assumed that a 3-year period of construction would be appropriate for use in the model. Construction project components (miles of light rail, number and type of bridges, number of stations, type and size of park-and-rides, and other project components) as input into the ICE model were based on the project definition presented in **Chapter 2 – Alternatives** (see **Table 2.5-2**).

GHG emissions are categorized as upstream emissions materials or direct emissions for routine construction activities. Model results are shown in **Table 5.10-3** as metric tons (MT) of carbon dioxide equivalent (CO_2e) per year. Changes in GHG emissions due to direct emissions from the construction of the proposed BLRT Extension project would be minimal. Most of the GHG emissions presented in **Table 5.10-3** would be from the indirect upstream emissions caused by the development of construction materials, including raw material extraction, production, and transportation.

Table 5.10-3. Annual Greenhouse Gas Emissions during Construction

Emission Type	Roadway Reconstruction/ Park-and-Ride Construction (MT CO_2e/year)	Bridges (MT CO_2e/year)	Rail (MT CO_2e/year)	Total (MT CO_2e/year)
Upstream emissions – materials	1,827	314	15,295	17,436
Direct emissions – construction	996	83	2,297	3,376
Direct emissions – routine maintenance	N/A	N/A	N/A	379
Total	**2,823**	**397**	**17,592**	**21,191**

Source: Council, 2016f

Currently, no quantitative GHG emission thresholds at federal or state levels are applicable to the proposed BLRT Extension project. The proposed BLRT Extension project's construction emissions would be temporary, and the Council would make an effort to minimize the amount of emissions generated during construction. If amortized over the life of the proposed BLRT Extension project, the GHG emissions would be minimal. In addition, the proposed BLRT Extension project is included in the Regional Transportation Plan and the Transportation Improvement Program. These transportation plans consider climate change mitigation, adaptation, and resilience for sustainable development of the region. Therefore, GHG emissions from the proposed BLRT Extension project would not hinder the region's GHG emission-reduction efforts.

No other construction-phase impacts to air quality are anticipated.

Proposed BLRT Extension Project

Constructing the proposed BLRT Extension project would affect traffic volumes and operations on roads in and around the study area. During construction, some intersections might need to temporarily operate with reduced capacities or be temporarily closed. The Council expects that, under these conditions, traffic would detour to parallel roads near the construction area. This increased traffic would temporarily increase emissions and concentrations of air pollutants near homes and businesses.

In addition to traffic-related emission increases, construction activities can also cause higher concentrations of air pollutants. Construction equipment powered by fossil fuels emits the same air

pollutants as highway vehicles. Exposed earthen materials can also produce increased particulate matter when they are moved or disturbed by wind. The BMPs described in **Section 5.10.5** would ensure that concentrations of air pollutants are kept at the lowest possible levels during the construction phase.

5.10.5 Avoidance, Minimization, and/or Mitigation Measures

Long-Term Mitigation Measures. The analysis presented in this Final EIS demonstrates that air pollutant concentrations during the operating phase of the proposed BLRT Extension project would not exceed the NAAQS; therefore, no mitigation measures are necessary. The State of Minnesota does not require permits related to air quality for projects of this type.

The Council estimates that operation of the proposed BLRT Extension project would slightly reduce GHG emissions compared to the No-Build Alternative because of the reduction in automobile traffic. Thus, the proposed BLRT Extension project would help reduce any effects of GHG emissions on climate.

Short-Term Mitigation Measures. Given the scattered, intermittent, and temporary nature of construction activities, the Council does not expect any exceedances of ambient air quality standards during the construction phase of the proposed BLRT Extension project. However, the contractor will implement a series of BMPs during construction to control dust. These BMPs could include the following preventive and mitigation measures:

- Minimize land disturbance during site preparation
- Use watering trucks to minimize dust
- Cover trucks while hauling soil or debris off site or transferring materials
- Stabilize dirt piles if they are not removed immediately
- Use dust suppressants on unpaved areas
- Minimize unnecessary vehicle and machinery idling
- Revegetate any disturbed land post-construction

The Council will develop traffic-control measures in subsequent stages of the project to address detours and the flow of traffic.

Construction would cause an unavoidable temporary increase in GHG emissions because of both direct emissions from construction equipment exhaust and indirect emissions from production of construction materials such as steel and concrete. However, in the long term, these emissions would tend to be offset by the net reductions in emissions from project operation.

5.11 Energy

This section reports the estimated changes in regional energy consumption due to the No-Build Alternative and the proposed BLRT Extension project.

5.11.1 Regulatory Context and Methodology

The analysis results are reported in British thermal units (BTU) per mile as calculated from the VMT reported for each alternative by the Twin Cities Regional Travel Demand Model. A BTU is a commonly used unit of energy that represents the amount of heat energy needed to raise the temperature of 1 pint of water by 1 degree Fahrenheit. Energy consumption factors are based on estimates of average energy consumption rates.

The energy impact of the proposed BLRT Extension project was determined by comparing the total energy consumption of the proposed BLRT Extension project to that of the No-Build Alternative. The amount of energy used per mile by each mode of transportation is presented in **Table 5.11-1**. By multiplying these energy-use factors by the total miles traveled, annual energy use can be estimated.

Table 5.11-1. Energy Consumption Factors

Travel Mode	Factor (BTU/Vehicle-Mile)
Light rail transit	61,645
Heavy duty vehicles	21,463
Bus	35,958
Passenger vehicles	5,692

Source: Transportation Energy Data Book: Edition 31 (2012), US Department of Energy, Oak Ridge National Laboratory

5.11.2 Study Area

The study area for energy includes the seven-county metropolitan area, with an emphasis on anticipated changes in travel patterns and bus operations associated with the proposed BLRT Extension project. The focus is on direct energy use; that is, the energy consumed through the operation of vehicles including automobiles, buses, and trucks.

5.11.3 Affected Environment

The study area is primarily urban with undeveloped land at the north end. Development along the proposed BLRT Extension project alignment includes residential, business, industrial, institutional, park, and transportation uses. Existing land uses along the proposed BLRT Extension project alignment are identified and described in **Section 4.1**.

5.11.4 Environmental Consequences

5.11.4.1 Operating-Phase (Long-Term) Impacts

The long-term operational effects of the No-Build Alternative and the proposed BLRT Extension project are presented in **Table 5.11-2** and are discussed below.

Table 5.11-2. Energy Use in 2040

Vehicle Type	No-Build Alternative	Proposed BLRT Extension Project
2040 Annual VMT (in thousands)[1]		
Light rail	9,218	12,050
Heavy-duty vehicle	1,164,926	1,164,926
Bus	71,684	71,856
Passenger car	36,303,648	36,250,920
Total[2]	**37,549,475**	**37,499,751**
2040 Annual Energy Consumption (billion BTU)		
Light rail	568	743
Heavy-duty vehicle	25,003	25,003
Bus	2,578	2,584
Passenger car	206,640	206,340
Total	**234,789**	**234,670**
Difference from No-Build	—	(119)

[1] Based on VMT data for seven-county metro area (Council, 2015b).
[2] Totals will not always exactly match the summed values, due to rounding of each of the summed values as shown in the table.

No-Build Alternative

The annual regional direct energy consumption for on-road and light rail activity under the No-Build Alternative is estimated at about 234.789 trillion BTU based on output from the Twin Cities Regional Travel Demand Model as modified for the proposed BLRT Extension project.

Proposed BLRT Extension Project

The proposed BLRT Extension project would have slightly lower energy consumption than the No-Build Alternative, primarily because of reduced passenger car miles and energy use, which would more than offset the energy use of the light rail vehicles and the slight increase in energy use for buses. The estimated annual regional direct energy consumption for the proposed BLRT Extension project is 234.670 trillion BTU. The energy savings in 2040 for the proposed BLRT Extension project compared to the No-Build Alternative are estimated at 119 billion BTU annually.

5.11.4.2 Construction-Phase (Short-Term) Impacts

No-Build Alternative

There would be no construction-phase impacts to energy use from the No-Build Alternative.

Proposed BLRT Extension Project

Energy would be required to construct the proposed BLRT Extension project, to produce the raw materials used in construction, and to operate construction equipment. Energy use would be local and temporary. Compared to the energy consumption of the entire Twin Cities Metropolitan Area, the construction of the proposed BLRT Extension project would not have a substantial effect on regional energy consumption.

5.11.5 Avoidance, Minimization, and Mitigation Measures

Long-Term Mitigation Measures. No mitigation measures are warranted for long-term impacts to energy, because, unlike the No-Build Alternative, the proposed BLRT Extension project would decrease total annual regional energy consumption. During operation, the proposed BLRT Extension project would use regenerative braking, similar to the Blue and Green Lines currently in operation. Energy generated by light rail vehicle (LRV) braking can be used by another LRV if they are in the same power section at the same time; otherwise, the energy would dissipate as heat from the top of the LRV.

Although not required, there are opportunities to reduce energy consumption, which include constructing energy-efficient structures such as park-and-ride facilities, light rail stations, and the OMF. The Council assessed these energy-saving opportunities and appropriate energy-saving measures, and the following have been incorporated into the proposed BLRT Extension project:

- Follow the State of Minnesota Sustainable Building Guidelines (MSBG-B3) (similar to standards required to achieve Leadership in Energy and Environmental Design [LEED] certification).
- Use highly efficient LED (light-emitting diode) lighting for the proposed BLRT Extension project (street lighting to building lighting).
- Maximize use of daylight at the OMF, supplemented with lighting control management software.
- Coordinate with Xcel Energy for efficient OMF heating, cooling, and lighting control systems.
- Use energy recovery units in the OMF.
- Use a high-efficiency chiller at the OMF.
- Use condensing boilers at the OMF.
- Use a closed-cell cooling tower (free winter cooling).

Short-Term Mitigation Measures. No mitigation measures are warranted for short-term impacts to energy because the impacts would be local and minor compared to regional energy consumption.

6 Indirect Impacts and Cumulative Effects

This chapter addresses the potential indirect impacts and cumulative effects of the proposed METRO Blue Line Light Rail Transit (BLRT) Extension project.

Indirect (secondary) impacts are those that are caused by the proposed BLRT Extension 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 induced changes in land-use patterns, population density, or growth rate and related effects to 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 Part 1508.7). The purpose of a cumulative effects analysis is "to ensure that federal decisions consider the full range of consequences of actions" (Council on Environmental Quality [CEQ], 1997). Cumulative effects could occur through the combination of the proposed BLRT Extension project's direct and indirect impacts combined with other development that is not directly related to the proposed BLRT Extension project.

Changes to This Chapter since the Draft Environmental Impact Statement Was Published

This chapter updates the following sections from the Draft Environmental Impact Statement (Draft EIS):

- **Section 6.1.3** – Updates the reasonably foreseeable future actions anticipated in the proposed BLRT Extension project study area
- **Section 6.2 –** Updates potential indirect impacts associated with the proposed BLRT Extension project
- **Section 6.3 –** Updates potential cumulative effects associated with the proposed BLRT Extension project

In addition to updates of the above sections, this chapter specifically identifies cumulative effects associated with the West Broadway Avenue Reconstruction project. The identification of cumulative effects associated with the West Broadway Avenue Reconstruction project is identified as a change because this chapter includes additional information from the environmental review that was completed for the West Broadway Avenue Reconstruction project.

As described in **Section 2.5.1.1** of this Final EIS, the reconstruction of West Broadway Avenue (County State Aid Highway 103) is occurring in the same location as the proposed BLRT Extension project, from south of Candlewood Drive to north of 93rd Avenue. Funds for reconstructing West Broadway Avenue have been identified in Hennepin County's Capital Improvement Program (CIP) for several years, but the schedule for designing and reconstructing West Broadway Avenue is now progressing in parallel with planning, designing, and constructing of the proposed BLRT Extension

project. The two projects each have independent utility (that is, each project can function without the other being constructed).

The West Broadway Avenue Reconstruction project was documented in an Environmental Assessment Worksheet (EAW) (Hennepin County, 2015) in accordance with the Minnesota Environmental Policy Act (MEPA). At the conclusion of the EAW process, Hennepin County prepared its Findings of Fact and Conclusions and finalized the environmental review process through a Negative Declaration on the Need for an EIS. Because there is no federal funding involved, it is not a major federal action, and no National Environmental Policy Act (NEPA) analysis is required.

6.1 Methodology

The indirect impacts and cumulative effects assessment follows the requirements of NEPA (40 CFR Parts 1500–12508) and the following specific guidance documents:

- *Considering Cumulative Effects Under the National Environmental Policy Act* (CEQ, 1997)
- *Consideration of Cumulative Impacts in EPA Review of NEPA Documents* (EPA, 1999)
- *Interim Guidance: Questions and Answers Regarding Indirect and Cumulative Impact Considerations in the NEPA Process* (FHWA, 2003)
- *Guidance on the Consideration of Past Actions in Cumulative Effects Analysis* (CEQ, 2005)
- *Desk Reference for Estimating Indirect Effects of Proposed Transportation Projects* (National Cooperative Highway Research Program [NCHRP] Report 466 [NCHRP, 2002])

Although the methodology and level of detail for indirect impacts and cumulative effects analyses are not dictated by NEPA, guidance from the Federal Highway Administration (FHWA) specifies that "the document needs to present a reasonably complete and accurate picture of the probable consequences involved in implementation of a proposed project, commensurate with the potential for adverse impacts …" The FHWA guidance further specifies that the analysis must be of sufficient detail to be "useful to the decision maker in deciding whether, or how, to alter the program to lessen cumulative impacts." The analysis and discussion in this chapter has been prepared with this guidance in mind.

The Metropolitan Council (Council) used a combination of analysis methodologies to fully assess and quantify cumulative effects using readily available information and data, including the following:

- **Trends Analysis.** Trend analysis was used to identify effects occurring over time and to project the future context of land-use and environmental resources of interest.
- **Map Overlays.** The Council performed quantitative and qualitative analyses by layering maps showing land-use and resource context from various periods. The patterns of past, existing, and future land use and the effects of development on resources of interest were analyzed to forecast future trends.

The Council's primary data sources for this indirect impacts and cumulative effects analysis were the following:

- The Council's *2040 Transportation Policy Plan* (2015a)
- Local capital-improvement plans and community-development data

Local land use plans were reviewed to help focus the identification of capital improvements and land use developments.

The Council used the following process to determine whether implementing the proposed BLRT Extension project will result in indirect impacts and/or cumulative effects:

1. **Identify Resources of Interest.** The Council identified resources of interest that will be directly affected by the proposed BLRT Extension project (step 1). Because these resources will be directly affected, they might also experience indirect impacts and/or cumulative effects.
2. **Analyze Existing Conditions.** The Council reviewed and analyzed the existing condition of each resource of interest as described in the resource chapters in this Final EIS. The Council's review focused on understanding the status, viability, and historical context of each resource in order to determine the relative vulnerability of the resource to indirect impacts and cumulative effects. The analysis of existing conditions also helped the Council understand the condition of the resources over a broader geographic area, which is critical for assessing the potential for indirect impacts and cumulative effects, since these effects can be separated from a project's direct impacts in both space and time. The Council used quantitative and qualitative methods for the existing conditions analysis depending on the approach that was used for each resource in each relevant section of this Final EIS.
3. **Analyze Direct Project Impacts.** The Council reviewed and analyzed the direct impacts of the proposed BLRT Extension project on each resource, as described in the resource chapters of this Final EIS. In order to anticipate how the proposed BLRT Extension project might result in indirect impacts and/or cumulative effects, this review focused on outcomes—the state of the resource assuming that the proposed BLRT Extension project has been implemented. The Council used its understanding of project impacts, combined with its understanding of existing conditions and past trends, to characterize the state of each resource of interest and its vulnerability to impacts from other present or reasonably foreseeable future actions.
4. **Identify and Analyze Impacts of Other Actions.** The Council identified other present actions and reasonably foreseeable future actions and their possible impacts to each resource of interest. These actions and the process used to identify them are discussed in **Sections 6.1.2 and 6.1.3**. The Council identified the potential impacts of each action using a checklist to consider each project-area resource in relation to each action. For example, many of the reasonably foreseeable future actions are residential or commercial development projects. The Council used the information from the analysis of existing conditions (step 2) along with its knowledge of the types of impacts that typically result from land development to perform a qualitative analysis of the resources of interest that likely will be affected by other actions. The result was a list of the resources of interest that could be affected by these other actions.

5. **Assess Indirect Impacts.** The Council identified potential indirect impacts and estimated their magnitude using the information from the existing conditions analysis (step 2) and information about trends and project impacts (step 3). The Council's indirect impacts analysis used its qualitative understanding of the causal nature of impacts to the built and natural environment that are likely to result from development, drawing on analyses for similar projects locally and elsewhere. This approach included a checklist and review of each resource area described in the Final EIS for potential physical, spatial, and ecological (system) interactions. As a result, this chapter's descriptions of potential indirect impacts are qualitative. Rather than attempting a complex analysis to quantify potential indirect impacts, the Council focused on being comprehensive with respect to potentially affected resources and estimating the potential magnitude of effects.
6. **Assess Cumulative Effects.** The Council identified potential cumulative effects on each resource of interest by considering the combination of existing conditions (step 2) and trends, project impacts (step 3), and the impacts of other present actions and other reasonably foreseeable future actions (step 4). As with the other steps, the Council used a checklist so that all potentially affected resources were considered. The Council used its professional judgment to reach conclusions regarding the potential cumulative effects, taking into account the frequency, duration, magnitude, and extent of past, present, and future effects. The results of the analysis (**Section 6.3**) are generally qualitative, reflecting the general lack of available data regarding other present and future actions. However, the lack of quantification does not prevent the analysis from considering the potential magnitude of effects and therefore does not limit the value or thoroughness of the analysis.

6.1.1 Select Resources of Interest

The Council selected resources of interest for this analysis that are particularly susceptible to indirect impacts and cumulative effects and that will be affected directly or indirectly by the proposed BLRT Extension project as well as by one or more other projects over time that, in aggregate, will result in indirect impacts or cumulative effects. The resources of interest addressed in this indirect impacts and cumulative effects analysis are:

- Transportation
- Land use
- Community character, services, and facilities
- Displacement of residences and businesses
- Cultural resources
- Visual and aesthetic resources
- Parklands and open space
- Economic effects
- Safety and security
- Environmental justice
- Public utilities
- Hydrology and floodplains
- Wetlands
- Geology, soils, and topography
- Hazardous materials contamination
- Noise
- Vibration
- Habitat and endangered species
- Water quality and stormwater
- Air quality/greenhouse gases
- Energy

6.1.2 Establish Geographic and Temporal Boundaries

6.1.2.1 Geographic Study Areas

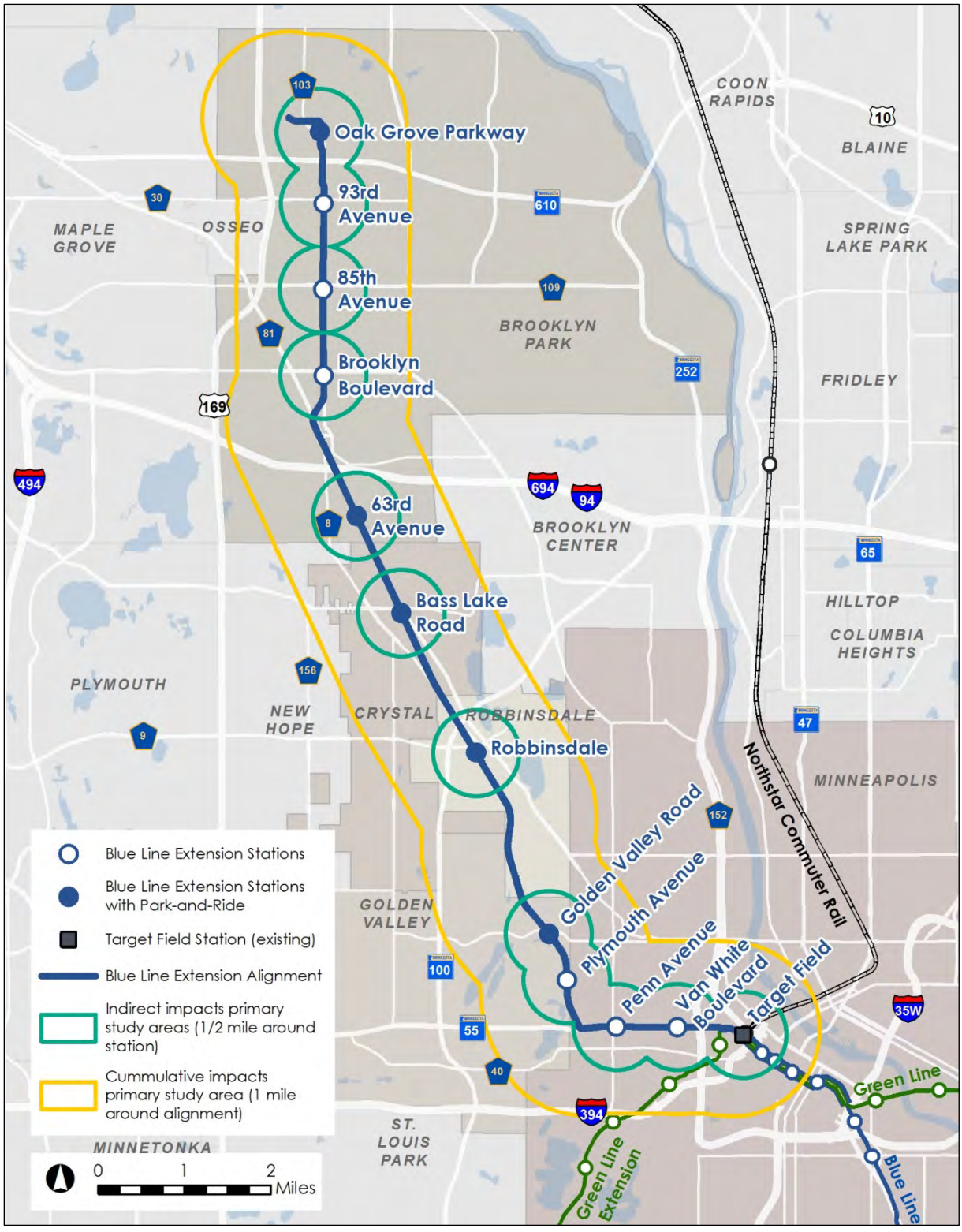
Indirect Impact Analysis. The analysis for indirect impacts focuses on a ½-mile radius around each of the proposed transit stations (**Figure 6.1-1**). This approach is supported by NCHRP's Report 466: *Desk Reference for Estimating Indirect Effects of Proposed Transportation Projects*, which states that "development effects are most often found up to one-half mile around a transit station." The indirect impacts study area focuses on the proposed BLRT Extension project alignment because potential induced effects, such as effects on the built environment (businesses, environmental justice populations, traffic, and historic properties) typically occur within the ½-mile buffer around a light rail transit (LRT) project.

The indirect impacts (such as induced development) from the proposed BLRT Extension project are most likely to occur in the areas around the transit stations because the new transit service will improve access to these areas. Beyond ½ mile, new development induced by the proposed BLRT Extension project is less likely. However, secondary development impacts are possible beyond a ½-mile radius from the transit stations. 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 ½-mile boundary relevant to the built environment. To address this, the Council analyzed potential impacts on natural resources by following the boundaries of those resources (e.g., wetland complexes, waterways, floodplains, and habitat).

Cumulative Effects Analysis. The primary study area for the analysis of cumulative effects is an area 1 mile on each side of the proposed BLRT Extension project alignment (**Figure 6.1-1**). The cumulative effects study area is a larger geographic area than the indirect impacts study area because it encompasses resources, primarily natural resources, that could be affected by multiple projects considered in aggregate. For example, the Council examined the effects of multiple projects on floodplains on a watershed-wide basis to determine how those projects taken together could affect the capacity of existing floodplains (acreage of available floodplains) to provide flood control.

The Council selected this study area based on guidance documents and the resource-specific study areas used in this Final EIS. However, the boundary of the cumulative effects study area varies by the resource being considered. For example, effects on air, 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 reason, the Council considered the potential degree of spatial effect for each resource within this basic framework.

Figure 6.1-1. Primary Study Areas for Indirect Impacts and Cumulative Effects



6.1.2.2 Temporal Boundaries and Present Definitions

The timeframes established for the indirect impacts and cumulative effects analyses include a past timeframe of 1960 to the present (2016) and a future timeframe of the present to 2040. Present actions are those defined to occur between 2018 and 2021, the construction period for the proposed BLRT Extension project.

The Council determined the past cumulative effects timeframe by examining population trends and previous key events of influence on land use and transportation in the cumulative effects study area. Beginning with the period of interstate highway construction in the 1960s and 1970s, the Twin Cities region has experienced strong population growth between 1960 and 2010. At the end of the first period of interstate highway construction (1970), during which the most miles of interstate highway were constructed, the region's population was 1.9 million. By 2010, it had increased to 2.9 million (Council, 2014). This growth has influenced the land-use patterns of the region since that time. **Table 6.1-1** shows the population trends for Minnesota and Hennepin County[1] from 1960 through 2010.

Table 6.1-1. Population of Minnesota and Hennepin County (1960–2010)

Year	Minnesota	Hennepin County
1960	3,413,864	842,854
1970	3,806,103	960,080
1980	4,075,970	941,411
1990	4,375,099	1,032,431
2000	4,919,479	1,116,200
2010	5,303,925	1,152,425
Percent change 1960–2010	55%	37%
Average annual growth rate	0.9%	0.6%

Source: US Census Bureau, 2011

The future cumulative effects timeframe, from 2020 to 2040, extends to the same year as the regionally approved population and land-use projections[2] prepared by the Council as part of its regional development framework, Thrive 2040. Over the 20 years from 2020 to 2040, continued growth is projected for the overall proposed BLRT Extension project area. The 2010 (existing) population of the proposed BLRT Extension project corridor is 514,834. In 2040, the population of

[1] The proposed BLRT Extension project will be completely within Hennepin County, Minnesota.

[2] To develop local forecasts, the Council uses a land use model, simulating real estate development possibilities, and predicting growth patterns responsive to the region's future industry mix and future demographics. Local data—including planned land use from each community's 2030 comprehensive plan—inform the model about land supply and allowable land uses. Future transportation networks also influence the local forecasts. These forecasts reflect the array of growth policies, investment priorities, infrastructure plans, and redevelopment tools that currently exist (*Thrive MSP 2040*, page 186 [Council, 2014]).

the proposed BLRT Extension project corridor is expected to increase to 624,800, an increase of 21 percent from 2010 (see **Table 1.4-1** in **Chapter 1**).

Within the cumulative effects study area, population is projected to increase by about 23 percent between 2010 and 2040, and employment is projected to increase by 29 percent (**Table 6.1-2**).

Table 6.1-2. Population and Employment Projections for the Cumulative Effects Study Area (2010–2040)

City	Population			Employment		
	2010	2040 Forecast	2010–2040 % Change	2010 Total Estimate	2040 Total Estimate	2010–2040 % Change
Minneapolis	382,578	466,400	21.91%	281,732	356,000	26.36%
Golden Valley	20,371	24,300	19.29%	33,194	41,500	25.02%
Robbinsdale	13,953	15,300	9.65%	6,858	7,600	10.82%
Crystal	22,151	23,300	5.19%	3,929	5,500	39.98%
Brooklyn Park	75,781	95,500	26.02%	24,084	42,000	74.39%
Proposed BLRT Extension project area total	**514,834**	**624,800**	**21.36%**	**349,797**	**452,600**	**29.39%**

Source: Council, 2015b

6.1.3 Identify Past, Present, and Reasonably Foreseeable Future Actions

6.1.3.1 Past Projects

The passage of the Federal Aid Highway Act of 1956 and the start of Interstate construction the same year strongly influenced the pace and location of growth that transformed the Twin Cities region. The period of Interstate construction in the Twin Cities region extended from 1956 to 1996. 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 US 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.

The following major transportation projects, land-use policies, and events contributed to the changes in land-use patterns and resource context in the Twin Cities region between 1956 and 2016:

- 1956 – Passage of the Federal Aid Highway Act
- 1966 – Interstate Highway 35W (I-35W)/Highway 62 (Crosstown Commons) completed
- 1968 – Interstate Highway 94 (I-94) completed
- 1973 – Interstate Highway 35E (I-35E) completed
- 1991 – Interstate Highway 394 (I-394) completed
- 2004 – METRO Blue Line (Hiawatha LRT) completed
- 2009 – Northstar Commuter Rail Line completed
- 2014 – METRO Green Line (Central Corridor LRT) completed
- 2014 – *Thrive MSP 2040*: Major land-use policies (www.metrocouncil.org/Planning/Projects/Thrive-2040.aspx)

6.1.3.2 Present Actions and Reasonably Foreseeable Future Actions

The Council identified present projects as well as other public actions planned and programmed to be completed by 2040 in the indirect impacts and cumulative effects study areas. **Table 6.1-3** lists the public and private projects by station area in the indirect impacts and cumulative effects study areas that were considered in the Council's analysis of both indirect impacts and cumulative effects.

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 indirect impacts and cumulative effects study areas. The Council identified these actions by coordinating with the local agency partners serving on the project Technical Project Advisory Committee (TPAC). The members of the TPAC include the cities of Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park; Hennepin County; the Minnesota Department of Transportation (MnDOT); and the Council/Metro Transit.

None of these future actions would occur because of the proposed BLRT Extension project. These actions are reasonably foreseeable in that they are likely to occur by virtue of being funded, 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 by the Council at this time because they have not been funded, approved, or a part of an officially adopted planning document.

Table 6.1-3. Present and Reasonably Foreseeable Future Actions[1]

Project Developer	Action (Project)	Estimated Construction Timing	Description	Potential Environmental Impacts of the Action
Target Field Station				
City of Minneapolis and private	Public and private development in downtown Minneapolis	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) LRT Extension	2020 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
MnDOT	Northern Lights Express	To be determined	New 110-miles-per-hour passenger rail service between downtown Minneapolis and Duluth	Construction, transportation (travel patterns, freight rail operations), traffic, noise, stormwater
MnDOT	Midwest High-Speed Rail	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
Van White Boulevard Station				
City of Minneapolis	Heritage Park Master Plan	Ongoing	Redevelopment of 145-acre former public housing development into sustainable, affordable urban neighborhood; bounded by 12th Avenue North, Third Avenue North, Lyndale Avenue North, Humboldt Avenue North, and Girard Terrace/Emerson Avenue North	Stormwater, water resources, wetlands, visual, land use, community facilities, environmental justice
Plymouth Avenue and Golden Valley Road Stations				
Minneapolis Park and Recreation Board	Theodore Wirth Regional Park Master Plan	2015–2035	Master plan to guide over $5 million in improvements	Community facilities, wildlife

Table 6.1-3. Present and Reasonably Foreseeable Future Actions[1]

Project Developer	Action (Project)	Estimated Construction Timing	Description	Potential Environmental Impacts of the Action
Robbinsdale Station				
Three Rivers Park District	Crystal Lake Regional Trail Master Plan	To be determined	Master plan for 11-mile paved multi-use trail to connect to regional trail network	Transportation, traffic, noise, stormwater, construction, community facilities
Joint Powers Agreement Partners[2]	Sochacki Park Master Plan	To be determined	Connect Sochacki Park to Crystal Lake Regional Trail; connect existing paved trail directly to Bassett Creek Regional Trail; develop outdoor H20 classroom	Community facilities, wildlife
City of Robbinsdale	Proposed Robbinsdale Wastewater Treatment Facility	To be determined	Construct new treatment plant adjacent to the BNSF Railway corridor project currently in the planning stage	Water quality, construction
Bass Lake Road Station				
Hennepin County	Phased improvements for Bottineau Boulevard (County Road 81)	Ongoing	Reconstruct roadway from Trunk Highway (TH) 100 to 93rd Avenue with capacity and stormwater-management upgrades	Transportation, traffic, noise, stormwater, right-of-way, visual, construction
63rd Avenue Station				
Hennepin County	Reconstruction/ expansion of Bottineau Boulevard	2017–2019	Reconstruct/expand roadway from north of 63rd Avenue North to TH 169	Transportation, traffic, noise, water resources, land use, visual, stormwater, construction
Brooklyn Boulevard Station				
Private	Undeveloped land across from Candlewood Drive on west side of West Broadway Avenue	Future development	Unknown	Transportation, traffic, noise, water resources, land use, visual, stormwater, construction
85th Avenue Station				
Hennepin County	Construction of new library at northeast of West Broadway Avenue and 85th Avenue North	Under construction	New library	Transportation, water resources, land use, visual, stormwater, construction

Table 6.1-3. Present and Reasonably Foreseeable Future Actions[1]

Project Developer	Action (Project)	Estimated Construction Timing	Description	Potential Environmental Impacts of the Action
Hennepin County	West Broadway Avenue Reconstruction project (93rd Avenue to Candlewood Drive)	2018–2021	Upgrade roadway to four-lane divided urban section with trails	Transportation, traffic, water resources, right-of-way, visual, stormwater, noise, construction
93rd Avenue Station				
Private	Commercial development at northeast corner of West Broadway Avenue and 93rd Avenue North	Under construction	Commercial development	Transportation, traffic, noise, water resources, land use, visual, stormwater, construction
Private	Construction of new church at southeast corner of West Broadway Avenue and 93rd Avenue North	Under construction	New church	Transportation, traffic, noise, water resources, land use, visual, stormwater, construction
Hennepin County	93rd Avenue North construction	2018–2020	Construction includes reconstructing 93rd Avenue North from two lanes to four from West Broadway Avenue to TH 169	Transportation, traffic, noise, water resources, land use, visual, stormwater, construction
Private	Development at Calvin Gray Farm	Available for development	Single-family homes at 8924 West Broadway Avenue	Transportation, traffic, noise, water resources, land use, visual, stormwater, construction
Private	Gateway planned development	2015+	Planned mixed-use development in the southwest quadrant of the TH 610/ TH 169 interchange	Transportation, traffic, noise, water resources, land use, visual, stormwater, construction
Private	Brooklyn Park Business Center	Planned development – timing uncertain	Commercial development just west of West Broadway Avenue and south of TH 610	Transportation, traffic, noise, water resources, land use, visual, stormwater, construction
Private	Astra Village	Planned development – timing uncertain	Commercial and housing development at the intersection of County Roads 30 and 14	Transportation, traffic, noise, water resources, land use, visual, stormwater, construction

Table 6.1-3. Present and Reasonably Foreseeable Future Actions[1]

Project Developer	Action (Project)	Estimated Construction Timing	Description	Potential Environmental Impacts of the Action
Oak Grove Parkway Station				
Private	Target North Campus Alternative Urban Areawide Review Update	Near-term 2015; long-term 2030	1,700,000 square feet (sf) of office, 300,000 sf of commercial, and 130,600 sf of tech/data support buildings	Transportation, traffic, noise, stormwater, water resources, wetlands, visual, construction
MnDOT	TH 610 extension to I-94	Present – 2016	Extend TH 610 from County Road 81/Elm Creek Boulevard to I-94	Transportation, traffic, noise, stormwater, right-of-way, visual, water resources, construction
City of Brooklyn Park	New interchange at TH 169 and 101st Avenue[3]	Unknown	Replace at-grade crossing of TH 169 and 101st Avenue with a grade separation	Transportation, traffic, noise, stormwater, right-of-way, visual, water resources, construction

[1] Reasonably foreseeable future actions are identified through 2040, the planning horizon for the proposed BLRT Extension project.

[2] The cities of Golden Valley and Robbinsdale and the Three Rivers Park District entered into a Joint Powers Agreement for the management of Sochacki Park, Sochacki Park: Mary Hills Nature Area, and Rice Lake Nature Area. These three park resources are now jointly referred to as Sochacki Park; individually they are referred to as Sochacki Park: Sochacki Management Unit, Sochacki Park: Mary Hills Management Unit, and Sochacki Park: Rice Lake Management Unit.

[3] Project is not currently in the Council's *2040 Transportation Policy Plan* (*2040 TPP*) but is actively being pursued by the city of Brooklyn Park.

6.2 Indirect Impacts Assessment

This section describes the potential for indirect impacts from the proposed BLRT Extension project. These potential indirect impacts are considered in combination with past trends and the reasonably foreseeable future actions described in **Section 6.1.2**. The discussion is summarized in **Table 6.4-1**.

6.2.1 Transportation

6.2.1.1 Transit Conditions

The areas of indirect benefit on transit include ridership forecasts and operational changes. Ridership forecasts for the proposed BLRT Extension project show an increase in new transit trips, which would be associated with a decrease in auto trips resulting from people switching from auto to transit for the first time. While the intent of implementing light rail is to attract new riders, this would nevertheless be an indirect impact because people may choose to use the new light rail service once it is constructed based on its benefits in relation to their transportation needs.

Implementation of the proposed BLRT Extension project would also result in a redistribution of ridership and operational changes to the existing local bus system. Trips via bicycle and pedestrian modes would increase in direct relation to the increase in transit trips because a certain number of transit riders would access the transit system by foot and/or bicycle. It is likely that demand for pedestrian and bicycle access to light rail stations would increase as an indirect result of the proposed BLRT Extension project.

Another potential indirect benefit of the proposed BLRT Extension project would be the potential increases in development density or redevelopment in areas surrounding proposed light rail stations could result in an increase in number of people that use transit. This would have a positive effect on the proposed BLRT Extension project and other elements of the transit system.

6.2.1.2 Freight Rail Conditions

While the proposed BLRT Extension project would require freight rail track modifications, these modifications would not substantially alter operations and would not open access to new freight rail markets. Future freight rail operations are subject to a range of market forces and are dependent on the business plans of freight railroad operators, both of which are outside of the jurisdiction of the Federal Transit Administration (FTA) and the Council. Pursuant to 40 CFR Part 1502.22 and Minnesota Statute 4410.2500, the Final EIS does not evaluate potential adverse effects on the human environment related to the potential indirect impact of increased freight rail frequency and/or length for the following reasons:

- In order to evaluate this potential impact, the Council and FTA would need information related to freight rail market analysis in the area and operational plans, which are proprietary information that are subject to change based on a number of factors that are unknown and unavailable. FTA and the Council cannot compel the freight rail operators to disclose their business plans for future service.
- In order to evaluate reasonably foreseeable impacts, FTA and the Council would need access to private market analysis information for freight operators in the region, and short- and long-term business plans for the railroads. Such information is protected under Title 49, Subtitle IV, Part A of US Code.
- There is no existing credible scientific evidence or data which can be used to evaluate the potential for related adverse impacts on the human environment related to future market demands placed on freight rail cargo in the proposed BLRT Extension project study area.
- FTA and the Council are aware of no theoretical approaches or research methods generally accepted in the scientific community to derive the information required for this analysis without the cooperation of the freight rail operators in sharing the proprietary information.

No long-term indirect impacts on freight rail related to other aspects of the proposed BLRT Extension project are anticipated.

6.2.1.3 Vehicular Traffic

The proposed BLRT Extension project would have an indirect impact on the roadway network. The areas of indirect impact on roadways and traffic include additional vehicle traffic from the anticipated new development surrounding the light rail stations, and a modest decrease in auto trips on the surrounding roadway network as people switch from auto to transit.

The traffic assessment described in **Section 3.3.4.1**was based on the regional travel demand model (refer to **Section 3.3.1** for a description of the methodology) which includes 2040 population and employment forecasts that include current and reasonably foreseeable future actions, such as station-area development. Based on this information, the proposed BLRT Extension project includes capacity upgrades and improvements in locations that could realize the indirect impact of increased traffic generated in station areas.

6.2.1.4 Pedestrians and Bicyclists

The proposed BLRT Extension project would result in long-term indirect impacts to pedestrian and bicycle facilities and travel patterns. Generally, the introduction of light rail transit into a transportation system results in increased pedestrian and bicycle activity as some light rail users walk or bike to access the new light rail stations. In this manner, the proposed BLRT Extension project is likely to create additional demand for pedestrian and bicycle facilities. Over time, this could result in the need for new or expanded pedestrian and bicycle facilities, in order to provide adequate non-motorized access to proposed light rail stations.

This increased demand for pedestrian and bicycle facilities would be concentrated around the stations. In particular, the proposed BLRT Extension project would increase pedestrian and bicycle demand at the following locations:

- Near the Plymouth Avenue and Golden Valley Road stations where the existing Theodore Wirth Regional Park and Sochacki Park trail systems are adjacent to the stations
- Near the Robbinsdale, Bass Lake Road, and 63rd Avenue stations where the Crystal Lake Regional trail is adjacent to or within two to three blocks of the stations
- Near the 85th Avenue Station, which is adjacent to North Hennepin Community College

Biking and walking trips to these stations may use existing trails to access the stations. Over time, additional capacity may be needed on these trails to address this demand.

6.2.1.5 Parking

The proposed BLRT Extension project could affect the supply of and demand for off-street parking in the areas surrounding the proposed new light rail stations as a result of station-area development/redevelopment. Light rail lines can advance the timing and increase the intensity of development surrounding proposed station areas. Any development would be required to comply with the parking requirements of the local jurisdiction, which would tend to ensure a long-term balance of parking supply and demand.

The proposed BLRT Extension project could also lead to indirect impacts related to "spillover" parking in neighborhoods adjacent to proposed light rail stations. Spillover parking is unwanted parking by light rail riders in off-street parking lots or at on-street parking spaces adjacent to a light rail station. Spillover parking can result from a lack of park-and-ride lot capacity relative to demand for park-and-ride lot spaces, and can affect both businesses and residences by limiting available parking spaces for residents, visitors, customers, and employees. Spillover parking could occur at stations where there are no park-and-ride lots planned or if there is a shortage of park-and-ride spaces along the light rail alignment or at a particular station.

6.2.2 Community and Social Analysis

6.2.2.1 Land Use Plan Compatibility

While development and redevelopment in the land use study area is regulated by the affected local jurisdictions and is driven by regional and local economic conditions, light 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 fully leverage this development potential and to support local land use goals, Hennepin County, in partnership with the cities of Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park, undertook or is undertaking station-area planning efforts. These efforts identify short- and long-term infrastructure needs and land use plans for the proposed BLRT Extension project station areas.

These station-area plans are intended to help coordinate the proposed BLRT Extension project design with the plans and decisions of local jurisdictions and adjacent property owners. These plans are part of an ongoing process that will continue through the Engineering phase and into construction and operation. The station-area planning process has featured public workshops and meetings designed to help identify local area goals and the potential for redevelopment near proposed stations. As the proposed BLRT Extension project continues toward construction, similar outreach and community involvement effort is anticipated. The Council recognizes that local governments control the decisions about land use, including zoning and specific development approvals.

Because the proposed Brooklyn Park Operations and Maintenance Facility (OMF) would be used to perform light maintenance on light rail vehicles and is not a light rail station, the OMF is not anticipated to attract transit-oriented development nor it is anticipated to negatively affect planned growth and development on adjacent land. Because the proposed OMF and the uses that would occur within it are compatible with existing and planned adjacent land uses, it would not limit future development of adjacent parcels.

Because future potential developments would require the actions of others and are influenced by market forces, they are considered potential indirect impacts to land use and not necessarily probable. See **Figure 2.5-1** for an illustration of the proposed light rail station locations. The anticipated development and density surrounding the proposed BLRT Extension project station areas would promote employment by creating new permanent jobs and supporting access to employment opportunities. Commercial, office, and industrial uses would benefit from this improved transit access, as employers would be able to draw from a larger pool of potential

employees. Businesses also may be influenced by transit service when selecting new sites, resulting in increased intensity of these land uses.

The expected increase in development density around light rail stations resulting from the construction of the proposed BLRT Extension project is consistent with regional and local plans. These plans acknowledge the value of transit in supporting efficient land use development and the value of transit-oriented development around light rail stations.

6.2.2.2 Community Facilities/Community Character and Cohesion

Long-term indirect impacts related to the proposed BLRT Extension project that could affect access to community facilities, community character, and community cohesion generally include property conversion related to station-area development, and increased demand for parking in the neighborhoods surrounding proposed stations.

The proposed BLRT Extension project has the potential to result in indirect impacts related to property conversion in the areas surrounding proposed light rail stations. In particular, light rail lines can advance the timing and increase the intensity of private and public development surrounding proposed station areas. Any development/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 station will not have an adverse effect on community facilities, community character, or community cohesion.

The proposed BLRT Extension project could also affect the supply of and demand for off-street and on-street parking in the areas surrounding the proposed light rail stations, as a result of station-area development/redevelopment. Any development would, however, be required to comply with the parking requirements of the local jurisdiction, which would tend to ensure a long-term balance of parking supply and demand.

In addition, planned park-and-ride lots under the proposed BLRT Extension project have been sized to cumulatively meet forecast (2040) demand for park-and-ride spaces, which will help to minimize "spillover" or unwanted parking in neighborhoods adjacent to proposed light rail stations. Therefore, no adverse effects to community facilities, community character, or community cohesion related to changes in the supply of vehicle parking are expected.

6.2.2.3 Displacement of Residents and Businesses

There is potential for increased development and redevelopment in areas surrounding proposed light rail stations because of improved transit access. While development and redevelopment is regulated by the affected local jurisdictions and is driven by regional and local economic conditions, light 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.

6.2.2.4 Cultural Resources

Development and redevelopment associated with the proposed transit stations could change the setting, context, and land use in the station areas (typically within a ½-mile radius or less from the transit station).[3] Such changes could have indirect impacts on existing historic resources, such as changing the visual quality of the setting by adding a new (modern) building, adding a transportation facility (other than those proposed in the proposed BLRT Extension project), or increasing the density of the area. The induced development might also directly affect historic properties through demolition, changes in property values, or other impacts.

6.2.2.5 Visual/Aesthetics

Some indirect visual impacts are possible in the long term because the improved accessibility of the areas around the stations will create potential opportunities 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. The extent to which this development will have visual effects will depend upon the effectiveness of planning, development control, and urban design policies and regulations of the communities in which the development takes place. Further, as discussed in **Section 6.2.2.1**, new development would also be subject to a zoning/permitting process before proceeding.

6.2.2.6 Economic Effects

The proposed BLRT Extension project is likely to have the long-term indirect impact of increased development and redevelopment in the areas surrounding proposed light rail stations.[4]

Because future potential developments would require the actions of others and are influenced by market forces, they are understood to be indirect impacts to land use. Development that is consistent with local land use plans and policies would not result in adverse long-term impacts.

Transit investments have proven to yield net positive effects on property values (Diaz, 1999). Research conducted by the Center for Transportation Studies at the University of Minnesota (Goetz et al., 2010; Ko and Cao, 2010) on the impacts the METRO Blue Line (Hiawatha Line LRT) has had on residential, commercial, and industrial properties suggests that light rail has an overall positive effect on property values. Proximity to station areas was a major factor in the positive effect on

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[3] In 2011 the Minnesota Historic Preservation Office (MnHPO) concurred that the architecture/history Area of Potential Effects (APE) around each station was 0.25-mile radius from the center point of each station. MnHPO also concurred that the APE for archaeology was a 500-foot radius from the center point of each station.

[4] Research on the impacts associated with light rail systems indicates that light rail is one of many factors that can influence development. In a study titled "Public Transportation: Multiple Factors Influence Extent of Transit-Oriented Development" (Wise, 2014), the U.S. Government Accountability Office (GAO) reviewed six federally funded transit projects and found a wide range in the amount of transit-oriented development (TOD) near transit stations since transit operations began. The findings of the GAO 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.

residential and multifamily properties. The overall strength of the economy, local government policies, and land availability, are also critical factors in determining the value of the property.[5]

Light rail also has the potential to cause environmental impacts ("nuisance effects") that could reduce the value of an area for some existing or planned uses and/or lower the revenue of local businesses over the long term. These potential nuisance effects include disruptive noise levels; significant visual impacts; and significant reductions in vehicular access and parking. The rate and timing of such impacts would depend on the location of the business relative to the new station, changes in business activity during construction and operation of the system, business visibility, and local land use plans and development standards. For the proposed BLRT Extension project, the potential nuisance effects are expected to be minimal. Mitigation measures for visual quality, noise, and vibration, and parking impacts are discussed in **Sections 4.5, 5.6, 5.7,** and **3.5,** respectively.

The proposed BLRT Extension project may indirectly lead to new development and/or redevelopment of land surrounding some of the proposed light rail 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, light 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 fully leverage this development potential and to support local land use goals, Hennepin County, in partnership with the cities of Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park, undertook or is undertaking station-area planning. These efforts identify short- and long- term infrastructure needs and land use plans for the station areas included in the proposed BLRT Extension project, with the intent of supporting the local and regional vision for increased transit oriented development.

To the extent the proposed BLRT Extension project leads to new private development around light rail 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.

6.2.2.7 Safety and Security

The increased development density and intensity anticipated by the Council around the new transit stations could affect law enforcement and security providers. New planned concentrations of residential, commercial, and other uses would put more transit riders, pedestrians, and bicyclists in proximity with transit vehicles, tracks, crossings, and freight rail, potentially creating safety conflicts. This could in turn place greater demands on security providers and/or require changes in current patrol routes, schedules, and equipment needs.

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[5] The impact to residential and commercial property values of light rail projects has been studied in other markets throughout the nation. While impacts to property values have varied depending on the community, residential and commercial properties located closer to light rail stations experienced greater increases in property values. In a report for the American Public Transportation Association entitled "Economic Impact of Public Transportation Investment" (2009), a number of studies in other cities were summarized and generally concluded a positive effect to property values.

6.2.3 Physical and Environmental Analysis

6.2.3.1 Utilities

No adverse long-term indirect impacts to utilities are anticipated because conflicting utilities will be relocated and services maintained. Site-specific conflicts will be addressed by design measures such as relocating utilities, as appropriate.

The light rail overhead catenary system will operate by supplying electrical energy to the train with the return current flowing through the rails. This return current can also flow through underground metal utility pipes and cable lines near the LRT alignment. The potential for long-term indirect impacts, such as corrosion of existing metal utility pipes and cables due to stray current from the light rail electrification systems was evaluated. The proposed BLRT Extension project will include measures to minimize stray current and reduce the amount of corrosion due to stray current in accordance with proposed BLRT Extension project's design criteria.[6] Therefore, no long-term indirect impacts related to stray current are anticipated.

The increased development density and intensity anticipated around new transit stations could affect utility providers. New planned concentrations of residential, commercial, and other uses could change the patterns and level of demand for utilities in the area. Typically, utility fees charged to users offset net new costs to provide more service. In some cases, such changes could be beneficial to providers because higher-density land use typically results in more-efficient distribution of services.

6.2.3.2 Floodplains

Light 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. Long-term indirect impacts to floodplains may occur if new development occurs within the proposed station areas. Future development will be subject to the laws and regulations in place at the time of development. New development induced by the proposed BLRT Extension project might adversely affect hydrology and floodplains (reduces water quality and floodplain storage) if best management practices (BMPs) are not implemented.

6.2.3.3 Wetlands

Light 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. Long-term indirect impacts to wetlands may occur if new development occurs within the proposed station areas. Future development will be subject to the laws and regulations in place at the time of development.

The proposed BLRT Extension project may induce new development which could cause wetland impacts. These impacts could include filling for development, dredging to increase stormwater

[6] Cathodic protection is a way to prevent corrosion of a pipeline by using special cathodes and anodes to circumvent corrosive damage caused by electrical current.

treatment capacity, or diminished wetland function and value because of increased pollutant loading from runoff. These impacts are less likely if impact avoidance and minimization efforts are used, and typical BMPs are followed.

6.2.3.4 Geology, Soils, and Topography

Light 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. If new development occurs within the proposed station areas, no indirect impacts to soil or bedrock are expected because of the existing disturbed soils underlying these areas.

6.2.3.5 Hazardous Materials Contamination

The anticipated development and redevelopment induced by the proposed BLRT Extension project around transit stations could affect hazardous materials sites if proper BMPs (which are legally required) are not implemented. Contaminated sites would require cleaned-up as development occurs.

A potential beneficial long-term indirect impact of properties being on or in the vicinity of proposed light rail stations is that known and unknown hazardous and contaminated properties may be cleaned up as redevelopment occurs. Areas encountered during construction of the proposed BLRT Extension project that contain hazardous and contaminated materials that are within the limits of disturbance will be cleaned up as part of the proposed BLRT Extension project, in accordance with the Response Action Plan and Construction Contingency Plan (see **Section 5.5.5**). See **Appendix E** for the engineering drawings that illustrate the proposed BLRT Extension project's limits of disturbance.

6.2.3.6 Noise

Some indirect noise impacts are likely to occur in the long term because of the anticipated increase in development density anticipated around the light rail stations. Local jurisdictions will likely take advantage of better transportation and access following completion of the project by encouraging transit-oriented development/redevelopment of land around the stations, which will result in noise exposure produced by light rail equipment and park-and-ride facilities. The anticipated development induced by the proposed BLRT Extension project around stations would expose more people to noise from transit and associated park-and-ride facilities. Automobile-related noise levels could change by area with induced changes in mode and trip choices.

6.2.3.7 Vibration

Some indirect changes in vibration levels are likely in the long term with the proposed BLRT Extension project due to the anticipated increase in development density around light rail stations. Local jurisdictions will likely take advantage of better transportation and access following completion of the proposed BLRT Extension project by encouraging transit-oriented development/redevelopment of land around the stations, which will result in exposure to vibrations produced by LRT and freight rail. The anticipated new development induced by the

proposed BLRT Extension project around transit stations would expose more people to ground-borne vibration from LRT.

6.2.3.8 Biological Environment (Wildlife Habitat and Endangered Species)

The proposed BLRT Extension project could cause indirect impacts to habitat and endangered species if proper BMPs are not implemented. Indirect impacts could occur if development induced around the station areas were to cause direct impacts to 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, any such new development would be required to follow applicable permitting and other regulatory requirements related to protecting natural resources.

6.2.3.9 Water Quality and Stormwater

There is potential for increased development and redevelopment in areas surrounding proposed light rail stations because of improved transit access. To the extent that the proposed BLRT Extension project increases development and redevelopment intensity, long-term indirect impacts will result as commercial, transportation, and industrial activities in the proposed BLRT Extension project's vicinity increase new point and non-point sources of water pollutants. Water quality impacts can 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

The anticipated development and redevelopment induced by the proposed BLRT Extension project in station areas likely will temporarily disturb soil and potentially increase the area of impervious surfaces, both of which could directly affect water resources. However, these activities would be subject to current water quality regulations, and installation of required BMPs would protect water quality.

6.2.3.10 Air Quality/Greenhouse Gases

The proposed BLRT Extension project will provide more options for public transportation; therefore, the reliance on passenger cars for daily work commute and recreational trips will be reduced as people choose transit instead of driving. The marginal reduction vehicle travel on highways and local streets contribute to indirect air quality improvements. Conversely, the induced development that could result from the proposed BLRT Extension project could increase motor vehicle travel thereby indirectly increasing air pollutant emissions.

6.2.3.11 Energy

The proposed BLRT Extension project will result in minor shifts from single-occupant vehicles to transit (see **Section 3.1**). As a result, a potential benefit from that mode change would be a projected annual reduction in passenger vehicle miles traveled of 49,724,000 with a resulting reduction in annual energy consumption of 119 billion British thermal units (BTUs) in the proposed BLRT Extension project area and the region over the long term.

New development and redevelopment in the proposed light rail station areas could result in greater demand for electricity in these locations; however, this type of new urban development (e.g., buildings) is typically more energy efficient than existing or less dense development. Conversely, the induced development that could result from the proposed BLRT Extension project could increase motor vehicle travel thereby indirectly increasing energy consumption.

6.2.4 Environmental Justice

See **Section 7.4.6** for the discussion of indirect impacts and cumulative effects for environmental justice.

6.2.5 Parklands and Open Space

Parks and open spaces are important community resources and are considered an asset in the indirect impacts study area. Regional parks (such as Theodore Wirth Regional Park, which will be directly accessible by the proposed BLRT Extension project) are also potential generators of new transit trips. Greater levels of activity at parks and open spaces could result from the increased accessibility provided by the proposed BLRT Extension project and by new populations who could be attracted to the proposed BLRT Extension project area as a result of the implementation of the proposed BLRT Extension project. Greater use of parks and open spaces could, in turn, strain facilities and increase maintenance levels.

6.3 Cumulative Effects Assessment

This section describes the potential for cumulative effects from the proposed BLRT Extension project in combination with past trends and the reasonably foreseeable future actions described in **Section 6.1.2**. The discussion is summarized in **Table 6.4-1**.

Planned transportation and other governmental development and private development in the cumulative effects study area will occur independently of the proposed BLRT Extension project. These developments are located in communities along the proposed BLRT Extension project alignment. Projections of anticipated land development are based on current local and regional land-use and growth-management objectives and regulations, which already consider the implementation of the proposed BLRT Extension project.

The proposed BLRT Extension project will have an incremental effect on resources of interest in the context of other past, present, and reasonably foreseeable actions in the cumulative effects study area. In general, the direct and indirect adverse impacts of the proposed BLRT Extension project will be localized, and the Council does not anticipate that the proposed BLRT Extension project will

result in substantial cumulative effects for the resource categories evaluated. The Council's assessment of the cumulative effects of the proposed BLRT Extension project and other past, present, and reasonably foreseeable actions is presented by each resource of interest in the following sections.

6.3.1 Transportation

6.3.1.1 West Broadway Avenue Reconstruction Project

Continued development of transit and transportation facilities in the proposed BLRT Extension project area over time, including the West Broadway Avenue Reconstruction project, combined with future actions and the direct and indirect impacts of the proposed BLRT Extension project will increase the demand for transportation as a whole as activity and development density increase. The reconstruction of West Broadway Avenue will increase roadway capacity and thus could attract additional traffic from adjacent congested roads. The proposed BLRT Extension project will increase the capacity to move people along the proposed BLRT Extension project corridor by introducing LRT service.

The combination of the West Broadway Avenue roadway improvements and the proposed BLRT Extension project will draw additional vehicle traffic associated with passenger drop-off locations and additional pedestrian and bicycle traffic near and around the West Broadway Avenue stations (85th Avenue and 93rd Avenue). The roadway environment with the two combined projects will have lower travel speeds than what exists today because of passenger drop-off, pedestrian, and bicycle activity around the transit stations and because of the narrower 11-foot lanes that are being proposed in the West Broadway Avenue Reconstruction project.

This Final EIS includes an analysis of the effects of the proposed BLRT Extension project on intersection operations as well as on the movement of all modes of traffic around the transit stations (**Sections 3.3 and 3.4**).

6.3.1.2 TH 169/101st Avenue North Interchange

With the No-Build Alternative, the roadway intersections in the area north of TH 610 are expected to have poor operating conditions in terms of delay and vehicle queuing. The projected traffic operation with the No-Build Alternative is a byproduct of the intense development that is planned for this area by 2040. However, no roadway projects have been programmed to improve the roadway network in this area, so the intersections are expected to operate over capacity.

In response to the anticipated 2040 traffic conditions north of TH 100, the city of Brooklyn Park studied a new full-access interchange at TH 169/101st Avenue North as a separate project not related to the proposed BLRT Extension project. The new interchange has not been programmed and is not shown in the Council's *2040 TPP*.

As a part of the scope of the proposed BLRT Extension project, the Council identified several roadway improvements in order to provide control of the light rail vehicles at intersections and to provide adequate infrastructure to accommodate buses, pedestrians, and park-and-ride traffic near the transit station. These infrastructure improvements include:

- Reconstruct 101st Avenue North and Oak Grove Parkway to accommodate the needs of the proposed BLRT Extension project OMF site
- Reconstruct West Broadway Avenue from TH 610 to north of Oak Grove Parkway to accommodate the desired location of the LRT alignment, station location, and park-and-ride parking structure
- Install a new traffic signal at West Broadway Avenue/Main Street to provide a second access point to the park-and-ride facility

The Council incorporated these elements into the proposed BLRT Extension project traffic modeling. With these improvements, all intersections north of TH 610 will operate at acceptable levels of service with the proposed BLRT Extension project in 2040, with three exceptions: Oak Grove Parkway/Xylon Avenue, West Broadway Avenue/Oak Grove Parkway, and West Broadway Avenue/Main Street.

The planned future interchange at TH 169/101st Avenue North would distribute this traffic demand between two interchanges and would result in all intersections operating at an acceptable level of service during the peak periods. Additionally, the Council expects that a future traffic signal would be needed at the Oak Grove Parkway/Xylon Avenue intersection to accommodate 2040 development-generated traffic volumes. The traffic signal installation would occur at the same time as construction of the TH 169/101st Avenue North interchange project or as development traffic warrants.

6.3.2 Community and Social Analysis

6.3.2.1 Land Use Plan Compatibility

Continued development of transit and transportation facilities in the proposed BLRT Extension project area over time, combined with future actions and the direct and indirect impacts of the proposed BLRT Extension project, could result in land-use changes and increased development or redevelopment in the cumulative effects study area. This most likely will be in the form of increased residential and commercial densities consistent with transit-oriented development (TOD). These trends likely will continue until demands for housing and retail, office, and/or industrial space are met.

6.3.2.2 Community Facilities/Community Character and Cohesion

Over time, continued development of transit and transportation facilities in the proposed BLRT Extension project area, combined with future actions and the direct and indirect impacts of the proposed BLRT Extension project, will place increased demands on community services and facilities while potentially changing community character. For locations where comprehensive plans call for dense, mixed-use development, such changes in character will be consistent with planned growth and development.

6.3.2.3 Displacement of Residents and Businesses

Past projects such as the construction of the Interstate system and expansion of the trunk highway system that accompanied Interstate construction and the resulting growth in the suburban ring around the Twin Cities relocated a substantial number of residences and businesses. In the more recent past, projects like the METRO Green Line (Central Corridor LRT) resulted in property acquisition and associated displacements, and present actions such as the Southwest Light Rail Transit Project will result in acquisitions and displacements.

Future projects such as the phased improvements for Bottineau Boulevard and the TH 610 extension to I-94 projects would require property acquisitions and have the potential to displace existing commercial and residential buildings.

As noted in **Section 4.3.4.1**, property acquisitions required for the proposed BLRT Extension project will affect 292 parcels with a combined area of 75.5 acres of permanent and temporary easements. Of the 75.5 acres, about 28.9 acres will be temporary easements, most commonly involving a strip of land needed to allow for construction activities to occur.

Because the proposed BLRT Extension 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 BLRT Extension project and similar federal actions will not contribute to cumulative acquisition impacts after mitigation.

However, non-federally funded transportation facilities, such as the West Broadway Avenue Reconstruction project, in the proposed BLRT Extension project area over time, combined with future actions and the direct and indirect impacts of the proposed BLRT Extension 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.

6.3.2.4 Cultural Resources

Past transportation projects such as the early construction of the Interstate system and private development projects that predated the National Historic Preservation Act of 1966 and the National Environmental Policy Act of 1969 adversely affected architecture/history resources and archaeological resources. Because archaeological and architecture/history resources are widely distributed, present projects, such as the METRO Green Line Extension (Southwest LRT) also could affect cultural resources. Future projects may affect cultural resources, but because the historical significance of structures and the presence and significance of archaeological resources within the footprint of a project are generally not evaluated until a project is underway, it is difficult to reliably predict future projects' contribution to cultural resource cumulative effects. Depending on the funding source for future projects, cultural resources are afforded some level of protection by federal, state, and local cultural resource regulations.

Based on results of the effects assessments and implementation of the measures included in the Section 106 MOA, FTA has determined, in consultation with the MnHPO and other consulting parties, that the proposed BLRT Extension project will have No Adverse Effect on 11 historic resources and an Adverse Effect on six resources, including two individual properties and four

historic districts. Because of the proposed BLRT Extension project's adverse effect on these six resources—Wayman AME Church; Floyd B. Olson Memorial Statue; Osseo Branch Line of the St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District; Grand Rounds Historic District, Theodore Wirth Segment; Homewood Residential Historic District; and the West Broadway Avenue Residential Historic District —it has been determined that the undertaking will have an Adverse Effect on historic resources (see **Section 4.4.3**).

The proposed BLRT Extension project will implement appropriate measures identified in the Section 106 Memorandum of Agreement to minimize or mitigate the proposed BLRT Extension project's adverse cultural resource effects (see **Section 4.4.4**); however, future actions other than the proposed BLRT Extension project also have the potential to adversely affect cultural resources in the cumulative effects study area.

Over time, continued development of transit and transportation facilities in the proposed BLRT Extension project area, combined with future actions and the direct and indirect impacts of the proposed BLRT Extension project including new development induced by the proposed BLRT Extension project in the station areas, could result in changes that diminish the integrity of a historic property's or district's location, feeling, or association. Some properties could be converted or demolished to take advantage of development or redevelopment opportunities.

6.3.2.5 Visual/Aesthetics

Past public and private actions in the Minneapolis Downtown Fringe landscape unit have transformed the visual environment by increasing the density and height of buildings in the downtown area. Outside of downtown Minneapolis, particularly areas closer to the proposed BLRT Extension project's northern terminus, past actions created a transition in the visual environment from rural to suburban/urban. While the visual impacts of more recent past projects, present actions, and reasonably foreseeable projects along the proposed BLRT Extension project alignment may be less visually transformative than past projects because they occur in a developed urban and suburban physical environment, they still have the ability to create visual impacts. However noting the severity of the visual impact is dependent on the scale and massing of the development.

The analysis conducted to evaluate the proposed BLRT Extension project's effect on visual quality and aesthetics included long-term direct and indirect impacts. The analysis evaluated 28 key viewpoints along the alignment in the cities of Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park (see **Section 4.5.4.4**). Results of the analysis are summarized in **Table 6.3-1 and Table 6.3-2**.

The proposed BLRT Extension project will implement appropriate measures to avoid, minimize, and mitigate visual quality and aesthetics impacts (see **Section 4.5.5**); however, future actions other than the proposed BLRT Extension project have the potential to adversely affect visual quality and aesthetics in the cumulative effects study area.

Table 6.3-1. Summary of Changes to Visual Quality and Character

Degree of Visual Change in Quality and Character	Number of Key Viewpoints
Not substantially altered	7
Altered	11
Altered for visual quality; not substantially altered for visual character	7
Substantially altered	3
Total	**28**

Table 6.3-2. Summary of Visual Impacts

Level of Impact	Number of Higher Quality Visual Features/Primary Project Visual Features
Neutral	29
Potentially Adverse	3
Adverse	31
Total	**63**

Continued development of transit and transportation facilities in the proposed BLRT Extension project area over time, combined with future actions and the direct and indirect impacts of the proposed BLRT Extension project, could cumulatively change views in the proposed BLRT Extension project 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 cumulative effects study area, plans which call for continued development of transportation infrastructure and land.

6.3.2.6 Economic Effects

Continued development of transit and transportation facilities in the proposed BLRT Extension project area over time, combined with future actions and the direct and indirect impacts of the proposed BLRT Extension project, could cumulatively strengthen the business climate by providing improved transportation access to customers and employees. Although individual businesses could be affected negatively, the overall (cumulative) result is expected to be positive.

6.3.2.7 Safety and Security

The continued development of transit and transportation facilities in the proposed BLRT Extension project area over time, combined with future actions, natural population growth, and the direct and indirect impacts of the proposed BLRT Extension project, could cumulatively add to the demands

on law enforcement and security providers, potentially affecting staffing levels and budgets over the long term.

6.3.3 Physical and Environmental Analysis

6.3.3.1 Utilities

The continued development of transit and transportation facilities in the proposed BLRT Extension project area over time, combined with future actions, natural population growth, and the direct and indirect impacts of the proposed BLRT Extension project, could add to the demands on the customer base of utilities in the cumulative effects study area. The efficiencies of more-compact development patterns (anticipated in station areas) are expected to provide operating efficiencies to the utility providers over the long term.

6.3.3.2 Floodplains

Well before the start of Interstate construction in the proposed BLRT Extension project corridor, floodplains were being adversely affected by development activities, particularly in Hennepin County, the most populous county in the state. The conversion of the proposed BLRT Extension project corridor's original land cover, including maple and basswood forest, prairies, and wetlands, to agricultural land began the process of adverse impacts to hydrology and floodplains that intensified with the increase in urban development. The incomplete understanding of the inherent value of floodplains, and the lack of comprehensive environmental regulations at the local, state, and federal levels resulted in a generally degraded condition of floodplains through the first period of Interstate construction in the proposed BLRT Extension project corridor. The passage of legislation, such as the 1972 Clean Water Act and the 1991 Minnesota Wetland Conservation Act, increased protection of floodplains.

The proposed BLRT Extension project will add approximately 86 acres of impervious surface (including proposed ballasted track areas) that may adversely affect water quality. In addition, the operation of light rail transit may affect the hydrology and connectivity of public waters along the light rail alignment. If commercial, transportation, and industrial activities along the light rail alignment increase as a result of the proposed BLRT Extension project, there may be long-term indirect impacts on surface water resources as a result of new point and non-point sources of pollution. Finally, the proposed BLRT Extension project will place 17,000 cubic yards of fill into two locally regulated 100-year floodplains adjacent to the LRT alignment. Continued development of transit and transportation facilities in the proposed BLRT Extension project area over time, combined with future actions and the direct and indirect impacts of the proposed BLRT Extension project, could cumulatively affect hydrology and floodplains if BMPs are not implemented.

6.3.3.3 Wetlands

Well before the start of Interstate construction in the proposed BLRT Extension project corridor, wetlands were being adversely affected by development activities, particularly in Hennepin County, the most populous county in the state. The conversion of the proposed BLRT Extension project corridor's original land cover, including maple and basswood forest, prairies, and wetlands, to

agricultural land began the process of adverse impacts to wetlands that intensified with the increase in urban development. 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 BLRT Extension project corridor. 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.[7] A similar level of impact would be expected to have occurred in the proposed BLRT Extension project corridor.

The passage of legislation, such as the 1972 Clean Water Act and the 1991 Minnesota Wetland Conservation Act, increased protection of wetlands however, impacts.

As a result of the proposed BLRT Extension project, 10.14 acres of natural wetland basins and 3.07 acres of stormwater ponds will be impacted. From a long-term indirect impact standpoint, the proposed BLRT Extension project may affect wetlands by facilitating future development. The proposed BLRT Extension project will add approximately 86 acres of impervious surface that may adversely affect water quality. In addition, the operation of light rail transit may affect the hydrology and connectivity of public waters along the light rail alignment. Continued development of transit and transportation facilities in the proposed BLRT Extension project area over time, combined with future actions and the direct and indirect impacts of the proposed BLRT Extension project, could cumulatively affect wetlands, particularly if BMPs are not implemented.

6.3.3.4 Geology, Soils, and Topography

No geologic features or hazards were identified in the cumulative effects study area; however, a portion of the proposed BLRT Extension project is located in an area identified as active karst. Two springs were mapped 1 mile southwest of the cumulative effects study area. Though no karst features have been identified along the proposed BLRT Extension project, a small segment of the cumulative effects study area has a high probability for karst, as shown in **Figure 5.4-1**. The design and operation of the proposed BLRT Extension project infrastructure could be affected if subsurface features are encountered during construction. The presence of karst could also exacerbate the spread of contamination if spills or releases of hazardous materials were to occur in this area. Details regarding releases of hazardous materials in karst areas are discussed further in **Section 5.5.4.2**.

Past public and private projects have affected geology (soils) in a manner similar to the proposed BLRT Extension project. Compressible soils and other soils unsuitable for construction have been excavated and replaced with suitable fill. In addition, past projects have disturbed soil geology while constructing cuts and fills required to build roadways and private development projects. While past projects would have affected geology, they may have had adverse geology impacts, particularly in the Sochacki Park area where construction debris from TH 100 was purportedly

[7] *Status and Trends of Wetlands in Minnesota: Wetland Quantity Trends from 2006 to 2011*, Minnesota DNR, May 2013.

dumped. It is not possible to know whether past actions encountered karst conditions, which could be an adverse geology impact.

Recent past, present and reasonably foreseeable actions, whether state/federal transit (e.g., METRO Green Line Extension) or roadway projects or residential/commercial developments would be expected to have similar soil impacts to the proposed BLRT Extension project's impacts described below.

The generally compatible geologic conditions along the proposed light rail alignment will accommodate construction and operations thus limiting long-term direct geology impacts.

Constructing load transfer platforms, bridge abutments and piers in areas of compressible soils are not expected to create adverse geology impacts. No long-term indirect impacts to geology and soils will occur solely during construction of the proposed BLRT Extension project. No direct impacts to topography have been identified. Given that any impacts will be temporary, no cumulative effects to these resources are anticipated.

6.3.3.5 Hazardous Materials Contamination

Continued development of transit and transportation facilities in the proposed BLRT Extension project area over time, combined with future actions and the direct and indirect impacts of the proposed BLRT Extension project, will contribute to the remediation of hazardous materials sites, because such sites will be required to be cleaned up as a condition of development or redevelopment.

6.3.3.6 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 US highway and trunk highway systems resulted in noise levels approaching or exceeding the FHWA Noise Abatement Criteria for sensitive receptors adjacent to the transportation improvements.

It is also expected that more recent past transportation projects, present actions, and reasonably foreseeable transportation projects have or will also result in noise impacts to sensitive receptors without evaluating and or constructing noise barriers.

The proposed BLRT Extension project will implement appropriate measures to avoid, minimize, and mitigate noise impacts (see **Section 5.6.5**), as appropriate; however, future actions other than the proposed BLRT Extension project have the potential to adversely affect noise in the cumulative effects study area.

6.3.3.7 Vibration

The proposed BLRT Extension project will contribute to increases in ground-borne vibration events along its alignment, and cumulative effects could occur where this transitway is near other public transportation vibration sources in downtown Minneapolis, sources such as at the Target Field multimodal transportation hub where other LRT and commuter rail lines are planned to converge.

6.3.3.8 Biological Environment (Wildlife Habitat and Endangered Species)

Past public and private actions, particularly during the first period of Interstate construction (1956–1969) with associated expansion of the US 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 threatened and endangered (T&E) 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 T&E species 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.

The proposed BLRT Extension project will be located mostly in areas that have been previously disturbed or developed with impervious surfaces and buildings. Portions of the proposed BLRT Extension project will be within or near limited pockets of aquatic habitats and natural or open areas with vegetative cover that may provide foraging, migrating, or nesting habitat for wildlife. Long-term impacts to habitat include removal, conversion, degradation, or fragmentation of existing habitat. In addition, 22.23 acres of notable terrestrial and aquatic habitats will be impacted by the proposed BLRT Extension project. The proposed BLRT Extension project is not expected to result in long-term direct or indirect impacts on state or federal protected T&E species or migratory birds because the proposed BLRT Extension project will utilize appropriate best management practices to avoid impacts on listed species that have the potential to occur in the proposed BLRT Extension project area. The proposed BLRT Extension project will implement appropriate measures to avoid, minimize, and mitigate ecosystem impacts (see **Section 5.8.5**); however, future actions are anticipated to have minor effects on habitat and endangered species, similar to the indirect impacts from the induced development, because they would be located in urban and suburban areas. The planned projects are expected to use to BMPs during construction in order to limit indirect impacts to aquatic habitats, and no adverse cumulative effects are anticipated.

6.3.3.9 Water Quality and Stormwater

Well before the start of Interstate construction in the proposed BLRT Extension project corridor, water quality and stormwater were being adversely affected by development activities, particularly in Hennepin County, the most populous county in the state. The conversion of the proposed BLRT Extension project corridor's original land cover, including maple and basswood forest, prairies, and wetlands, to agricultural land began the process of adverse impacts to water quality and stormwater that intensified with the increase in urban development. The incomplete understanding of the inherent value of water quality and stormwater, and the lack of comprehensive environmental regulations at the local, state, and federal levels resulted in a generally degraded condition of water quality and stormwater through the first period of Interstate construction in the proposed BLRT Extension project corridor. The passage of legislation, such as the 1972 Clean Water Act and the 1991 Minnesota Wetland Conservation Act, increased protection of water quality and stormwater.

The proposed BLRT Extension project will add approximately 86 acres of impervious surface (including proposed ballasted track areas) that may adversely affect water quality. If commercial, transportation, and industrial activities along the light rail alignment increase as a result of the proposed BLRT Extension project, there may be long-term indirect impacts on water quality and stormwater as a result of new point and non-point sources of pollution.

Cumulative effects from future actions in the proposed BLRT Extension project area watersheds could include increased sediment and pollutant loads. However, future actions are subject to the same water quality regulations as the proposed BLRT Extension project and would use similar BMPs during construction and operation. Thus, no cumulative adverse effects to water quality are anticipated.

6.3.3.10 Air Quality/Greenhouse Gases

Continued transportation and land development in the proposed BLRT Extension project area could result in increased air pollutant emissions. When combined with the proposed BLRT Extension project, which is expected to reduce the overall air pollutant load because of less automobile use, the cumulative effect on air quality could be an improvement over the conditions without the proposed BLRT Extension project.

6.3.3.11 Energy

Continued transportation and land development in the proposed BLRT Extension project area could result in increased energy use. When combined with the proposed BLRT Extension project, which is expected to use 119 billion British thermal units (BTUs) less energy than the No-Build Alternative, the cumulative effect on energy use will likely be an improvement over conditions without the proposed BLRT Extension project (see **Section 5.11.4**).

6.3.4 Parklands and Open Space

Past federal and state transportation projects, particularly those constructed before the implementation of the Section 4(f) regulations (1966) and the National Environmental Policy Act (1969), and private development would have adversely affected parks and recreation areas. Even after the passage of Section 4(f) regulations, present publicly and privately funded projects still have the potential to adversely affect parks and recreation areas; however, at least for projects using federal funds, there is the potential for minimizing or mitigating adverse effects.

Currently, the reasonably foreseeable projects in **Table 6.1-3** are not expected to adversely affect parks or recreation areas. As described in **Section 8.7.1** and summarized in **Table 8.7-2**, the following parks, recreation areas, and open space properties will be affected as a result of the proposed BLRT Extension project:

- Theodore Wirth Regional Park – *De minimis* use
- Glenview Terrace Park – *De minimis* use
- Sochacki Park: Mary Hills Management Unit – Temporary occupancy
- Sochacki Park: Sochacki Management Unit – Temporary occupancy
- South Halifax Park – Temporary occupancy
- Becker Park – Temporary occupancy
- Park Property Adjacent to Rush Creek Regional Trail – Temporary occupancy

Population growth in the cumulative effects analysis area caused by new residential development surrounding the proposed light rail stations may increase demand and capacity pressure on public parks and recreation facilities. Because of limited land availability and funding for acquisitions, the City of Minneapolis and other communities are limited in park expansion opportunities to meet recreational demands. These limitations have the potential to result in a long-term shortfall in the ratio of parks and recreation areas to population.

The proposed BLRT Extension project will not contribute to substantial cumulative park and recreation area impacts directly related to acquisitions because the magnitude of the acquisition impacts is low (approximately 2 acres), as compared to the size of the parks in the cumulative effects study area (approximately 852 acres; see **Table 8.7-2**). The proposed BLRT Extension project will implement appropriate measures to avoid, minimize, and mitigate other park, recreation areas, and open space impacts not related to acquisitions (see **Section 8.7.3**); however, future actions other than the proposed BLRT Extension project have the potential to adversely affect parks, recreation and open space in the cumulative effects study area.

6.4 Mitigation and Summary of Effects

This section includes a review of mitigation needs for the indirect impacts and cumulative effects to each resource of interest as well as a summary of effects. **Table 6.4-1** presents this information.

Table 6.4-1. Summary of Indirect Impacts, Cumulative Effects, and Associated Mitigation

Resource	Indirect Impacts	Cumulative Effects	Mitigation
Transportation	Travel by transit, pedestrian, and bicycle modes will increase, and the number of single-occupant vehicles will decrease, as a result of the proposed BLRT Extension project. The proposed BLRT Extension project could also lead to indirect impacts related to "spillover" parking in neighborhoods adjacent to proposed light rail stations.	The proposed BLRT Extension project in combination with the reasonably foreseeable future actions, including the West Broadway Avenue Reconstruction project, will increase overall transportation demand. The combination of the roadway improvements and the proposed BLRT Extension project will draw additional vehicle traffic associated with passengers accessing the proposed BLRT Extension project stations.	Because the indirect impacts and cumulative effects identified are consistent with the comprehensive plans of the communities affected, as well as with county and regional plans, no mitigation is required. To address the potential for spillover parking in neighborhoods adjacent to proposed LRT stations, the Council will complete a Regional Park-and-Ride System Report on an annual basis, which tracks facility use and emerging travel patterns to identify the appropriate mitigation, as needed and where feasible.
Land Use Plan Compatibility	Market-driven development could lead to increased density and intensely used spaces along the proposed BLRT Extension project corridor.	Reasonably foreseeable future actions will likely increase the density and intensity of development in the proposed BLRT Extension project corridor.	The cities in the corridor have planned for future growth and development with their individual comprehensive plans. Potential indirect impacts and cumulative effects on land use are compatible with these plans and plans for the region, which state the agencies' desire for transit to alleviate traffic and congestion. No mitigation is required.
Community Facilities/ Community Character and Cohesion	New businesses and residential development could be attracted to station areas, likely leading to denser land-use patterns and increased demand on community services and facilities. Increased development could affect access to community facilities.	The proposed BLRT Extension project in combination with the reasonably foreseeable future actions could change the character of neighborhoods by increasing mixed-use development in the cumulative effects study area.	The types of indirect impacts and cumulative effects identified are typically consistent with and governed by applicable land-use plans. No mitigation is required.
Displacement of Residents and Businesses	New station-area development could result in displacements of existing uses, limited by zoning, comprehensive plans, and local economic conditions.	Additional transportation investments in the proposed BLRT Extension project corridor to service 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.	Although there could be cumulative effects from the acquisition and displacement of residents and businesses, induced development, along with available housing in the proposed BLRT Extension project corridor, will likely create more jobs and housing opportunities than what will be lost. No mitigation is required.

Table 6.4-1. Summary of Indirect Impacts, Cumulative Effects, and Associated Mitigation

Resource	Indirect Impacts	Cumulative Effects	Mitigation
Cultural Resources	More-dense and -intense development could affect the context of cultural resources. Induced development could directly affect historic properties through demolition, change in property values, or other impacts.	Induced development associated with the proposed BLRT Extension project in combination with the reasonably foreseeable future actions could cumulatively diminish the integrity of a historic property's or district's location, feeling, or association cultural resources.	All indirect impacts and cumulative effects are subject to the protections and regulations of Section 106 of the National Historic Preservation Act of 1966. Committed mitigation has been documented in the Section 106 Memorandum of Agreement.
Visual/Aesthetics	Induced development around the transit stations will likely change the views of the area. Specifically, a new building that is in keeping with the scale and character of the existing neighborhood will typically be seen as a positive impact on visual resources, whereas a new building that does not fit in with the existing character could be seen as a negative impact.	Induced development associated with the proposed BLRT Extension project and additional transportation facilities in combination with the reasonably foreseeable future actions will change the views in neighborhoods. Specifically, views could become more organized and urbanized, and wide-open views could in some cases become more closed.	Development that occurs in response to the proposed BLRT Extension project and future actions will likely have a visual impact on the proposed BLRT Extension project corridor. All development is regulated through applicable municipal codes. No additional mitigation is required.
Economic Effects	To the extent the proposed BLRT Extension project leads to new private development around light rail 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.	Induced development associated with the proposed BLRT Extension project in combination with the reasonably foreseeable future actions will likely increase the number of customers in the proposed BLRT Extension project corridor.	Development that occurs in response to the proposed BLRT Extension project and the reasonably foreseeable future actions might increase access to businesses in the area and expand the base of local consumers. No additional mitigation is required.
Safety and Security	Increased development densities around transit stations could place greater demands on safety and security personnel and systems.	Increased development associated with the proposed BLRT Extension project in combination with the reasonably foreseeable future actions could require more service personnel and could cumulatively strain local providers' capacity to deliver services.	Safety and security measures to address induced development and future actions would be planned for by cities, counties, and emergency service providers. Metro Transit will provide security at and around the transit stations. Transit rider, pedestrian, and bicycle safety features will be incorporated into design and maintained and enforced over time. No additional mitigation is required.

Table 6.4-1. Summary of Indirect Impacts, Cumulative Effects, and Associated Mitigation

Resource	Indirect Impacts	Cumulative Effects	Mitigation
Utilities	No long-term indirect impacts related to stray current are anticipated. Induced development will put a greater demand on the existing utilities in the proposed BLRT Extension project corridor.	Induced development associated with the proposed BLRT Extension project in combination with the reasonably foreseeable future actions will likely put a greater demand on utilities in the proposed BLRT Extension project corridor.	To meet any increased demand for utilities from induced development and future actions, utility providers will plan appropriately through their regular planning processes. No additional mitigation is required.
Floodplains	Induced development could adversely affect hydrology (increased impervious surfaces) and floodplains storage if BMPs are not implemented during the development process.	Induced development associated with the proposed BLRT Extension 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 to hydrology and floodplains caused by induced development and future actions will be mitigated according to applicable regulations. No additional mitigation is required.
Wetlands and Other Aquatic Resources	Induced development could adversely affect wetlands if new developments were to cause wetland impacts and BMPs are not implemented.	Induced development associated with the proposed BLRT Extension 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 to wetlands caused by induced development and future actions will be mitigated according to applicable regulations. No additional mitigation is required.
Geology, Soils, and Topography	No indirect impacts are anticipated.	No cumulative effects are anticipated.	Not applicable (no indirect impacts or cumulative effects are anticipated).
Hazardous Materials Contamination	If BMPs are followed, no adverse indirect impacts should occur; beneficial impacts will occur through remediation.	Induced development associated with the proposed BLRT Extension project in combination with the reasonably foreseeable future actions will have a positive effect by contributing to the remediation of hazardous materials sites, because such sites will be required to be cleaned up as a condition of development or redevelopment.	Parties involved will be required to follow all state and federal laws concerning hazardous materials. No additional mitigation is required.

Table 6.4-1. Summary of Indirect Impacts, Cumulative Effects, and Associated Mitigation

Resource	Indirect Impacts	Cumulative Effects	Mitigation
Noise	Changes in development density and intensity will bring more people into contact with noise produced by LRT. Mode shifting could lead to a reduction in noise related to automobile traffic in the proposed BLRT Extension project corridor.	Induced development associated with the proposed BLRT Extension project in combination with the reasonably foreseeable future actions will likely result in more people and traffic in the area. Although the proposed BLRT Extension project will add a new noise source to the cumulative effects study area, the combined effects of the proposed BLRT Extension project and the West Broadway Avenue Reconstruction project will result in lower noise impacts to sensitive receptors.	Noise impacts caused by development or other future actions will be assessed for mitigation on a project-by-project basis. No additional mitigation is required.
Vibration	Changes in development density and intensity will bring more people into contact with vibration produced by LRT.	Cumulative vibration impacts could occur at the Target Field multimodal transportation hub in downtown Minneapolis.	No mitigation for impacts to induced development is identified. Mitigation for vibration impacts associated with other LRT or commuter rail lines and the Target Field multimodal transportation hub are documented in each project's environmental clearance commitments.
Biological Environment (Wildlife Habitat and Endangered Species)	New development induced by the project, with implementation of proper BMPs, is unlikely to result in impacts on habitat and endangered species.	Induced development associated with the proposed BLRT Extension project in combination with the reasonably foreseeable future actions will not likely have a cumulative effect on habitat or endangered species because of the urbanized nature of the proposed BLRT Extension project corridor.	No additional mitigation is required. The Council assumes that BMPs would be followed for any new development.

Table 6.4-1. Summary of Indirect Impacts, Cumulative Effects, and Associated Mitigation

Resource	Indirect Impacts	Cumulative Effects	Mitigation
Water Quality and Stormwater	No indirect impacts are anticipated if BMPs are implemented.	Induced development associated with the proposed BLRT Extension project in combination with the reasonably foreseeable future actions could increase the amount of impervious surfaces in the proposed BLRT Extension project corridor and have a cumulative effect on increased sediment and pollutant loads if BMPs are not implemented.	BMPs will be implemented to reduce potential cumulative effects from induced development. No additional mitigation is required.
Air Quality/ Greenhouse Gas Emissions	The mode shift away from automobiles with the proposed BLRT Extension project will result in fewer cars on local roads and marginally less congestion, resulting in a positive impact on air pollution. Conversely, the induced development that could result from the proposed BLRT Extension project could increase motor vehicle travel thereby indirectly increasing air pollutant emissions.	The proposed BLRT Extension project's positive contribution to air quality will improve cumulative conditions over what they would be without the proposed BLRT Extension project.	No mitigation is required.
Energy	The mode shift to LRT with the proposed BLRT Extension project will likely lead to an operational efficiency in passenger transport and reduced energy use.	Induced development associated with the proposed BLRT Extension project in combination with the reasonably foreseeable future actions could increase the amount of transit riders and cumulatively reduce the amount of energy consumed for transportation.	No mitigation is required.
Parklands and Open Space	Greater accessibility could lead to higher usage rates of parks and open spaces along the proposed BLRT Extension project corridor. Greater use of parks and open space could strain facilities and increase maintenance levels.	Induced development associated with the proposed BLRT Extension project in combination with the reasonably foreseeable future actions and natural population growth would likely place a greater demand on parks and open spaces and could result in a cumulative adverse effect.	The Council and the municipalities in the proposed BLRT Extension project corridor have plans to expand and enhance parks and open spaces in the area to meet the demands of population growth. No additional mitigation is required.

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7 Environmental Justice

This chapter describes the proposed METRO Blue Line Light Rail Transit (BLRT) Extension project's compliance with applicable federal regulations for environmental justice (EJ). This chapter includes the Metropolitan Council's (Council) review of the regulatory context and methodology, identification of minority and/or low-income populations (that is, EJ populations), an overview of public outreach strategies and activities to engage EJ populations in the project planning process, an assessment of impacts that would affect EJ populations, and a project-wide EJ finding.

7.1 Regulatory Context and Methodology

7.1.1 Regulatory Context

The analyses presented in this chapter were prepared in compliance with the Presidential Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994); the US Department of Transportation's (USDOT) *Order to Address Environmental Justice in Minority Populations and Low-Income Populations* [USDOT Order 5610.2(a), May 2, 2012]; and the Federal Transit Administration's (FTA) Circular FTA C4703.1, *Environmental Justice Policy Guidance for Federal Transit Administration Recipients* (FTA, 2012).

As outlined in FTA Circular 4703.1, USDOT and FTA are required to make EJ part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of programs, policies, and activities on minority populations and/or low-income populations (collectively, *environmental justice populations*). FTA includes incorporation of EJ and non-discrimination principles into transportation planning and decision-making processes and project-specific environmental reviews.

Furthermore, USDOT Order 5610.2(a) sets forth the USDOT policy to consider EJ principles in all USDOT programs, policies, and activities. It describes how the objectives of EJ are integrated into planning and programming, rulemaking, and policy formulation. This chapter addresses only impacts to minority and low-income populations that would be caused by the proposed BLRT Extension project, because the No-Build Alternative would not directly or indirectly change existing conditions of the surrounding environment.

7.1.2 Methodology for the Environmental Justice Analysis

The framework for the EJ evaluation incorporated in this chapter is based on FTA Circular 4703.1, described above, which outlines a methodology that addresses EO 12898 including both a robust public participation process and an analytical process with three basic steps:

1. Determine whether there are EJ populations potentially affected by the project.
2. If EJ populations are present, consider the potential effects of the project on the EJ population, including any disproportionate high and adverse effects.
3. Determine whether any adverse effects could be avoided, minimized, or mitigated.

7.1.2.1 Environmental Justice Study Area and Data Sources

A geographic information systems (GIS) platform was used by the Council to identify a half-mile buffer[1] around the proposed BLRT Extension project. Year 2010 US Census data were used to quantify minority populations at the block level, the smallest geographic unit for which race and ethnicity data are available. For the analysis of minority populations, each census block that is completely within or intersects the buffer is included in the study area.

American Community Survey (ACS) 2009–2013 data were used by the Council as a primary source for mapping and quantifying low-income populations at the block group level, also the smallest geographic unit for which low-income population data are available. For the analysis of low-income populations, each census block group that intersects or is completely within the half-mile buffer is included in the study area.

7.1.2.2 Method for Identifying Minority and Low-Income Populations

As defined in *FTA Circular 4703.1* (page 6), persons of minority status include those who are:

- American Indian or Alaska Native, which refers to people having origins in any of the original peoples of North and South America (including Central America), and who maintain tribal affiliation or community attachment
- Asian, which refers to people having origins in any of the original peoples of the far East, Southeast Asia, or the Indian subcontinent, including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam
- Black or African American, which refers to people having origins in any of the Black racial groups of Africa
- Hispanic or Latino, which includes persons of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race
- Native Hawaiian or Other Pacific Islander, which refers to people having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands

[1] One half-mile is the industry standard for the maximum distance people prefer when walking to a station. FTA uses one-half-mile catchment areas around transitway stations to measure population and employment in the station areas. Use of the half-mile buffer for this EJ analysis is consistent with corridor demographic measurements throughout the EIS.

As defined in *FTA Circular 4703.1*, a low-income person is one whose median household income is at or below the US Department of Health and Human Services' poverty guidelines.[2] Poverty levels are defined at the national level and vary by the number of persons in a family and the age of the family members.

In addition to the use of US Census data, the Council further identified the presence of minority and/or low-income populations in the study area identified through an extensive public engagement program as part of the National Environmental Policy Act (NEPA) process; interviews and outreach as part of the *Bottineau Transitway Health Impact Assessment* (*HIA*) (Hennepin County, 2013); and data analysis, outreach, and research as part of Bottineau Boulevard (County Road 81) station-area pre-planning. See **Section 7.3** for more information on these efforts.

7.1.2.3 Method for Determination of Impacts to Minority and Low-Income Populations

The project-wide EJ finding is based on whether the proposed federal action (the proposed BLRT Extension project) would result in disproportionate and high adverse impacts to EJ populations. Based on FTA guidance, when making the final project-wide EJ finding in this chapter, FTA considered the following criteria:

- Would the proposed BLRT Extension project's adverse impacts be predominantly borne by EJ populations?
- Would adverse impacts to EJ populations be appreciably more severe or greater in magnitude than those suffered by non-EJ populations?
- What would be the effect of the proposed BLRT Extension project's offsetting benefits when considering these impacts?
- What would be the effect of mitigation measures that would be incorporated into the proposed BLRT Extension project and any other enhancements or betterments that would be provided in lieu of mitigation when considering these impacts?

[2] US Department of Health and Human Services. 2013 Poverty Guidelines. aspe.hhs.gov/poverty/13poverty.cfm.

7.2 Environmental Justice Populations in the Study Area

This section describes the minority and low-income populations identified within the study area, based on the methodology described above.

7.2.1 Minority Populations

The racial composition of the study area, as well as Hennepin County, the Twin Cities Metropolitan Area, and the State of Minnesota, is shown in **Table 7.2-1**. Minorities comprise populations that identify as Latino/Hispanic, Black/African American, Asian, and Other (American Indian, Alaska Native, Native Hawaiian, Other Pacific Islander, Some Other Race, or Two or More Races). The study area has a higher percentage of minority populations (48.4 percent) than the State of Minnesota (16.9 percent), the seven-county Twin Cities Metropolitan Area (23.7 percent), and Hennepin County (28.3 percent). Brooklyn Park is the municipality along the proposed BLRT Extension project corridor with the greatest percentage of minorities (51.0 percent).

Figure 7.2-1 maps the percentage of minority populations in the proposed BLRT Extension project study area by census block. **Figure 7.2-2 through Figure 7.2-5** map the percentage of specific minority groups by census block (Black, Asian, Latino, and other, respectively). As the figures show, the study area contains several neighborhoods with more than half their population comprising minorities, most notably near the proposed Van White Boulevard, Penn Avenue, Plymouth Avenue, 63rd Avenue, and 85th Avenue stations.

The census data are useful for gaining preliminary information about minority communities in the study area; however, community engagement efforts have provided additional information on study area populations. For example, information has been obtained by the Council on specific neighborhoods in the study area comprising recent Somali, Ethiopian, Hmong, and Lao immigrants.

Table 7.2-1. Minority Populations by State, Region, County, and Study Area

Geography		Total Population	Non-Hispanic				Hispanic/Latino (All Races)	All Minority Groups
			White	Black/African American	Asian	Other[1]		
Minnesota	Population	5,303,925	4,405,142	269,141	212,996	166,388	250,258	898,783
	%	100%	83.10%	5.10%	4.00%	3.10%	4.70%	16.90%
Seven-county Twin Cities Metropolitan Area	Population	2,849,567	2,173,218	234,334	182,496	91,961	167,558	676,349
	%	100%	76.30%	8.20%	6.40%	3.20%	5.90%	23.70%
Hennepin County	Population	1,152,425	826,670	134,240	71,535	42,304	77,676	325,755
	%	100.00%	71.70%	11.70%	6.20%	3.70%	6.70%	28.30%
Minneapolis	Population	382,578	230,650	69,971	21,399	20,485	40,073	151,928
	%	100.00%	60.30%	18.30%	5.60%	5.35%	10.45%	39.70%
Golden Valley	Population	20,594	16,897	1,550	872	805	470	3,697
	%	100.00%	82.10%	7.50%	4.20%	3.90%	2.30%	17.90%
Robbinsdale	Population	14,121	10,842	2,082	317	404	476	3,279
	%	100.00%	76.80%	14.70%	2.20%	2.90%	3.40%	23.20%
Crystal	Population	22,361	16,315	2,541	1,109	872	1,524	6,046
	%	100.00%	73.00%	11.35%	4.95%	3.90%	6.80%	27.00%
Brooklyn Park	Population	76,781	37,622	19,274	11,712	3,061	5,112	39,159
	%	100.00%	49.00%	25.10%	15.20%	4.00%	6.70%	51.00%
Study area	Population	63,087	32,539	17,099	5,560	2,870	5,019	30,548
	%	100.00%	51.60%	27.10%	8.80%	4.50%	8.00%	48.40%

Source: US Census Bureau 2011 Decennial Census, Table P9: Hispanic or Latino, and Not Hispanic or Latino by Race

[1] "Other" includes people who identify as American Indian, Alaska Native, Native Hawaiian, Other Pacific Islander, Some Other Race, or Two or More Races.

Figure 7.2-1. Minority Populations in the Study Area

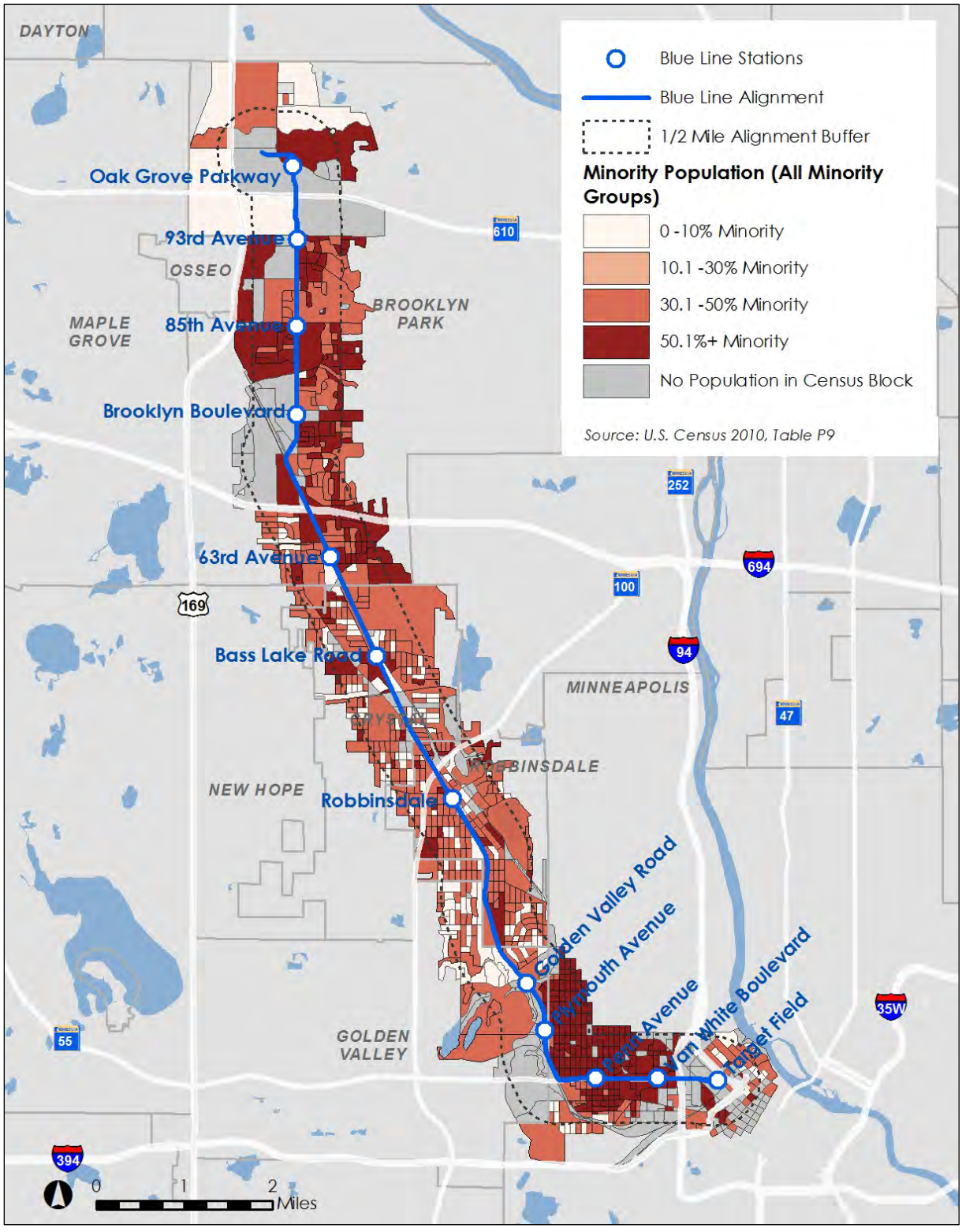


Figure 7.2-2. Black/African American Populations in the Study Area

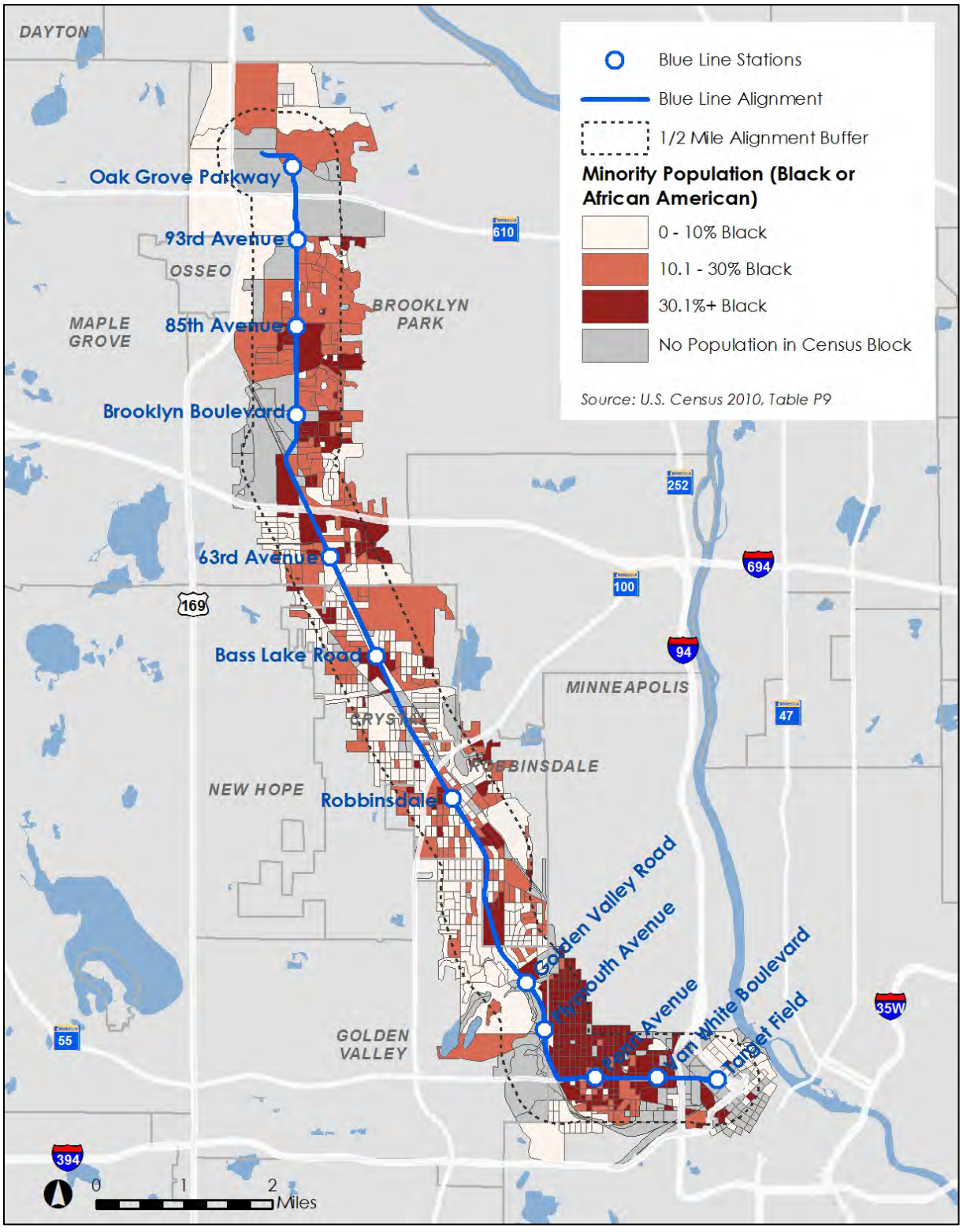


Figure 7.2-3. Asian Populations in the Study Area

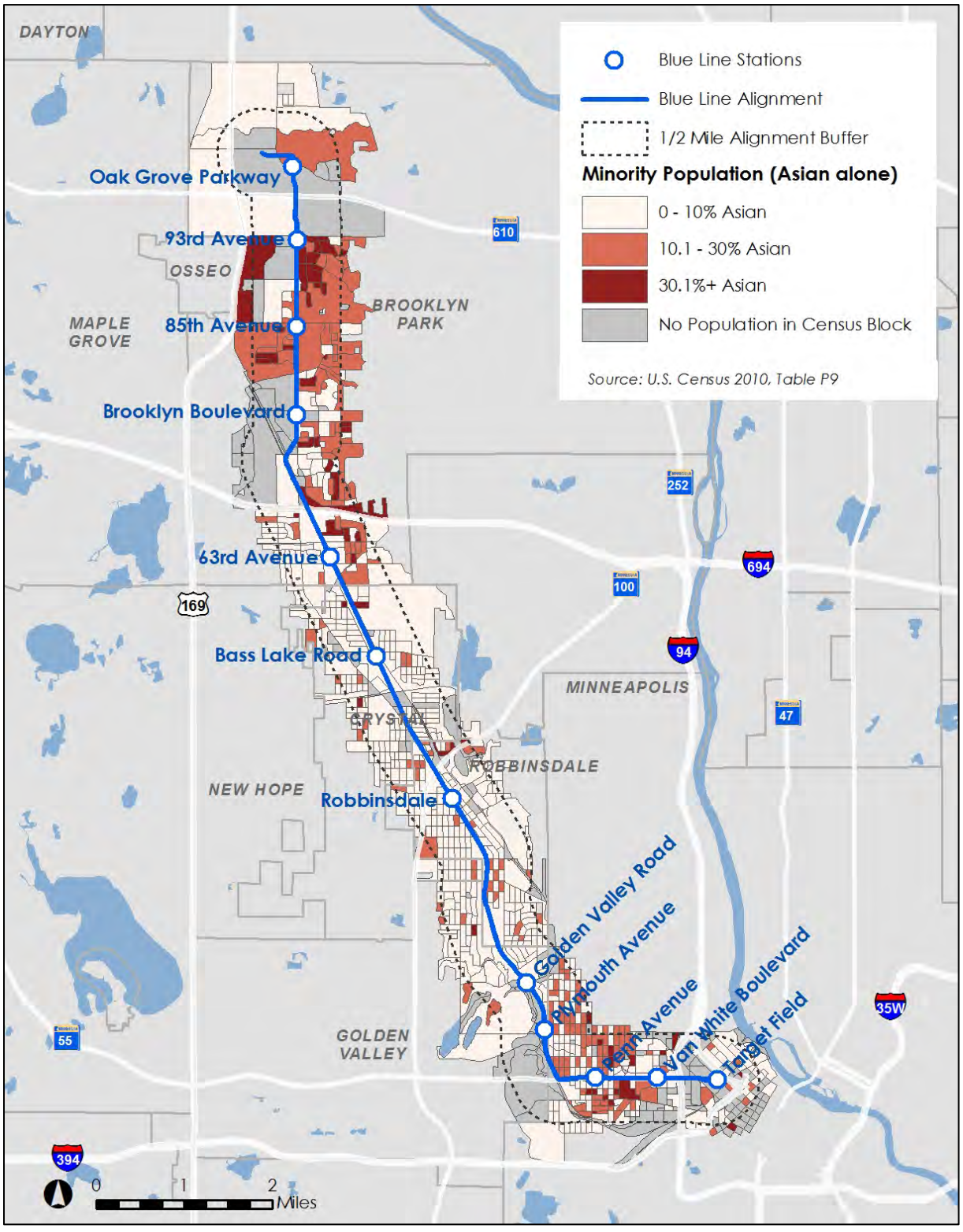


Figure 7.2-4. Hispanic/Latino Populations in the Study Area

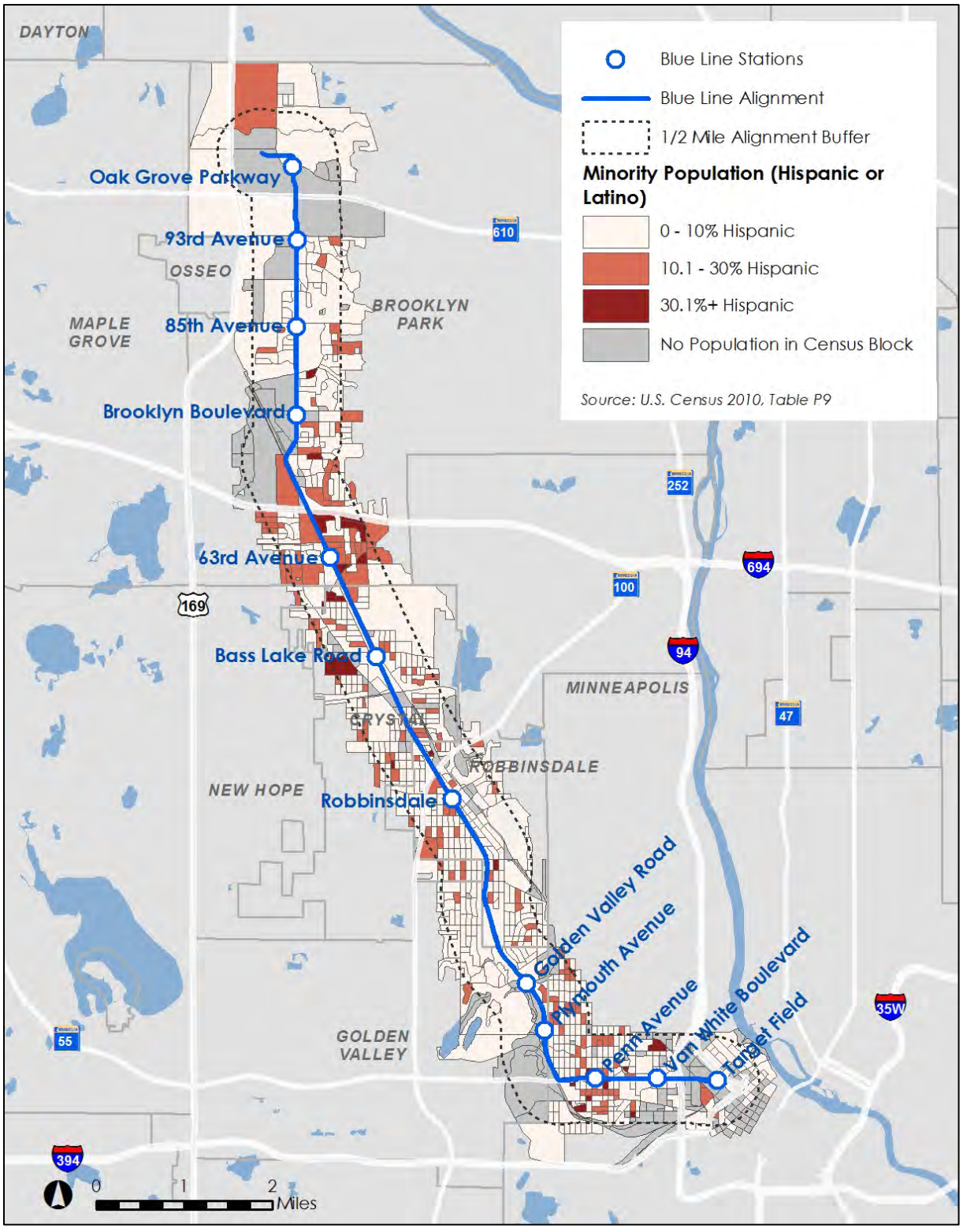
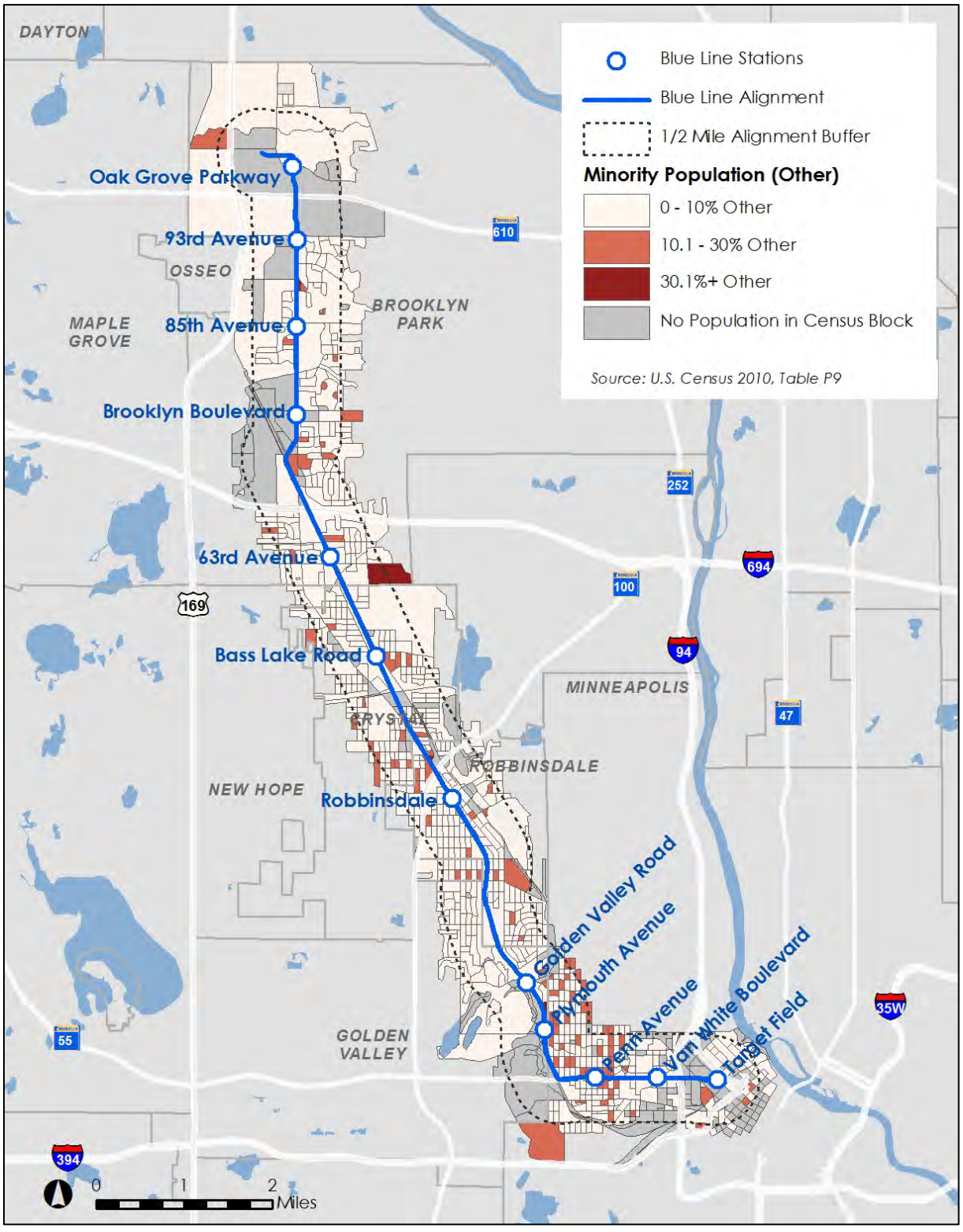


Figure 7.2-5. Other Minority Populations in the Study Area



7.2.2 Low-Income Populations

Table 7.2-2 shows the percentages of low-income individuals (that is, those with household income below the federally established poverty level) in the study area, Hennepin County, the Twin Cities Metropolitan Area, and the State of Minnesota.

According to the Fair Housing equity assessment conducted by the Council in 2014 (*Choice, Place and Opportunity: An Equity Assessment of the Twin Cities Region*; metrocouncil.org/Planning/Projects/Thrive-2040/Choice-Place-and-Opportunity.aspx?source=child) (FHEA) (Council, 2014), poverty in suburban and rural areas has increased by 85 percent since 1990. The racial composition of the residents living in poverty has also changed over the last 20 years. In the most recent data in the report, over half of the region's residents living in poverty were people of color. Areas of concentrated poverty[3] usually suffer from high crime and tend to have schools with lower test scores and graduation rates. These factors have an undermining effect on people's physical and mental health. Areas of concentrated poverty in the region are shown in **Figure 7.2-6**.

The study area has a higher percentage of low-income populations (18.7 percent) than the State of Minnesota (11.5 percent), the seven-county Twin Cities Metropolitan Area (11.0 percent), and Hennepin County (12.8 percent). Minneapolis is the municipality in the study area with the greatest percentage of low-income populations (22.5 percent).

Table 7.2-2. Low-Income Populations by State, Region, County, and Study Area

Geography	Measure	Total Population	At or above Poverty Level	Low Income (below Poverty Level)
Minnesota	Population	5,223,936	4,625,545	598,391
	%	100%	88.50%	11.50%
Seven-county Twin Cities Metropolitan Area	Population	2,842,338	2,530,403	311,935
	%	100%	89.00%	11.00%
Hennepin County	Population	1,148,765	1,001,939	146,826
	%	100.00%	87.20%	12.80%
Minneapolis	Population	373,744	289,668	84,076
	%	100.00%	77.50%	22.50%
Golden Valley	Population	20,125	18,758	1,367
	%	100.00%	93.20%	6.80%
Robbinsdale	Population	13,996	12,463	1,533
	%	100.00%	89.00%	11.00%
Crystal	Population	22,143	20,196	1,947
	%	100.00%	91.20%	8.80%
Brooklyn Park	Population	76,417	66,990	9,427
	%	100.00%	87.70%	12.30%
Study area	Population	89,075	72,443	16,632
	%	100.00%	81.30%	18.70%

Source: US Census Bureau American Community Survey 2009 –2013 5-Year Estimates, Table C17002: Ratio of Income to Poverty Level in the Past 12 Months (US Census Bureau, 2014)

[3] The term *area of concentrated poverty* refers to census tracts where at least 40 percent of residents have a family income below 185 percent of the federal poverty threshold. As context, 185 percent of the poverty level for a typical family of four in 2013 was $44,093.

Figure 7.2-6. Areas of Concentrated Poverty 2010–2014

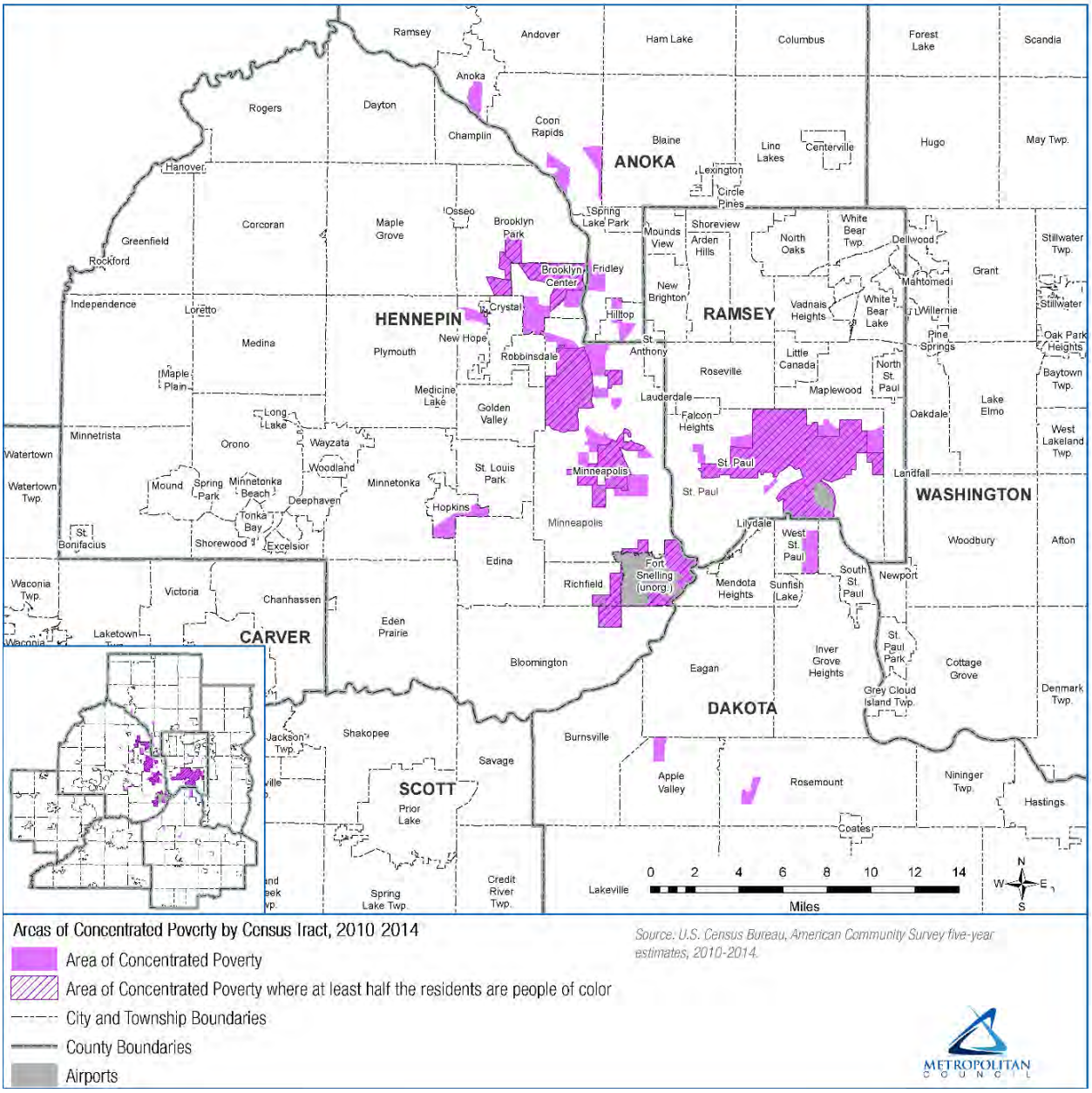
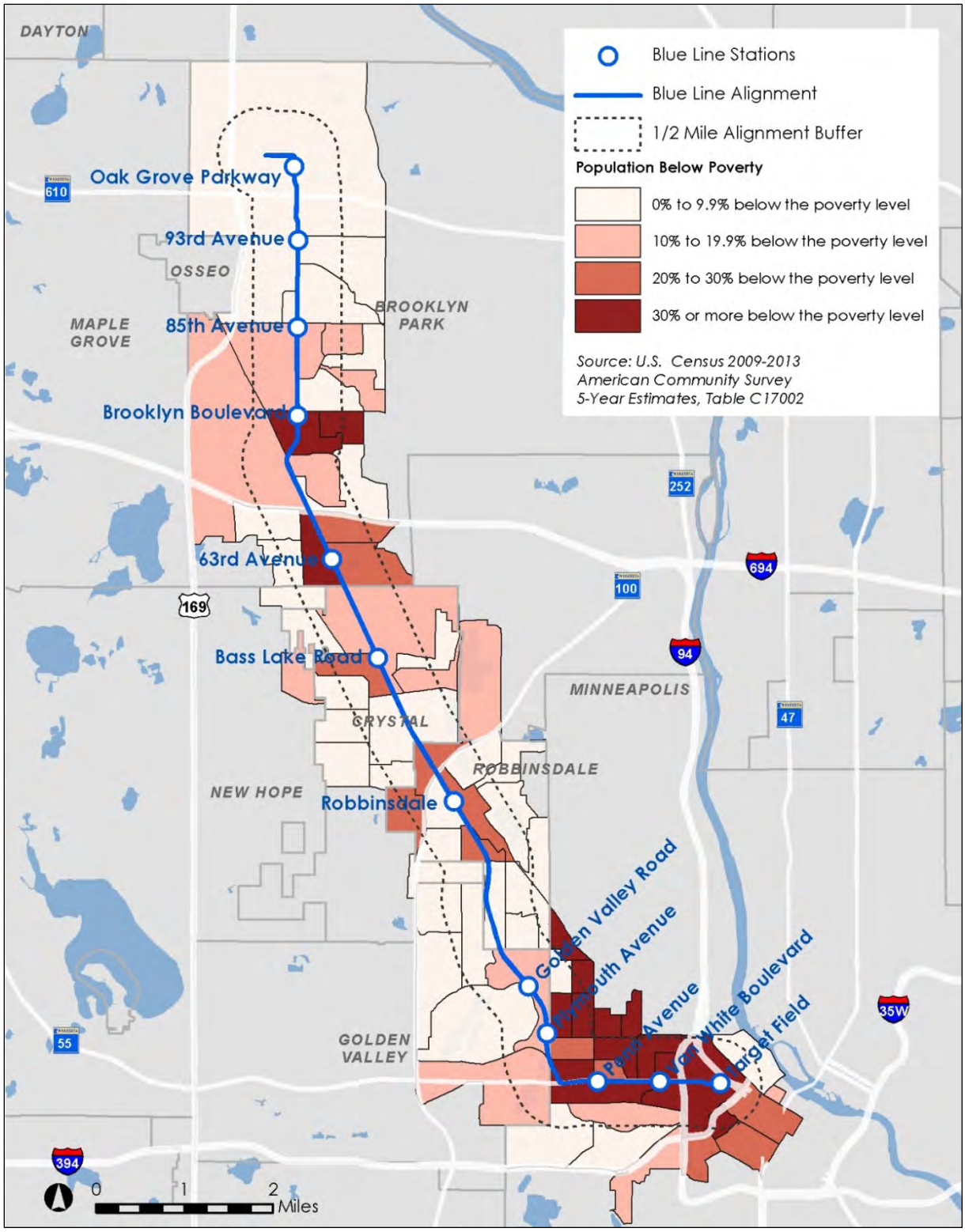


Figure 7.2-7 shows the concentrations of low-income residents in the study area by census tract block group. As the figure shows, low-income populations are located throughout the study area. Areas with more than 30 percent low-income residents include the Van White Boulevard, Penn Avenue, Plymouth Avenue, 63rd Avenue, and Brooklyn Boulevard stations. Through outreach activities described in **Section 7.4**, lower-income apartment complexes in the study area, even if in an otherwise predominantly higher-income neighborhood, have been identified, engaged in the proposed BLRT Extension project, and considered in the EJ analysis.

Figure 7.2-7. Low-Income Populations in the Study Area



7.3 Public Engagement

While the US Census and ACS are useful tools to help characterize a neighborhood or other geographic region, they are not comprehensive and do not incorporate the communities' views on the composition of their neighborhoods and potential issues of concern. The proposed BLRT Extension project's extensive outreach program has helped to identify communities, neighborhoods, and groups with minority and low-income status outside the purview of census analysis from early in the planning process. **Chapter 9 – Consultation and Coordination** of this Final Environmental Impact Statement (Final EIS) includes a summary of the outreach activities for the proposed BLRT Extension project.

NEPA-phase public involvement has included targeted outreach to EJ communities identified through the census analysis, as well as follow-up communications and outreach to newly identified EJ populations. For the proposed BLRT Extension project, public outreach has been an iterative process, initiated by meetings and events to get to know the communities and include additional organizations, businesses, individuals, and other community groups into the fold as the proposed BLRT Extension project progressed. Initial mapping to identify minority and low-income populations has aided in the identification of neighborhoods within the proposed BLRT Extension project study area that would benefit from enhanced, pro-active, and non-traditional outreach. The sections that follow describe the outreach activities during the Draft Environmental Impact Statement (Draft EIS) and Final EIS phases to identify EJ populations and actively engage them in the proposed BLRT Extension project.

7.3.1 Overview of Early Outreach Activities

During the initial project planning and Draft EIS phase of the proposed BLRT Extension project, in 2011 and 2012, outreach focused on established neighborhood groups, community leaders, and private organizations comprising and connected to low-income and minority communities in the project study area. These efforts included the following:

- **Corridors of Opportunity grantee organizations.**[4] The Corridors of Opportunity Initiative awarded grants to place-based organizations that work with underrepresented communities to educate and organize communities around transit corridor decision-making, planning, and implementation opportunities important to them. Ten Corridors of Opportunity grantee organizations have engaged minority and low-income populations located in the proposed BLRT Extension project area, including African Career, Education, and Resource, Inc., La Asamblea de Derechos Civiles, Asian Economic Development Association, Asian Media Access, Centro de Trabajadores Unidos en la Lucha, Cleveland Neighborhood Association,

[4] Corridors of Opportunity is a is a broad-based initiative to accelerate the build out of a regional transit system for the Twin Cities while advancing economic development and ensuring that people of all incomes and backgrounds share in resulting opportunities. Corridors of Opportunity is funded by a 3-year, $5-million Sustainable Communities grant from the federal Department of Housing and Urban Development, in partnership with the Department of Transportation and the Environmental Protection Agency. Since grant funds will expire at the end of 2013, the Initiative has created a Community Engagement Steering Committee to evaluate and recommend improvements to existing community engagement structures so that best practices continue beyond the life of Corridors of Opportunity to future transitway projects.

Harrison Neighborhood Association on behalf of the Transit Equity Partnership, Masjid An-Nur, Metropolitan Interfaith Coalition on Affordable Housing, and Northside Residents Redevelopment Council. Chapter 7 of the Bottineau Transitway Draft EIS (March 2014) provides more information on the involvement of these organizations in the proposed BLRT Extension project and the partnership they provided in identifying and engaging EJ populations early in project development.

- **Community Advisory Committee.** The Bottineau Transitway Community Advisory Committee (CAC), comprising residents and key business and institutional representatives from each city, have met for several years to share information and provide input on the proposed BLRT Extension project. Meetings are open to the public and meeting dates, locations, and materials have been available on the website for the proposed BLRT Extension project.
- **Community Events and Meetings.** Project staff has been active participants in project-related events sponsored by several community and neighborhood organizations, including roundtable discussions, panel discussions, project tours, media appearances, and others. Chapter 7 of the *Bottineau Transitway Draft EIS* provides more information on these events.

Project communications were extensive and broad-reaching through the Draft EIS phase, as staff utilized the following methods to disseminate information to the public and project stakeholders:

- The proposed BLRT Extension project's email-based list serve, which had nearly 950 recipients at the time
- Hardcopy newsletters, posters, and flyers to community gathering places along the proposed BLRT Extension project corridor
- Notification of Corridors of Opportunity grantee organizations of all project meetings
- By-request distribution of project informational materials and exhibits
- Distribution of meeting announcement flyers door to door in several Minneapolis neighborhoods

Several public open house meetings were held along the proposed BLRT Extension project corridor, including general project open houses (June 2011), Scoping open houses (January 2012), site- or issue-specific open houses (2011/12), and open houses sponsored by Corridors of Opportunity organizations (2011/12). In addition to traditional open houses, project staff provided many opportunities for public input to the project until release of the Draft EIS in 2014, such as:

- Project-specific website, email, and phone lines throughout project planning.
- Staff participation in dozens of one-on-one meetings with individuals, business owners/managers, organizations, and agencies in the proposed BLRT Extension project corridor.
- Partnership with staff preparing the *Bottineau Transitway Health Impact Assessment*, including one-on-one interviews with stakeholder organizations, such as Lao Assistance, Summit Academy, Asian Economic Development Association, Northwest Hennepin Human Services Council, Healthy Together Northwest Network, North Point Health and Human Services Center, Harrison Neighborhood Association, Neighborhood Hub, Jordan Neighborhood, Transportation Equity Partnership, African Career, Education, and Resource, Inc., and Redeemer Center for Life.

The diversity of project meetings, materials, and information sources resulted in the involvement of EJ communities in many different ways, including:

- Corridors of Opportunity organizations, neighborhood organizations, and advocacy groups organized their own BLRT Extension project meetings and used their contacts and networks to attract new participants and make the most of opportunities related to the proposed BLRT investment.
- Members of many EJ communities served on the CAC for the project, and they have helped to share project information within their communities.
- Throughout the Draft EIS phase, members of EJ communities met with project staff to express and resolve individual property or business issues related to the project.
- Project meetings and open houses were consistently held in EJ communities to facilitate attendance by members of EJ communities at these meetings.

7.3.2 Draft EIS Public Meetings and Comments

In May 2014, four public meetings were held along the proposed BLRT Extension project corridor at the University of Minnesota Urban Research and Outreach-Engagement Center, Golden Valley City Hall, Brooklyn Park City Hall, and Crystal Community Center. The Draft EIS document and several copies of the executive summary and comment forms were provided, a flyover simulation video was featured, and attendees were provided the opportunity to fill out comment forms, ask questions of project staff, view exhibit boards, and access information on other initiatives in the proposed BLRT Extension project corridor. Meeting attendees were provided an opportunity to offer verbal testimony regarding the Draft EIS, and translators were offered in the meeting notifications.

The public was notified of the meetings in a variety of ways, including: project and Hennepin County websites, emails to contact list, press releases, Federal Register and Minnesota Environmental Quality Board (EQB) *Monitor* publications, partnership with corridor cities and community groups providing notices, and hard copy notices and documents at local libraries and government offices.

A wide range of perspectives were shared through public testimony and comments obtained during and following the meetings. In total, 1,252 comments were received during the public review period, 76 of which were recorded verbally or written on comment cards at the public meetings.

7.3.3 Final EIS–Phase Focused Environmental Justice Outreach Activities

In January 2015, outreach events began for the Final EIS phase of the proposed BLRT Extension project with a number of community meetings to re-connect with the corridor communities and share project information. Through these meetings, as issues were discussed and the proposed BLRT Extension project outreach team learned more about the communities and project details were refined, the branches of outreach expanded and additional community organizations, neighborhood associations, businesses, and other groups were included.

The BLRT Extension project outreach team developed a strategy to focus its Final EIS–phase efforts on individual communities and property owners by dividing the proposed BLRT Extension project corridor into three segments (Brooklyn Park; Crystal, Robbinsdale, and Golden Valley; and Minneapolis), each with a different population base and set of project concerns. The BLRT Extension project outreach leader for each segment was selected based on knowledge and understanding of the segment, and outreach efforts focused in each segment were tailored to the communities involved.

Table 7.3-1 summarizes the major EJ issues addressed during the development of the Final EIS. These issues were identified from comments received on the Draft EIS and through outreach conducted. (See **Chapter 9** and **Appendix G** for non-EJ issues noted in comments received on the Draft EIS.)

As the table shows, commenters had concerns about access to parks and recreation facilities, the loss of housing with the proposed BLRT Extension project, transit-dependent population access to the new light rail transit (LRT) service, economic development opportunities with the proposed BLRT Extension project, potential increase in property values resulting in displacement of low-income residents, outreach strategies to engage underrepresented communities, and safety along Olson Memorial Highway (Trunk Highway [TH] 55). These concerns helped inform and guide the level and type of outreach and analysis to be included in the Final EIS. The table also shows the proposed BLRT Extension project actions in response to the concerns.

Table 7.3-1. Major Environmental Justice Issues Addressed during Final EIS Development

Area of Concern	Major Issues	Project Actions	Comment Received on Draft EIS?
Parks and Recreation	Economically disadvantaged youth of color would lose access to the healthier outdoor environment with diminished recreational experience in area parks.	Outreach team has enhanced coordination efforts and dissemination of project information with local community groups to discuss project effects, including no permanent impacts to recreational facilities in parks, and park enhancements such as new trails and improved accessibility to parks.	Yes
Acquisitions and Relocations	Concern over loss of housing with project, particularly with Alignment D2 (see Chapter 2) along Penn Avenue.	BLRT Extension project does not result in full property acquisitions or relocation of residents, avoiding the residential impacts of Alignment D2.	Yes
Transit	Transit-dependent populations in isolated low-income communities would not have access to the new LRT service, for example, residents in North Minneapolis near the D2 alignment.	New LRT service would be part of an integrated transit system, with feeder bus service connecting transit-dependent neighborhoods to proposed BLRT stations and complementary arterial bus rapid transit (BRT) along Penn Avenue to provide north Minneapolis neighborhoods with enhanced transit service.	Yes
Economic Development	Interest in equitable economic development opportunities near station locations for local residents.	Station Area Planning activities are considering public input in local development policies that would create economic development opportunities and guide land use.	Yes
	Concern over adverse impact on lower income populations due to increased property values near transit stations, resulting in the involuntary displacement of low-income residents.	The Council has an active affordable-housing program to help cities maintain a viable proportion of affordable housing in Metro Area cities. Outreach staff coordinating with Station Area Planning teams and local cities to share these concerns.	Yes
Public Engagement	Project should proactively engage underrepresented groups, particularly those who cannot attend meetings.	The outreach team has continued to work with the communities along the proposed BLRT Extension project corridor, partnering with local community groups and agencies, as well as often going door to door to speak to local residents.	Yes

The following organizations were engaged during the Final EIS phase, supporting minority groups and/or lower income individuals. Many of these organizations are members of the Blue Line Coalition, a group serving and representing low- to moderate-income people and various communities of color along the proposed BLRT Extension project corridor. Their mission is to enhance the community-based power and leverage that power in advancing local and regional equity, and strengthening healthy, safe communities.

- African American Leadership Forum[5]
- African Career, Education & Resource, Inc.[5]
- Afrifest Foundation
- Alliance for Metropolitan Stability[5]
- Asian Economic Development Association[5]
- Asian Media Access[5]
- Black Women in Business Alliance
- Brooklyn Area Ministerial Association
- Bryn Mawr Neighborhood Association
- Center for Asians and Pacific Islanders[5]
- Center for Urban & Regional Affairs
- Centro de Trabajadores Unidos en Lucha
- Cleveland Neighborhood Association
- City of Lakes Community Land Trust[5]
- Cycles for Change
- Global Fatherhood Foundation
- Harrison Neighborhood Association
- Heritage Park Neighborhood Association[5]
- HIRE MN
- Lao Assistance Center of Minnesota[5]
- La Asamblea de Derechos Civiles
- Masjid An-Nur[5]
- Metropolitan Consortium of Community Developers
- Metropolitan Interfaith Council on Affordable Housing[5]
- Minneapolis Regional Labor Federation
- Minneapolis Urban League
- Minnesota African Women's Association
- Native American Community Development Institute[5]
- Neighborhood Development Corporation
- Neighborhoods Organizing for Change
- North Hennepin Community College
- Northside Residents Redevelopment Council[5]
- Northwest Human Service Council
- Organization of Liberians in Minnesota
- Redeemer Center for Life
- Summit Academy OIC[5]
- Umunne Cultural Association
- Wayman AME Church
- Yes, Inc. (formerly Pro USA, Inc.)

The BLRT Extension project outreach team led or participated in over 170 events with members of the public and local stakeholders between January 7, 2015, and December 28, 2015, including a variety of committee/board meetings (for example, CAC, Business Advisory Committee, Blue Line Coalition), meetings with community organizations and neighborhood groups, project Open Houses, Station Area Planning meetings, and individual meetings with property owners and other interested persons.

In addition, outreach staff participated in a number of events sponsored by others, staffing tables or booths, distributing project information, and taking comments. Also, in January 2015, the Council's BLRT Extension Project Office (BPO) opened in the central part of the proposed BLRT Extension project corridor in the City of Crystal near the proposed Bass Lake Road Station. In addition to the

[5] Member of Blue Line Coalition

BPO being a shared space for staff working on the proposed BLRT Extension project, the BPO has hosted many outreach efforts and meetings with members of the public.

The outreach events occurred throughout the Final EIS phase, and feedback received from the meeting or event attendees was recorded and shared with the proposed BLRT Extension project team and considered in the refinement of the proposed BLRT Extension project and analysis of its environmental and social impacts. This iterative process engaged a wide cross-section of the study area, including every EJ community identified through initial US Census Bureau demographic data, as well as those identified through the outreach process. Through the outreach process the Council outreach staff identified a West African community in Crystal, a Liberian community in Brooklyn Park, and an Oromo community in Brooklyn Park. A summary of these outreach events is provided in **Table 7.3-2**.

Table 7.3-2. Summary of Final EIS–Phase Outreach Events

General Location	Number of Outreach Events	Type(s) of Meetings/Events						
		Meetings with Property Owners	Meetings with Community/Business Organizations	Participation in Other Community Events	Committee, Council, or Board Meetings	Project Open Houses	Station Area Planning Meetings	Meetings with Other Interested Individuals/Groups
Downtown / Olson Memorial Highway	2		X	X				
North Minneapolis	7		X	X	X		X	
Van White Boulevard Station area	20	X	X	X	X	X		X
Plymouth Avenue Station area	1			X				
Golden Valley – other	5		X		X	X		
Golden Valley Road Station area	5	X	X			X		X
Robbinsdale – other	3					X	X	
Robbinsdale Station area	11	X	X			X		X
Crystal – other	12	X			X	X	X	
Bass Lake Road Station area	5	X		X		X		
BLRT Extension Project Office[1]	19	X	X		X			X
Brooklyn Center	13		X		X			
Brooklyn Park – other	6	X	X	X				
Brooklyn Park civic area	21	X			X		X	X
63rd Avenue Station area	2	X		X				
Brooklyn Blvd. Station area	13	X	X			X		X
85th Avenue Station area	9		X	X		X	X	X
93rd Avenue / Oak Grove Parkway Station areas	6	X	X	X				
Outside proposed BLRT Extension project corridor	11		X		X			X

[1] Events occurring at BLRT Extension Project Office are not counted with Bass Lake Road Station area.

7.4 Environmental Justice Impacts Analysis

The FTA Circular (August 2012) defines a disproportionately high and adverse effect on human health or the environment to include an adverse effect that:

- Is predominantly borne by a minority population and/or a low-income population,
- Will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population

The FTA Circular (Section 2.C.2, *Determining Whether Adverse Effects are Disproportionately High*) states that, in making determinations regarding disproportionately high and adverse effects on minority and low-income populations, mitigation and enhancement measures that would be implemented and all offsetting benefits to the affected minority and low-income populations may be taken into account. This is particularly important for public transit projects because they often involve both adverse effects (such as short-term construction impacts and increases in bus traffic) and positive benefits (such as improved transportation options and connectivity, or overall improvement in air quality).

All environmental categories were reviewed to identify those environmental categories that would not result in any adverse effects, based on the analysis described in **Chapters 3 and 4** of this Final EIS. The environmental categories with no adverse effects identified were not considered for additional EJ analysis due to having no adverse effects and thus no potential for disproportionately high and adverse effects to EJ populations. Environmental categories that would result in adverse effects were retained to determine if and to what extent these adverse effects would affect EJ populations (that is, have the potential to be disproportionately high and adverse or predominantly borne by EJ populations). **Table 7.4-1** includes all environmental categories and shows whether each requires additional EJ analysis. The rationale for the selection of these categories is also provided.

Table 7.4-1. Environmental Categories Requiring Additional Environmental Justice Analysis

Environmental Category	EJ Analysis Required (yes/no)	Rationale
Transit Conditions – Section 3.1	Yes	Public comments on Draft EIS about transit access
Freight Rail Conditions – Section 3.2	No	No adverse impacts with construction-phase mitigation
Vehicular Traffic – Section 3.3	No	No adverse impacts with construction-phase mitigation
Pedestrians and Bicyclists – Section 3.4	No	No adverse impacts with construction-phase mitigation
Parking – Section 3.5	No	No adverse impacts with mitigation (construction and operating phases)
Aviation – Section 3.6	No	No adverse impacts
Land Use Plan Compatibility – Section 4.1	No	No adverse impacts
Community Facilities/Community Character and Cohesion – Section 4.2	No	No adverse impacts with construction-phase mitigation
Parks and Recreation – Section 4.2 and Chapter 8	Yes	Public comments on Draft EIS about park access
Displacement of Residents and Businesses – Section 4.3	Yes	Displacements of businesses may disproportionately affect EJ populations
Cultural Resources – Section 4.4	No	No Adverse Effect with mitigation
Visual/Aesthetics – Section 4.5	Yes	Impacts can be mitigated, but may disproportionately affect EJ populations
Economic Effects – Section 4.6	No	No adverse impacts
Safety and Security – Section 4.7	No	No adverse impacts with construction-phase mitigation
Utilities – Section 5.1	No	No adverse impacts with construction-phase mitigation
Floodplains – Section 5.2	No	No adverse impacts with operating-phase mitigation
Wetlands – Section 5.3	No	No adverse impacts with mitigation (construction and operating phases)
Geology, Soils, and Topography – Section 5.4	o	No adverse impacts with construction-phase best management practices (BMPs)
Hazardous Materials Contamination – Section 5.5	No	No adverse impacts with construction-phase mitigation
Noise – Section 5.6	Yes	Operating-phase impacts may disproportionately affect EJ populations
Vibration – Section 5.7	No	No adverse impacts, with mitigation (construction and operating phases)
Biological Environment – Section 5.8	No	No adverse impacts, with mitigation (construction and operating phases)
Water Quality and Stormwater – Section 5.9	No	No adverse impacts, with mitigation and BMPs (construction and operating phases)
Air Quality/Greenhouse Gas Emissions – Section 5.10	No	No adverse impacts with construction-phase mitigation and BMP; long-term benefit to greenhouse gases offsets construction-phase impacts

Table 7.4-1. Environmental Categories Requiring Additional Environmental Justice Analysis

Environmental Category	EJ Analysis Required (yes/no)	Rationale
Energy – Section 5.11	No	No adverse impacts
Indirect Impacts: Economic Effects – Section 6.2.2.6	Yes	Public comments on Draft EIS about economic development effects on property values

The following sections provide a description of additional EJ analysis for the six environmental categories identified as having potential for disproportionately high and adverse effects predominantly borne by EJ populations, including a summary of the EJ finding for each of the environmental categories evaluated. These EJ findings assess whether the anticipated impacts of the environmental categories evaluated would likely result in disproportionately high and adverse impacts on minority and low-income populations. This assessment includes consideration of offsetting benefits the proposed BLRT Extension project would have on minority and low-income populations, as well as consideration of mitigation measures identified throughout this Final EIS. The proposed BLRT Extension project's final project-wide EJ finding is included in **Section 7.5**.

7.4.1 Transit

7.4.1.1 Transit Access

Access to transit and alternative modes of transportation is most critical to populations that have limited or no access to personal vehicles. As **Table 7.4-2** shows, 13.2 percent of the households in the study area do not have access to a vehicle. In Hennepin County, 10.1 percent of the households do not have access to a vehicle. The EJ communities with concentrations of no-vehicle households near the proposed LRT stations would receive a benefit from the proposed BLRT Extension project by having easy access to destinations throughout the regional network.

Throughout the development of the Alternatives Analysis and the Draft EIS, the public and project stakeholders expressed concern about the North Minneapolis EJ community's access to the proposed BLRT Extension project (then referred to as Alternative B-C-D1). Many stakeholders commented at meetings and on the Draft EIS that the other similar alternative considered, Alternative B-C-D2, would provide the EJ community in North Minneapolis with better access to the LRT since it would extend along Penn Avenue and would be more centrally located within this EJ community. The Policy Advisory Committee selected Alternative B-C-D1 as the locally preferred alternative over Alternative B-C-D2 because it would result in significantly less property and neighborhood impacts, improved travel time, greater cost-effectiveness, and less disruption of roadway traffic operations (see **Section 2.4** for more detail on the process for selecting the locally preferred alternative). The Draft EIS found that Alternative B-C-D2 had the potential for long-term disproportionately high and adverse impacts to EJ communities, including 105 residential displacements, 270 net parking spaces lost, changes in community character, and visual quality impacts from the introduction of LRT on a relatively narrow roadway. The disproportionately high

and adverse impacts to EJ populations outweighed the benefits of this alternative. The selected Alternative B-C-D1 (the proposed BLRT Extension project) would provide transit access to EJ populations without the associated impacts to EJ populations in North Minneapolis.

Since the selection of Alternative B-C-D1 (the proposed BLRT Extension project), the Penn Avenue corridor in North Minneapolis has been incorporated by the Council into a proposed BRT line known as the C Line. The proposed C Line and stations would be adjacent to the proposed BLRT Extension project corridor and would directly serve the high concentration of EJ populations in the North Minneapolis community. The proposed C Line supplements the proposed BLRT Extension project by providing a similar level of enhanced transit service and access to downtown Minneapolis to the populations that would have been served by the D2 alignment studied in the Draft EIS.

The proposed C Line BRT service would supplement existing Route 19. Presently, travel time on Route 19 from downtown Minneapolis to the Brooklyn Center Transit Center is approximately 46 minutes, and the C Line BRT would make the trip in approximately 35 minutes (Metro Transit, 2015), The C Line would include 10-minute headway during peak times, train-like features (pre-pay), enhanced station amenities (real-time departure signage and maps), enhanced security, and specialized vehicles.

During the development of the Final EIS, the Council evaluated the need to include both Plymouth Avenue and Golden Valley Road stations in the proposed BLRT Extension project (see **Section 2.5**, Technical Issue 4). The issue of whether to include both stations was of particular concern to the EJ community because the Plymouth Avenue Station would serve the adjacent EJ population in North Minneapolis. In response to input from the public and other stakeholders, both stations are included in the proposed BLRT Extension project.

Table 7.4-2. Vehicles Available per Household by State, Region, County, and Study Area

Geography		Total Households	Households with No Vehicle Available	One Vehicle	Two or More Vehicles
Seven-county Twin Cities Metropolitan Area	Total	1,131,621	90,372	368,248	673,001
	%	100.00%	8.00%	32.50%	59.50%
Hennepin County	Total	481,263	48,771	174,647	257,845
	%	100.00%	10.10%	36.30%	53.60%
Minneapolis	Total	165,438	30,064	70,249	65,125
	%	100.00%	18.20%	42.50%	39.40%
Golden Valley	Total	8,685	416	2,970	5,299
	%	100.00%	4.80%	34.20%	61.00%
Robbinsdale	Total	5,999	756	2,236	3,007
	%	100.00%	12.60%	37.30%	50.10%
Crystal	Total	9,133	585	3,201	5,347
	%	100.00%	6.40%	35.00%	58.50%
Brooklyn Park	Total	26,342	1,922	7,856	16,564
	%	100.00%	7.30%	29.80%	62.90%
Study area	Total	36,317	4,808	14,303	17,206
	%	100.00%	13.20%	39.40%	47.40%

Source: US Census Bureau American Community Survey 2009 –2013 5-Year Estimates, Table B25044: Tenure by Vehicles Available (US Census Bureau, 2014)

To meet the needs of the region, including the transit-dependent populations identified above, Metro Transit, the region's transit service provider, has an existing network of urban local bus routes and suburban express bus routes, light rail, and commuter rail, providing connectivity throughout the Twin Cities area.

Metro Transit intends to implement a comprehensive Regional Transitway System by 2040 that would include, in addition to the proposed BLRT Extension project, the following planned services:

- **Green Line Extension (LRT) / "Southwest LRT"** –14.5-mile extension of the existing Green Line ("Central Corridor LRT") that would provide additional service to the growing communities of Minneapolis, St. Louis Park, Hopkins, Minnetonka, and Eden Prairie.
- **Orange Line (Bus Rapid Transit [BRT])** –17-mile METRO Orange Line BRT service on Interstate Highway 35W (I-35W) that would connect Minneapolis, Richfield, Bloomington, and Burnsville.
- **Red Line Extension (BRT) / "Cedar Avenue Transitway"** – extension of the existing Red Line BRT that would add an additional five stops to the south of the existing termination at the Apple Valley Transit Station.
- **Gold Line (BRT) / "Gateway Corridor"** – 12-mile BRT line connecting downtown St. Paul with its eastern suburbs including Woodbury and Lake Elmo.

Metro Transit is also planning an Arterial BRT Program that would include BRT services along urban corridors with existing high-ridership bus routes, as described below:

- **A Line BRT ("Snelling BRT")** – BRT service along Snelling Avenue, Ford Parkway, and 46th Street, connecting to the Blue Line at 46th Street, and serving a commercial corridor.
- **C Line BRT ("Penn Avenue BRT")** – BRT line connecting Downtown Minneapolis with the Brooklyn Center Transit Center along Olson Memorial Highway and Penn Avenue, serving the North Minneapolis neighborhood.

Moreover, Metro Transit would modify existing bus routes to be most efficient after implementation of the proposed BLRT Extension project, reducing redundancy and maximizing connectivity. The 2040 Feeder Bus Plan, currently under development, would extend the reach of accessibility to the Blue Line beyond just those within the vicinity of the proposed stations, but also along each of these feeder lines. The service areas of the feeder bus routes would also include EJ populations that would benefit from the proposed BLRT Extension project.

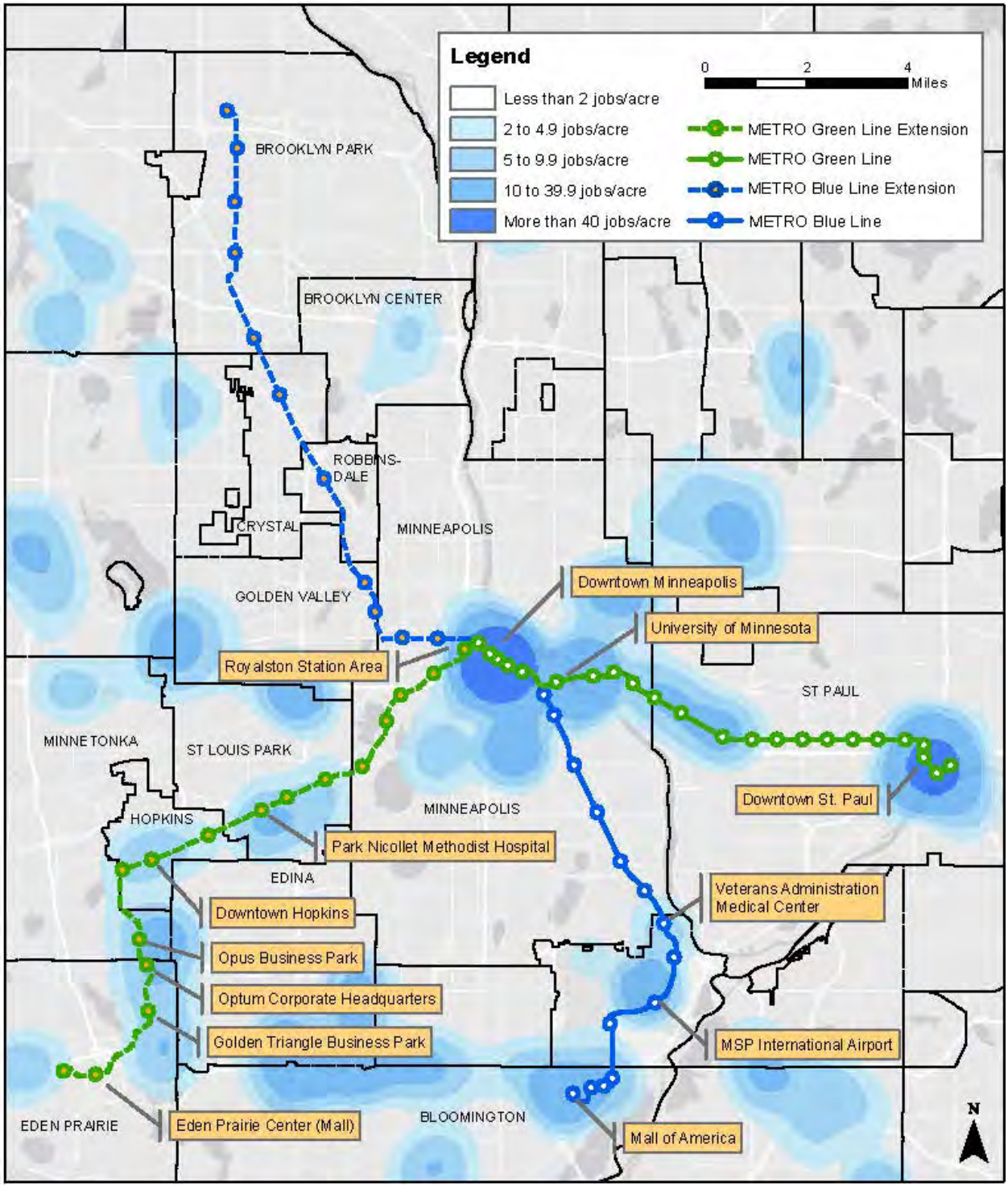
7.4.1.2 Transit Connectivity

The workforce in the Twin Cities region is distributed among Downtown Minneapolis, Downtown St. Paul, the Mall of America/Minneapolis–St. Paul International Airport area, and a number of other employment centers, as shown in **Figure 7.4-1**. Areas in darker shades of blue show denser concentrations of jobs per acre, and these areas are located predominantly along existing and planned LRT lines.

Along the proposed BLRT Extension project corridor, key employment and other destinations include Target Headquarters, North Memorial Medical Center, a number of colleges (for example, Rasmussen College – Brooklyn Park Campus, North Hennepin Community College, Hennepin Technical College, Minnesota International University), shopping centers (for example, Park Square Shopping Center, Crystal Shopping Center, Wal-Mart Super Center), and several other public and community facilities.

In addition to the destinations described above, the proposed BLRT Extension project would provide a one-seat ride that would connect riders to downtown Minneapolis, Viking Stadium, the VA Medical Center, Minneapolis–St. Paul International Airport, and the Mall of America. Numerous other key destinations are available with a transfer to the Green Line, including downtown St. Paul, University of Minnesota, and a number of other public and health facilities, business parks, and shopping centers.

Figure 7.4-1. Twin Cities Regional Job Concentrations Served by Light Rail



7.4.1.3 Finding

The area served by the proposed BLRT Extension project would benefit substantially from implementation of the proposed BLRT Extension project. The proposed BLRT Extension project would serve the EJ community in North Minneapolis by including stations at Van White Boulevard, Penn Avenue, and Plymouth Avenue in the proposed BLRT Extension project area and would connect with the proposed C Line BRT along Penn Avenue. The new light rail line would provide connections with existing bus routes, LRT lines, BRT lines, and commuter rail, as well as transit services planned for the future. For transit-dependent populations, which are often low-income and minority populations, the enhanced transit connectivity provides greater access to employment opportunities, services, shopping, and recreation.

Not only are no adverse impacts anticipated during the operation of the proposed BLRT Extension project, but the benefits are substantial for EJ populations. Therefore, the proposed BLRT Extension project *will not have a disproportionately high and adverse impact on EJ populations related to transit*.

7.4.2 Parks and Recreation

7.4.2.1 Construction-Phase (Short-Term) Impacts

The construction of the proposed BLRT Extension project may result in temporary modifications to roadways and/or pedestrian or bicycle facilities that would change park access patterns. Construction may also result in temporary noise, vibration, and air quality impacts at parks proximate to construction activities.

In addition to potential short-term access; noise, vibration, and air quality impacts might affect parks; temporary easements from Theodore Wirth Regional Park (TWRP) would be required to construct the proposed BLRT Extension project guideway north of Olson Memorial Highway where it transitions from the street right-of-way to the BNSF Railway (BNSF) rail corridor. TWRP is located adjacent to an EJ area, but any impacts from construction would be temporary and occur in limited areas of this large park.

Construction of the proposed BLRT Extension project would require temporary occupancy of both Sochacki Park: Mary Hills Management Unit for grading, and Sochacki Park: Sochacki Management Unit for construction access and staging. Also, a temporary occupancy of Becker Park would be needed to reconstruct the sidewalk/trail from the park to the Bass Lake Road Station which may temporarily impact park facilities and recreation opportunities. The proposed BLRT Extension project would restore these parks to pre-construction conditions; moreover, the proposed BLRT Extension project would include enhancements to Sochacki Park to mitigate for the temporary occupancy.

All construction impacts are temporary and no adverse construction-phase impacts resulting from the proposed BLRT Extension project are identified; therefore, there is no potential for any high and adverse construction impacts to be disproportionately borne by EJ populations.

7.4.2.2 Operating-Phase (Long-Term) Impacts and Benefits

Operating-phase effects on EJ populations are discussed below for parks that serve EJ populations near parks or serve as destinations for EJ populations using the proposed BLRT Extension. The proposed BLRT Extension project includes stations that are located within a half mile or less of many parks. Most of these are small parks with limited facilities and are more likely to serve populations that live near these parks than to be a destination point for proposed BLRT Extension project riders. However, there are some larger parks, such as TWRP and Sochacki Park, that are destinations for regional populations and their location in proximity to the proposed BLRT Extension project, particularly the Plymouth Avenue and Golden Valley Road stations, allows transit-dependent populations to access them more easily. All parks along the proposed BLRT Extension project corridor are described in greater detail in **Section 4.2**.

Theodore Wirth Regional Park

The proposed BLRT Extension project borders the eastern boundary of TWRP within an existing BNSF rail corridor. The proposed BLRT Extension project would require permanent easements from TWRP; however, these easements are not anticipated to impact park facilities or recreational use.

Some of the TWRP walking trails and cross country ski trails are near the proposed BLRT Extension project alignment. Deciduous trees currently provide some visual screening of the existing rail corridor; their buffering effect would be reduced as a result of leaf loss during the winter months. Recreational users of the park during these months may see elements of the proposed BLRT Extension project not visible during spring and summer months; however, these effects would be borne by both EJ and non-EJ users of the park.

In addition, the existing TWRP trail that runs adjacent to Bassett Creek near Plymouth Avenue would be relocated to the west and out of the BNSF right-of-way. Enhanced trail connections providing greater levels of connectivity with the regional trail system and the proposed Plymouth Avenue Station are being considered. The proposed BLRT Extension project includes a trailhead at the eastern corner of the proposed Golden Valley Road Station park-and-ride and the new Golden Valley Road bridge would be designed to accommodate a new trail connection under the bridge between TWRP and Sochacki Park: Mary Hills Management Unit and Sochacki Park: Sochacki Management Unit.

The proposed BLRT Extension project would improve access to TWRP not only for those living within the vicinity of the park, but also for regional users, including transit-dependent EJ populations, via the Plymouth Avenue and Golden Valley Road stations. The changes to the trail system would not impact the community, which includes a low-income neighborhood with a high percentage of minorities (predominantly African-American/black) to the east of the park.

Sochacki Park: Mary Hills Management Unit / Sochacki Park: Sochacki Management Unit / Glenview Terrace Park / South Halifax Park

Sochacki Park: Mary Hills Management Unit, Sochacki Park: Sochacki Management Unit, South Halifax Park, and Glenview Terrace Park are located north of TWRP in in the cities of Golden Valley and Robbinsdale. Sochacki Park: Mary Hills Management Unit (City of Golden Valley) and Sochacki Park: Sochacki Management Unit (City of Robbinsdale) are located on the western side of the existing BNSF tracks (proposed BLRT Extension project corridor) and connected by a meandering trail system. Glenview Terrace Park (City of Golden Valley) and South Halifax Park (City of Robbinsdale) are located on the eastern side of the tracks. These parks are located in areas of high concentrations of EJ populations.

The proposed BLRT Extension project would require a very small permanent easement from Glenview Terrace Park at its western edge; however, the active uses of the park are well buffered from this area by a ravine and wooded area and would not be noticeably affected. This impact to the park property would not impact users of the park.

For all four parks, increased transitway operations would have no direct impact on the recreational features of the parks and minimal impact on the enjoyment of the park for users closer to the rail corridor. The trail connecting Sochacki Park: Mary Hills Management Unit and Sochacki Park: Sochacki Management Unit generally parallels the existing rail corridor, with deciduous vegetation providing some visual screening. The recreational experiences of this park resource may be lessened because of the effects of increased transitway operations and change in setting.

As noted above, construction of the proposed BLRT Extension project would require temporary occupancy of Sochacki Park in addition to subsequent restoration of this amenity to at least as good as its pre-construction condition with added enhancements. The long-term enhancements to the park would include a trail connection between Sochacki Park and TWRP with a tie-in to the Bassett Creek Regional Trail, and a paved trail that extends to the northern park entrance, all in accordance with the Sochacki Park Conceptual Master Plan. See **Chapter 8** of this Final EIS for more details. These enhancements would improve the recreational functions of the park for all users, including the EJ populations in nearby communities.

Finally, construction of the proposed BLRT Extension project would require closing the existing informal and prohibited crossings of the BNSF track at Sochacki Park. Fences or other barriers to discourage pedestrian crossings would be necessary in these locations to preserve pedestrian safety near the LRT and freight tracks. In lieu of this prohibited crossing, users would be able to safely cross between Sochacki Park and Glenview Terrace Park or between Sochacki Park and South Halifax Park via pedestrian improvements at the Golden Valley Road Station to the south or via the reconstructed 36th Avenue bridge to the north about three-quarters of a mile south of the Robbinsdale Station. While the two options create an indirect path for park users than directly crossing over the BNSF tracks, it allows for a safe and secure access to both users of the parks and to the railroads and transit operations.

Triangle Park / Lee Park

Triangle Park is located just south of the proposed Robbinsdale Station and Lee Park is located approximately 0.4 mile from the Robbinsdale Station, both in areas with concentrations of EJ populations. Lee Park is bordered by the BNSF rail corridor on the east, with fencing providing a barrier between the rail corridor and the park. The fencing is expected to remain, thereby providing a barrier between park activities and transitway operations. Triangle Park is located adjacent to the proposed BLRT Extension project alignment, and the perimeter of the park is bounded by chain-link fencing. Neither park would be affected by the proposed BLRT Extension project. Moreover, the proximity of these parks to the Robbinsdale Station would improve access to the parks by local and regional EJ populations.

Becker Park

Becker Park is a 12.4-acre park in the City of Crystal that provides amenities and programs that serve as resources not only for users in the local neighborhood but also for visitors outside of the area (Hennepin County, 2013). The park is located directly west of the proposed Bass Lake Road Station, east of the BNSF and LRT tracks, and in the vicinity of high percentages of EJ populations.

The proposed BLRT Extension project includes pedestrian improvements on Bass Lake Road that would connect the station with Becker Park. For safety reasons, the proposed BLRT Extension project would also include fencing along the eastern boundary of the park that would provide a barrier to the existing railroad and the transit station. South of Bass Lake Road, the proposed BLRT Extension project also includes improved pedestrian crossings of the LRT tracks at West Broadway Avenue (County State-Aid Highway 103; about 1 mile south of the Bass Lake Road Station) and Corvallis Avenue (about two-thirds of a mile south of the Bass Lake Road Station), further increasing accessibility of the park to users. Becker Park would not be adversely impacted with the proposed BLRT Extension project; however, improved access and connectivity would be a benefit for all users, including local and regional EJ populations.

7.4.2.3 Finding

Data from the Metropolitan Regional Parks and Trails 2008 survey presented in the *Bottineau Transitway HIA* (Hennepin County, 2013) shows that the majority of visitors to the Metropolitan Regional Park and Trail system access these facilities by car, truck, recreational vehicle (RV), or van. For populations that do not live close enough to walk to these parks and have limited vehicle access, these parks and the low-cost opportunities for physical activity they offer may be out of reach. Improved transit service to the parks in the study area would increase physical activity accessibility for EJ populations.

The permanent easements from park properties required with the proposed BLRT Extension project would not result in impacts to park users, and the proximity of the parks to the rail corridor and transitway operations would not substantially affect the enjoyment of the parks. Therefore, the proposed BLRT Extension project *will not have a disproportionately high and adverse impact on EJ populations related to parks and recreation*.

7.4.3 Displacement of Residents and Businesses

7.4.3.1 Effects on Businesses

Property acquisitions would affect 291 properties in the study area, including residential (207 partial acquisitions, one full acquisitions), commercial (42 partial and 11 full acquisitions), industrial (18 partial and two full acquisitions), and public land (10 partial acquisitions). The partial acquisitions most commonly involve a strip of land needed to widen an existing transportation right-of-way. No residences would be displaced; however, 10 businesses would be displaced as described in **Table 7.4-3**.[6]

Table 7.4-3. Business Displacements and Environmental Justice Owner Status

Location	Name of Displaced Business or Property	EJ Owner or Tenant?	Serving EJ Community?
4740 42nd Avenue North, Robbinsdale	Sawhorse	No	Yes
4719 42nd Avenue North, Robbinsdale	EMI Audio	No	Yes
4165 Hubbard Avenue North, Robbinsdale	Northside Oriental Market	Yes – owner/tenant	Yes
4900 West Broadway Avenue, Crystal	Steve O's Restaurant	No	Yes
5501 Lakeland Avenue North, Crystal	Schrader Building – office building with 4 tenants	Yes – tenant	Yes
7308 Lakeland Avenue North, Brooklyn Park	American Furniture Mart	No	Yes
7300 Lakeland Avenue North, Brooklyn Park	Modern Dental Studio	Yes – owner	Yes

Based on the extensive public outreach as described in **Section 7.4**, and as shown in the table, some of the businesses are minority-owned. As described in more detail in **Section 4.3**, loss of private property would be mitigated by payment of fair market compensation and provision of relocation assistance in accordance with the Uniform Relocation Act. For these non-residential displacements, the following would be provided to both EJ and non-EJ business operators:

- Relocation advisory services
- Minimum 90 days written notice to vacate prior to requiring possession
- Reimbursement for moving and reestablishment expenses

[6] The full acquisitions listed do not necessarily match the number of displacements, since several of the full acquisitions are vacant parcels that are zoned commercial or residential. A vacant parcel is counted as an acquisition in the category that matches how the parcel is zoned, but is not counted as a displacement since there is no residence or business to be displaced.

7.4.3.2 Effects on Employees and Customers

In addition to the property and business owners, displacement of businesses also has the potential to affect employees and customers of these establishments. All businesses that would be displaced are located within or adjacent to EJ areas, and thus may have minority or lower-income employees and/or customers. As described above, displaced businesses would be provided assistance with relocation and reestablishment expenses. Employees of each of the businesses may be minority or lower-wage hourly workers that would potentially have a longer or different commute to the new business site after the relocation or may opt for alternate employment. The potential effects of the displacement of businesses with the proposed BLRT Extension project on their customers are described below.

- **Sawhorse** is a design and building company specializing in residential home remodeling throughout the Twin Cities. Given the nature of this enterprise, it is unlikely that EJ populations use and rely on this business more than non-EJ populations. The business serves the entire Twin Cities area and potential relocation to another neighborhood would not substantially impact its customer base. Therefore, the displacement of Sawhorse would not result in disproportionately high and adverse impacts to EJ populations.
- **EMI Audio** provides lighting and audio/visual rental equipment, as well as design, sales, installation, repair, and service of audio equipment. Given the nature of this enterprise, it is unlikely that EJ populations use or rely on this business more than non-EJ populations.
- **Northside Oriental Market** is a relatively small grocery store specializing in Asian foods. The displacement of this enterprise has the potential to impact the EJ community it serves.
- **Steve O's Restaurant** is a local bar and restaurant serving traditional American barbeque and grill cuisine, serving the residents of the EJ community in which it is located as well as other patrons.
- **The Schrader Building** is a 14,000-square-foot, two-story office building with multiple suites. The building is owned by ALS Properties and their headquarters currently occupies a portion of the building. The property tenants consist of the following businesses:
  - **Hart Custom Homes / ALS Properties / Venture Real Estate Services** own the Schrader Building. This company sells, transports, and installs manufactured homes and also develops and manages manufactured housing communities throughout the Midwest. Given the nature of this enterprise, residents of the EJ community in which it is located may utilize this business.
  - **United Staffing, Inc.** is a minority-owned business with headquarters in Bloomington, Minnesota and locations throughout the country that helps connect businesses with employees. Given the nature of this enterprise, the EJ community in which this business is located may rely on this business.
  - **Andrew C. Frasier, CPA** provides personal financial and tax guidance to individuals and businesses and may serve the EJ community in which it is located.
  - **Brianna's Hair Studio** provides hair care services, specializing in ethnic hair styling and care and serves the EJ community in which the business is located.

- **American Furniture Mart** sells pre-owned, hotel liquidation, closeout, and discontinued furniture for discounted prices and may serve the EJ community in which the business is located.
- **Modern Dental Studio Inc.** provides dental services to patients and may serve the EJ community in which it is located.

7.4.3.3 Finding

- As described above, both EJ and non-EJ business and property owners would be compensated consistent with state and federal requirements. The Council shall identify relocation sites by working with the business owners through the right-of-way acquisition process. Relocation sites shall be considered based on the business owners' preferences to retain their client base and/or continue to serve a similar population. Relocation expenses shall be considered consistent with state and federal requirements. Therefore, the required property acquisitions *will not be disproportionately high and adverse on EJ business owners* displaced with the proposed BLRT Extension project.
- Since it is unknown at this time whether businesses would relocate within the same community, the result of the displacements of the five businesses noted above may have the potential for disproportionately high and adverse effects on EJ populations in the communities currently served by the businesses. The specific businesses cited above that likely have a predominantly minority and/or low-income clientele include: Northside Oriental Market; American Furniture Mart; Unified Staffing, Inc. (tenant of Schrader Building); Hart Custom Homes (owner and tenant of Schrader Building); and Brianna's Hair Studio (tenant of Schrader Building). For impact on the communities served by the displaced businesses, the Council shall provide notices to the affected EJ community with the business' new location (if a suitable relocation was identified) with transit options to access the new business location, and/or other options to meet their needs. Since it is unknown at this time whether businesses would relocate within the same community, the result of the displacements of the five businesses noted above would have the potential for disproportionately high and adverse effects on EJ populations in the communities currently served by the businesses.

7.4.4 Visual/Aesthetics

7.4.4.1 Construction-Phase (Short-Term) Impacts

Visual impacts from construction of the proposed BLRT Extension project may include the temporary presence of heavy equipment, transport and delivery of construction materials and equipment, pedestrian and traffic control measures and detours, and other construction activities such as the use of staging areas. Staging areas would be restored to pre-project conditions after completion. Particularly noticeable construction activities to sensitive viewer groups, in areas with concentrated EJ populations, include:

- The reconstruction of the Olson Memorial Highway Bridge over Interstate Highway 94 (I-94) to create adequate width for the transitway would be highly visible to travelers along I-94 and Olson Memorial Highway.
- Construction work at TWRP, Sochacki Park, South Halifax Park, Rice Lake Park, and Sochacki Park: Mary Hills Nature Area, particularly the reconstruction of the westbound Olson Memorial Highway bridge over the BNSF rail corridor, would likely be perceived as undesirable and not consistent with users' anticipated recreational experience.
- The reconstruction of the BNSF bridge over TH 100 to create adequate width for the transitway would be highly visible to travelers along northbound TH 100. Where the transitway passes along residential neighborhoods, the construction activity would likely be perceived as more visually disruptive to these typically peaceful residential settings.

Implementation of mitigation measures would help to reduce the impacts of construction of the proposed BLRT Extension project on sensitive viewer groups in the proposed BLRT Extension project area. Mitigation measures during construction include limiting pre-construction clearing, preserving existing vegetation wherever possible, revegetating after construction, avoiding locating staging areas adjacent to high-sensitivity receptors, and minimizing light disturbance during construction.

7.4.4.2 Operating-Phase (Long-Term) Impacts

Project implementation would not result in a substantial change to the visual character of the study area as a whole. The majority of visual quality changes resulting from the proposed BLRT Extension project described in **Section 4.5** is considered "neutral" (either before or after mitigation). However, substantial visual effects (either substantially altered views or adversely impacted visual features) would occur in some areas:

- **Boulevard and median trees along Olson Memorial Highway west of I-94 in the City of Minneapolis:** Visual impacts to the Olson Memorial Highway center median would be substantial, as young trees would need to be removed for the transitway alignment. After the transitway is constructed in the center median, there would not be adequate space for new trees. However, trees at the highway edges would remain and continue to support the "gateway" appearance of the study area.

- **Theodore Wirth Regional Park in the City of Golden Valley:** Visual impacts to TWRP would be substantial since views to the BNSF right-of-way may be opened up by grading and vegetation thinning for the transitway. Additional features, such as catenary wires, support poles, tracks, and light rail vehicles, would add visual intrusions to the perceived "natural" character of the park, beyond the existing railroad and overhead utilities.
- **Bassett Creek and Bassett Creek Lagoon in the City of Golden Valley:** Visual impacts to Bassett Creek and Bassett Lake would be substantial. Project features would add visual intrusions to the perceived natural character of the parks beyond the existing railroad and overhead utilities.
- **Sochacki Park, South Halifax Park, Rice Lake, and Mary Hills Nature Center:** Visual impacts to these parks would be substantial. Similarly to TWRP, the additional features of the transitway would add visual intrusions to the perceived natural character of the parks.
- **Green Boulevard on west side of West Broadway Avenue between 47th Avenue and TH 100 in the cities of Robbinsdale and Crystal:** The construction of the transitway would require the removal of some mature trees and reduce the width of the green space separating the roadway and railroad. Visual effects would be substantial.
- **Bass Lake Road Station Area in the City of Crystal:** The proposed pedestrian bridge over Bottineau Boulevard would be a prominent visual feature, altering the viewshed at this location and resulting in substantial effects to visual quality. However, the new structure would not be out of character with the varied land uses (retail, commercial, transportation, etc.) at this location.
- **LRT corridor between Bass Lake Road Station and 62nd Avenue in the City of Crystal:** Between the proposed Bass Lake Road Station and the proposed 63rd Avenue Station in the City of Crystal, many existing residences already have a partial or full view of the existing rail corridor. Existing vegetation provides visual screening of the existing BNSF rail corridor and would also provide visual screening of the proposed LRT vehicles. However, in order to construct the proposed LRT alignment, vegetation removal, such as tree clearing, is proposed for portions of the BNSF right-of-way. Impacts on visual quality would be substantial.
- **63rd Avenue Station Area in the City of Brooklyn Park:** The proposed 63rd Avenue park-and-ride and pedestrian bridge over the BNSF rail corridor would be prominent visual features, altering the viewshed at this location and resulting in substantial effects to visual quality. However, the new structures would not be out of character with the varied land uses (retail, commercial, transportation, etc.) at this location.
- **73rd Avenue/Bottineau Boulevard Area:** While the proposed BLRT Extension project is designed to minimize impacts on land uses/private property, the proposed 73rd Avenue/Bottineau Boulevard bridge would result in the acquisition of commercial property to the south of the Brooklyn Boulevard Station. The new bridge would be a prominent visual feature, altering the viewshed and resulting in substantial effects to visual quality. However, the new bridge would not be out of character with the varied land uses (retail, commercial, transportation, etc.) at this location.
- **Rush Creek Regional Trail and Area:** The proposed Operations and Maintenance Facility (OMF) would be a prominent visual feature, altering the viewshed along the Rush Creek Regional Trail near the northern terminus of the proposed BLRT Extension project alignment. The new facility

would introduce a large structure to an otherwise minimally developed area. Further, the new OMF would alter views for recreational users, resulting in substantial effects to visual quality.

At locations where adverse visual effects are anticipated, mitigation measures include minimizing operational night lighting (minimizing glare and illumination of areas in the immediate vicinity of the proposed BLRT Extension project while maintaining lighting for safety and security) and screening project facilities using landscaping or walls consistent with applicable local policies and compatible with the character of the neighborhood to screen sensitive receptors and soften visual changes.

7.4.4.3 Finding

Based on a review of the distribution of project-related visual quality impacts throughout the study area and after the consideration of visual quality mitigation to be implemented by the proposed BLRT Extension project, the visual quality impacts are not disproportionately borne by EJ populations or appreciably more severe than those suffered by the non-EJ populations. Therefore, the proposed BLRT Extension project *will not have a disproportionately high and adverse impact on EJ populations related to visual quality*.

7.4.5 Noise

7.4.5.1 Construction-Phase (Short-Term) Impacts

Elevated noise levels from construction activities are, to a degree, unavoidable for this type of project. The proposed BLRT Extension project would require that construction equipment be properly muffled and in proper working order. While the proposed BLRT Extension project construction contractors are exempt from local noise ordinances, they will comply with applicable local noise restrictions and ordinances to the extent that is reasonable. Advanced notice would be provided to affected communities of any planned abnormally loud construction activities. It is anticipated that night construction may sometimes be required to minimize traffic impacts and to improve safety; however, construction would be limited to daytime hours as appropriate.

Excessive noise-generating activities, such as construction of retaining walls and bridges, would occur at multiple locations in the study area in both EJ and non-EJ areas. The primary means of mitigating noise from construction activities is to require the contractors to prepare a detailed Noise Control Plan. Key elements of the Plan would include:

- Contractor's specific equipment types
- Schedule and methods of construction
- Maximum noise limits for each piece of equipment with certification testing
- Prohibitions on certain types of equipment and processes during the nighttime hours without local agency coordination and approved variances
- Identification of specific sensitive sites near construction sites
- Methods for projecting construction noise levels
- Implementation of noise control measures where appropriate
- Methods for responding to community complaints

Temporary adverse impacts to noise levels resulting from the proposed BLRT Extension project would be experienced by those living within close proximity to the proposed BLRT Extension project alignment, particularly where retaining walls and or bridges would be constructed due to pile driving.

7.4.5.2 Operating-Phase (Long-Term) Impacts

With the proposed BLRT Extension project and prior to mitigation, there would be 368 moderate and 623 severe noise impacts at residential and institutional locations along the proposed BLRT Extension project alignment. The majority of the noise impacts are due to the sounding of LRT horns at at-grade crossings, primarily those shared with existing freight operations.

The primary mitigation measure would be the implementation of Quiet Zones[7] at the shared at-grade crossings. This would eliminate the LRT horn sounding and would have the added benefit of eliminating the freight horns as well. With the implementation of Quiet Zones at all FRA-shared at-grade crossings, the number of noise impacts would be reduced to 175 moderate noise impacts and 120 severe noise impacts. At residences where residual noise impacts would remain after the implementation of the Quiet Zones, wayside devices, noise barriers, interior testing would be used for mitigation, as shown in **Table 5.6-7** in **Chapter 5** of this Final EIS. Should any of the municipalities decide not to apply to FRA for Quiet Zones, this decrease in moderate and severe noise impacts would not be achieved and residual noise impacts would not be mitigated. With the proposed mitigation measures, the majority of residential noise impacts would be eliminated. In the few locations where moderate and severe noise impacts would still occur, both EJ and non-EJ populations reside nearby (see **Table 5.6-7** for residual noise impacts with mitigation in the cities of Minneapolis, Golden Valley, and Robbinsdale).

7.4.5.3 Finding

Based on a review of the distribution of proposed BLRT Extension project–related moderate and severe noise impacts throughout the study area (see **Table 5.6-7**) and after the consideration of noise mitigation to be implemented by the proposed BLRT Extension project, the residual noise impacts are not disproportionately borne by EJ population or appreciably more severe than those suffered by the non-EJ population. Therefore, the proposed BLRT Extension project *will not have a disproportionately high and adverse impact on EJ populations related to noise*.

[7] Quiet Zones are locations, at least one-half mile in length, where the routine sounding of horns has been eliminated because of safety improvements at at-grade crossings, including modifications to the streets, raised median barriers, four quadrant gates, and other improvements designed and implemented as a part of the proposed BLRT Extension project and consistent with Quiet Zone readiness. Horns are sounded in emergency situations at these locations. Municipalities must apply to FRA for approval of Quiet Zones.

7.4.6 Indirect Impacts and Cumulative Effects

Potential indirect impacts on EJ populations could result from increased development and redevelopment in the station areas. While not every station area is likely to see significant 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 study area, low-income persons may experience them to a greater extent and, particularly if they rent rather than own property, more likely as an adverse impact (**Figure 7.4-2**).

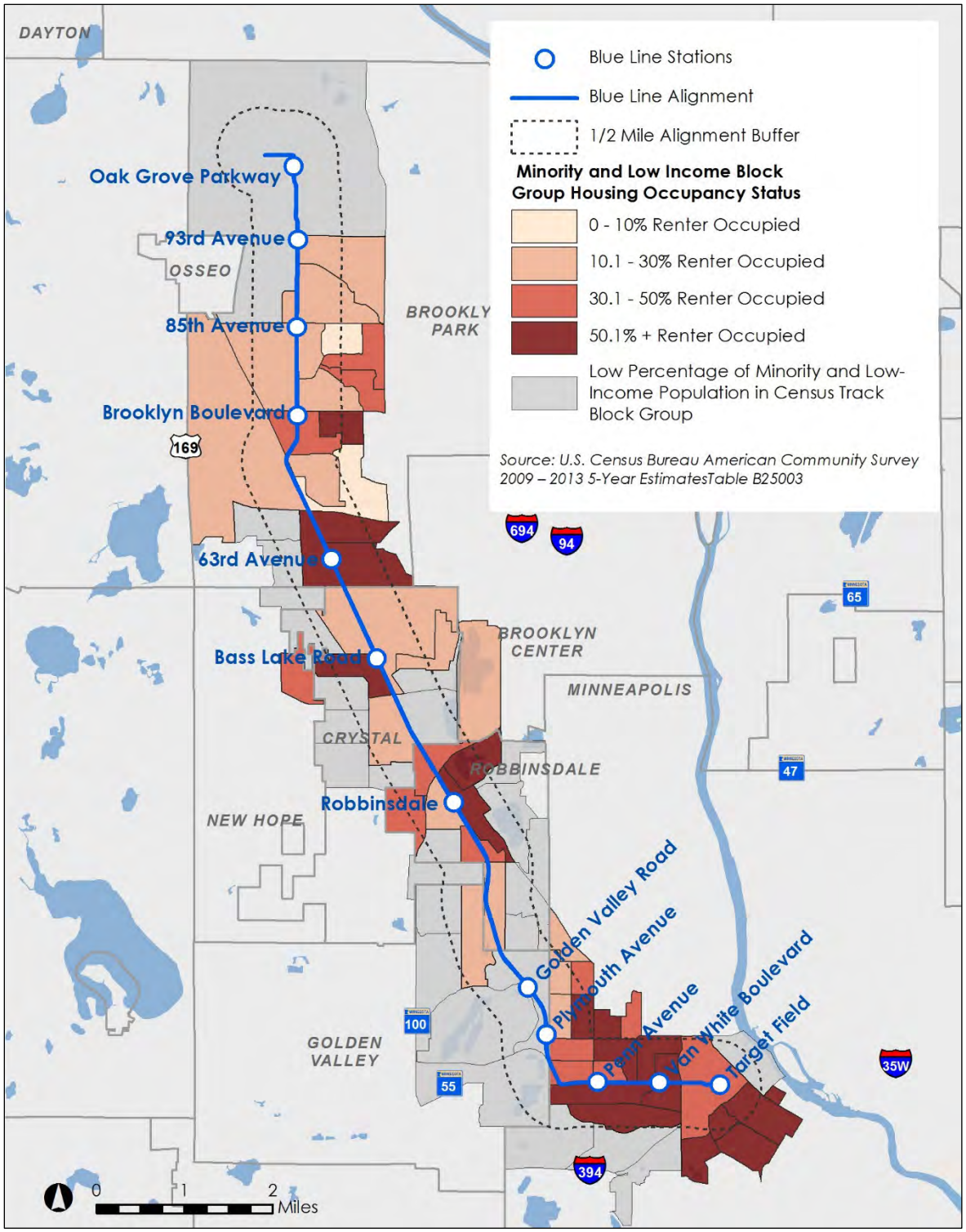
The Hennepin County Bottineau LRT Community Works program was established in 2014 to leverage the proposed BLRT Extension project by partnering with cities along the proposed BLRT Extension project corridor to help plan for and implement critical changes "beyond the rails." The County is currently actively leading a Station Area Planning effort to help the community take advantage of the new transit investment in parallel with, but not as part of, the proposed BLRT Extension project. By providing an opportunity for dialogue among station-area residents, members of the business community, agency staff, and elected/appointed officials, the planning effort aims to create short- and long-term visions for the neighborhoods within 0.5 mile of each station. The community-based planning process examines the community's goals and priorities, develops an overall vision for the station areas, and recommends actions for cities, agencies, and communities to consider moving forward (Hennepin County, 2015).

Station Area Planning efforts began in 2014 with the development of Community Working Groups to identify issues and to help define the planning effort moving forward. Open houses were held in November 2014, January 2015, and June 2015 to present and elicit feedback from the public on existing conditions and potential improvements. During the latter part of 2015, design workshops and community meetings were held in the cities of Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park.

Among other things, the Station Area Planning efforts have addressed economic development opportunities near the LRT stations by including recommendations that would strengthen the character and economic viability of the areas while balancing the communities' concerns for housing options, affordability, and sustainability. While any future development near stations that arise from the station-area plans may potentially increase property values and other costs in the area, the plans would include provisions to maintain a balanced range of housing types, including affordable housing.

Below is a summary of Station Area Planning outcomes related to housing. For more information about Station Area Planning, visit Hennepin County's Community Works website, www.hennepin.us/residents/transportation/bottineau-community-works.

Figure 7.4-2. Minority- and Low-Income-Renter-Occupied Units (by Census Block Group)



Minneapolis Station Areas. The Minneapolis station areas of Van White Boulevard and Penn Avenue have more than 50.1 percent of low-income- or minority-renter-occupied units. The station-area plans for these stations include preserving existing housing and adding medium to high density market rate housing to balance the high percentage of rental housing. Proposed redevelopment sites are owned by the city of Minneapolis, which allows for stable investment in the community. Station area plans were completed in May 2015 for Minneapolis.

Golden Valley Station Areas. The Golden Valley station areas at Plymouth Avenue and Golden Valley Road are predominantly owner-occupied housing. The station-area plan for Plymouth Avenue identified a variety of new housing types to serve different incomes and different stages of life, while preserving existing housing.

Robbinsdale Station Areas. The downtown Robbinsdale station area has more than 50.1 percent of low-income- or minority-renter-occupied units. The station-area plan shows a desire for diverse housing choices (senior/affordable and apartments) and preserving the unique small town character of downtown.

Crystal Station Areas. The Crystal station area at Bass Lake Road has more than 50.1 percent of low-income- or minority-renter-occupied units. While the station-area plan is still under development, community input throughout the process has identified a demand for more housing around the station area and improving housing choices for the community.

Brooklyn Park Station Areas. The Brooklyn Park station areas at 63rd Avenue north and Brooklyn Boulevard have more than 50.1 percent of low-income- or minority-renter-occupied units in the vicinity. While the station-area plan is still under development, community input throughout the planning process has identified a need for multi-family rental housing, and preserving affordable and diverse housing. The other station areas in Brooklyn Park have predominantly owner-occupied units (85th Avenue, 93rd Avenue, and Oak Grove Parkway).

7.4.6.1 Finding

The proposed BLRT Extension project has the potential to indirectly spur development in the proposed BLRT Extension project corridor particularly around stations. This creates the potential for changes in property values as described above, which can be perceived as either an impact (generally for renters) or a benefit (generally for owners). These potential "pricing-out" impacts (that is, increased rents and decreased affordability for existing residents) can be offset by the decrease in transportation costs. The *HIA* suggests that cities, communities, and developers work together to keep existing and provide new affordable housing options in station areas to ensure that neighborhoods near the transit stations continue to be affordable for low-income households (Hennepin County, 2013). The Council will track new development (commercial, residential, industrial) along the proposed BLRT Extension project as a tool to evaluate new investment and monitor new affordable housing.

The proposed BLRT Extension project outreach staff have worked closely with community organizations whose work is devoted to affordable housing and equitable transitway development. These groups affiliated with the Blue Line Coalition include the City of Lakes Community Land

Trust, African Career, Education & Resource, Inc., Alliance for Metropolitan Stability, Nexus, Harrison Neighborhood Association, African American Leadership Forum, and Summit OIC. Two members of the Blue Line Coalition sit as voting members of the BLRT Extension project Corridor Management Committee. Additionally, many of these groups are represented on the Business or Community Advisory Committees that are integral to the decision-making process.

Hennepin County is proactively working with the cities to consider land use policies and strategies that retain existing affordable housing, minimize teardowns and promote redevelopment of underutilized properties to a mix of housing options. This work is supported in Hennepin County's Station Area Planning effort, which seeks input from the public, including EJ populations, to create a framework for any potential development that aligns with the community's goals and preferences.

Furthermore, the Council has established programs to encourage affordable housing planning and implementation that may offset potential indirect impacts to low-income persons. The findings from the FHEA identified a need to address equity in affordable housing and the policies to address this issue are included in the *Thrive MSP 2040*, Housing Policy Plan (www.metrocouncil.org/Housing/Planning/2040-Housing-Policy-Plan.aspx). The Council's role is to:

- Work with communities to create a mix of housing affordability, including subsidies to strategically locate market-rate housing in areas that lack such options as well as affordable housing in areas that lack affordability.
- Use Livable Communities Act resources to both catalyze private investment in areas of concentrated poverty and attract affordable housing to higher-income areas.
- Work with our partners and stakeholders to identify indicators to measure how projects, supported with Council resources, advance equity, including providing opportunities to residents of areas of concentrated poverty, lower-income households, and people with disabilities.
- Identify and address institutional challenges and barriers, including a lack of funding, to affordable housing development in Suburban, Suburban Edge, and Emerging Suburban Edge locations.
- Encourage private market interest in these targeted areas through transit investments, education, and marketing support to local communities.

To comply with the Metropolitan Land Planning Act and remain consistent with the Housing Policy Plan, the Council requires cities to demonstrate how affordable housing needs can be met in their local comprehensive plan updates. Cities must demonstrate how their comprehensive plan:

- Addresses the future housing need for forecasted growth.
- Acknowledges its allocation for future affordable housing need.
- Guides sufficient land at minimum residential densities of 8 units/acre to support the city's total allocation of affordable housing need.

Table 7.4-4 represents each corridor city's allocation of affordable housing needed in its next comprehensive plan update. The affordable housing is divided between households earning at or below the area median income (AMI) to at or below 80 percent of the AMI.

Table 7.4-4. Affordable Housing Need Allocation of Corridor Cities, 2021–2030

City	Total Units of Affordable Housing Needed
Minneapolis	3,499
Golden Valley	111
Robbinsdale	76
Crystal	25
Brooklyn Park	583

Source: Metropolitan Council 2015 System Statements
www.metrocouncil.org/Communities/Planning/Local-Planning-Assistance/System-Statements.aspx

The multifaceted effort of county, Council, city, and local stakeholder involvement in creating and preserving affordable housing will provide a strong foundation for serving EJ populations indirectly impacted by the proposed BLRT Extension project. Since the majority of residents near proposed LRT stations own their homes and would perceive a benefit to their property values, and considering the offsetting benefits of proximity to enhanced transit, continued Station Area Planning efforts, and policies in the Housing Policy Plan, the proposed BLRT Extension project *will not have a disproportionately high and adverse impact on EJ populations related to indirect impacts and cumulative effects*.

7.5 Environmental Justice Finding

In summary, the resource-specific conclusions are:

- **Transit** – no disproportionately high and adverse impacts on EJ populations
- **Parks and Recreation** – no disproportionately high and adverse impacts on EJ populations
- **Displacements of Residences and Businesses** – may have a disproportionately high and adverse impacts on EJ populations
- **Visual/Aesthetics** – no disproportionately high and adverse impacts on EJ populations
- **Noise** – no disproportionately high and adverse impacts on EJ populations
- **Indirect Impacts and Cumulative Effects** – no disproportionately high and adverse impacts on EJ populations

While there would be adverse impacts related to the proposed BLRT Extension project, they would affect both EJ and non-EJ populations proportionately for all resource areas evaluated in this EJ analysis, except for business displacements. As discussed in **Section 7.4.3.3**, there may be a disproportionately high and adverse effect on EJ communities that rely on some of the businesses displaced by the proposed BLRT Extension project. The Council is committed to mitigating these impacts. For these businesses, the Council is committed to providing assistance through its partnerships with project-related groups and local community organizations, which may include the proposed BLRT Extensions project's Business Advisory Committee, Blue Line Coalition, Black Women in Business Alliance, Asian Economic Development Association, among others. For each displaced business impact on a community, the Council and its outreach partners will work with the community to provide information regarding the business' new location, transit options to access the new business location, and/or other options to meet their needs.

Both EJ and non-EJ populations in the study area would also benefit from the proposed BLRT Extension project. The following is a list of the benefits to communities in the proposed BLRT Extension project study area:

- Reliable and higher-capacity service for transit riders
- Improved connectivity and access to transit
- Faster travel times along the proposed BLRT Extension project corridor
- Improved pedestrian and bicycle connections and access, particularly in the vicinity of proposed BLRT Extension stations
- Improved access to employment, educational, recreational, shopping, and cultural opportunities
- Improved overall health of the users of the proposed BLRT Extension project with improvements to the parks' trail system, grade-separated crossings, and other safety improvements.

Project-wide Environmental Justice Finding: The Council and FTA recognize that some of the specific impacts of the proposed BLRT Extension project may adversely affect both EJ and non-EJ populations, and additional outreach and coordination with community organizations and the Station Area Planning teams would be necessary to maintain continued engagement with EJ populations as the proposed BLRT Extension project advances. The Council is committed to continued engagement with the Blue Line Coalition which has two voting members on the proposed BLRT Extension project Corridor Management Committee (CMC), and continued engagement with the Business or Community Advisory Committees which are integral to project decision-making.

The Blue Line Coalition members on the CMC voted to approve the revised proposed BLRT Extension project scope and cost estimate. The Blue Line Coalition also issued a resolution supporting the general direction of the design for the proposed BLRT Extension project on November 12, 2015 (see **Appendix D – Agency Coordination**). This resolution supported the general direction for design of the proposed BLRT Extension project acknowledging its potential to connect low- and moderate-income populations and communities of color to regional opportunities, expand access to needed services, and its potential to spur development and economic growth to reduce disparities along the proposed BLRT Extension project corridor.

After examining the proposed BLRT Extension project holistically, taking into account the adverse impacts on EJ populations, committed mitigation measures, and benefits to EJ populations, the Council and FTA have concluded that the proposed BLRT Extension project *will not result in disproportionately high and adverse impacts to EJ populations project-wide*.

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8 Amended Draft Section 4(f) and 6(f) Evaluation

8.1 Introduction

The METRO Blue Line (formerly Bottineau Transitway) Light Rail Transit (BLRT) Extension project Amended Draft Section 4(f) and 6(f) Evaluation provides additional information on the proposed BLRT Extension project's Section 4(f) and 6(f) properties since the publication of the Bottineau Transitway Draft Section 4(f) Evaluation. The Draft Section 4(f) Evaluation was published in March 2014 as a part of the Bottineau Transitway Draft Environmental Impact Statement (Draft EIS; see Draft EIS Chapter 8 – Draft Section 4(f) Evaluation). In particular, this Amended Draft Section 4(f) and 6(f) Evaluation provides additional information regarding impacts to nine Section 4(f) properties along the proposed BLRT Extension project corridor. This Amended Draft Section 4(f) and 6(f) Evaluation also presents information regarding Section 4(f) resources where the assessment of impacts has not changed from the March 2014 Draft Section 4(f) Evaluation. The Federal Transit Administration (FTA) is seeking comments on the potential impact to these Section 4(f) properties.

Table 8.1-1 describes the preliminary determination of the Section 4(f) properties affected by the proposed BLRT Extension project, including two new preliminary Section 4(f) *de minimis* impact determinations. The locations of these Section 4(f) properties are shown in **Figure 8.1-1 through Figure 8.1-4** along with the proposed BLRT Extension project alignment and stations, and the proposed BLRT Extension project's Section 106 Area of Potential Effect (APE).

With this Amended Draft Section 4(f) and 6(f) Evaluation, FTA invites public and agency review and comment on the revised, impact analysis. Comments received concerning the revised Section 4(f) evaluations will be considered by FTA and the entities with jurisdiction over the Section 4(f) properties prior to making Section 4(f) determinations for those properties.

This Amended Draft Section 4(f) and 6(f) Evaluation includes the following sections:

- **Section 8.1** – Introduction
- **Section 8.2** – Changes in the Proposed BLRT Extension Project from the Draft Section 4(f) Evaluation to the Amended Draft Section 4(f) Evaluation
- **Section 8.3** – Amended Draft Section 4(f) Evaluation Summary
- **Section 8.4** – Regulatory Background/Methodology
- **Section 8.5** – Purpose and Need
- **Section 8.6** – Description of the Project
- **Section 8.7** – Use of Section 4(f) Properties in the Proposed BLRT Extension Project Study Area
- **Section 8.8** – Coordination
- **Section 8.9** – Preliminary Determination of Section 4(f) Use
- **Section 8.10** – Federally and State Funded Parks

Table 8.1-1. Impacts to Section 4(f) Properties[1]

Section 4(f) Property	Property Type	Official with Jurisdiction	Direct Use	*De minimis* Use	Temporary Occupancy	No Use
Harrison Park	Parkland	Minneapolis Park and Recreation Board (MPRB)				X
Theodore Wirth Regional Park (TWRP)	Parkland	MPRB		X		
Glenview Terrace Park	Parkland	MPRB		X		
Sochacki Park: Mary Hills Management Unit[2]	Parkland	City of Golden Valley and Joint Powers Agreement (JPA) Board[2]			X	
Sochacki Park: Sochacki Management Unit[3]	Parkland	City of Robbinsdale and JPA Board[3]			X	
South Halifax Park	Parkland	City of Robbinsdale			X	
Lee Park	Parkland	City of Robbinsdale				X
Triangle Park	Parkland	City of Robbinsdale				X
Becker Park	Parkland	City of Crystal			X	
Unnamed park identified as Tessman Park in the Draft EIS)	Parkland	City of Brooklyn Park				X
College Park	Parkland	City of Brooklyn Park				X
Park Property Adjacent to Rush Creek Regional Trail	Parkland	Three Rivers Park District (TRPD)			X	
St. Paul Minneapolis & Manitoba Railway Historic District (Minneapolis)	Historic	Minnesota Historic Preservation Office (MnHPO)				X
Minneapolis Warehouse District	Historic	MnHPO				X
Northwestern Knitting Company Factory	Historic	MnHPO				X
Sumner Branch Library	Historic	MnHPO				X
Wayman African Methodist Episcopal Church	Historic	MnHPO				X
Labor Lyceum	Historic	MnHPO				X
Floyd B. Olson Memorial Statue	Historic	MnHPO				X
Bridge No. L9327	Historic	MnHPO				X
Homewood Historic District	Historic	MnHPO				X
Osseo Branch, St. Paul Minneapolis & Manitoba Railway Historic District	Historic	MnHPO	X			

Table 8.1-1. Impacts to Section 4(f) Properties[1]

Section 4(f) Property	Property Type	Official with Jurisdiction	Direct Use	*De minimis* Use	Temporary Occupancy	No Use
Grand Rounds Historic District[4]	Historic	MnHPO	X			
Sacred Heart Catholic Church	Historic	MnHPO				X
Robbinsdale Waterworks	Historic	MnHPO				X
Hennepin County Library – Robbinsdale Branch	Historic	MnHPO				X
West Broadway Avenue Residential Historic District	Historic	MnHPO				X
Jones-Osterhus Barn	Historic	MnHPO				X
Minneapolis & Pacific/Soo Line Railway Historic District	Historic	MnHPO				X

[1] See **Section 8.4** for definitions of the potential types of Section 4(f) uses.

[2] The cities of Golden Valley and Robbinsdale entered into a Joint Powers Agreement with TRPD to manage Sochacki Park as discussed in **Section 8.2**. The joint management entity for these park resources is referred to as the JPA Board.

[3] Sochacki Park: Sochacki Management Unit is also a Section 6(f) property as funds from the federal Land and Water Conservation program have been used on the property. See **Section 8.10** for additional information.

[4] In the March 2014 Draft Section 4(f) Evaluation, the Grand Rounds Historic District was identified as a direct use in Table 8.3-2 on page 8-13, but was described as a *de minimis* use in the text on page 8-35. The correct preliminary determination in the March 2014 Draft Section 4(f) Evaluation was a *de minimis* use. Since the publication of the March 2014 Draft Section 4(f) Evaluation, additional engineering information along with additional coordination with MnHPO has resulted in FTA revising their preliminary Section 4(f) determination to a direct use.

Figure 8.1-1. Park Resources: Southern Portion of Proposed BLRT Extension Project Corridor

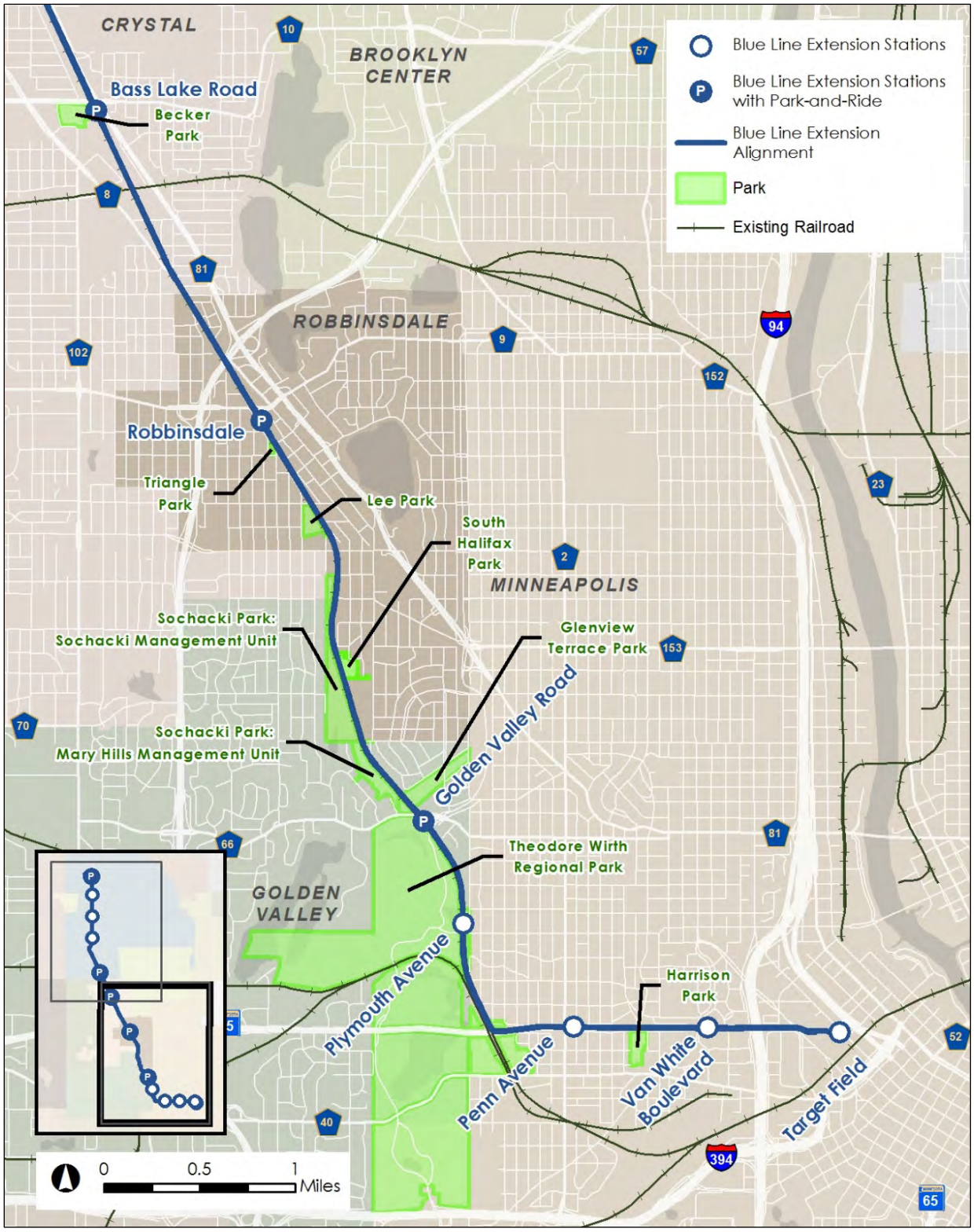


Figure 8.1-2. Park Resources: Northern Portion of Proposed BLRT Extension Project Corridor

Figure 8.1-3. Historic Sites: Southern Portion of Proposed BLRT Extension Project Corridor

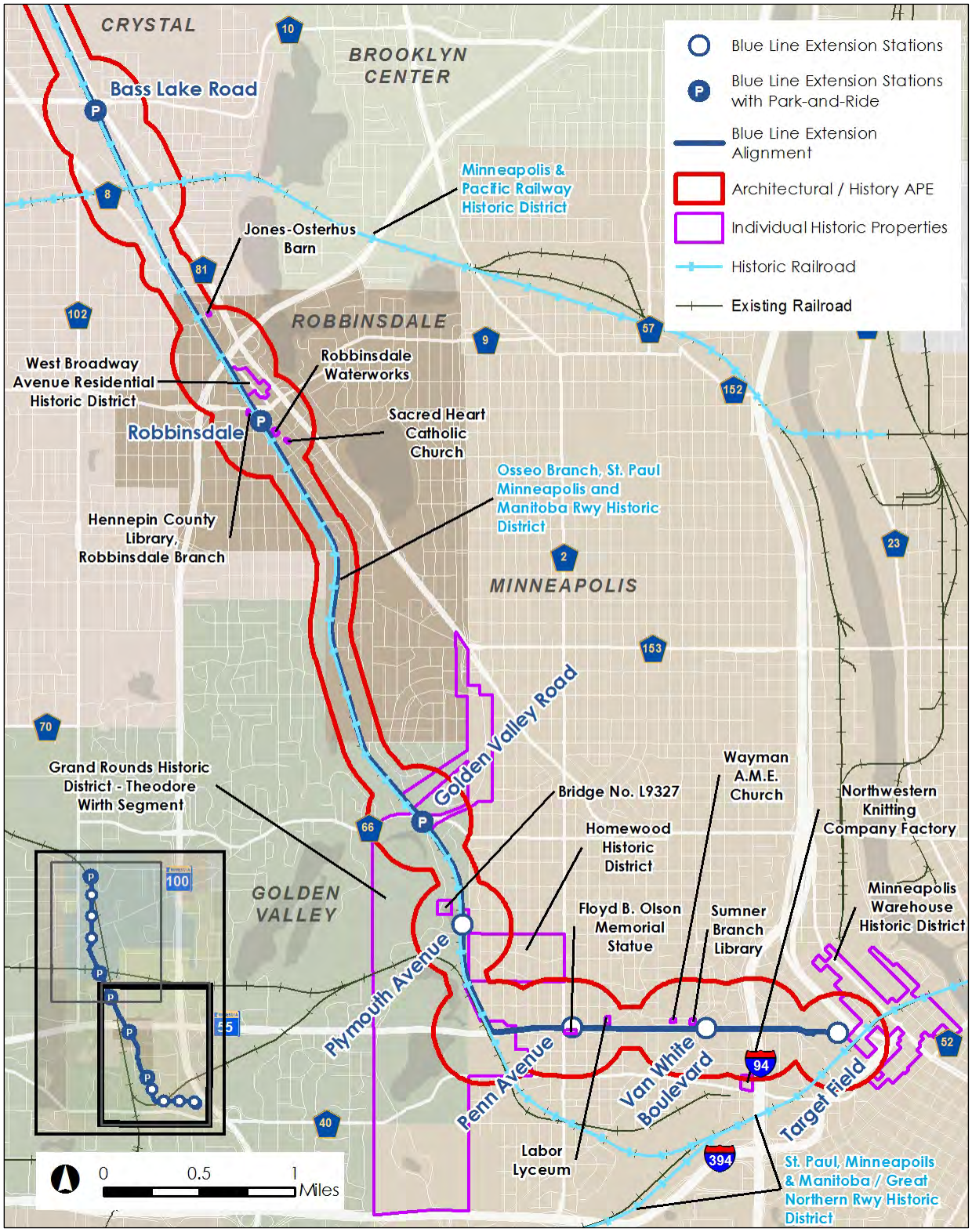
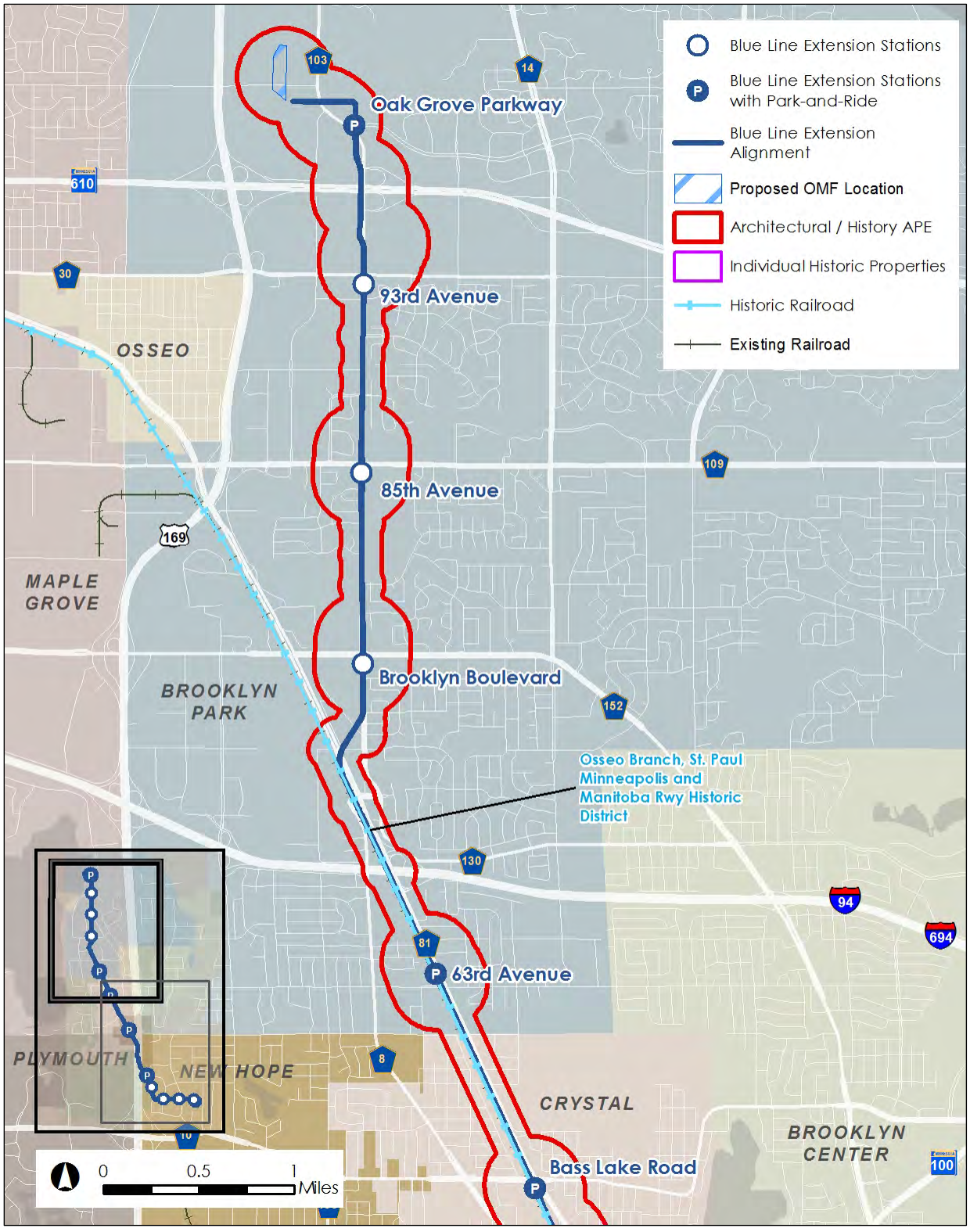


Figure 8.1-4. Historic Sites: Northern Portion of Proposed BLRT Extension Project Corridor



Appendix E provides the proposed BLRT Extension project Engineering Drawings used for this Amended Draft Section 4(f) and 6(f) Evaluation. In summary, this report documents FTA's revised, preliminary Section 4(f) use determinations for Section 4(f) properties where the use determination has changed from the Draft Section 4(f) Evaluation (including *de minimis* uses) as a result of the proposed BLRT Extension project. This Amended Draft Section 4(f) Evaluation and 6(f) Evaluation will also support the Section 6(f) process.

8.2 Changes in the Proposed BLRT Extension Project from the Draft Section 4(f) Evaluation to the Amended Draft Section 4(f) Evaluation

Table 8.2-1 summarizes the changes in potential impacts to Section 4(f) properties made in this Amended Draft Section 4(f) Evaluation compared to the Draft Section 4(f) Evaluation published as part of the Draft EIS in March 2014. In addition to the changes in Section 4(f) preliminary determinations, a change in the management of Sochacki Park and Mary Hills Nature Area has taken place since the publication of the Draft Section 4(f) Evaluation. The Sochacki Park/Mary Hills Nature Area/Rice Lake Nature Area Initiative proposed the unification of Sochacki Park (located in the City of Robbinsdale) with the Mary Hills and Rice Lake nature areas in the City of Golden Valley to form one park under the Sochacki Park name. This combined park resource is managed through a Joint Powers Agreement (JPA), executed in March 2015 among the Three Rivers Park District (TRPD), the city of Robbinsdale, and the city of Golden Valley. Under the JPA, the three former park resources are referred to jointly as Sochacki Park, and separately as Sochacki Park: Sochacki Management Unit, Sochacki Park: Mary Hills Management Unit, and Sochacki Park: Rice Lake Management Unit. The underlying fee title ownership of the respective management units of Sochacki Park remains with the cities in which they are located.

8.3 Amended Draft Section 4(f) Evaluation Summary

FTA is issuing a revised, preliminarily Section 4(f) use, *de minimis* use, or temporary occupancy use determinations of nine Section 4(f) properties along the proposed BLRT Extension project corridor. The rationale for the revised, preliminary determinations is documented in **Section 8.7** and supporting documentation is provided in **Appendix J**. In general, this Amended Draft Section 4(f) Evaluation is based on proposed BLRT Extension project engineering drawings and design work (see **Appendix E**).

The documentation and exhibits within **Section 8.7** of this Amended Draft Section 4(f) Evaluation provide detail on the proposed BLRT Extension project improvements and construction activities and its impacts on Section 4(f) properties.

Table 8.2-1. Comparison of Impacts to Section 4(f) Properties in the Draft and Amended Draft Section 4(f) Evaluations

Property	March 2014 Draft Section 4(f) Preliminary Determination	Amended Draft Section 4(f) Preliminary Determination
Park Properties		
TWRP	Direct Use	*De minimis* Use
Glenview Terrace Park	No Use	*De minimis* Use
Sochacki Park: Mary Hills Management Unit[1]	Temporary Occupancy	Temporary Occupancy
Sochacki Park: Sochacki Management Unit[1]	Temporary Occupancy	Temporary Occupancy[2]
South Halifax Park	No Use	Temporary Occupancy
Minneapolis Public Schools Athletic Field	Direct Use	No Use[3]
Becker Park	No Use	Temporary Occupancy
Park Property Adjacent to Rush Creek Regional Trail	*De minimis* Use	Temporary Occupancy
Historic Properties		
Grand Rounds Historic District	*De minimis* Use	Direct Use
Homewood Historic District	Direct Use	No Use[3]
Osseo Branch, St. Paul Minneapolis & Manitoba Railway Historic District	No Use	Direct Use

[1] Park Resource name change: Sochacki Park and Mary Hills Nature Area are now operated as a combined park resource under the Sochacki Park name; the former individual parks are considered separate management units under the joint park resource.

[2] Sochacki Park: Sochacki Management Unit is included in this Amended Draft Section 4(f) and 6(f) Evaluation as it has been identified as a Section 6(f) resource in addition to a Section 4(f) resource. See **Section 8.10** for the Section 6(f) analysis for Sochacki Park: Sochacki Management Unit.

[3] Resource use was associated with one of the Draft EIS alternative alignments that is not on the current proposed BLRT Extension project alignment.

8.4 Regulatory Background/Methodology

Section 4(f) of the United States Department of Transportation (USDOT) Act of 1966, 49 USC § 303 (Section 4(f)), is a federal law that protects publicly owned parks, recreation areas, wildlife and/or waterfowl refuges, and significant historic sites, whether publicly or privately owned. Section 4(f) requirements apply to all transportation projects that require funding or other approvals by USDOT, including FTA. FTA's Section 4(f) implementing regulations are at 23 CFR Part 774.

Additional protection is provided for outdoor recreational lands under Section 6(f) legislation (16 USC § 4602-8(f)(3)) where Land and Water Conservation Fund (LWCF) Act dollars were 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 reasonably equivalent usefulness and location is assured. Minnesota has adopted the LWCF grant guidelines for the administration of state recreation grants; therefore, parks that have received state grant funds are subject to requirements similar to parks that have received LWCF funds.

This Section 4(f) documentation has been prepared in accordance with 49 USC § 303), the joint Federal Highway Administration (FHWA)/FTA regulations for Section 4(f) compliance codified as 23 CFR Part 774, the FHWA Technical Advisory T6640.8A (FHWA, 1987), and the revised FHWA Section 4(f) Policy Paper (FHWA, 2012). The FTA guidance on Section 4(f) is based on the revised FHWA policy paper.

Various methods were used to identify Section 4(f) properties near the proposed BLRT Extension project and to assess the potential use of those properties. Section 4(f) properties more than 300 feet from the proposed BLRT Extension project alignment were assumed to experience no direct impacts. This distance is used because 300 feet is the unobstructed screening distance for FTA noise impact assessments and would allow identification of potential noise impacts to Section 4(f) properties. Maps, aerial photography, and local comprehensive plans were consulted to determine the location of Section 4(f) properties. The proximity of Section 4(f) properties to the proposed BLRT Extension project, based on property ownership boundaries and construction limits of disturbance (see **Appendix E – Engineering Drawings**), was evaluated to determine the potential for direct use and temporary occupancy. Potential constructive use was assessed based on the proximity to the proposed BLRT Extension project and the potential effects to the activities, features, and attributes of the Section 4(f) property. Field visits and coordination with local jurisdictions provided additional information for evaluating the potential use of Section 4(f) properties.

FTA will make its final Section 4(f) determinations in the proposed BLRT Extension project's Record of Decision (ROD), and subsequent to its consideration of public and agency comments received on the FEIS. FTA will seek concurrence from the Official(s) With Jurisdiction (OWJs) on the preliminary determinations, prior to making a final determination in the ROD, as required by regulations.

8.4.1 Types of Section 4(f) Properties

Section 4(f) requires consideration of:

- Parks and recreational areas of national, state, or local significance that are both publicly owned and open to the public
- Publicly owned wildlife and waterfowl refuges of national, state, or local significance that are open to the public to the extent that public access does not interfere with the primary purpose of the refuge
- Historic sites of national, state, or local significance in public or private ownership regardless of whether they are open to the public that are listed on, or eligible for listing on, the National Register of Historic Places (NRHP)

8.4.2 Section 4(f) Approvals

FTA cannot approve the use of a Section 4(f) resource, as defined in 23 CFR Part 774.17, unless FTA determines that:

- There is no feasible and prudent avoidance alternative, as defined in 23 CFR Part 774.1, to the use of land from the Section 4(f) property, and the action includes all possible planning, as defined in 23 CFR Part 774.17, to minimize harm to the Section 4(f) property resulting from such use; or
- The use of the Section 4(f) property, including any measure(s) to minimize harm (such as any avoidance, minimization, mitigation, or enhancement features) committed to by the applicant would have a *de minimis* use, as defined in 23 CFR Part 774.17, on the Section 4(f) property

8.4.3 Section 4(f) Evaluation Process

After identifying the Section 4(f) properties in the proposed BLRT Extension project study area, FTA analyzed whether and how the proposed BLRT Extension project would impact each Section 4(f) property and whether the impact qualified as a use of the property.

The primary steps in an individual Section 4(f) Use evaluation are described below:

- **Analyze Avoidance Alternatives:** In this step, FTA considers alternatives that completely avoid the use of a Section 4(f) property. The avoidance analysis applies the Section 4(f) feasible and prudent criteria (23 CFR Part 774.17(2) and (3)). An alternative is not feasible if it cannot be built as a matter of sound engineering judgment. An avoidance alternative is not considered prudent if:
    1. It compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need
    2. It results in unacceptable safety or operational problems
    3. After reasonable mitigation, it still causes:
        a. Severe social, economic, or environmental impacts
        b. Severe disruption to established communities
        c. Severe disproportionate impacts to minority or low income populations
        d. Severe impacts to environmental resources protected under other federal statutes
    4. It results in additional construction, maintenance, or operational costs of an extraordinary magnitude
    5. It causes other unique problems or unusual factors; or
    6. It involves multiple factors in items (1) through (5) of this definition, that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

- **Consider All Possible Planning to Minimize Harm:** After determining that there are no feasible and prudent alternatives to avoid the use of Section 4(f) property, the project approval process for an individual Section 4(f) evaluation requires the consideration and documentation of all possible planning to minimize harm to Section 4(f) property (see 23 CFR Part 774.3(a)(2)). All possible planning, defined in 23 CFR Part 774.17, means that all reasonable measures identified in the Section 4(f) evaluation to minimize harm or to mitigate for adverse impacts and effects must be included in the project. All possible planning to minimize harm does not require analysis of feasible and prudent avoidance alternatives because such analysis would have already occurred in the context of searching for feasible and prudent alternatives that would avoid Section 4(f) properties altogether under 23 CFR Part 774.3(a)(a). Minimization and mitigation measures should be determined through consultation with the OWJs over the Section 4(f) resource. Mitigation measures involving public parks, recreation areas, or wildlife or waterfowl refuges may involve replacement of land and/or facilities of comparable value and function, or monetary compensation to enhance remaining land. Mitigation of historic sites usually consists of those measures necessary to preserve the integrity of the site and agreed to in the project's Section 106 MOA in accordance with 36 CFR Part 800 by FTA, the Minnesota Historic Preservation Office (MnHPO), and other consulting parties.
- **Determine Alternative(s) with Least Overall Harm:** If no feasible and prudent alternatives are identified that would avoid using a Section 4(f) property, FTA also determines the alternative that would cause the least overall harm to Section 4(f) properties using the following factors (23 CFR Part 774.3I1) and the results of considering all possible planning to minimize harm:
    1. The ability to mitigate adverse impacts to each Section 4(f) property
    2. The relative severity of the remaining harm after mitigation
    3. The relative significance of each Section 4(f) property
    4. The views of the OWJs over each property
    5. The degree to which each alternative meets the project purpose and need
    6. The magnitude of adverse effects to resources not protected by Section 4(f)
    7. Substantial cost differences among the alternatives
- **Coordinate with OWJs:** Section 4(f) regulations require coordination with the officials with jurisdiction over the Section 4(f) property prior to Section 4(f) approval in several situations. The OWJs include:
    - MnHPO in the case of historic sites; and
    - Officials of the agency or agencies that own or administer the property in the case of public parks and recreation areas.

The concurrence of OWJs is required in the case of making *de minimis* findings or applying the temporary occupancy exception.

See 23 CFR Part 774 for additional information regarding coordination with OWJs.

8.4.4 Section 4(f) Use Definitions and Requirements

This section provides definitions of types of potential Section 4(f) uses that are used throughout **Section 8.7** of this document and their related requirements, including: (1) individual Section 4(f) evaluation; (2) temporary occupancy exception; (3) *de minimis* impact determinations; and (4) constructive use.

8.4.4.1 Individual Section 4(f) Evaluation

The term "individual Section 4(f) evaluation" is used to refer to the process of assessing avoidance alternatives, determining the alternative with the least overall harm, and considering all possible planning to minimize harm for each property that would be used by the proposed BLRT Extension project and where that use would not be *de minimis* (*de minimis* use is described below in **Section 8.4.4.3**).

8.4.4.2 Temporary Occupancy Exception

Temporary occupancies that meet each of the following five criteria for temporary occupancy exception in 23 CFR Part 774.13(d) are not subject to Section 4(f) approval:

1. Duration of occupancy must be temporary (that is, less than the time needed for construction of the project), and there can be no change in ownership of the land.
2. The scope of work must be minor (that is, both the nature and magnitude of the changes to the Section 4(f) property are minimal).
3. There can be no anticipated permanent adverse physical impacts, nor can there be interference with the activities, features, or attributes of the property on either a temporary or permanent basis.
4. The land being used must be fully restored (that is, the property must be returned to a condition that is at least as good as that which existed prior to the project).
5. Written concurrence must be obtained from the OWJs, documenting agreement with the above conditions. If the OWJs do not agree with a temporary occupancy exception determination, an analysis of use must be conducted.

8.4.4.3 *De minimis* Impact Determinations

De minimis impacts to parks are defined as those that do not "adversely affect the activities, features, and attributes" of the Section 4(f) property. To distinguish the activities, features, or attributes of a Section 4(f) park property that are important to protect from those which can be used without resulting in an adverse effect, FTA carefully considered the activities, features and attributes of the properties noted in this analysis. *De minimis* impacts on historic sites are defined as the determination of either "no adverse effect" or "no historic properties affected" in compliance with Section 106 of the National Historic Preservation Act.

- A *de minimis* impact determination is made for a permanent incorporation or temporary occupancy (i.e. construction) of Section 4(f) property. A *de minimis* impact determination requires agency coordination and public involvement as specified in 23 CFR Part 774.5(b). For

park properties and recreation areas, the OWJs over the property must be informed of the intent to make a *de minimis* impact determination, after which an opportunity for public review and comment must be provided. After considering any comments received from the public, if the OWJs concur in writing that the project will not adversely affect the activities, features, or attributes that make the property eligible for Section 4(f) protection, then FTA may finalize the *de minimis* impact determination.

- **Parks, Recreational Areas, and Refuges:** In order for a *de minimis* impact determination to be approved for a Section 4(f) park property, the following conditions must be met:
  - The transportation use of the Section 4(f) property, together with any impact avoidance, minimization, and mitigation or enhancement measures incorporated into the project, does not adversely affect the activities, features, or attributes that qualify the resource for protection under Section 4(f);
  - The public has been afforded an opportunity to review and comment on the effects of the project on the protected activities, features, or attributes of the Section 4(f) property; and
  - The OWJs over the property, after being informed of the public comments and FTA's intent to make the *de minimis* impact finding, concur in writing that the project will not adversely affect the activities, features, or attributes that qualify the property for protection under Section 4(f).
- **Historic Properties:** In order for a *de minimis* impact determination to be approved for a Section 4(f) historic property, the following conditions must be met:
  - The consulting parties identified as part of the Section 106 process must be consulted;
  - The public has been afforded an opportunity to review and comment on the effects of the project on the Section 4(f) property; and
  - MnHPO or the Tribal Historic Preservation Office (THPO), after being informed of the public comments and FTA's intent to make the *de minimis* impact finding, concur in writing with the *de minimis* determination.

8.4.4.4 Constructive Use

A constructive use involves no actual physical use of the Section 4(f) property via permanent incorporation of land or a temporary occupancy of land into a transportation facility. A constructive use occurs when the proximity impacts of a proposed project adjacent to or nearby a Section 4(f) property result in substantial impairment to the property's activities, features, or attributes that qualify the property for protection under Section 4(f). As a general matter, substantial impairment means that the value of the resource, in terms of its Section 4(f) purpose and significance, would be meaningfully reduced or lost. The types of impacts that may qualify as constructive use are addressed in 23 CFR Part 774.15. The degree of impact and impairment must be determined in consultation with the OWJs in accordance with 23 CFR Part 774.15(d)(3). In situations where a potential constructive use can be reduced below a substantial impairment level by the inclusion of mitigation measures, there will be no constructive use and Section 4(f) use will not apply. If there is no substantial impairment, notwithstanding an adverse effect determination (under Section 106),

there is no constructive use and Section 4(f) use does not apply. A project's proximity to a Section 4(f) property is not in itself an impact that results in constructive use. Also, the assessment for constructive use is based on the impact that is directly attributable to the project under review, not the overall combined impacts to a Section 4(f) property from multiple sources over time.

8.5 Purpose and Need

The proposed BLRT Extension project's purpose and need is presented in **Chapter 1**. It is summarized in this section as reference for the Amended Draft Section 4(f) Evaluation.

8.5.1 Project Purpose

The purpose of the proposed BLRT Extension project is to provide transit service that would satisfy the long-term regional mobility and accessibility needs for businesses and the traveling public.

8.5.2 Project Need

The proposed BLRT Extension project is needed to effectively address long-term regional transit mobility and local accessibility needs while providing efficient, travel-time competitive transit service that supports economic development goals and objectives of local, regional, and statewide plans.

Due to continued increase in travel demand coupled with few highway capacity improvements planned for regional roadways in this area, congestion is expected to worsen by 2040. While transit investment is recognized regionally as one of the key strategies for managing congestion, transit would offer many other benefits to address the needs of residents and businesses in the proposed BLRT Extension project study area. Residents and businesses in the proposed BLRT Extension project study area need improved access to the region's activity centers to fully participate in the region's economy. Access to jobs in downtown Minneapolis and northbound reverse commute transit options to serve jobs in the growing suburban centers are crucial to continued economic vitality. Current transit options in the proposed BLRT Extension project study area offer a limited number of travel-time competitive alternatives to the single-occupant vehicle. Without major transit investments, it would be difficult to effectively meet the transportation needs of people and businesses in the corridor, manage highway traffic congestion in the proposed BLRT Extension project study area, and achieve the region's 2040 goal, as identified in the Metropolitan Council's (Council's) *2040 Transportation Policy Plan* (*2040 TPP*), of increasing transit ridership by providing multi-modal options and encouraging land use to take advantage of transportation options.

Five factors contribute to the need for the proposed BLRT Extension project:

- Growing travel demand resulting from continuing growth in population and employment
- Increasing traffic congestion and limited fiscal resources
- People who depend on transit
- Limited transit service to suburban destinations (reverse commute opportunities) and time-efficient transit options
- Regional objectives for growth stated in *Thrive MSP 2040*

8.6 Description of the Project

The proposed BLRT Extension project would be a light rail transit (LRT) line of about 13 miles operating from downtown Minneapolis through the cities of Golden Valley, Robbinsdale, Crystal, and Brooklyn Park. The BLRT line would be an extension of the METRO Blue Line and would also connect to the METRO Green Line in downtown Minneapolis (see **Figure 8.6-1**).

On August 22, 2014, the proposed BLRT Extension project entered FTA's New Starts program, receiving formal approval to enter Project Development. The Preferred Alternative for the proposed BLRT Extension project, which resulted from refinements to the locally preferred alternative (LPA) during Project Development based on stakeholder input, technical analysis, as well as consideration of comments received on the Draft EIS, provides the basis for FTA's amended Section 4(f) evaluation and preliminary determinations.

8.6.1 Description of the Proposed BLRT Extension Project

The Preferred Alternative for the proposed BLRT Extension project (hereinafter referred to as the proposed BLRT Extension project) begins at the Target Field Station in downtown Minneapolis and follows Olson Memorial Highway (Trunk Highway [TH] 55) west to the BNSF Railway (BNSF) rail corridor just west of Thomas Avenue where it enters the BNSF rail corridor. Adjacent to the freight rail tracks, it continues in the rail corridor through the cities of Golden Valley, Robbinsdale, Crystal, and southern Brooklyn Park. The proposed BLRT Extension project crosses Bottineau Boulevard (County Road 81) at 73rd Avenue to run in the median of West Broadway Avenue (County State-Aid Highway 103) and terminates just north of TH 610 near the Target North Campus, as illustrated in **Figure 8.6-1**.

The proposed BLRT Extension project includes seven new LRT bridges: a 350-foot-long crossing of the Hennepin Energy Recovery Center (HERC) driveway, a 700-foot-long crossing of the ponds immediately north of Golden Valley Road, a 1,250-foot-long crossing of Grimes Pond in Robbinsdale, a 375-foot-long bridge over TH 100, a 1,250-foot-long bridge over the Canadian Pacific Railway rail tracks, a 925-foot-long bridge over the 73rd Avenue/Bottineau Boulevard intersection, and a 300 foot-long bridge over TH 610.

In addition, five roadway bridges would be reconstructed: a 375-foot-long Olson Memorial Highway bridge over the BNSF rail corridor, a 375-foot-long Plymouth Avenue bridge, a 120-foot-long Theodore Wirth Parkway bridge, a 215-foot-long Golden Valley Road bridge, and a 110-foot-long 36th Street bridge. The Olson Memorial Highway Bridge over Interstate Highway 94 (I-94) in Minneapolis and the I-94 Bridge over a BNSF rail corridor in Brooklyn Park would require modifications to accommodate the proposed BLRT Extension project.

In addition to the new LRT bridges and reconstructed roadway bridges, pedestrian bridges are proposed at the Bass Lake Road Station and the 63rd Avenue Station. The Bass Lake Road Station bridge would cross Bottineau Boulevard on the south side of Bass Lake Road and the 63rd Avenue Station bridge would cross Bottineau Boulevard on the north side of 63rd Avenue.

Other general elements of the proposed BLRT transitway system are stations, operations and maintenance facilities, traction power substations, fare collection system, rail tracks, vehicles, train control, and operating frequencies.

Eleven stations are planned for the proposed BLRT Extension project (see **Figure 8.6-1**). The station locations were selected based on connections with existing transit services and urban design principles including access and safety, public space availability, local plans, ridership catchment areas, and engineering feasibility. Potential station locations were presented to community members, local jurisdictions, and other stakeholders for input. In some cases, stations have been modified in response to comments. Five of the stations would include park-and-ride facilities, while the remaining stations would be walk-up facilities. Access plans for each station have been developed to enhance pedestrian and transit access for nearby communities. Ramps, stairs, elevators, and escalators in compliance with the Americans with Disabilities Act of 1990 (ADA), as amended, would be provided where needed.

The proposed BLRT Extension project's total cost will be approximately $1.496 billion (in year-of-expenditure dollars).

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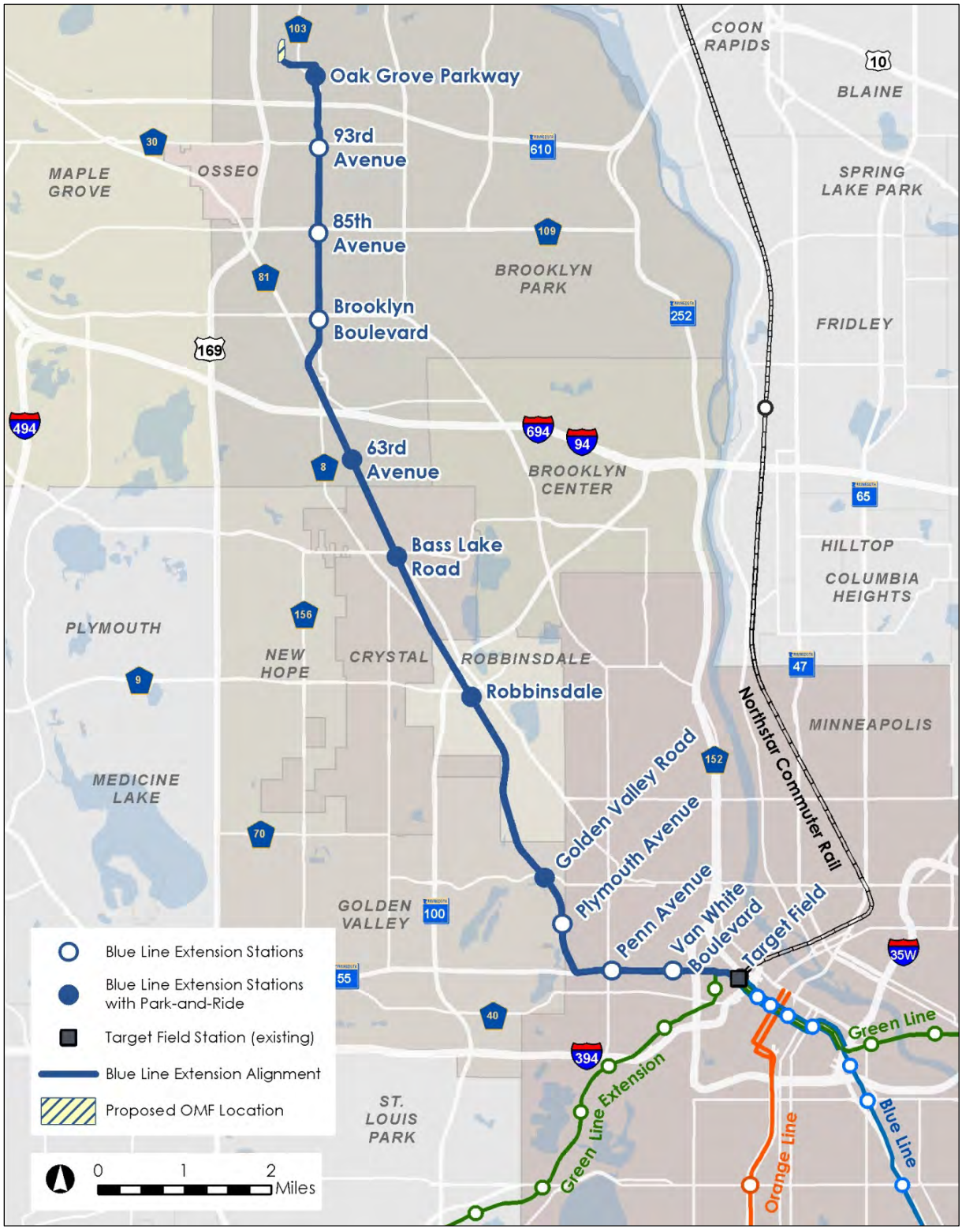
Figure 8.6-1. Proposed Blue Line Extension Project



8.7 Use of Section 4(f) Properties in the Proposed BLRT Extension Project Study Area

This section addresses the Section 4(f) properties where the potential impacts to Section 4(f) properties differ from the Draft Section 4(f) Evaluation in March 2014, (Chapter 8 of the Bottineau Transitway Draft EIS). In **Section 8.7.1**, 12 publicly owned park and recreation areas are addressed; seven of these park and recreation areas have updated Section 4(f) impact assessments. **Section 8.7.2** addresses 17 historic properties; two of these historic properties have updated Section 4(f) impacts assessments. All of the properties evaluated are listed and briefly described in **Table 8.7-1.**

Table 8.7-1. Section 4(f) Properties Evaluated in this Amended Draft Section 4(f) Evaluation

Property Name	Property Type	Location	Official with Jurisdiction	Section 4(f) Qualifying Description[1,2]
Parks and Recreational Areas				
Harrison Park*	Park	503 Irving Avenue North (located south of the Highway 55 service road and west of Irving Avenue)	MPRB	6.9-acre public park
TWRP	Park	3201 Glenwood Avenue North (located generally between a line extending along France Avenue on the west, Xerxes Avenue on the east, Interstate Highway 394 (I-394) on the south, and Golden Valley Road on the north)	MPRB	759-acre public park
Glenview Terrace Park	Park	2351 Zenith Avenue North (located south of Manor Drive)	MPRB	17.5-acre public park
Sochacki Park: Mary Hills Management Unit	Recreational Area	3500 June Avenue North (located between Golden Valley Road and 26th Avenue)	City of Golden Valley and JPA Board	15.7-acre public park
Sochacki Park: Sochacki Management Unit	Park	4237 36th Avenue North (located between 26th Avenue and 34th Avenue)	City of Robbinsdale and JPA Board	37.4-acre public park
South Halifax Park	Park	3101 Halifax Avenue North (located south of Lowry Avenue and west of Halifax Avenue)	City of Robbinsdale	4.0-acre public park
Lee Park*	Park	3738 Lee Avenue North (located between 36th Avenue and 38th Avenue)	City of Robbinsdale	6.7-acre public park
Triangle Park*	Park	4000 Orchard Avenue North (located at the intersection of Noble Avenue North & 40th Avenue North)	City of Robbinsdale	1.0-acre public park

Table 8.7-1. Section 4(f) Properties Evaluated in this Amended Draft Section 4(f) Evaluation

Property Name	Property Type	Location	Official with Jurisdiction	Section 4(f) Qualifying Description[1,2]
Becker Park	Park	6225 56th Avenue North (located in southwest quadrant of Bottineau Boulevard and Bass Lake Road and adjacent to the west side of the BNSF rail corridor)	City of Crystal	12.4-acre public park
Unnamed park (identified as Tessman Park in the Draft EIS)*	Park	7890 Tessman Drive (located south of North Hennepin Community College)	City of Brooklyn Park	6.6-acre public park
College Park*	Park	8233 West Broadway Avenue (located west of West Broadway Avenue, between 82nd Avenue and North College Park Drive)	City of Brooklyn Park	6.0-acre public park
Park Property Adjacent to Rush Creek Regional Trail	Park	Located north of, and parallel to, 101st Avenue between Elm Creek Park Reserve in Hennepin County and Coon Rapids Dam Regional Park in Anoka County	TRPD	6.4 mile trail corridor
Historic Resources				
St. Paul Minneapolis & Manitoba Railway Historic District*	Historic Property	Minneapolis	MnHPO	Eligible for NRHP
Minneapolis Warehouse Historic District*	Historic Property	Bounded by 1st Avenue North, 1st Street North, 10th Avenue, and 6th Street – Downtown Minneapolis	MnHPO	Listed on NRHP
Northwest Knitting Company Factory*	Historic Property	718 Glenwood Avenue, Minneapolis	MnHPO	Listed on NRHP
Sumner Branch Library*	Historic Property	611 Emerson Avenue North, Minneapolis	MnHPO	Listed on NRHP
Wayman African Methodist Episcopal Church*	Historic Property	1221 7th Avenue North, Minneapolis	MnHPO	Eligible for NRHP
Labor Lyceum*	Historic Property	1800 Olson Memorial Highway, Minneapolis	MnHPO	Eligible for NRHP
Floyd B. Olson Memorial Statue*	Historic Property	Olson Memorial Highway at Penn Avenue North, Minneapolis	MnHPO	Eligible for NRHP

Table 8.7-1. Section 4(f) Properties Evaluated in this Amended Draft Section 4(f) Evaluation

Property Name	Property Type	Location	Official with Jurisdiction	Section 4(f) Qualifying Description[1,2]
Bridge No. L9327*	Historic Property	Theodore Wirth Parkway over Bassett Creek (in TWRP), Golden Valley	MnHPO	Eligible for NRHP
Homewood Historic District*	Historic Property	Bounded by Penn Avenue, Oak Park Avenue, Xerxes Avenue, and Plymouth Avenue – Minneapolis	MnHPO	Eligible for NRHP
Osseo Branch, St. Paul Minneapolis & Manitoba Railway Historic District	Historic Property	Minneapolis, Golden Valley, Crystal, Robbinsdale, Brooklyn Park, Osseo	MnHPO	Eligible for NRHP
Grand Rounds Historic District	Historic Property	Minneapolis, Golden Valley, Robbinsdale	MnHPO	Eligible for NRHP
Sacred Heart Catholic Church*	Historic Property	4087 West Broadway Avenue, Robbinsdale	MnHPO	Eligible for NRHP
Robbinsdale Waterworks*	Historic Property	4127 Hubbard Avenue North, Robbinsdale	MnHPO	Eligible for NRHP
Hennepin County Library – Robbinsdale Branch*	Historic Property	4915 42nd Avenue North, Robbinsdale	MnHPO	Listed on NRHP
West Broadway Avenue Residential Historic District*	Historic Property	West Broadway Avenue, between 42nd Avenue North and TH 100, Lakeland Avenue North to BNSF right-of-way – Robbinsdale	MnHPO	Eligible for NRHP
Jones-Osterhus Barn*	Historic Property	4510 Scott Avenue North, Robbinsdale	MnHPO	Eligible for NRHP
Minneapolis & Pacific/Soo Line Railway Historic District*	Historic Property	Crystal	MnHPO	Eligible for NRHP

* Denotes Section 4(f) resource where FTA's preliminary determination has not changed since the publication of the March 2014 Draft Section 4(f) Evaluation.

[1] All listed parks are publicly owned, publicly accessible, and of local significance.

[2] All acreages in this table are approximate. Theodore Wirth Cultural Landscape Study (see **Appendix H**) is the source of the number of acres and this acreage includes Theodore Wirth Parkway.

8.7.1 Publicly Owned Parks and Recreational Areas

Table 8.7-2 summarizes FTA's revised assessment of Section 4(f) properties and also includes how many acres of each property would be used under the proposed BLRT Extension project (compared to the property's acreage). Only parks where FTA's assessment has changed from the March 2014 Draft Section 4(f) Evaluation are listed in **Table 8.7-2**; however, all Section 4(f) parks are discussed in **Section 8.7.1**.

Table 8.7-2. Summary of Preliminary Section 4(f) Park and Recreational Property Impacts[1]

Section 4(f) Property	Direct Use	*De minimis* Use	Temporary Occupancy	Existing Property Magnitude[2]	Acres Temporary Easement	Acres Permanently Used	Percent of Property Used
TWRP		X		759 acres	9.2	2.1	<1
Glenview Terrace Park		X		17.5 acres	0.25	0.01	<1
Sochacki Park: Mary Hills Management Unit			X	15.7 acres	0.57	0	0
Sochacki Park: Sochacki Management Unit			X	37.4 acres	5.6	0	0
South Halifax Park			X	4.0 acres	0.7	0	0
Becker Park			X	12.4 acres	0.1	0	0
Park Property Adjacent to Rush Creek Regional Trail			X	6.4 miles	No use of trail itself; 1.1 acres of temporary easement of property associated with trail	0	0

[1] See **Section 8.4** of this report for definitions of the potential types of Section 4(f) uses.

[2] All acreages in this table are approximate. Theodore Wirth Cultural Landscape Study (see **Appendix H**) is the source of the number of acres and this acreage includes Theodore Wirth Parkway.

8.7.1.1 Harrison Park

Section 4(f) Property Description

Harrison Park is located south of the Olson Memorial Highway service road and west of Irving Avenue (see **Figure 8.7-1**). Amenities provided by this 6.9-acre park include baseball, softball, football, and soccer fields, a basketball court, biking and walking paths, a picnic area, restroom facilities, a wading pool, and a playground. The park is under the jurisdiction of the Minneapolis Park and Recreation Board (MPRB). Because the park is a publicly owned, publicly accessible park of local significance, Harrison Park is considered by FTA to be a Section 4(f) protected property.

Figure 8.7-1. Harrison Park

Potential Impacts to Harrison Park

As illustrated in the BLRT preliminary engineering plans, the proposed BLRT Extension project would not result in a permanent incorporation of land from Harrison Park. As such, there would not be an impact on the property.

Temporary Occupancy

As illustrated in the BLRT preliminary engineering plans, the proposed BLRT Extension project would not result in the temporary use of property from Harrison Park during construction.

Potential Constructive Use

Existing bicycle, pedestrian, and vehicular access to the park would be maintained under the proposed BLRT Extension project. Changes in development density in areas surrounding the proposed Van White Boulevard and Penn Avenue transit stations could result in an increase in Harrison Park usage, which could have potential for both positive and negative consequences. The proposed BLRT Extension project would result in changes in the park's setting and a visitor's visual experience through the introduction of the light rail alignment north of the park. The visual changes and impacts would not alter or impair the overall use or function of Harrison Park. Although the sound of light rail trains could be audible from within the park, the park is not considered a sensitive noise receptor based on FTA's criteria.

Coordination

MPRB, as the OWJ, has been involved in design meetings for the proposed BLRT Extension project, and is aware that there are no permanent or temporary easements required from the park site. The Council has coordinated with the city of Minneapolis as well given their interest in the park.

8.7.1.2 Theodore Wirth Regional Park

Section 4(f) Property Description

Theodore Wirth Regional Park (TWRP; 3201 Glenwood Avenue North) is located generally between a line extending along France Avenue on the west (France Avenue is discontinuous and exists north and south of the park only), Xerxes Avenue on the east, I-394 to the south, and Golden Valley Road on the north. At 759 acres, TWRP is the largest park in the Minneapolis Park System. The northern two-thirds of the park lie within the municipal boundary of Golden Valley, while the southern third of the park lies within the City of Minneapolis. The park can be accessed from the north and south by Theodore Wirth Parkway and Cedar Lake Parkway. From the east and west, the park can be accessed via Glenwood Avenue North, Plymouth Avenue, Golden Valley Road, and the Luce Line Trail.

TWRP is recognized for its variety of year round recreational activities as well as its natural resource features. The park has trails for walking, running, dog walking, biking, off-road biking, and skiing. Summer activities include picnicking, swimming, basketball, tennis, volleyball, golf, and disc golf. Winter activities include snowboarding, sledding, tubing, cross-country skiing, and snowshoeing. The park's natural amenities include wetlands, prairie, and woodland resources. Within these natural areas, TWRP provides opportunities for quietude and nature observation,

particularly in the peaceful setting along portions of the park's western boundary. These natural areas of TWRP are consistent with historic and current master plans for the park.

The Eloise Butler Wildflower Garden, the oldest public wildflower garden in the nation, is located within the southern portion of the park. TWRP is also the site of the Quaking Bog, a five-acre acid bog that is one of the southernmost bogs in Minnesota. The wildflower garden and bog are situated about a half-mile southwest of where the proposed BLRT Extension project transitions from the BNSF rail corridor to Olson Memorial Highway.

Existing Facilities: TWRP has the following existing natural amenities and facilities: Bassett Creek, Wirth Lake and Birch Pond, a fishing pier and boat launch, a swimming beach, a floating boardwalk, volleyball courts, a half basketball court, tennis court, a playground, picnic facilities, indoor picnic pavilion, restrooms, a snowboard park, a Swiss chalet–style clubhouse, 18-hole and par-three golf courses, an 18-hole disc golf course, and the J.D. Rivers' Children's Garden. The Eloise Butler Wildflower Garden and Bird Sanctuary, the Quaking Bog, and Birch Pond are situated at the south end of the park.

Planned Facilities: On February 18, 2015, MPRB adopted the Theodore Wirth Regional Park Master Plan (TWRP Master Plan). The plan focuses on two primary outcomes: (1) TWRP's unique natural and ecological resources would be protected and enhanced and (2) TWRP's natural resources would be a basis for recreational and visitor experiences (MPRB, 2015). The plan depicts proposed future amenities including walking paths, an off-road cycling trail, golf course improvements, an event cycling trail and stadium, along with various improvements to existing park facilities.

Figure 8.7-2 depicts locations of existing and planned TWRP facilities.

Potential Impacts to TWRP

The proposed BLRT Extension project would result in the permanent incorporation of approximately 2.1 acres of property from TWRP (see **Figure 8.7-3 through Figure 8.7-5**). In particular, an approximate 1.9-acre portion of designated parkland, located in the southwest corner of the Golden Valley Road and Theodore Wirth Parkway intersection, would be affected with the construction of a transit station and park-and-ride lot. This triangle-shaped portion of TWRP is unimproved with no existing or planned recreational amenities. The 1.9 acres are isolated from the larger segments of TWRP as it is surrounded by transportation infrastructure (Golden Valley Road, Theodore Wirth Parkway, and the existing rail corridor). An additional 0.2 acre would need to be permanently incorporated and would occur immediately adjacent to the eastern edge of rail corridor in an area just north of Plymouth Avenue. This narrow strip of parkland is needed to construct the transitway and associated facilities, including drainage improvements. This impact occurs on land associated with TWRP, but is on an unimproved area that is separated from the primary parkland by the rail corridor.

During construction, approximately 9.2 acres of temporary construction easements would be required within TWRP to grade land around the proposed BLRT Extension project corridor, to provide access during construction, and to provide floodplain and wetland mitigation. The land encompassed by temporary construction easements includes existing open space (e.g. wooded and

grassland areas adjacent to the rail corridor and Bassett Creek). A short segment of an existing north-south trail that parallels the west side of the rail corridor (a portion of the trail is located on the private rail corridor right-of-way) would be realigned along with a shift of an approximately 400-foot stretch of Bassett Creek as part of the replacement of the Plymouth Avenue Bridge. Access to the park would remain open throughout construction.

A portion of TWRP property just west of the proposed BLRT Extension project corridor and just north of Olson Memorial Highway, along with adjacent private property, would be excavated for floodplain and wetland mitigation. The design details of the excavation and grading of the site would be coordinated with MPRB staff to ensure a design that is in harmony with the park setting.

All wetland impacts and mitigation activities have been reviewed and approved by the Minnesota Wetlands Technical Evaluation Panel (TEP)[1] and the US Army Corps of Engineers (USACE). USACE issued approval of National Environmental Policy Act (NEPA)/404 Merger Concurrence Point 4[2] on June 16, 2016.

The Council considered modifications to the alignment to minimize effects on park property. However, given the limited area within the BNSF rail corridor and the proximity of the park property, alignment shifts were largely not effective.

The total permanent and temporary easements on TWRP property necessary for building the proposed BLRT Extension project constitute approximately one percent of the total park property; permanent easements needed for the proposed BLRT Extension project are significantly less than one percent of the 759-acre park.

In consideration of the permanent and temporary uses of TWRP property, the proposed BLRT Extension project has evaluated park-related enhancements as measures to minimize harm to the park resource. These enhancements include (see also **Figure 8.7-4** and **Figure 8.7-5**):

- Relocation of the TWRP trail adjacent to Bassett Creek; the portion of the existing trail that is located within BNSF right-of-way would be shifted west to lie entirely within TWRP property.
- Construction of a stair access and bridge over Bassett Creek to connect the previously mentioned trail to Plymouth Avenue, thereby improving connectivity between the TWRP trail system and the proposed BLRT Extension project Plymouth Avenue Station.
- Construction of a trail connection between the existing trail on the west side of Theodore Wirth Parkway and the trail system in Sochacki Park just north of Golden Valley Road. The proposed trail connection would run along the west side of the rail corridor, pass under the Golden Valley

[1] The BLRT Extension project TEP includes representatives from the cities along the corridor, the Bassett Creek Watershed Management Commission, the Shingle Creek/West Mississippi Watershed Management Commission, the Hennepin County Soil and Water Conservation District, and the Minnesota Board of Soil and Water Conservation. MPRB staff have also participated in TEP meetings.

[2] Concurrence Point 4, in the combined or "merged" NEPA review process and Section 404 of the Clean Water Act permitting process, is an agreement between USACE and FTA regarding the compensatory mitigation requirements for wetland impacts, which have been submitted to USACE as part of the Section 404 permit process for review and approval.

Road bridge, curve around the wetland to the north of Golden Valley Road, and connect to the existing trail system in Sochacki Park: Mary Hills Management Unit.

- Construction of a new trailhead incorporated into the Golden Valley Road Station park-and-ride at the intersection of Theodore Wirth Parkway and Golden Valley Road. The trailhead would provide a convenient access point to the MPRB trail adjacent to Theodore Wirth Parkway, and to the proposed Bassett Creek Trail, a TRPD trail that would run along Golden Valley Road at this location. The trailhead would also provide wayfinding signs to help direct pedestrians and bicyclists to park resources in the area.
- Reconstruction of the Theodore Wirth Parkway bridge over the BNSF rail corridor; this bridge is currently owned by MPRB.
- Reconstruction of the Theodore Wirth Parkway/Golden Valley Road intersection, including intersection features that would enhance pedestrian and bicycle safety.
- Minimization of visual effects through ongoing coordination regarding design of station elements and retaining walls.

Most of the park and recreation area of TWRP property will not be directly affected by the proposed BLRT Extension project. There will be no permanent effects on park property which accommodates the golf course, trails, and other recreational facilities from implementation of the proposed BLRT Extension project. Temporary impacts will be limited to the existing trail adjacent to Bassett Creek which will be reconstructed as part of the proposed BLRT Extension project, relocating the trail to the west outside of the BNSF right-of-way. In addition, the proposed BLRT Extension's project infrastructure will generally be screened from view from the TWRP recreational areas due to retained trees and existing natural view sheds located between the proposed alignment and the park areas.

The portion of the TWRP property that will have a permanent use by the proposed BLRT Extension project includes some natural vegetation; however, that area is generally isolated from the larger park and recreation areas located in the western and southern portions of the property. Further, the area that will be permanently used by the proposed BLRT Extension project is not a recreational feature of the TWRP, and is not planned to be incorporated into recreational use in the TWRP Master Plan. Therefore, the permanent acquisition of 2.1 acres of TWRP would not adversely affect the activities, features, or attributes which qualify TWRP for protection under Section 4(f).

Construction activities within TWRP property will be closely coordinated with MPRB to help avoid and minimize effects on recreational activities within the park property. The Council will also provide MPRB and the public with ongoing notification of construction activities within the open space, such as the timing and location of heavy construction activities and detours. All areas of the TWRP property that will be affected by proposed BLRT Extension project's construction activities will be restored to existing conditions or better and restoration plans will be developed and implemented in consultation with MPRB.

Figure 8.7-2. Existing and Planned TWRP Facilities

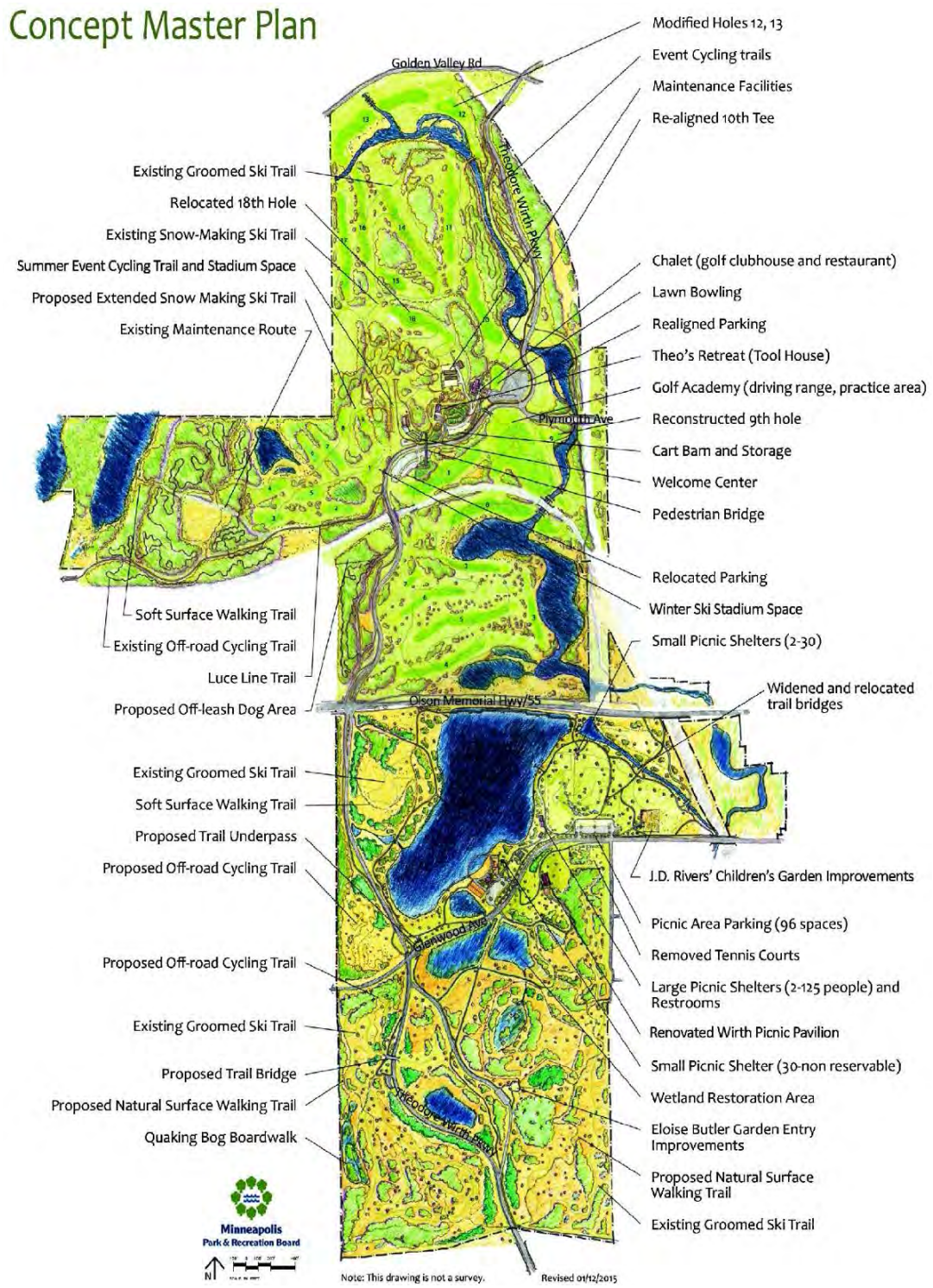


Figure from TWRP Master Plan, MPRB, February 2015

Figure 8.7-3. TWRP: Overview

Figure 8.7-4. TWRP: Plymouth Avenue Station Area

Figure 8.7-5. TWRP: Golden Valley Road Station Area

Coordination

Coordination between FTA, the Council, and MPRB is ongoing regarding anticipated impacts to TWRP that would result from constructing the proposed BLRT Extension project. Documentation showing these coordination efforts is provided in **Appendix J**. The documentation includes notes from meetings with MPRB staff discussing park impacts and mitigation options, and a November 2015 MPRB action in support of the proposed BLRT Extension project that includes mitigation and continuing coordination components.

8.7.1.3 Glenview Terrace Park

Section 4(f) Property Description

Glenview Terrace Park is located in the City of Golden Valley south of Manor Drive and west of Zenith Avenue, and is owned by MPRB. The 17.5-acre park includes playground equipment, two lighted tennis courts, open space, and walkways. The rail corridor forms the southwestern boundary of the park. Active uses of the park are buffered from the proposed BLRT Extension project by a wetland area and ravine that is heavily wooded.

Potential Impacts to Glenview Terrace Park

As documented in the Draft EIS and Draft Section 4(f) Evaluation, FTA had preliminarily determined that there would be "No Use" of Glenview Terrace Park. However, since publication of the Draft Section 4(f) Evaluation, the Council has refined the design of the proposed BLRT Extension project, which results in a permanent use of Glenview Terrace Park. In particular, a 0.01-acre unimproved portion of designated parkland (currently a wetland) would be impacted with the operation of the proposed BLRT Extension project (see **Figure 8.7-6**), specifically to accommodate an LRT bridge over the wetland area. No existing and/or planned park amenities would be affected and all features, connections, and activities at the park would be maintained throughout construction.

The improvements associated with the proposed BLRT Extension project in the area of Glenview Terrace Park include the Golden Valley Road Station and reconstruction of the Golden Valley Road Bridge. Several design adjustments have been made as a result of coordination with staff from the local jurisdictions affected by the proposed bridge structure and with input from representatives with BNSF Railway. Specifically, BNSF Railway has indicated the need to separate the freight rail tracks from the LRT tracks underneath the Golden Valley Road Bridge. This would be accomplished by placing a bridge pier between the tracks of the freight rail and transit line. The refined Golden Valley Road bridge design requires a slightly wider footprint for the proposed LRT bridge over the wetland. This slight shift results in the 0.01-acre permanent impact to Glenview Terrace Park.

The wetland impact in this area has been minimized through preliminary design efforts. At the time of the publication of the Draft Section 4(f) Evaluation in 2014, the freight rail and LRT corridor would have been constructed on fill through the middle of the wetland. The current design allows the existing freight rail to stay in place, and would construct the LRT on a bridge over the wetland. Therefore the wetland impact in this area has been reduced to the cross-section of the bridge piers. The wetland impact minimization strategy at this location has been discussed with the Minnesota

Wetlands TEP and USACE. USACE has agreed to this approach through its approval of NEPA/404 Merger Concurrence Point 4 on June 16, 2016.

During construction, approximately 0.25 acre of temporary construction easements within the park would be required for access and construction work along the proposed BLRT Extension project (see **Figure 8.7-6**). Specifically, the work area is needed to enable construction of the new BLRT tracks. The area of proposed temporary easements is currently open water (wetland), wooded, and undeveloped. Glenview Terrace Park and all existing park features, connections, and activities would be maintained throughout construction.

Most of the park and recreation area of Glenview Terrace Park property will not be directly affected by the proposed BLRT Extension project. The park property which accommodates the playground areas, tennis courts, open space and walkways will not be altered by the proposed BLRT Extension project, either permanently or temporarily. In addition, the proposed BLRT Extension's project infrastructure will generally be screened from view from the Glenview Terrace Park recreational areas due to retained trees and existing natural view sheds located between the proposed alignment and the park areas.

The websites for MPRB and the city of Golden Valley indicate that the features and amenities of Glenview Terrace Park include biking paths, a picnic area, walking paths, playground equipment, lighted tennis courts, and game squares. These amenities are located in the central and eastern portion of the park property. The park amenities are at an elevation of approximately 900 feet above mean sea level (amsl). The 0.01 acre required for the proposed BLRT Extension project is isolated from the recreational features. Specifically, the area to be impacted is at an elevation of approximately 838 feet amsl, is at the western edge of the park property immediately adjacent to existing transportation right-of-way, is over 875 feet from the recreational amenities at the park, and is visually screened from the recreational features by the presence of a dense stand of mature trees.

Construction activities within Glenview Terrace Park property will be closely coordinated with MPRB and city of Golden Valley to help avoid and minimize effects on recreational activities within the park property and provide continued access to park users. The Council will also provide MPRB, the city of Golden Valley, and the public with ongoing notification of construction activities within the open space, such as the timing and location of heavy construction activities and detours. All areas of the Glenview Terrace Park property that will be affected by proposed BLRT Extension project's construction activities will be restored to existing conditions or better and restoration plans will be developed and implemented in consultation with MPRB and the city of Golden Valley.

The Council considered widening the rail corridor away from Glenview Terrace Park, but this would result in the need to shift the freight rail tracks southwest and result in further impacts to Sochacki Park: Mary Hills Management Unit (another Section 4(f) Resource). In coordination with the city of Golden Valley and MPRB, the Council has made efforts to help avoid, minimize, and mitigate impacts to Glenview Terrace Park. As part of the measures to minimize harm to the park,

Figure 8.7-6. Glenview Terrace Park

the Council would provide public awareness of and access to the park property. Specifically, the Council would provide pedestrian and bicycle improvements at the nearby Theodore Wirth Parkway/Golden Valley Road intersection and incorporate wayfinding signs at the trailhead that would direct people to various park system amenities, including Glenview Terrace Park.

Coordination

FTA has coordinated with MPRB as the OWJ regarding the use of Glenview Terrace Park and associated minimization and mitigation measures, and has discussed the proposed *de minimis* use determination for the park. The Council has coordinated with the city of Golden Valley as well given their interest in the park.

The Council would continue to coordinate with FTA, MPRB, and the city as the proposed BLRT Extension project advances regarding potential refinements to minimization and mitigation strategies.

8.7.1.4 Sochacki Park: Mary Hills Management Unit

Section 4(f) Property Description

This Section 4(f) property is located between Golden Valley Road and 26th Avenue in Golden Valley (see **Figure 8.7-7**). The existing rail corridor borders the east side of the recreational property. Sochacki Park: Mary Hills Management Unit encompasses 15.7 acres of wooded open space. Other recreational features include trails, picnic areas, and benches. A meandering north-south trail provides a connection between the Mary Hills and Sochacki management units. The Mary Hills Management Unit is under the jurisdiction of the city of Golden Valley and the JPA partners.

Potential Impacts to Sochacki Park: Mary Hills Management Unit

The proposed BLRT Extension project would not result in a permanent incorporation of land from the Mary Hills Management Unit; however, there would be a temporary easement of approximately 0.57 acre along the eastern border of the Sochacki Park: Mary Hills Management Unit to facilitate the proposed BLRT Extension project construction activities and stormwater conveyance improvements (see **Figure 8.7-7**).

The overall duration of construction for the entire proposed BLRT Extension project is approximately 3 years. The duration of the construction activities for the portion affecting the Sochacki Park: Mary Hills Management Unit is estimated to occur for approximately 18 calendar months—additional time may be needed for restoration activities, depending on variables, such as seasonal timing of the activities and weather conditions. There would be no change in ownership of the parkland that would be temporarily occupied.

Construction activities within the Sochacki Park: Mary Hills Management Unit property will be adjacent to the BNSF right-of-way and away from the recreational areas of the park property. Construction activities include:

- Clearing and grading along the eastern edge of the park to match grade elevations for the proposed BLRT Extension project corridor and improve existing stormwater drainage; and
- Restoration of vegetation within Sochacki Park: Mary Hills Management Unit property.

Figure 8.7-7. Sochacki Park: Mary Hills Management Unit

All areas of the Sochacki Park: Mary Hills Management Unit property that will be affected by proposed BLRT Extension project's construction activities will be restored to existing conditions or better and restoration plans will be developed and implemented in consultation with the city of Golden Valley and the JPA.

The Sochacki Park: Mary Hills Management Unit would be accessible to the public throughout construction via existing trails and paths. There would be no permanent change to the Sochacki Park: Mary Hills Management Unit as a result of proposed BLRT Extension project actions.

None of the activities, features, or attributes of the Sochacki Park: Mary Hills Management Unit would be permanently affected nor would temporary construction actions permanently interfere with visitors using the park as they do currently. Council staff would coordinate with staff from the city of Golden Valley and the JPA to avoid park activities identified by the city that should be considered when setting the schedule for construction activities. Impacts related to temporary changes to access would be mitigated by development of a Construction Communication Plan, which would include advance notice of construction activities and highlighting trail closures and detour routes.

The portion of the park to be temporarily occupied during construction would be restored to existing conditions or better. A new multi-use trail under the Golden Valley Road Bridge is proposed that would provide a connection between the Sochacki Park: Mary Hills Management Unit and TWRP to the south (see **Figure 8.7-7**). The existing trail within the Sochacki Park: Mary Hills Management Unit would be widened from eight feet to 10 feet, as requested by the city and the JPA.

As part of coordination during proposed BLRT Extension project development, the Council has discussed potential impacts to Sochacki Park: Mary Hills Management Unit with the city of Golden Valley and the JPA. The city of Golden Valley and the JPA have agreed in writing that the mitigation commitments listed above (the restoration activities, the widening of the existing trail, and the construction of a trail connection to TWRP) are reasonable mitigation for occupying park property during LRT construction activities. Following the comment period on this Amended Draft Section 4(f) Evaluation and pending the review of comments received, FTA and the Council will seek written concurrence from the city of Golden Valley and the JPA on the temporary occupancy determination.

Potential Constructive Use

Changes in development density in areas surrounding proposed transit stations could result in increased use of the Mary Hills Management Unit, which could have potential for both positive and negative consequences.

The proposed BLRT Extension project would also result in changes to the property's setting and a visitor's visual experience, resulting in a moderately-low and low impact to views into and from the nature area, respectively. In particular, some users' visual experiences could be perceived as adversely affected by the introduction of light rail trains, located immediately east of the property. However, the visual changes and impacts would not alter or impair the overall use or function of the property. The alignment of the proposed BLRT Extension project in the area adjacent to the Mary Hills Management Unit would parallel the existing freight rail line. Although the sound of light

rail trains would be audible from within the park, the park is not considered a sensitive noise receptor based on FTA's criteria.

In summary, the proximity impacts of the proposed BLRT Extension project on Mary Hills Management Unit would not substantially impair the qualifying activities, features, or attributes of the park.

Coordination

During the design process, proposed BLRT Extension project staff consulted with the city of Golden Valley, the owner of the Mary Hills Management Unit, as well as the city of Robbinsdale and TRPD (the other two members of the JPA), on design adjustments to the proposed light rail alignment and associated facilities within the vicinity of the Mary Hills Management Unit.

8.7.1.5 Sochacki Park: Sochacki Management Unit

Section 4(f) Property Description

The Sochacki Park: Sochacki Management Unit is situated between 26th Avenue and 34th Avenue in the City of Robbinsdale. The park is bordered by June Avenue and residential backyards on the west, and the rail corridor on the east. The 37.4-acre park primarily provides passive recreational activities. Existing features within the Sochacki Park: Sochacki Management Unit include a picnic area, picnic pavilion, and gravel surface trails. An existing north-south path provides a connection to the Sochacki Park: Mary Hills Management Unit, which is located immediately south of the Sochacki Park: Sochacki Management Unit. The park is under the jurisdiction of the city of Robbinsdale and the JPA.[3]

Potential Impacts on Sochacki Park: Sochacki Management Unit

The proposed BLRT Extension project would not result in a permanent incorporation of land from the Sochacki Park: Sochacki Management Unit; however it would require a temporary easement of approximately 5.6 acres along the western edge of the Sochacki Park: Sochacki Management Unit to provide access and construction staging for the construction of a new LRT bridge structure across Grimes Pond (see **Figure 8.7-8**). All non-park construction staging options have been considered and proven to not be feasible because of impacts to residential property adjacent to the BNSF right-of-way.

The overall duration of construction for the entire proposed BLRT Extension project is approximately 3 years. The duration of the construction activities for the portion affecting the Sochacki Park: Sochacki Management Unit is estimated to occur for approximately 18 calendar months—additional time may be needed for restoration activities, depending on variables, such as seasonal timing of the activities and weather conditions. There would be no change in ownership of the parkland that would be temporarily occupied.

[3] See **Section 8.2** for information regarding the JPA and the operation of Sochacki Park and Sochacki Park: Mary Hills Management Unit.

Figure 8.7-8. Sochacki Park: Sochacki Management Unit, and South Halifax Park

The portions of the Sochacki Park: Sochacki Management Unit to be temporarily occupied during construction of the LRT bridge over Grimes Pond include areas of open space with existing prairie and wooded vegetation. The proposed scope of work for the Sochacki Park: Sochacki Management Unit involves construction activities over multiple areas of the park and includes the following components:

- Approximately 5.6 acres of park property would be subject to a temporary easement for staging/laydown areas on both the north and south sides of North Rice Pond, and for a temporary construction access road from the northern border of the park to the northern and southern staging areas. This road would generally follow the current road/path alignment to minimize additional impacts to park trees and other vegetation. These temporary construction facilities would be used for the construction of the new LRT bridge across Grimes Pond.
- A temporary fence would be erected along both sides of the existing access road and a new pedestrian path would be added to just west of the access road provide a safe north-south connection through the park while construction vehicles utilize the access road during construction of the new LRT Bridge. Vehicular access to the southern end of the park would be limited during construction. However, pedestrian access would be maintained throughout the temporary occupancy.
- Minor improvements to the existing narrow access road would be made in order to accommodate the structural capacity needs of construction vehicles/equipment and to provide several bypass areas to allow two-way traffic an opportunity to safely pass when entering/exiting the park property.

All areas of the Sochacki Park: Sochacki Management Unit property that will be affected by proposed BLRT Extension project's construction activities will be restored to existing conditions or better and restoration plans will be developed and implemented in consultation with the city of Robbinsdale and the JPA. The park would remain accessible to the public throughout construction. Pedestrians would still be allowed to access the park from all existing access points. A new paved trail is proposed along the western edge of the north-south park access road, and all natural trails would remain open. The portion of the park to be temporarily occupied does not preclude the use of park resources by the public. Therefore, the nature and magnitude of changes to the Sochacki Park: Sochacki Management Unit are considered minimal.

None of the aforementioned activities, features, or attributes of the Sochacki Park: Sochacki Management Unit would be permanently impacted nor would temporary construction actions at the park permanently interfere with visitors utilizing the park as they do currently. Council staff would coordinate with staff from the city of Robbinsdale and the JPA to avoid park activities identified by the city that should be considered when setting the schedule for construction activities. Impacts related to temporary changes to access would be mitigated by development of a Construction Communication Plan, which would include advance notice of construction activities and highlighting park road and trail closures and proposed detour routes.

The portion of the park to be temporarily occupied during construction would be restored to existing conditions or better—this includes the following mitigation commitments (see **Appendix J** for a copy of the JPA Board action):

- Removal of existing vegetation as agreed to by Council staff and JPA staff within the restoration zone, defined as A) the southern construction staging area, and B) the northern staging area (see Map Attachment A), blending into the adjacent disturbed areas in the northeast quadrant of the park.
- Removal and disposal of all surface rubble within the restoration zone, in accordance with the Minnesota Pollution Control Agency (MPCA) permitting requirements.
- Addition of clean fill and top soil in the restoration zone in accordance with MPCA permitting requirements and consistent with the re-use of this area as guided by stakeholders.
- Development and implementation of a revegetation plan approved by the JPA staff. The plan would address all areas disturbed by construction activities, including secondary construction activities in BNSF right-of-way, such as moving the Xcel power lines. In addition, the plan would identify practicable additional thickening of the vegetative buffer such as plantings of evergreen trees between the park and the LRT Corridor for the purposes of reducing visual impacts of the LRT on park visitors.
- In the southern staging area, North Rice Lake water edge restoration work and vegetation plantings to provide learning opportunities for park users (design and species to be determined [TBD]).
- Restoration of the existing paved interior road to provide for safe two way traffic.
- Removal or replacement of the northern parking lot to be determined in consultation with JPA staff.
- Reconstruction and expansion of the interior paved parking lot (exact site TBD in consultation with JPA staff), to include room for a school bus turnaround.
- Clearing, revegetation and fencing of an area immediately east and north of the interior parking lot within the northern staging area for future use as a dog off leash area.
- Providing practicable utility services to a site adjacent to the interior parking lot for future development of a bathroom/storm shelter, and drinking water fountain.
- Ground preparation for a future education shelter sized for 50 students in a location TBD.
- Construction of a water education platform on North Rice Lake.
- Redevelopment of a safe 10-foot-wide paved trail through the length of the park, running from the northern entrance to the current trail terminus by Bonnie Lane; with restoration along the trail edge as needed.
- Construction of an off-road trail connection from the existing terminus of the Sochacki Park trail at Bonnie Lane, crossing underneath the reconstructed Golden Valley Road Bridge and connecting to the existing trail in TWRP.

Potential Constructive Use

Changes in development density in areas surrounding proposed transit stations could result in an increase in Sochacki Park: Sochacki Management Unit usage, which could have potential for both positive and negative consequences.

The proposed BLRT Extension project would also result in changes to the park's setting and a visitor's visual experience, resulting in a moderately-low and low impact to views into and from the park, respectively. In particular, some users' visual experiences could be perceived as adversely affected by the introduction of light rail trains located immediately east of the park. However, the visual changes and impacts would not alter or impair the overall use or function of the park. The alignment of the BLRT in the area adjacent to the Sochacki Park: Sochacki Management Unit would parallel the existing BNSF rail corridor. Although the sound of light rail trains would be audible from within the park, the park is not considered a sensitive noise receptor based on FTA's criteria.

In summary, the proximity impacts of the proposed BLRT Extension project on the Sochacki Park: Sochacki Management Unit would not substantially impair the qualifying activities, features, or attributes of the park.

Coordination

During the proposed BLRT Extension project's preliminary design process, staff consulted with the city of Robbinsdale, the park owner, on design adjustments to the proposed light rail alignment and associated facilities within the vicinity of the Sochacki Park: Sochacki Management Unit. As part of coordination during project development, the Council has discussed potential impacts to Sochacki Park: Sochacki Management Unit with the city of Robbinsdale and the JPA. The city and the JPA have agreed in writing that the mitigation commitments listed above are reasonable mitigation for occupying park property during LRT construction activities. Following the comment period on this Amended Draft Section 4(f) Evaluation and pending the review of comments received, FTA and the Council will seek written concurrence on the temporary occupancy determination from the JPA Board and the city of Robbinsdale.

8.7.1.6 South Halifax Park

Section 4(f) Property Description

The park is located southwest of 31½ Avenue North and Halifax Avenue in Robbinsdale. The existing rail corridor forms the western boundary of the park. The 6.6-acre park has playground equipment, half-court basketball, a picnic area, and trails. The park is under the jurisdiction of the city of Robbinsdale. As the park is a publicly owned, publicly accessible park of local significance, South Halifax Park is considered by FTA to be a Section 4(f) protected property.

Potential Impacts to South Halifax Park

As illustrated in the BLRT preliminary engineering plans, the proposed BLRT Extension project would not result in a permanent incorporation of land from South Halifax Park; however the proposed BLRT Extension project would require a temporary easement of approximately 0.70 acre

along the western border of South Halifax Park to facilitate project-related construction activities (see **Figure 8.7-8**).

The overall duration of construction for the entire proposed BLRT Extension project is approximately 3 years. The duration of the construction activities for the portion affecting South Halifax Park is estimated to occur for approximately 18 calendar months—additional time may be needed for restoration activities, depending on variables, such as seasonal timing of the activities and weather conditions. There would be no change in ownership of the parkland that would be temporarily occupied.

The area of South Halifax Park to be occupied during construction is primarily open space (open water wetland) with no improved park amenities (see **Figure 8.7-8**). The proposed LRT bridge across Grimes Pond is located just northwest of South Halifax Park and temporary occupancy of 0.70 acre of the park is necessary in order to access the construction area and construct the improvements. South Halifax Park would still be accessible to the public throughout construction via existing roadways and paths. There would be no permanent change to South Halifax Park as a result of proposed BLRT Extension project actions. All areas of the South Halifax Park property that will be affected by proposed BLRT Extension project's construction activities will be restored to existing conditions or better and restoration plans will be developed and implemented in consultation with the city of Robbinsdale.

None of the activities, features, or attributes of South Halifax Park would be permanently impacted nor would temporary construction actions permanently or temporarily interfere with visitors utilizing the park as they do currently. Council staff would coordinate with staff from the city of Robbinsdale to avoid park activities identified by the city that should be considered when setting the schedule for construction activities. Impacts related to temporary changes to access would be mitigated by development of a Construction Communication Plan, which would include advance notice of construction activities and highlighting sidewalk closures and detour routes.

The portion of the park to be temporarily occupied during construction would be restored to existing conditions or better.

Potential Constructive Use

Changes in development density in areas surrounding proposed transit stations could result in an increase in usage of South Halifax Park, which could have potential for both positive and negative consequences.

The proposed BLRT Extension project would also result in changes to the property's setting and a visitor's visual experience, resulting in a moderately-low and low impact to views into and from the nature area, respectively. In particular, some users' visual experiences could be perceived as adversely affected by the introduction of light rail trains, located immediately west of the property. However, the visual changes and impacts would not alter or impair the overall use or function of the property. The alignment of the proposed BLRT Extension project in the area adjacent to South Halifax Park would parallel the existing freight rail line. Although the sound of light rail trains would be audible from within the park, the park is not considered a sensitive noise receptor based on FTA's criteria.

In summary, the proximity impacts of the proposed BLRT Extension project on South Halifax Park would not substantially impair the qualifying activities, features, or attributes of the park.

Coordination

During the proposed BLRT Extension project design process, Council staff consulted with the city of Robbinsdale, the owner of South Halifax Park on design adjustments to the proposed light rail alignment and associated facilities within the vicinity of South Halifax Park. Existing access to the park would be maintained under the proposed BLRT Extension project.

As part of the coordination process during project development, the Council has discussed the potential impacts on South Halifax Park from the construction of the LRT project with the city of Robbinsdale. Following the comment period on this Amended Draft Section 4(f) Evaluation and pending the review of comments received, FTA and the Council will seek written concurrence on the temporary occupancy determination from the city of Robbinsdale.

8.7.1.7 Lee Park

Section 4(f) Property Description

The park is situated between 36th Avenue and 38th Avenue in Robbinsdale (see **Figure 8.7-9**). The park is bordered by the existing rail corridor on the east. The 6.7-acre park has a ball field, playground equipment, picnic area, picnic pavilion, skating rink, and a path/trail that connects with June Avenue to the south. The park is under the jurisdiction of the city of Robbinsdale. As the park is a publicly owned, publicly accessible park of local significance, Lee Park is considered by FTA to be a Section 4(f) protected property.

Potential Impacts to Lee Park

As illustrated in the BLRT preliminary engineering plans, the proposed BLRT Extension project would not result in a permanent incorporation of land from Lee Park.

Temporary Occupancy

As illustrated in the BLRT preliminary engineering plans, the proposed BLRT Extension project would not result in the temporary use of property from Lee Park during construction.

Potential Constructive Use

Existing bicycle, pedestrian, and vehicular access to the park would be maintained under the proposed BLRT Extension project. Although the sound of light rail trains could be audible from within the park, the park is not considered a sensitive noise receptor based on FTA's criteria. The proposed BLRT Extension project would result in changes in the park's setting and a visitor's visual experience through the introduction of the light rail alignment east of the park. The visual changes and impacts would not alter or impair the overall use or function of Lee Park.

Coordination

The city of Robbinsdale has been involved in design meetings for the proposed BLRT Extension project, and is aware that there are no permanent or temporary easements required from the park site.

Figure 8.7-9. Lee Park

8.7.1.8 Triangle Park

Section 4(f) Property Description

Triangle Park is located west of Broadway Avenue in Robbinsdale. The 1-acre park is bordered by Orchard Avenue on the west and 40th Avenue on the south (see **Figure 8.7-10**). Park amenities include a ball field, playground equipment, picnic area, and a wading pool. The park is under the jurisdiction of the city of Robbinsdale. As the park is a publicly owned, publicly accessible park of local significance, Triangle Park is considered by FTA to be a Section 4(f) protected property.

Potential Impacts to Triangle Park

As illustrated in the BLRT preliminary engineering plans, the proposed BLRT Extension project would not result in a permanent incorporation of land from Triangle Park.

Temporary Occupancy

As illustrated in the BLRT preliminary engineering plans, the proposed BLRT Extension project would not result in the temporary use of property from Triangle Park during construction.

Potential Constructive Use

Existing bicycle, pedestrian, and vehicular access to the park would be maintained under the proposed BLRT Extension project. Although the sound of light rail trains could be audible from within the park, the park is not considered a sensitive noise receptor based on FTA's criteria. Changes in development density in areas surrounding the proposed Robbinsdale transit station could result in an increase in Triangle Park usage, which could have potential for both positive and negative consequences. The proposed BLRT Extension project would result in changes in the park's setting and a visitor's visual experience through the introduction of the light rail alignment east of the park. The visual changes and impacts would not alter or impair the overall use or function of Triangle Park.

Coordination

The city of Robbinsdale has been involved in design meetings for the proposed BLRT Extension project, and is aware that there are no permanent or temporary easements required from the park site.

Figure 8.7-10. Triangle Park

8.7.1.9 Becker Park

Section 4(f) Property Description

Becker Park, owned and operated by the city of Crystal, is located in the southwest quadrant of Bottineau Boulevard and Bass Lake Road in Crystal (see **Figure 8.7-11**). This 12.4-acre park contains two baseball/softball fields, tennis and basketball courts, playground equipment, and a shelter structure. The eastern border of the park abuts the existing rail corridor and proposed BLRT alignment. Becker Park is accessible by automobile via two existing parking lots located off Sherburne Avenue and Douglas Drive. Pedestrian and bicycle access is also provided through connections to local sidewalks and off-street trails.

Potential Impacts to Becker Park

As illustrated in **Figure 8.7-11**, the proposed BLRT Extension project would not result in a permanent incorporation of land from Becker Park; however, it would require a temporary easement of approximately 0.1 acre near the northeast corner of Becker Park to facilitate construction activities including the reconstruction of a short (approximately 100 lineal feet) of existing sidewalk (see **Figure 8.7-11**).

The overall duration of construction for the entire proposed BLRT Extension project is approximately 3 years. The duration of the construction activities for the portion affecting Becker Park is estimated to occur for approximately 12 calendar months—additional time may be needed for restoration activities, depending on variables, such as seasonal timing of the activities and weather conditions. There would be no change in ownership of the parkland that would be temporarily occupied.

The portion of Becker Park to be temporarily occupied during construction includes a portion of an existing sidewalk from the intersection of Bottineau Boulevard and Bass Lake Road that passes through and provides access to the park. Pedestrians entering from the northeast corner of the park would be provided a temporary pedestrian path detour. Construction activities within Becker Park property include reconstruction of the existing trail in order to connect to the sidewalk system. The park would still be accessible to the public throughout construction for vehicles, bicycles, and pedestrians via the two parking lots and also for bicycles and pedestrians via the respective off-street sidewalk paths surrounding the park. The portion of the park to be temporarily occupied does not contain any recreational features or amenities. There would be no permanent change to Becker Park as a result of proposed BLRT Extension project actions.

Figure 8.7-11. Becker Park

None of the aforementioned activities, features, or attributes of Becker Park would be permanently impacted nor would temporary construction actions at the park permanently or temporarily interfere with visitors utilizing the park as they do currently. Council staff would coordinate with park staff from the city of Crystal to avoid park activities identified by the city that should be considered when setting the schedule for construction activities. Impacts related to temporary changes to access would be mitigated by development of a Construction Communication Plan, which would include advance notice of construction activities and highlighting sidewalk closures and detour routes.

The portion of the park to be temporarily occupied during construction would be restored to existing conditions or better—this includes the previously described sidewalk.

Potential Constructive Use

Changes in development density in areas surrounding proposed transit stations could result in an increase in Becker Park usage, which could have potential for both positive and negative consequences.

The proposed BLRT Extension project would also result in changes to the park's setting and a visitor's visual experience; with the addition of the pedestrian bridge over Bottineau Boulevard the overall visual impact is considered adverse. Some users' visual experiences could be perceived as adversely affected by the introduction of light rail trains and a new transit station, located immediately east of the park. However, the visual changes and impacts would not alter or impair the overall use or function of the park. The alignment of the BLRT in the area adjacent to Becker Park would parallel the existing rail line. Although the sound of light rail trains would be audible from within the park, the park is not considered a sensitive noise receptor based on FTA's criteria.

In summary, the proximity impacts of the proposed BLRT Extension project on Becker Park would not substantially impair the qualifying activities, features, or attributes of the park.

Coordination

During the proposed BLRT Extension project's design process, Council staff consulted with the city of Crystal, the park owner, on design adjustments to the proposed light rail alignment and associated facilities within the vicinity of Becker Park. Existing bicycle, pedestrian, and vehicular access to the park would be maintained under the proposed BLRT Extension project.

As part of the coordination process during proposed BLRT Extension project development, the Council has discussed the potential impacts and mitigation on Becker Park from the construction of the LRT project with the city of Crystal. Following the comment period on this Amended Draft Section 4(f) Evaluation and pending the review of comments received, FTA and the Council will seek written concurrence on the temporary occupancy determination from the city of Crystal.

8.7.1.10 Unnamed Park (identified as Tessman Park in the Draft EIS)

Section 4(f) Property Description

The park is located directly south of North Hennepin Community College in Brooklyn Park (see **Figure 8.7-12**). The approximately 11-acre passive use park consists of open space grasslands, woodlands, and wetlands. There is an existing trail along the north side of Shingle Creek, which flows through the park. The park is under the jurisdiction of the city of Brooklyn Park. As the park is a publicly owned, publicly accessible park of local significance, the unnamed park is considered by FTA to be a Section 4(f) protected property.

Potential Impacts to Unnamed Park

As illustrated in the BLRT preliminary engineering plans, the proposed BLRT Extension project would not result in a permanent incorporation of land from the unnamed park.

Temporary Occupancy

As illustrated in the BLRT preliminary engineering plans, the proposed BLRT Extension project would not result in the temporary use of property from the unnamed park during construction.

Potential Constructive Use

Existing bicycle, pedestrian, and vehicular access to the park would be maintained under the proposed BLRT Extension project. Although the sound of light rail trains could be audible from within the park, the park is not considered a sensitive noise receptor based on FTA's criteria. Changes in development density in areas surrounding the proposed Brooklyn Boulevard and 85th Avenue stations could result in an increase in the unnamed park usage, which could have potential for both positive and negative consequences. The proposed BLRT Extension project would result in changes in the park's setting and a visitor's visual experience through the introduction of the light rail alignment west of the park. The visual changes and impacts would not alter or impair the overall use or function of the unnamed park.

Coordination

The city of Brooklyn Park has been involved in design meetings for the proposed BLRT Extension project, and is aware that there are no permanent or temporary easements required from the park site.

Figure 8.7-12. Unnamed Park

8.7.1.11 College Park

Section 4(f) Property Description

The park is located west of West Broadway Avenue and between 82nd Avenue and North College Park Drive in Brooklyn Park (see **Figure 8.7-13**). The 6-acre park has a playground, skating rink, a picnic pavilion, and park activity building. The park is under the jurisdiction of the city of Brooklyn Park. As the park is a publicly owned, publicly accessible park of local significance, College Park is considered by FTA to be a Section 4(f) protected property.

Potential Impacts to College Park

As illustrated in the BLRT preliminary engineering plans, the proposed BLRT Extension project would not result in a permanent incorporation of land from College Park.

Temporary Occupancy

As illustrated in the BLRT preliminary engineering plans, the proposed BLRT Extension project would not result in the temporary use of property from College Park during construction.

Potential Constructive Use

Existing bicycle, pedestrian, and vehicular access to the park would be maintained under the proposed BLRT Extension project. Although the sound of light rail trains could be audible from within the park, the park is not considered a sensitive noise receptor based on FTA's criteria. Changes in development density in areas surrounding the proposed Brooklyn Boulevard and 85th Avenue stations could result in an increase in College Park usage, which could have potential for both positive and negative consequences. The proposed BLRT Extension project would result in changes in the park's setting and a visitor's visual experience through the introduction of the light rail alignment east of the park. The visual changes and impacts would not alter or impair the overall use or function of College Park.

Coordination

The city of Brooklyn Park has been involved in design meetings for the proposed BLRT Extension project, and is aware that there are no permanent or temporary easements required from the park site.

Figure 8.7-13. College Park

8.7.1.12 Park Property Adjacent to Rush Creek Regional Trail

Section 4(f) Property Description

The green space surrounding the Rush Creek Regional Trail is located north of, and generally parallel to, 101st Avenue between Elm Creek Park Reserve and Coon Rapids Dam Regional Park, both located in Hennepin County (see **Figure 8.7-14**). There are two multi-use trail properties which lie within the property boundary of the park—the primary trail is a 10-foot-wide multi-use paved trail and a secondary turf trail is situated south of and roughly parallel to the paved trail. The park property and both the trails lie within property owned by TRPD. As the park property is a publicly owned and publicly accessible, and the Rush Creek Regional Trail is a park property of local significance, and the property is a Section 4(f) protected property.

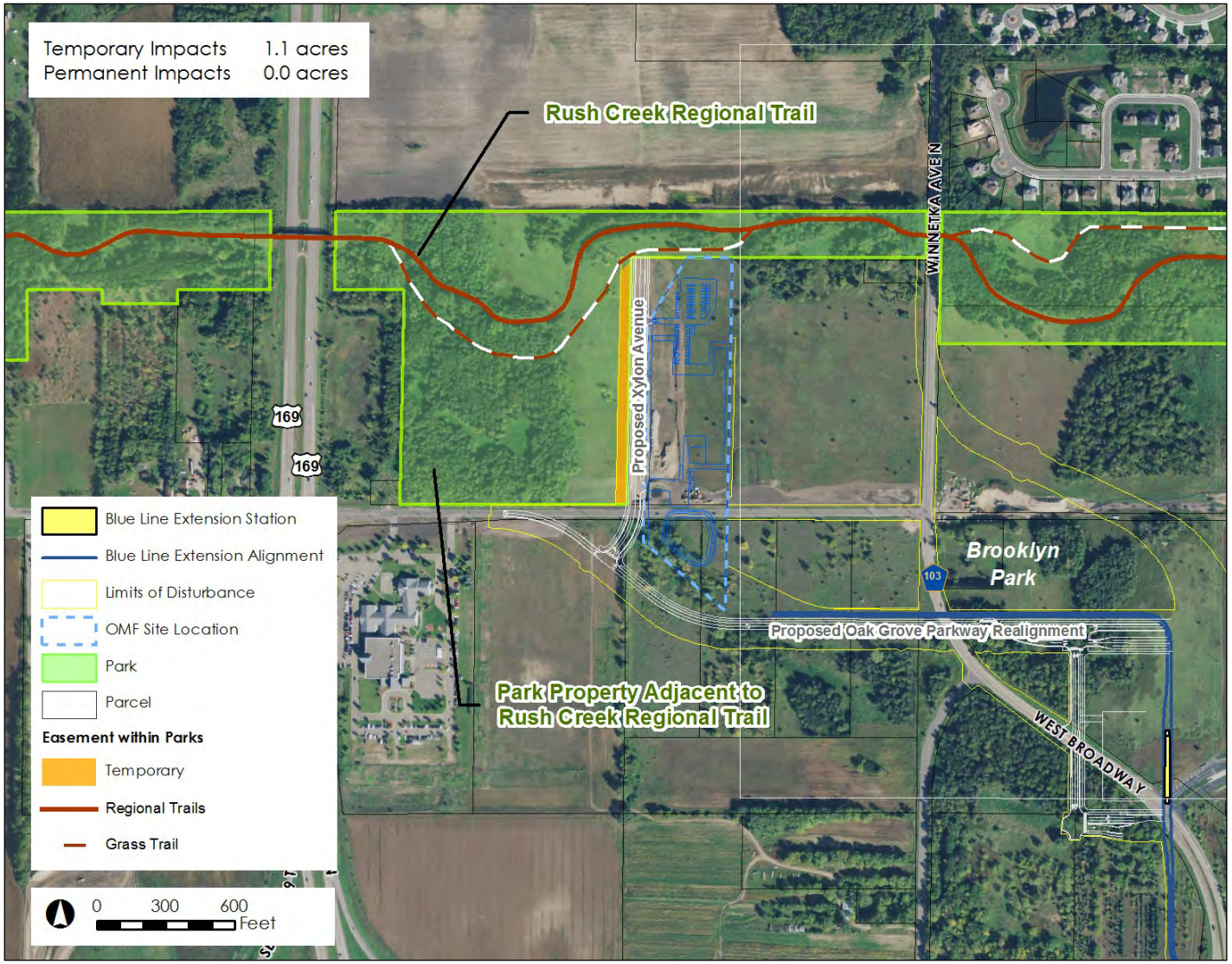
Potential Impacts to the Park Property Adjacent to Rush Creek Regional Trail

As illustrated in the BLRT preliminary engineering plans, the proposed BLRT Extension project would not result in a permanent incorporation of park land; however the proposed BLRT Extension project would require a temporary easement of approximately 1.1 acres of park property. This temporary occupancy is required for construction of the proposed Xylon Avenue; construction activities include grading along this approximate one-quarter mile segment of roadway (see **Figure 8.7-14**). The proposed BLRT Extension project Operations and Maintenance Facility would be constructed immediately to the east of Xylon Avenue.

The overall duration of construction for the entire proposed BLRT Extension project is approximately 3 years. The duration of the construction activities for the portion affecting the park property is estimated to occur for approximately 12 calendar months—additional time may be needed for restoration activities, depending on variables, such as seasonal timing of the activities and weather conditions. There would be no change in ownership of the parkland that would be temporarily occupied.

The portion of park property to be temporarily occupied during construction includes open, unimproved land with no recreational amenities. The trail itself would not be affected. The construction activities on the park property consist of grading work to match adjacent roadway elevations. All areas of the park property that will be affected by proposed BLRT Extension project's construction activities will be restored to existing conditions or better and restoration plans will be developed and implemented in consultation with TRPD. The park would still be accessible to the public throughout construction. There would be no permanent change to Rush Creek Regional Trail (primary or secondary trails) or adjacent park property as a result of proposed BLRT Extension project actions.

Figure 8.7-14. Park Property Adjacent to Rush Creek Regional Trail



The proposed BLRT Extension project would require a temporary easement of approximately 1.1 acres of park property. This temporary occupancy is required for construction of the proposed Xylon Avenue; construction activities include grading along this approximate one-quarter mile segment of roadway (see **Figure 8.7-14**). The proposed BLRT Extension project Operations and Maintenance Facility would be constructed immediately to the east of Xylon Avenue.

The overall duration of construction for the entire proposed BLRT Extension project is approximately 3 years. The duration of the construction activities for the portion affecting the park property is estimated to occur for approximately 12 calendar months—additional time may be needed for restoration activities, depending on variables, such as seasonal timing of the activities and weather conditions. There would be no change in ownership of the parkland that would be temporarily occupied.

The portion of park property to be temporarily occupied during construction includes open, unimproved land with no recreational amenities. The trail itself would not be affected. The construction activities on the park property consist of grading work to match adjacent roadway elevations. All areas of the park property that will be affected by proposed BLRT Extension project's construction activities will be restored to existing conditions or better and restoration plans will be developed and implemented in consultation with TRPD. The park would still be accessible to the public throughout construction. There would be no permanent change to Rush Creek Regional Trail (primary or secondary trails) or adjacent park property as a result of proposed BLRT Extension project actions.

None of the aforementioned activities, features, or attributes of the park property would be permanently impacted nor would temporary construction actions at the park permanently or temporarily interfere with visitors utilizing the park or the trail as they do currently. Council staff would coordinate with park staff from the TRPD to avoid trail activities identified by the TRPD that should be considered when setting the schedule for construction activities. Impacts related to temporary changes to access would be mitigated by development of a Construction Communication Plan, which would include advance notice of construction activities.

The portion of the park to be temporarily occupied during construction would be restored to existing conditions or better.

Potential Constructive Use

Existing bicycle, pedestrian, and vehicular access to the park would be maintained under the proposed BLRT Extension project. Changes in development density in areas surrounding the proposed Oak Grove Parkway transit station could result in an increase in Rush Creek Regional Trail usage, which could have potential for both positive and negative consequences. The proposed BLRT Extension project would result in changes in the park's setting and a visitor's visual experience through the introduction of the Operations and Maintenance Facility east and south of the park. The visual changes and impacts would not alter or impair the overall use or function of Rush Creek Regional Trail and adjacent park property.

In summary, the proximity impacts of the proposed BLRT Extension project on park property adjacent to Rush Creek Regional Trail would not substantially impair the qualifying activities, features, or attributes of the park and, therefore, FTA has determined that there would be no Section 4(f) constructive use of park property adjacent to Rush Creek Regional Trail under the proposed BLRT Extension project, consistent with 23 CFR Part 774.15(a).

Coordination

During the proposed BLRT Extension project's design process, Council staff consulted with the TRPD, the park owner, on design adjustments to the proposed light rail alignment and associated facilities within the vicinity of the park property adjacent to Rush Creek Regional Trail. Existing bicycle, pedestrian, and vehicular access to the park would be maintained under the proposed BLRT Extension project.

As part of the coordination process during proposed BLRT Extension project development, the Council has discussed the potential impacts and mitigation on park property adjacent to Rush Creek Regional Trail from the construction of the LRT project with the TRPD. Following the comment period on this Amended Draft Section 4(f) Evaluation and pending the review of comments received, FTA and the Council will seek written concurrence on the temporary occupancy determination from the TRPD.

8.7.2 Historic Properties

Cultural resources studies of historic properties for the proposed BLRT Extension project have been completed under Section 106 of the National Historic Preservation Act (Section 106). The historic properties included in this Section 4(f) evaluation are those for which the use determination has changed since the publication of the Draft Section 4(f) Evaluation in the Draft EIS and there is a direct use of the property and/or where there is potential for an adverse effect determination under Section 106. (See **Section 4.4 – Cultural Resources** for further discussion of historic property identification and assessment of effects under Section 106.)

As noted in the Draft Section 4(f) Evaluation, Section 4(f) applies to historic sites of national, state, or local significance in public or private ownership, regardless of whether they are open to the public or not, that are listed in or eligible for the NRHP. NRHP eligibility criteria are defined as follows:

- **Criterion A**—association with events that have made a significant contribution to broad patterns of history
- **Criterion B**—association with the life of a historically significant person
- **Criterion C**—embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction
- **Criterion D**—has yielded, or is likely to yield, information important in history or prehistory (this generally is understood to refer to archeological significance)

It is important to recognize the difference between Section 4(f) use of historic properties, discussed below, and Section 106 project effects to historic properties, which are discussed in **Section 4.4**. Section 4(f) and Section 106 are similar in that they both mandate consideration of historic sites in the planning of a federal undertaking. Section 4(f) applies to the actual use or occupancy of a historic site, while Section 106 involves an assessment of adverse effects of an action on historic properties. The Section 106 process is integral to the Section 4(f) process when historic sites are involved. Specifically, the Section 106 process identifies listed and eligible historic properties, and determines if the proposed action will have an adverse effect on a property. The eligibility of and adverse effects to a historic property are the basis for FTA's determination of a Section 4(f) use of that historic property.

The location of these historic properties relative to the proposed BLRT Extension project, based on parcel boundaries and preliminary construction limits, was used to determine the potential for direct use and temporary occupancy. Potential constructive use was based on determinations of potential adverse effect from proximity impacts as discussed in **Section 4.4** (e.g. noise, vibration) for those properties where there would be no temporary occupancy or direct use.

Following the provisions of the Section 106 review process, alternatives and design options to avoid, minimize, and mitigate adverse effects to historic properties have been explored through consultation with MnHPO, Section 106 consulting parties, other interested parties and the public and specified in the proposed BLRT Extension project's Memorandum of Agreement (MOA). The Advisory Council on Historic Preservation (ACHP) was invited to participate in this consultation; however, ACHP declined the opportunity to participate in a letter dated March 15, 2016 (see **Appendix H**). A copy of the Section 106 MOA is included for review in **Appendix H** and an executed copy will be part of FTA's Record of Decision for the proposed BLRT Extension project.

Of the 17 historic properties identified in **Table 8.1-1**, 15 were determined to have no Section 4(f) use based on information provided in **Section 4.4** and in the *METRO Blue Line Extension Light Rail Transit Project Section 106 Assessment of Effects and Final Determination of Effect for Historic Properties* (January 2016) (see **Appendix H**), hereinafter referred to as the Determination of Effects Report. **Table 8.7-3** summarizes FTA's revised, preliminary Section 4(f) use determinations for both of the remaining Section 4(f) properties. All historic Section 4(f) properties are discussed in the following sections; **Section 8.7.2.10 and Section 8.7.2.11** discuss in detail the evaluation of the two historic properties where FTA's preliminary determination has been revised since the March 2014 Draft Section 4(f) Evaluation.

Table 8.7-3. Summary of Preliminary Permanent Section 4(f) Historic Property Uses[1]

Section 4(f) Property	Direct Use	*De minimis* Use	Temporary Occupancy	Existing Property Magnitude	Acres Permanently Used	Percent of Property Used
Grand Rounds Historic District (Theodore Wirth Segment)	X			4,662 acres	0.7 acre	0.015
Osseo Branch, St. Paul Minneapolis & Manitoba Railway Historic District	X			158 acres	43 acres	27.2

All acreages in this table are approximate.
[1] See **Section 8.4** for definitions of the potential types of Section 4(f) uses.

8.7.2.1 St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District (Minneapolis)

Section 4(f) Property Description

The St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District is located in Minneapolis. This historic district is eligible for the NRHP under Criterion A. For more detailed information on this historic district, see **Section 4.4** and **Appendix H**.

Potential Impacts to the St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in a permanent incorporation of land from the St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District.

Temporary Occupancy

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in the temporary use of property from the St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District during construction.

Potential Constructive Use

Based on the proposed BLRT Extension project's engineering drawings (**Appendix E**) and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to the proposed BLRT Extension project impacts at the St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District (see the Section 106 consultation documentation in **Appendix H**).

Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District will not be substantially impaired by proximity impacts associated with the proposed BLRT Extension project.

8.7.2.2 Minneapolis Warehouse Historic District

Section 4(f) Property Description

The Minneapolis Warehouse Historic District, located in Minneapolis, is bounded by 1st Avenue North, 1st Street North, 10th Avenue, and 6th Street. This historic district is listed on the NRHP under Criterion A and Criterion C. For more detailed information on this historic district, see **Section 4.4** and **Appendix H**.

Potential Impacts to the Minneapolis Warehouse Historic District

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in a permanent incorporation of land from the Minneapolis Warehouse Historic District.

Temporary Occupancy

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in the temporary use of property from the Minneapolis Warehouse Historic District during construction.

Potential Constructive Use

Based on the proposed BLRT Extension project's engineering drawings (**Appendix E**) and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to the proposed BLRT Extension project impacts at the Minneapolis Warehouse Historic District (see the Section 106 consultation documentation in **Appendix H**).

Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Minneapolis Warehouse Historic District will not be substantially impaired by proximity impacts associated with the proposed BLRT Extension project.

8.7.2.3 Northwestern Knitting Company Factory

Section 4(f) Property Description

The Northwestern Knitting Company Factory is located in Minneapolis at 718 Glenwood Avenue. Northwestern Knitting Company Factory is eligible for the NRHP under Criterion A. For more detailed information on this historic property, see **Section 4.4** and **Appendix H**.

Potential Impacts to the Northwestern Knitting Company Factory

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in a permanent incorporation of land from the Northwestern Knitting Company Factory.

Temporary Occupancy

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in the temporary use of property from the Northwestern Knitting Company Factory during construction.

Potential Constructive Use

Based on the proposed BLRT Extension project's engineering drawings (**Appendix E**) and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to the proposed BLRT Extension project impacts at the Northwestern Knitting Company Factory (see the Section 106 consultation documentation in **Appendix H**).

Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Northwestern Knitting Company Factory will not be substantially impaired by proximity impacts associated with the proposed BLRT Extension project.

8.7.2.4 Sumner Branch Library

Section 4(f) Property Description

The Sumner Branch Library is located in Minneapolis at 611 Emerson Avenue North. The Sumner Branch Library is listed on the NRHP under Criterion A and Criterion B. For more detailed information on this historic property, see **Section 4.4** and **Appendix H**.

Potential Impacts to the Sumner Branch Library

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in a permanent incorporation of land from the Sumner Branch Library.

Temporary Occupancy

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in the temporary use of property from the Sumner Branch Library during construction.

Potential Constructive Use

Based on the proposed BLRT Extension project's engineering drawings (**Appendix E**) and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to the proposed BLRT Extension project impacts at the Sumner Branch Library. This No Adverse Effect finding is subject to the implementation of mitigation measures identified in the Section 106 MOA (see the Section 106 consultation documentation in **Appendix H**). In summary, the proposed BLRT Extension project would potentially catalyze redevelopment in the area surrounding the Sumner Branch Library, and proposed BLRT Extension project elements would be highly visible from the Sumner Branch Library. However, it was noted in the proposed BLRT Extension project Section 106 Determination of Effects Report that the Sumner Branch Library would be protected from the effects of redevelopment because:

- It is in public ownership and use;
- It is a city of Minneapolis designated local landmark, protected by requirements for Minneapolis Heritage Preservation Commission review of all proposed changes to confirm compatibility with the historic character of the property; and
- The city of Minneapolis' Heritage Preservation ordinance sets a high threshold for approval of demolition of the property.

The mitigation for the proposed BLRT Extension project's proximity effects on the Sumner Branch Library include a requirement to design proposed BLRT Extension project infrastructure in the vicinity of the library in accordance with the Secretary of the Interior's Standards, and to prepare and implement a construction protection plan for the library.

Based on the Section 106 finding of No Adverse Effect (with mitigation), FTA has concluded that the Sumner Branch Library will not be substantially impaired by proximity impacts associated with the proposed BLRT Extension project.

8.7.2.5 Wayman African Methodist Episcopal Church

Section 4(f) Property Description

The Wayman African Methodist Episcopal Church is located in Minneapolis at 1221 7th Avenue North. The Wayman African Methodist Episcopal Church is eligible for the NRHP under Criterion C. For more detailed information on this historic property, see **Section 4.4** and **Appendix H**.

Potential Impacts to the Wayman African Methodist Episcopal Church

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in a permanent incorporation of land from the Wayman African Methodist Episcopal Church.

Temporary Occupancy

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in the temporary use of property from the Wayman African Methodist Episcopal Church during construction.

Potential Constructive Use

Based on the proposed BLRT Extension project's engineering drawings (**Appendix E**) and continued consultation with MnHPO, a Section 106 finding of Adverse Effect has been made with respect to the proposed BLRT Extension project impacts at the Wayman African Methodist Episcopal Church. In summary, the proposed BLRT Extension project would potentially alter the setting of the Wayman African Methodist Episcopal Church through development pressure created in part by the construction and operation of the proposed BLRT Extension project. Redevelopment could result in potential alteration or demolition of this property. While new development in the setting would not alter characteristics that qualify the church for the NRHP, alteration of the property would likely diminish its historic integrity and demolition would destroy the historic property. The MOA developed in consultation with MnHPO and other parties includes measures that will be incorporated into the proposed BLRT Extension project to mitigate the Adverse Effect on the church (see the Section 106 consultation documentation in **Appendix H** for additional detail). Based on the Section 106 finding of Adverse Effect and the measures to mitigate the Adverse Effect included in the Section 106 MOA, FTA has concluded that the Wayman African Methodist Episcopal Church historic property will not be substantially impaired by proximity impacts associated with the proposed BLRT Extension project.

8.7.2.6 Labor Lyceum

Section 4(f) Property Description

The Labor Lyceum is located in Minneapolis at 1800 Olson Memorial Highway. This historic property is eligible for the NRHP under Criterion A. For more detailed information on this historic property, see **Section 4.4** and **Appendix H**.

Potential Impacts to the Labor Lyceum

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in a permanent incorporation of land from the Labor Lyceum.

Temporary Occupancy

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in the temporary use of property from the Labor Lyceum during construction.

Potential Constructive Use

Based on the proposed BLRT Extension project's engineering drawings (**Appendix E**) and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to the proposed BLRT Extension project impacts at the Labor Lyceum. This No Adverse Effect finding is subject to the implementation of mitigation measures identified in the Section 106 MOA (see the Section 106 consultation documentation in **Appendix H**).

Based on the Section 106 finding of No Adverse Effect (with mitigation), FTA has concluded that the Labor Lyceum will not be substantially impaired by proximity impacts associated with the proposed BLRT Extension project.

8.7.2.7 Floyd B. Olson Memorial Statue

Section 4(f) Property Description

The Floyd B. Olson Memorial Statue is located in Minneapolis at Olson Memorial Highway at Penn Avenue North. The Floyd B. Olson Memorial Statue is eligible for the NRHP under Criterion C. For more detailed information on this historic property, see **Section 4.4** and **Appendix H**.

Potential Impacts to the Floyd B. Olson Memorial Statue

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in a permanent incorporation of land from the Floyd B. Olson Memorial Statue.

Temporary Occupancy

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in the temporary use of property from the Floyd B. Olson Memorial Statue during construction.

Potential Constructive Use

Based on the proposed BLRT Extension project's engineering drawings (**Appendix E**) and continued consultation with MnHPO, a Section 106 finding of Adverse Effect has been made with respect to the proposed BLRT Extension project impacts at the Floyd B. Olson Memorial Statue. In summary, the proposed BLRT Extension project would potentially alter the setting of the Floyd B. Olson Memorial Statue through development pressure created in part by the construction and operation of the proposed BLRT Extension project. The construction of the Penn Avenue Station directly in front of the statue would disrupt the visual connection between the statue and Olson Memorial Highway, further diminishing the property's integrity of setting, feeling, and association. The redevelopment of adjacent properties would further diminish the visual connection to the statue and, as a result, its association with Olson Memorial Highway. The MOA developed in consultation with MnHPO and other parties includes measures that will be incorporated into the proposed BLRT Extension project to mitigate the Adverse Effect on the memorial statue (see the Section 106 consultation documentation in **Appendix H** for additional detail). Based on the Section 106 finding of Adverse Effect and the measures to mitigate the Adverse Effect included in the Section 106 MOA, FTA has concluded that the Floyd B. Olson Memorial Statue historic property will not be substantially impaired by proximity impacts associated with the proposed BLRT Extension project.

8.7.2.8 Bridge No. L9327

Section 4(f) Property Description

Bridge No. L9327 is located in Golden Valley at Theodore Wirth Parkway over Bassett Creek. This historic property is individually eligible for the NRHP under Criterion C and as a contributing element to the Grand Rounds Historic District under Criterion A and Criterion C. For more detailed information on this historic property, see **Section 4.4** and **Appendix H**.

Potential Impacts to Bridge No. L9327

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in a permanent incorporation of land from Bridge No. L9327.

Temporary Occupancy

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in the temporary use of property from Bridge No. L9327 during construction.

Determination of Constructive Use

Based on the proposed BLRT Extension project's engineering drawings (**Appendix E**) and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to the proposed BLRT Extension project impacts at Bridge No. L9327 (see the Section 106 consultation documentation in **Appendix H**).

Based on the Section 106 finding of No Adverse Effect, FTA has concluded that Bridge No. L9327 will not be substantially impaired by proximity impacts associated with the proposed BLRT Extension project.

8.7.2.9 Homewood Residential Historic District

Section 4(f) Property Description

The Homewood Residential Historic District, located in Minneapolis, is bounded by Penn, Oak Park, Xerxes, and Plymouth avenues. The Homewood Residential Historic District is eligible for the NRHP under Criterion A. For more detailed information on this historic district, see **Section 4.4** and **Appendix H**.

Potential Impacts to the Homewood Residential Historic District

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in a permanent incorporation of land from the Homewood Residential Historic District.

Temporary Occupancy

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in the temporary use of property from the Homewood Residential Historic District during construction.

Potential Constructive Use

Based on the proposed BLRT Extension project's engineering drawings (**Appendix E**) and continued consultation with MnHPO, a Section 106 finding of Adverse Effect has been made with respect to the proposed BLRT Extension project impacts at the Homewood Residential Historic District. In summary, the proposed BLRT Extension project would potentially alter the integrity of setting and feeling of the historic district through the introduction of a moderate noise impact on three residences at the southwestern corner of the historic district. However, that impact to the three properties in the historic district would not be to a degree that would affect the entire district's setting and feeling, and thus, eligibility for the NRHP. The MOA developed in consultation with MnHPO and other parties includes measures that will be incorporated into the proposed BLRT Extension project to mitigate the Adverse Effect on the historic district (see the Section 106 consultation documentation in **Appendix H** for additional detail). Based on the Section 106 finding of Adverse Effect and the measures to mitigate the Adverse Effect included in the Section 106 MOA, FTA has concluded that the Homewood Residential Historic District will not be substantially impaired by proximity impacts associated with the proposed BLRT Extension project.

8.7.2.10 Osseo Branch Line of the St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District

Section 4(f) Property Description

As stated in the Determination of Effects Report (FTA, 2016), the Osseo Branch (a portion of the St. Paul Minneapolis & Manitoba Railway Historic District) is a 13-mile segment of rail line that is generally 100-feet wide from Minneapolis to Osseo. The Osseo Branch supported the potato farming development of Osseo and surrounding areas. It established a farm-to-market connection that did not previously exist. This connection resulted in a significant expansion of the potato-growing region in northern Hennepin County from the construction of line until the decline of the potato industry. The Osseo Branch is eligible for the NRHP under Criterion A.

Determination of Section 4(f) Use

Constructing the proposed BLRT Extension project in the Osseo Branch would result in the need for a permanent incorporation of approximately 43 acres of property along the 8-mile segment from Olson Memorial Highway northwest to 73rd Avenue North in the City of Brooklyn Park (see **Figure 8.7-15**). This permanent incorporation results from the need to locate the BLRT guideway and other infrastructure in the eastern 50 feet of the approximately 100-foot-wide corridor over this distance. An additional 49 acres of the Osseo Branch would be directly impacted with temporary easements for construction access and staging, activities that would occupy the remaining western 50-feet of the approximately 100-foot corridor during the construction period.

Figure 8.7-15. Osseo Branch Line of the St. Paul Minneapolis & Manitoba Railroad/Great Northern Railway Historic District

These temporary construction easements would be required to shift the existing BNSF track and to grade land around the proposed BLRT Extension project corridor, as well as provide access during construction.

Based on the Section 106 analysis performed, FTA and MnHPO have determined that the proposed BLRT Extension project will result in an adverse effect on the Osseo Branch. The rationale for this effect determination is based on proposed changes to the historic property and its setting, including the following:

- The majority of the existing BNSF track would be removed and reconstructed on a new alignment approximately 15 to 25 feet west of its current location;
- The proposed BLRT Extension project would include the construction of two light rail tracks, an overhead catenary system, five stations, three vertical circulation towers, eight TPSSs and 15 signal bungalows, safety treatments, and bridges in the Osseo Branch right-of-way;
- The bluffs adjacent to the Osseo Branch would be altered for the construction of new retaining walls and to add sufficient space for the proposed BLRT Extension project, and some vegetation would also be removed; and
- A corridor protection barrier would be constructed between the freight rail track and new light rail track; the protection barrier can include a concrete wall that is up to six feet tall and two feet thick, a variable width ditch, or a retained embankment to grade separate freight and light rail traffic.

In addition to these rail infrastructure changes, the existing high-voltage transmission line on steel-truss towers located the eastern edge of the Osseo Branch corridor between Olson Memorial Highway and the Xcel Indiana Substation would be reconstructed with monopoles on the western edge of the corridor.

Based on the information summarized in this section, FTA has made a preliminary determination that the proposed BLRT Extension project will result in a non-*de minimis* use of the historic Osseo Branch Section 4(f) resource.

Avoidance Alternatives Analysis

The Section 4(f) statute requires the selection of an alternative that completely avoids the use of Section 4(f) property if that alternative is deemed feasible and prudent. Based on proposed BLRT Extension project analysis performed to date, the No-Build and the Enhanced Bus Alternatives as described and evaluated in the Draft EIS would completely avoid the use of any Section 4(f) property. During the proposed BLRT Extension project development process and associated analysis for this Amended Draft Section 4(f) Evaluation, three additional avoidance alternatives were identified. These include the Deep Tunnel Alternative, the Alignment Shift 1 Alternative, and the Alignment Shift 2 Alternative. The following sections summarize the FTA and Council assessment of the feasibility and prudence of these five avoidance alternatives.

No-Build Alternative

The No-Build Alternative is required by the NEPA and Minnesota Environmental Policy Act (MEPA) processes and includes all existing and committed transportation infrastructure, facilities, and services contained in the region's fiscally constrained and federally approved transportation plan, the Council's *TPP*.

As defined in **Chapter 2 – Alternatives**, the No-Build Alternative will completely avoid a use of all Section 4(f) resources.

Evaluation of Feasibility

As per 23 CFR Part 774.17 of the Section 4(f) regulations, an alternative is not feasible if it cannot be built as a matter of sound engineering judgment. FTA and the Council have determined that the No-Build Alternative will be feasible from an engineering perspective, because no construction will be required to implement the alternative.

Evaluation of Prudence

Section 8.4.3 lists the Section 4(f) criteria used by FTA to determine the prudence of a feasible and prudent avoidance alternative as defined in 23 CFR Part 774.17.

i. Effectiveness in Meeting Purpose and Need

The proposed BLRT Extension project's Purpose and Need is summarized in **Chapter 1**. FTA and the Council have concluded that, while the No-Build Alternative will avoid potential disruption to neighborhoods, commercial districts, and historic areas in the corridor, the No-Build Alternative will not adequately support the Purpose and Need of the proposed BLRT Extension project as expressed through the proposed BLRT Extension project's evaluation criteria (see **Section 12.1**). In summary, the No-Build Alternative will be inconsistent with local and regional comprehensive plans, which include or are consistent with implementation of the proposed BLRT Extension project. Furthermore, the No-Build Alternative will not improve mobility, provide a cost-effective efficient travel option, or support economic development, which are key elements of the proposed BLRT Extension project's Purpose and Need (see **Chapter 1**).

FTA and the Council have determined that the No-Build Alternative will compromise the proposed BLRT Extension project to a degree that, under the No-Build Alternative, the stated Purpose and Need for the proposed BLRT Extension project will not be met; therefore, the No-Build Alternative does not constitute a prudent alternative that will fully avoid the use of Section 4(f) properties.

ii. Safety and Operational Considerations

- None.

iii. Social, Economic, Environmental, and Community Impacts

- None.

iv. Cost

- None.

v. Unique Problems or Unusual Factors

- None.

vi. Cumulative Consideration of Factors

- None.

Avoidance Alternative Determination

The No-Build Alternative will avoid uses of all Section 4(f) resources, but it is deemed not prudent under the definition in 23 CFR Part 774.17. The No-Build Alternative is not prudent per 23 CFR Part 774.17 because it neither addresses nor corrects the transportation purpose and need that prompted the proposed BLRT Extension project.

Enhanced Bus Alternative

The Enhanced Bus Alternative was carried forward into the Draft EIS from the Bottineau Transitway Alternatives Analysis and Scoping. By definition, the Enhanced Bus Alternative is a low-capital cost alternative that will provide the best transit service to the corridor without a major capital investment. The Enhanced Bus Alternative included the same highway and roadway network improvements contained in the No-Build Alternative. The Enhanced Bus Alternative did not include any modifications to the existing highway or roadway infrastructure in the proposed BLRT Extension project study area.

In addition to the improvements included in the No-Build Alternative, the Enhanced Bus Alternative included the following:

- New transit center and park-and-ride facility in the City of Brooklyn Park on West Broadway Avenue near TH 610
- Additional limited stop bus routes providing bi-directional service between downtown Minneapolis and Brooklyn Park, with stops in Golden Valley, Robbinsdale, and Crystal,
- Service frequency improvements to existing transit routes
- Restructuring of existing bus routes in the corridor to connect to the new limited stop routes and enhance connections within the corridor

As defined in Chapter 2 of the Draft EIS, the Enhanced Bus Alternative will completely avoid the use of all Section 4(f) resources.

Evaluation of Feasibility

As per 23 CFR Part 774.17 of the Section 4(f) statute, an alternative is not feasible if it cannot be built as a matter of sound engineering judgment. FTA and the Council have determined that the Enhanced Bus Alternative could be built as a matter of sound engineering judgment and therefore it will be feasible from an engineering perspective.

Evaluation of Prudence

Section 8.4.3 lists the Section 4(f) criteria used by FTA to determine the prudence of a feasible and prudent avoidance alternative as defined in 23 CFR Part 774.17.

i. Effectiveness in Meeting Purpose and Need

The proposed BLRT Extension project's Purpose and Need is summarized in **Chapter 1** of this Final EIS, as well as Chapter 1 of the Draft EIS. In the Draft EIS, FTA and the Council concluded that, while the Enhanced Bus Alternative will avoid potential disruption to neighborhoods, commercial districts, and historic areas in the corridor, the Enhanced Bus Alternative will not adequately support the proposed BLRT Extension project's Purpose and Need as expressed through the proposed BLRT Extension project's evaluation goals, objectives, criteria, and measures (see Section 11.2 of the Draft EIS). In summary, the Enhanced Bus Alternative will be inconsistent with local and regional comprehensive plans, which include, or are consistent with, implementation of the proposed BLRT Extension project. The Enhanced Bus Alternative will only marginally improve mobility, and it will not provide a cost-effective, efficient travel option, or support economic development.

FTA and the Council have determined that the Enhanced Bus Alternative will compromise the proposed BLRT Extension project to a degree that, under the Enhanced Bus Alternative, the stated Purpose and Need for the proposed BLRT Extension project will not be met; therefore, the Enhanced Bus Alternative does not constitute a feasible and prudent alternative that will fully avoid the use of Section 4(f) properties.

ii. Safety and Operational Considerations

- None.

iii. Social, Economic, Environmental, and Community Impacts

- None.

iv. Cost

- None.

v. Unique Problems or Unusual Factors

- None.

vi. Cumulative Consideration of Factors

- None.

Avoidance Alternative Determination

The Enhanced Bus Alternative will avoid uses of all Section 4(f) resources, but it is deemed not prudent under the definition of in 23 CFR Part 774.17. The Enhanced Bus Alternative is not prudent per 23 CFR Part 774.17 because it neither addresses nor corrects the transportation purpose and need that prompted the proposed BLRT Extension project.

Deep Tunnel Alternative

The construction of an approximately 8-mile-long deep (nominally 60 feet below ground) tunnel[4] from approximately Olson Memorial Highway to 73rd Avenue was considered as an avoidance alternative for impacts on the Osseo Branch. The Deep Tunnel Alternative would have five underground stations, including Plymouth Avenue, Golden Valley Road, Robbinsdale, Bass Lake Road, and 63rd Avenue. The stations, ventilation shafts, and emergency egress portals would all daylight just outside the limits of the rail corridor to avoid the use of the Osseo Branch property. **Figure 8.7-16 through Figure 8.7-18** illustrate the general location of the Deep Tunnel Alternative and typical cross sections of a deep tunnel concept.

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[4] A shallow, cut and cover tunnel option was also considered, but eliminated as an avoidance alternative since it would not completely avoid a Section 4(f) use of the Osseo Branch. The cut and cover option would still require relocation of the existing freight rail, and several segments of the corridor would need to be constructed at-grade because of shallow groundwater and surface water features. In a cut and cover alternative, the Golden Valley Road Station would need to be constructed at-grade because of these engineering limitations.

Figure 8.7-16. Deep Tunnel Conceptual Plan View – South

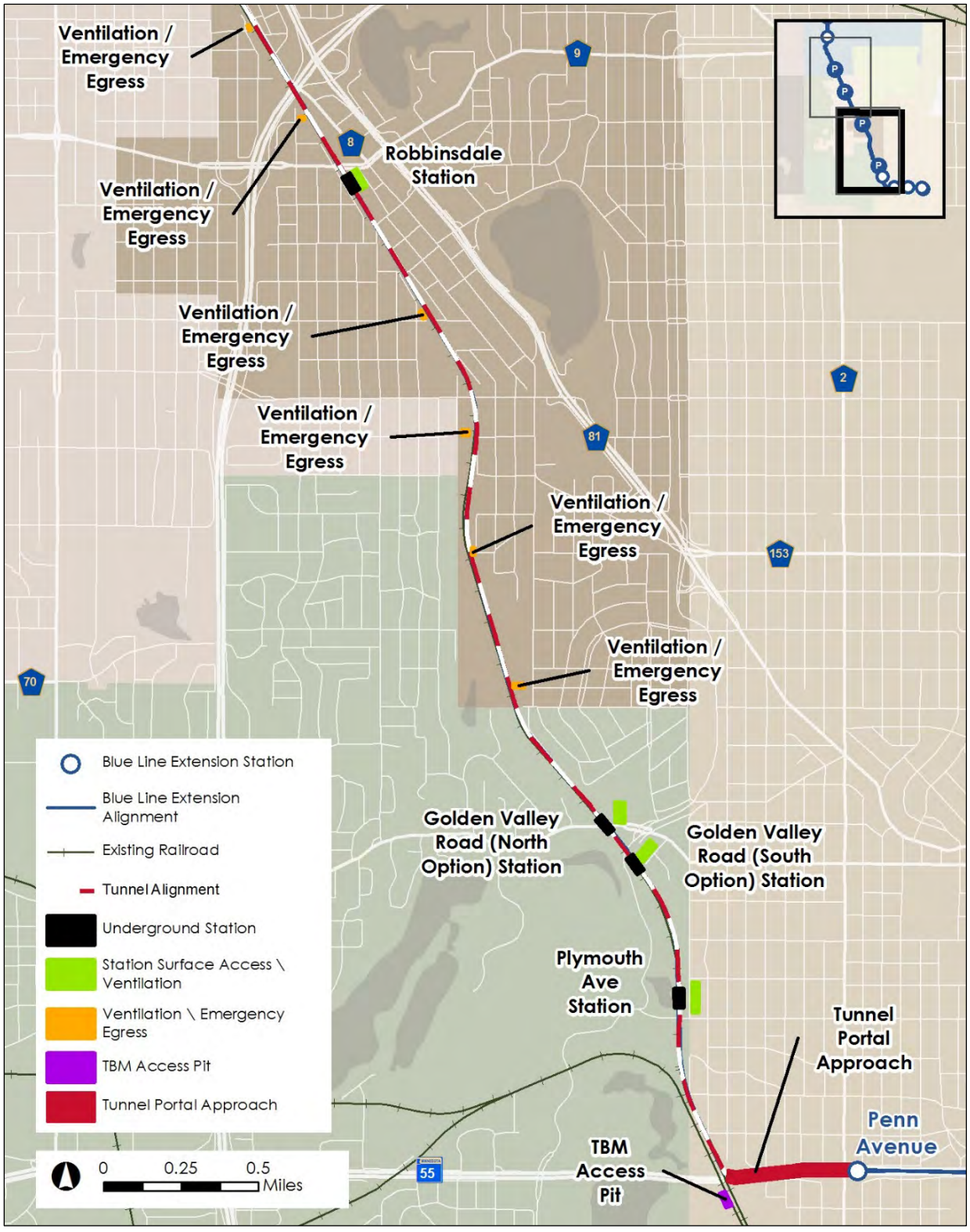
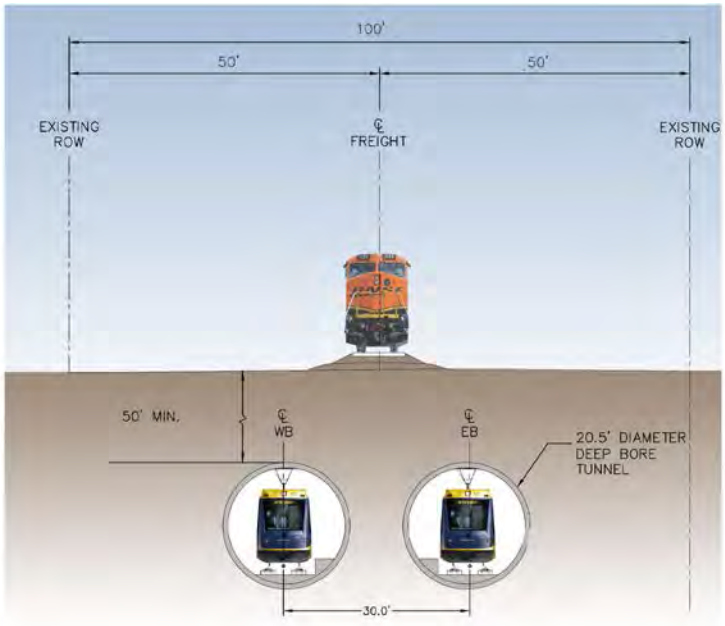


Figure 8.7-17. Deep Tunnel Conceptual Plan View – North

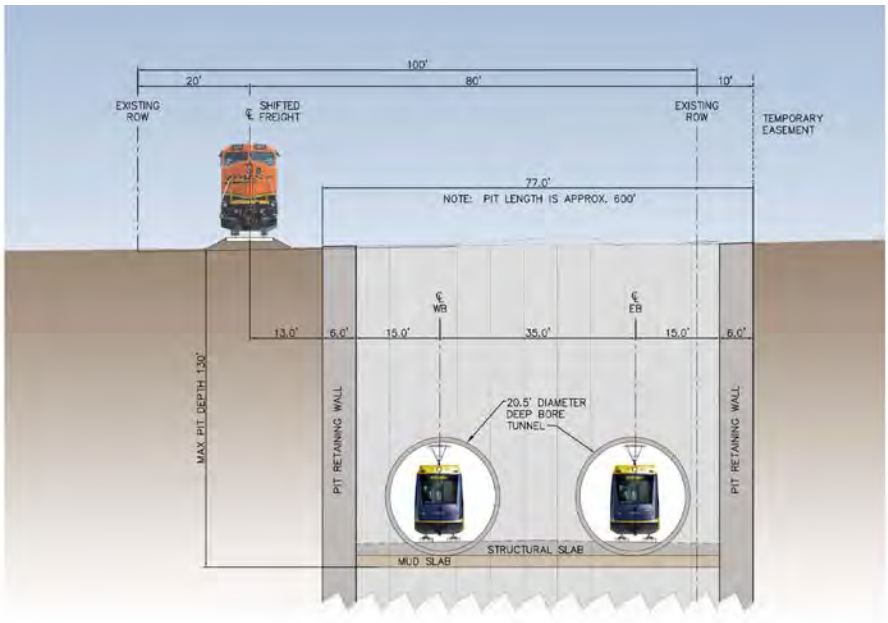
Figure 8.7-18. Deep Tunnel Sections

Typical Section



DRAFT-WORK IN PROCESS

Tunnel Boring Machine Access Pit



DRAFT-WORK IN PROCESS

Evaluation of Feasibility

While a number of operational and social, economic, and community concerns have been identified with the Deep Tunnel Alternative, FTA and the Council have determined that the alternative could be built as a matter of sound engineering judgment and therefore it would be feasible from an engineering perspective.

Evaluation of Prudence

Section 8.4.3 lists the Section 4(f) criteria used by FTA to determine the prudence of a full avoidance alternative as per 23 CFR Part 774.17.

i. Effectiveness in Meeting Purpose and Need

Determining whether an alternative is prudent requires an assessment of whether or not the alternative would compromise the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need (see **Section 8.5** above and **Chapter 1**).

Based on an assessment of Purpose and Need, the Deep Tunnel Alternative will address long-term regional transit mobility and local accessibility needs while providing efficient, travel-time competitive transit service that supports economic development goals and objectives of local, regional, and statewide plans.

ii. Safety and Operational Considerations

- None.

iii. Social, Economic, Environmental, and Community Impacts

Another consideration for prudence is if an alternative, after reasonable mitigation, would cause severe social, economic, or environmental impacts; cause severe disruption to established communities; cause disproportionate impacts to minority or low-income populations; or result in impacts to environmental resources protected under other federal statutes.

- **Tunnel Portals:** For the Deep Tunnel Alternative, large tunnel portals would be required at the southern end of the tunnel in the area of Olson Memorial Highway and Thomas Avenue, and at the northern end of the tunnel near the West Broadway Avenue/Brooklyn Boulevard intersection. The deepest portion of these portals would be between 30 and 60 feet below the ground surface, depending on tunnel depth and soil conditions. The portal excavation would extend as much as one quarter mile along the alignment in order to achieve the necessary grade for the LRT vehicles. Since no portion of the portals could be located in the Osseo Branch corridor, the impacts from the tunnel portals would be borne by properties and/or infrastructure adjacent to the corridor. At the southern portal, Olson Memorial Highway and the intersections with Penn and Thomas avenues would need to be reconfigured or closed to accommodate the descending LRT alignment. The required widening of Olson Memorial Highway in this area would require the acquisition of several residences adjacent to the current roadway. The portal excavation would present a massive, deep barrier to pedestrians and would exacerbate the existing safety concerns regarding the non-motorized traffic environment.

- At the northern end of the tunnel, the portal excavation would require the acquisition and relocation of three businesses. The tunnel portal would disrupt existing and planned pedestrian and bicycle trail connections in this area as well.
- Temporary construction impacts would be extensive as well. Large tunnel boring machine (TBM) access pits (approximately 75 feet wide, 200 feet long, and 30 to 60 feet deep) would need to be excavated at each end of the corridor. Because of the curves required at each end to align the tunnel portals with the Olson Memorial Highway and West Broadway Avenue surface running segments of the LRT alignment, the tunnel portals would not be able to be used as TBM access pits. Construction of the access pits would require dewatering in the Bassett Creek watershed, and could reduce the available hydrology for wetlands, especially those in and adjacent to TWRP.

- **Drainage:** Drainage in the tunnel approaches must be collected and sent to the storm drainage system. Given the high groundwater elevations in the area the collected drainage from the tunnel approaches would need to be pumped to a nearby stormwater treatment facility.
  - Any water in the tunnel (carried in by wet LRT vehicles, condensation, or seepage) must be treated as waste water and sent to the sanitary sewer system. As a result, a sanitary lift station would be required at the tunnel low point(s) in order to pump the collected water to nearby sanitary sewer line.
- **Impacts to Adjacent Property:** The deep tunnel option would require ventilation shafts, emergency egress shafts, and surface access points for five underground stations. The emergency egress shafts would be required every 2,500 feet, and it is assumed that where possible, ventilation shafts and powerhouses would be co-located with emergency egress shafts/portals. This would result in at least 15 surface portals. To avoid a Section 4(f) use of the Osseo Branch, these surface features would need to be located on property adjacent to the Osseo Branch, rather than within the rail corridor. To the extent practicable, these would be located on vacant property or non-park public rights of way. However, in the area between Olson Memorial Highway and 41st Avenue (approximately 3.5 miles of the 8-mile co-located corridor), adjacent lands are primarily park property, residential property, and other historic properties (the Homewood Historic District and the Grand Rounds Historic District). To avoid the park properties, which are Section 4(f) resources, the ventilation powerhouses and emergency egress portals would need to be located on residential property, and would likely result in the displacement of between 20 and 34 (depending on the location of the Golden Valley Road Station surface access) single-family residential properties.

  Of the five Osseo Branch corridor stations, three (Robbinsdale, Bass Lake Road, and 63rd Avenue) could be designed in a manner where the surface station access infrastructure would not impact residential property, however, 15 business displacements and acquisitions would likely be needed at these stations (especially Robbinsdale and Bass Lake Road) to accommodate the excavation for the underground station. The Plymouth Avenue Station is surrounded by TWRP property on the west and residential property to the east. The surface station access infrastructure for an underground Plymouth Avenue station would require the acquisition of 11 homes from the eastern boundary of the Plymouth Avenue Station in order to avoid impacts

to the park property. Similarly, the Golden Valley Road Station is surrounded by park property, the Grand Rounds Historic District to the west, and residential property to the east. To avoid the park property and the historic district, which are Section 4(f) resources, the surface station access infrastructure for an underground Golden Valley Road Station would require the acquisition of 14 homes or a church to the east.

As demonstrated in the discussion above, the construction and operational requirements of the Deep Tunnel Alternative would have extensive social, economic, and environmental impacts, especially with respect to the acquisition and displacement of residences and businesses.

iv. Cost

The Deep Tunnel Alternative would increase proposed BLRT Extension project capital costs by $5 billion to $7 billion compared to the same facility at grade. The increases occur as a result of construction activities involving tunneling, underground station construction and surface access, emergency egress, and ventilation infrastructure (see **Appendix J** for avoidance alternative cost information). Tunnel construction would also increase the proposed BLRT Extension project schedule by approximately 2 years, a factor that has been considered in the overall evaluation of proposed BLRT Extension project costs. The increased construction schedule would delay transportation benefits to system users.

Long-term operating and maintenance costs (e.g., tunnel lighting/communication, drainage, ventilation, fire protection) would be significantly greater than an at-grade facility.

v. Unique Problems or Unusual Factors

No unique problems or unusual factors were identified.

vi. Cumulative Consideration of Factors

A final consideration of prudence takes into account multiple factors that on their own may be considered minor, but would cumulatively result in unique problems or project impacts of extraordinary magnitude. Several factors of concern have been raised with the Deep Tunnel Alternative including social, economic, environmental, and community impacts, risks of schedule and benefit delays, and substantial increases in operational, maintenance, and construction costs. Cumulatively, these adverse effects and extraordinary increase in costs make the Deep Tunnel Alternative not prudent.

Avoidance Alternative Determination

The Deep Tunnel Alternative would avoid uses of all Section 4(f) resources and is feasible to construct, but is deemed not prudent under the criteria defined in paragraph (3) of 23 CFR Part 774.17 for feasible and prudent avoidance alternatives.

Alignment Shift 1 Alternative

The Alignment Shift Avoidance Alternatives considered would be primarily at-grade alignments that follow existing roadways adjacent to the proposed BLRT Extension project. A western shift (the Alignment Shift 1 Alternative) and an eastern shift (the Alignment Shift 2 Alternative) were developed (see **Figure 8.7-19**). However, because of the number of park resources, the presence of

Bassett Creek and relative lack of parallel roadways on the western side of the proposed BLRT Extension project south of TH 100; Alignment Shift 1 and Alignment Shift 2 alternatives share a common alignment segment. This common alignment segment lies east of the proposed BLRT Extension project through the portion of the City of Minneapolis north of Olson Memorial Highway, all of the cities of Golden Valley and Robbinsdale, and the southern portion of the City of Crystal.

The Alignment Shift 1 Alternative shifts the alignment and transit stations west along several public roadways to avoid use of the Osseo Branch (see **Figure 8.7-19**).

Beginning in the City of Minneapolis at the connection to Olson Memorial Highway, the Alignment Shift 1 Alternative would be shifted to public rights-of-way, to the extent possible, north along Xerxes Avenue. Between Oak Park Avenue and Plymouth Avenue, the Alignment Shift 1 Alternative would be constructed in a tunnel to avoid the Homewood Historic District. As the corridor approaches Theodore Wirth Parkway and Golden Valley Road the avoidance alternative would affect St. Margaret Mary Church property and Glenview Terrace Park (another Section 4(f) property, which includes a portion of the Grand Rounds Historic District). To avoid Glenview Terrace Park and the Grand Rounds Historic District, the alignment shift in this area would be constructed in a cut-and-cover tunnel (see **Figure 8.7-19**). In the cities of Golden Valley and Robbinsdale, the avoidance alternative would follow Crestview Avenue, Byrd Avenue, France Avenue. The avoidance alternative would continue north through the City of Crystal along West Broadway Avenue, bridging over the Osseo Branch at the West Broadway/BNSF at-grade crossing. Continuing north, the avoidance alternative shifts east, crossing over the Osseo Branch on a bridge in the City of Brooklyn Park.

Evaluation of Feasibility

While a number of operational, and social, economic, and community concerns have been identified with the Alignment Shift 1 Alternative, FTA and the Council have determined that the alternative could be built as a matter of sound engineering judgment and therefore it would be feasible from an engineering perspective.

Evaluation of Prudence

Section 8.4.3 lists the Section 4(f) criteria used by FTA to determine the prudence of a full avoidance alternative as per 23 CFR Part 774.17.

i. Effectiveness at Meeting Purpose and Need

Determining whether an alternative is prudent requires an assessment of whether or not the alternative would compromise the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need (see **Section 8.5** above and **Chapter 1**).

Based on an assessment of Purpose and Need, the Alignment Shift 1 Alternative will address long-term regional transit mobility and local accessibility needs while providing efficient, travel-time competitive transit service that supports economic development goals and objectives of local, regional, and statewide plans. However, as described in subsequent sections, the amount of right-of-way and relocations associated with the Alignment Shift 1 Alternative would be in conflict with local and regional economic development goals and objectives. Additionally, the Alignment Shift 1

Alternative would be less travel-time competitive than the proposed BLRT Extension project as the LRT speeds would need to be lower on residential streets.

ii. Safety and Operational Considerations

Consideration of safety and operational conditions of an avoidance alternative is required in determining whether the alternative is prudent. This avoidance alternative would introduce a new rail corridor in an area where rail operations do not currently exist. The Alignment Shift 1 Alternative would also require the closure of several public road intersections. This could potentially hinder emergency response to these directly affected streets and surrounding neighborhoods. BLRT operations would also be affected as trains would need to operate at reduced speeds through residential areas as compared to the proposed BLRT Extension project that uses the Osseo Branch (an existing rail corridor). Slower travel times would reduce projected ridership and overall effectiveness of the proposed BLRT Extension project.

iii. Social, Economic, Environmental, and Community Impacts

Another consideration for prudence is if an alternative, after reasonable mitigation, would cause severe social, economic, or environmental impacts; cause severe disruption to established communities; cause disproportionate impacts to minority or low-income populations; or result in impacts to environmental resources protected under other federal statutes.

Right-of-Way Impacts: As described above, shifting the BLRT alignment to the west to avoid the Osseo Branch would adversely impact densely developed residential areas along several public roadways (e.g. Xerxes, Crestview, Byrd, France, and West Broadway avenues; see **Appendix J** for a mapbook of the Alignment Shift 1 Alternative including anticipated impacted parcels). Within the area surrounding TWRP (between Olson Memorial Highway and 26th Avenue North) the potential number of relocations is estimated to exceed 90 residential properties and one commercial property. Farther north along West Broadway Avenue between Corvallis Avenue North and 73rd Avenue in the cities of Crystal and Brooklyn Park, approximately 60 residential relocations and over 20 business relocations would be required. Several partial land acquisitions of both public and private properties would also occur.

Economic Impact: The loss of residential and commercial property described above would impact economic conditions. While some residents and the commercial business displaced under this avoidance alternative may relocate within the area, the potential loss of property tax base would adversely affect economic conditions in the cities of Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park.

Community Disruption: Introducing a new rail corridor in a residentially developed area has the potential to cause community disruption by way of altering travel patterns, dividing or isolating neighborhoods, and increasing travel time to community resources, recreation areas, residents, or area businesses. Other local factors to consider include reduced accessibility, noise, and visual impacts. The Alignment Shift 1 Alternative has the potential to alter the desirability of the area and adversely impact the community character and cohesion for these portions of the cities of Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park, thereby reducing the quality of life of those who live in the surrounding neighborhoods.

The potential for constructing additional tunnel sections to avoid the social, economic and environmental effects noted above was considered. However, given the preponderance of narrow residential streets along the Alignment Shift 1 Alternative, a shallow cut and cover tunnel would require a similar number of acquisitions because of the required construction footprint. Deep tunnel sections would need to be approximately 850 feet long and would require the appropriate entrance and exit grades; these deep tunnel sections would encounter the same factors outlined in the discussion of the Deep Tunnel Alternative and would therefore be deemed not prudent.

iv. Construction, Maintenance, or Operational Costs of Extraordinary Magnitude

Long term maintenance and operational costs would be comparable to the proposed BLRT Extension project; the cost of construction of this avoidance alternative would approximately $35 million to $45 million higher than that of the proposed BLRT Extension project, primarily because of the costs for the cut and cover tunnels.

v. Unique Problems or Unusual Factors

No other unique or unusual factors have been identified. However, the Alignment Shift 1 Alternative introduces additional risks resulting from construction schedule uncertainty associated with a large increase in the number of acquisitions and relocations. Construction delay would not only increase overall capital costs, but delay benefits of system users. In addition, the Alignment Shift 1 Alternative would not be supported by local jurisdictions or the public due to the aforementioned concerns related to social, community and economic impacts.

vi. Cumulative Consideration of Factors

A final consideration of prudence takes into account multiple factors that on their own may be considered minor, but would cumulatively result in unique problems or project impacts of extraordinary magnitude. While the Alignment Shift 1 Alternative would have avoided use of the Osseo Branch and is considered feasible, this avoidance alternative is not considered prudent as it exhibits weak performance in meeting purpose and need by not supporting local and regional economic development goals and objectives and potentially reducing ridership because of slower travel times; it would result in social and economic impacts of extraordinary magnitude including creating substantially greater right-of-way impacts on residential properties; and it would create additional operational concerns. For these reasons, the Alignment Shift 1 Alternative has been determined not prudent.

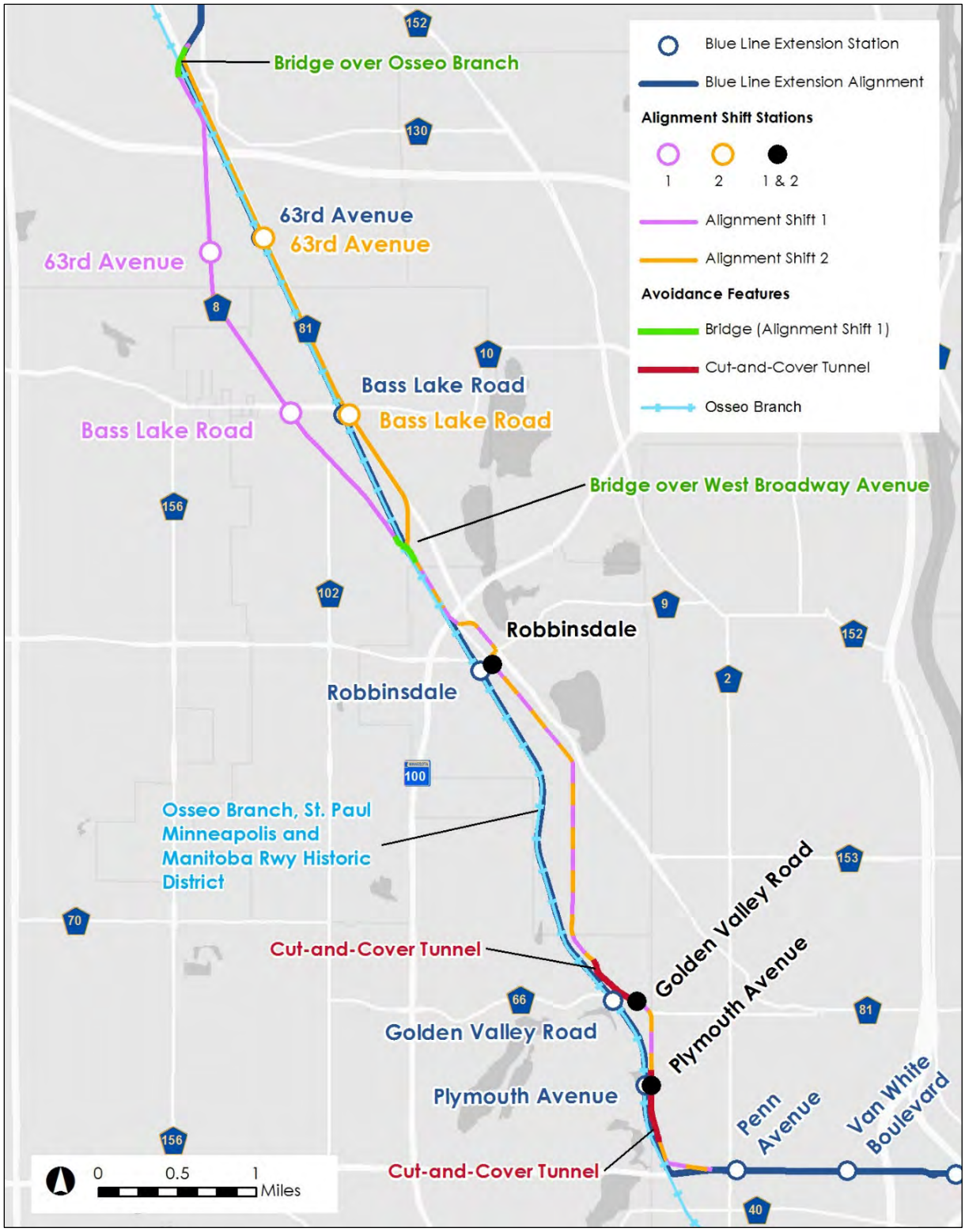
Avoidance Alternative Determination

The Alignment Shift 1 Alternative would avoid uses of all Section 4(f) resources and is feasible to construct, but is deemed not prudent under the criteria defined in paragraph (3) of 23 CFR Part 774.17 for feasible and prudent avoidance alternatives.

Alignment Shift 2 Alternative

This avoidance alternative shifts the alignment and transit stations east along several public roadways in order to stay outside the Osseo Branch (see **Figure 8.7-19**).

Figure 8.7-19. Alignment Shift Avoidance Alternatives



Beginning in the City of Minneapolis at the connection to Olson Memorial Highway, the Alignment Shift 2 Alternative would follow a common corridor with the Alignment Shift 1 Alternative 1 (i.e., Xerxes Avenue, then Crestview Avenue, Byrd Avenue, and France Avenue to West Broadway Avenue). Following West Broadway north, the Alignment Shift 2 Alternative would shift east to Vera Cruz Avenue North and then to Bottineau Boulevard just north of where the proposed BLRT Extension project enters the BNSF rail corridor in Brooklyn Park.

Evaluation of Feasibility

While a number of operational, and social, economic, and community concerns have been identified with the Alignment Shift 2 Alternative, FTA and the Council have determined that the alternative could be built as a matter of sound engineering judgment and therefore it would be feasible from an engineering perspective.

Evaluation of Prudence

Section 8.4.3 lists the Section 4(f) criteria used by FTA to determine the prudence of a full avoidance alternative as per 23 CFR Part 774.17.

i. Effectiveness at Meeting Purpose and Need

Determining whether an alternative is prudent requires an assessment of whether or not the alternative would compromise the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need (see **Section 8.5** above and **Chapter 1**).

Based on an assessment of Purpose and Need, the Alignment Shift 2 Alternative will address long-term regional transit mobility and local accessibility needs while providing efficient, travel-time competitive transit service that supports economic development goals and objectives of local, regional, and statewide plans. However, as described in subsequent sections, the amount of right-of-way and relocations associated with the Alignment Shift 2 Alternative would be in conflict with local and regional economic development goals and objectives. Additionally, the Alignment Shift 2 Alternative would be less travel-time competitive than the proposed BLRT Extension project as the LRT speeds would need to be lower on residential streets.

ii. Safety and Operational Considerations

Consideration of safety and operational conditions of an avoidance alternative is required in determining whether the alternative is prudent. The Alignment Shift 2 Alternative would introduce a new rail corridor in an area where rail operations do not currently exist. The Alignment Shift 2 Alternative would also require the closure of several public road intersections. This could potentially hinder emergency response to these directly affected streets and surrounding neighborhoods. BLRT operations would also be affected as trains would not be able to travel at the same speeds through residential areas as compared to the proposed BLRT Extension project that utilizes an existing rail corridor. Slower travel times would reduce projected ridership and overall effectiveness of the proposed BLRT Extension project.

iii. Social, Economic, Environmental, and Community Impacts

Another consideration for prudence is if an alternative, after reasonable mitigation, would cause severe social, economic, or environmental impacts; cause severe disruption to established communities; cause disproportionate impacts to minority or low-income populations; or result in impacts to environmental resources protected under other federal statutes.

Right-of-Way Impacts: As described above, shifting the BLRT alignment to the east to avoid the Osseo Branch would impact densely developed residential areas along several public roadways (e.g., Xerxes, Crestview, Byrd, France, and West Broadway avenues; see **Appendix J** for a mapbook of the Alignment Shift 2 Alternative including anticipated impacted parcels). Within the area surrounding TWRP (between Olson Memorial Highway and 26th Avenue North) the potential number of relocations is estimated to exceed 90 residential properties and one commercial property. Several partial land acquisitions of both public and private properties would also occur.

The northern portion of the Alignment Shift 2 Alternative would run down the median of Bottineau Boulevard. Bottineau Boulevard is a principal arterial that carries between 22,000 and 29,200 vehicles per day (vpd) and is projected to carry between 29,000 and 35,000 vpd in 2040. To effectively carry this volume of traffic, three through lanes in each direction are required. Intersections at Bass Lake Road and 63rd Avenue have sufficiently high volumes and turning movements that dual left turn lanes have been implemented. In its current configuration, there is insufficient median width to accommodate a light rail corridor and associated station infrastructure. In order to maintain the necessary traffic operations and incorporate light rail transit, Bottineau Boulevard would need to be widened a minimum of 30 feet. This widening would need to occur entirely on the east side of the roadway as widening to the west would encroach upon the Osseo Branch. Widening Bottineau Boulevard to the east would require the elimination of the frontage road, removal of business and residential accesses, and the likely acquisition of over 30 residences and partial or total acquisitions of over 20 businesses, and would encroach further into the Crystal Airport runway protection zone.

Economic Impact: The loss of residential and commercial property described above would impact economic conditions. While some residents and the commercial business displaced under this avoidance alternative may relocate within the area, the potential loss of property tax base would adversely affect economic conditions in the cities of Minneapolis, Golden Valley, Robbinsdale, and Crystal.

Community Disruption: Introducing a new rail corridor in a residentially developed area has the potential to cause community disruption by way of altering travel patterns, dividing or isolating neighborhoods, and increasing travel time to community resources, recreation areas, residents, or area businesses. Other local factors to consider include reduced accessibility, noise, and visual impacts. The Alignment Shift 2 Alternative has the potential to alter the desirability of the area and adversely impact the community character and cohesion for these portions of the cities of Minneapolis, Golden Valley, Robbinsdale, and Crystal, thereby reducing the quality of life of those who live in the surrounding neighborhoods.

The potential for constructing additional tunnel sections to avoid the social, economic and environmental effects noted above was considered. However, given the preponderance of narrow residential streets along the Alignment Shift 2 Alternative, a shallow cut and cover tunnel would require a similar number of acquisitions because of the required construction footprint. Deep tunnel sections would need to be approximately 850 feet long and would require the appropriate entrance and exit grades; these deep tunnel sections would encounter the same factors outlined in the discussion of the Deep Tunnel Alternative and would therefore be deemed not prudent.

iv. Construction, Maintenance, or Operational Costs of Extraordinary Magnitude

Long term maintenance and operational costs would be comparable to the proposed BLRT Extension project; the cost of construction of this avoidance alternative would approximately $35 million to $45 million greater than the proposed BLRT Extension project primarily because of the cost of the shallow tunnel sections.

v. Unique Problems or Unusual Factors

No other unique or unusual factors have been identified. However, the Alignment Shift 2 Alternative introduces additional risks resulting from construction schedule uncertainty associated with a large increase in the number of acquisitions and relocations. Construction delay would not only increase overall capital costs, but delay benefits of system users. In addition, Alignment Shift 2 Alternative would not be supported by local jurisdictions and/or the public due to the aforementioned concerns related to social, economic, and community impacts.

vi. Cumulative Consideration of Factors

A final consideration of prudence takes into account multiple factors that on their own may be considered minor, but would cumulatively result in unique problems or project impacts of extraordinary magnitude. While the Alignment Shift 2 Alternative would have avoided use of the Osseo Branch and is considered feasible, this avoidance alternative is not considered prudent as it exhibits weak performance in meeting purpose and need by not supporting local and regional economic development goals and objectives and potentially reducing ridership because of slower travel times; it would result in social and economic impacts of extraordinary magnitude including creating substantially greater right-of-way impacts on residential properties; and it would create additional operational concerns. For these reason, Alignment Shift 2 Alternative has been determined not prudent.

Avoidance Alternative Determination

The Alignment Shift 2 Alternative would avoid uses of all Section 4(f) resources and is feasible to construct, but is deemed not prudent under criteria defined in paragraph (3) of 23 CFR Part 774.17 for feasible and prudent avoidance alternatives.

All Possible Planning to Minimize Harm Analysis

In addition to a determination that there is no feasible and prudent alternative that avoids the use of a Section 4(f) resource, the Section 4(f) regulations also states that FTA may not approve the use of a Section 4(f) resource unless it determines that the proposed action includes all possible planning, as defined in 23 CFR Part 774.17, to minimize harm to the property resulting from such use.

In evaluating the reasonableness of measures to minimize harm under §774.3(a)(2), FTA will consider the preservation purpose of the Section 4(f) statute and:

- The views of the official(s) with jurisdiction over the Section 4(f) property;
- Whether the cost of the measures is a reasonable public expenditure in light of the adverse impacts of the project on the Section 4(f) property and the benefits of the measure to the property, in accordance with §771.105(d) of this chapter; and
- Any impacts or benefits of the measures to communities or environmental resources outside of the Section 4(f) property.

FTA and Council has consulted with MnHPO and identified consulting parties during the design of the proposed BLRT Extension project in the Osseo Branch corridor to avoid, minimize, and/or mitigate adverse effects from construction and operation of the proposed BLRT Extension project through sensitive design and the incorporation of protective measures. The design of the LRT alignment and facilities continue to be developed as part of the advancement of the design for the proposed BLRT Extension project.

FTA, MnDOT CRU, and the Council are responsible for the proposed BLRT Extension project's implementation of the Section 106 consultation process, including coordination with USACE, which has Section 106 responsibilities as a NEPA Cooperating Agency. USACE recognizes FTA as the Lead Federal Agency for the Section 106 process. **Table 8.7-4** lists the Section 106 coordination meetings that the Council has held under the Section 106 process. **Appendix H** includes documentation of Section 106 consultation meetings.

The complete reconstruction that is required within the Osseo Branch to accommodate the construction of the proposed BLRT Extension project and the reconstruction of the existing BNSF freight tracks would result in the demolition of the historic resource within the 8-mile segment that proposed BLRT Extension project would occupy (see Determination of Effects Report in **Appendix H**). Therefore, mitigation efforts would be the primary measures to minimize harm. During the March 10, 2016 Section 106 Consultation meeting, mitigation measures for impacts to the Osseo Branch were discussed and agreed upon.

Based on the Section 106 consultation meetings, the following proposed mitigation measures for impacts to the Osseo Branch have been agreed upon by MnHPO and the proposed BLRT Extension project's consulting parties and documented in the proposed BLRT Extension project's Section 106 MOA (see also **Appendix H**):

Osseo Branch Line of the St. Paul, Minneapolis & Manitoba Railroad / Great Northern Railway. The COUNCIL shall incorporate interpretation of the Osseo Branch Line of the St. Paul, Minneapolis & Manitoba Railroad / Great Northern Railway into the design of the PROJECT segment that will utilize the Osseo Branch Line of the St. Paul, Minneapolis & Manitoba Railroad / Great Northern Railway Historic District. The interpretation shall be based on the results of the Phase II evaluation completed for the historic property during the identification stage of the PROJECT and additional research that shall be completed to inform the content of the interpretation. Interpretation shall be incorporated into the design at station locations within the historic district corridor; and into the PROJECT related trail improvements along the historic district corridor.

Table 8.7-4. Council Meetings Related to Section 106

Date	Meeting Type
January 23–25, 31, 2012	EIS Scoping open houses (4)
May 7, 8, 13, 14, 2014	Draft EIS public hearings (4)
February 26, 2015	Open house
May 28, 2015	Open house
June 4, 2015	Open house
June 5, 2015	Section 106 consulting parties meeting
June 11, 2015	Open house
June 17, 2015	Open house
July 10, 2015	Section 106 consulting parties meeting
July 16, 2015	Section 106 consulting parties meeting
October 18, 2015	Open house
October 20, 2015	Open house
October 21, 2015	Open house
October 28, 2015	Open house
October 29, 2015	Open house
February 4, 2016	Section 106 consulting parties meeting
March 10, 2016	Section 106 consulting parties meeting
March 24, 2016	Section 106 consulting parties meeting

All Possible Planning to Minimize Harm Determination

Based on the summary within this section, FTA has determined in accordance with 23 CFR Part 774.17 that all possible planning to minimize harm to the Osseo Branch Line of the St. Paul, Minneapolis & Manitoba Railroad/Great Northern Railway Historic District will be conducted and implemented through the proposed BLRT Extension project's Section 106 process and with execution of the proposed BLRT Extension project's Section 106 MOA.

8.7.2.11 Grand Rounds Historic District – Theodore Wirth Segment

In the March 2014 Draft Section 4(f) Evaluation, the Grand Rounds Historic District was identified as a direct use in Table 8.3-2 on page 8-13, but was described as a *de minimis* use in the text on page 8-35. The correct preliminary determination in the March 2014 Draft Section 4(f) Evaluation was a *de minimis* use. Since the publication of the March 2014 Draft Section 4(f) Evaluation, additional engineering information along with additional coordination with MnHPO has resulted in FTA amending their preliminary Section 4(f) determination for the Grand Rounds Historic District. The following sections discuss FTA's amended Section 4(f) determination.

Section 4(f) Property Description

As stated in the Determination of Effects Report, the Grand Rounds Historic District is a nationally significant example of urban park development in the nineteenth and twentieth centuries and is one of the most unique and iconic features of Minneapolis. The district represents a conscious effort to link all areas of the City into a comprehensive and unified system. The district is the most comprehensive design by nationally prominent landscape architect Horace William Shaler Cleveland and most important work by nationally prominent landscape architect and park professional Theodore Wirth. TWRP is a contributing element to Theodore Wirth Segment of the district. The Grand Rounds Historic District is approximately 4,662 acres. The Grand Rounds Historic District is eligible for the NRHP under Criteria A and C.

Approximately one mile of the Osseo Branch Section 4(f) resource, which is discussed in detail in **Section 8.7.2.10**, lies within the boundaries of the Grand Rounds Historic District.

Determination of Permanent Section 4(f) Use

There are several permanent and temporary easements proposed for the proposed BLRT Extension project that lie within the boundaries of the Grand Rounds Historic District. These include (see also **Figure 8.7-20**):

- Approximately 0.7 acre of property along Theodore Wirth Parkway, a contributing element to the Grand Rounds Historic District, would be acquired as permanent easement.
- Approximately 1.4 acres of TWRP property that is not a contributing element to the Grand Rounds Historic District would be acquired as a permanent easement; this includes approximately 1.2 acres for the Golden Valley Road Station and approximately 0.2 acre for the Plymouth Avenue Station.
- Approximately 10.6 acres of property would be needed as temporary easement for construction purposes.
- Approximately 11.7 acres of existing BNSF right-of-way, currently in a transportation use, would be needed for LRT construction and freight rail reconstruction activities.

Impacts would occur from removal of vegetation, grading, construction of the LRT guideway, realigned freight track, bridge reconstruction, and corridor protection barriers between the freight rail and light rail lines. In addition, the Plymouth Avenue and Golden Valley Road stations are within the historic district and would include vertical circulation towers and pedestrian access

facilities that are ADA compliant. The Golden Valley Road Station also includes construction of a 100-space park-and-ride adjacent to the station; however, only 0.7 acre would impact Theodore Wirth Parkway—a contributing element to the Grand Rounds Historic District.

FTA has preliminarily determined that this 0.7-acre impact to Theodore Wirth Parkway is the only direct use of the Grand Rounds Historic District, since the other 1.4 acres of permanent easement do not affect contributing elements to the historic district. Similarly, the 11.7 acres of existing BNSF right-of-way that lie within the Grand Rounds Historic District are not a contributing element to the district, and furthermore are already a transportation use.

Avoidance Alternatives Analysis

The Section 4(f) statute requires the selection of an alternative that completely avoids the use of Section 4(f) property if that alternative is deemed feasible and prudent. Based on proposed BLRT Extension project analysis performed to date, the No-Build and the Enhanced Bus Alternatives as described and evaluated in the Draft EIS (and for the No-Build, as also evaluated in the Final EIS) would completely avoid the use of any Section 4(f) property. Alignment D2 from the Draft EIS would avoid impacts on the Grand Rounds Historic District, but would result in impacts to other Section 4(f) properties, including Lincoln Community School Playground, the Minneapolis Public Schools athletic field, and the Homewood Residential Historic District, that are being avoided by the proposed BLRT Extension project.

Portions of the same avoidance alternatives presented in **Section 8.7.2.10** for the Osseo Branch were evaluated for the Grand Rounds Historic District. These include the Deep Tunnel Avoidance Alternative and the Alignment Shift Avoidance Alternatives with the cut-and-cover tunnels. In addition, the elimination of the Golden Valley Road Station or the relocation of the station, north and south, was evaluated.

The following sections summarize the FTA and Council assessment of the feasibility and prudence of these avoidance alternatives.

No-Build Alternative and Enhanced Bus Alternative

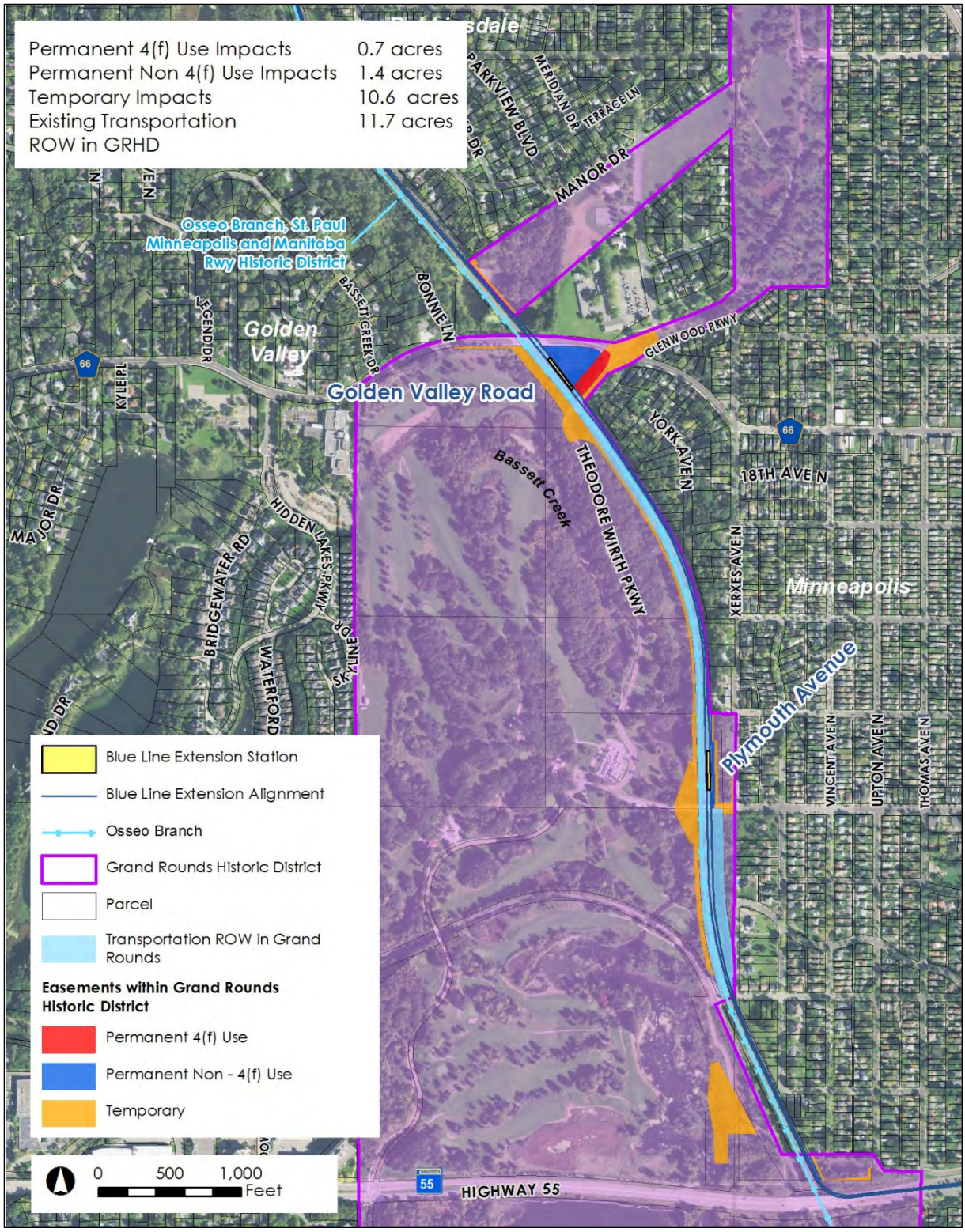
The No-Build Alternative and Enhanced Bus Alternative would, as described in **Section 8.7.2.10**, avoid all Section 4(f) uses. However, as described in **Section 8.7.2.10**, neither the No-Build Alternative nor the Enhanced Bus Alternative would be considered prudent as they would not address the Purpose and Need for the proposed BLRT Extension project.

Avoidance Alternative Determination

The No-Build Alternative and the Enhanced Bus Alternative would avoid uses of all Section 4(f) resources and would be considered feasible from an engineering perspective because of relatively low construction requirements to implement the alternatives, but both the alternatives are deemed not prudent under the criteria defined in paragraph (3) of 23 CFR Part 774.17 for feasible and prudent avoidance alternatives. The No-Build Alternative and the Enhanced Bus Alternative are not prudent per 23 CFR Part 774.17 because they neither address nor correct the transportation purpose and need that prompted the proposed BLRT Extension project.

See **Section 8.7.2.10** for additional discussion of the No-Build and Enhanced Bus alternatives.

Figure 8.7-20. Grand Rounds Historic District



Deep Tunnel Alternative

As described in **Section 8.7.2.10** the construction of an approximately 8-mile long deep tunnel[5] along the proposed BLRT Extension project alignment was considered as an alternative to avoid the use of the Osseo Branch. This Deep Tunnel Alternative would also avoid the Grand Rounds Historic District. A shorter tunnel section was also considered but eliminated since a shorter tunnel would still impact the majority of the Osseo Branch, a Section 4(f) protected property.

Figure 8.7-16 through Figure 8.7-18 illustrate the Deep Tunnel Alternative.

Evaluation of Feasibility

Section 8.4.3 describes the process and criteria to be used in determining whether or not an alternative is feasible.

As described in **Section 8.7.2.10**, FTA and the Council have determined that a Deep Tunnel Alternative is feasible from a technical engineering perspective.

Evaluation of Prudence

Section 8.4.3 describes the process and criteria to be used in determining whether or not an alternative is prudent. The analysis of prudence for the Deep Tunnel Alternative as an avoidance alternative for the Grand Rounds Historic District is the same as the prudence analysis for the Osseo Branch. See **Section 8.7.2.10** for a detailed discussion of the prudence evaluation criteria for the Deep Tunnel Alternative.

Avoidance Alternative Determination

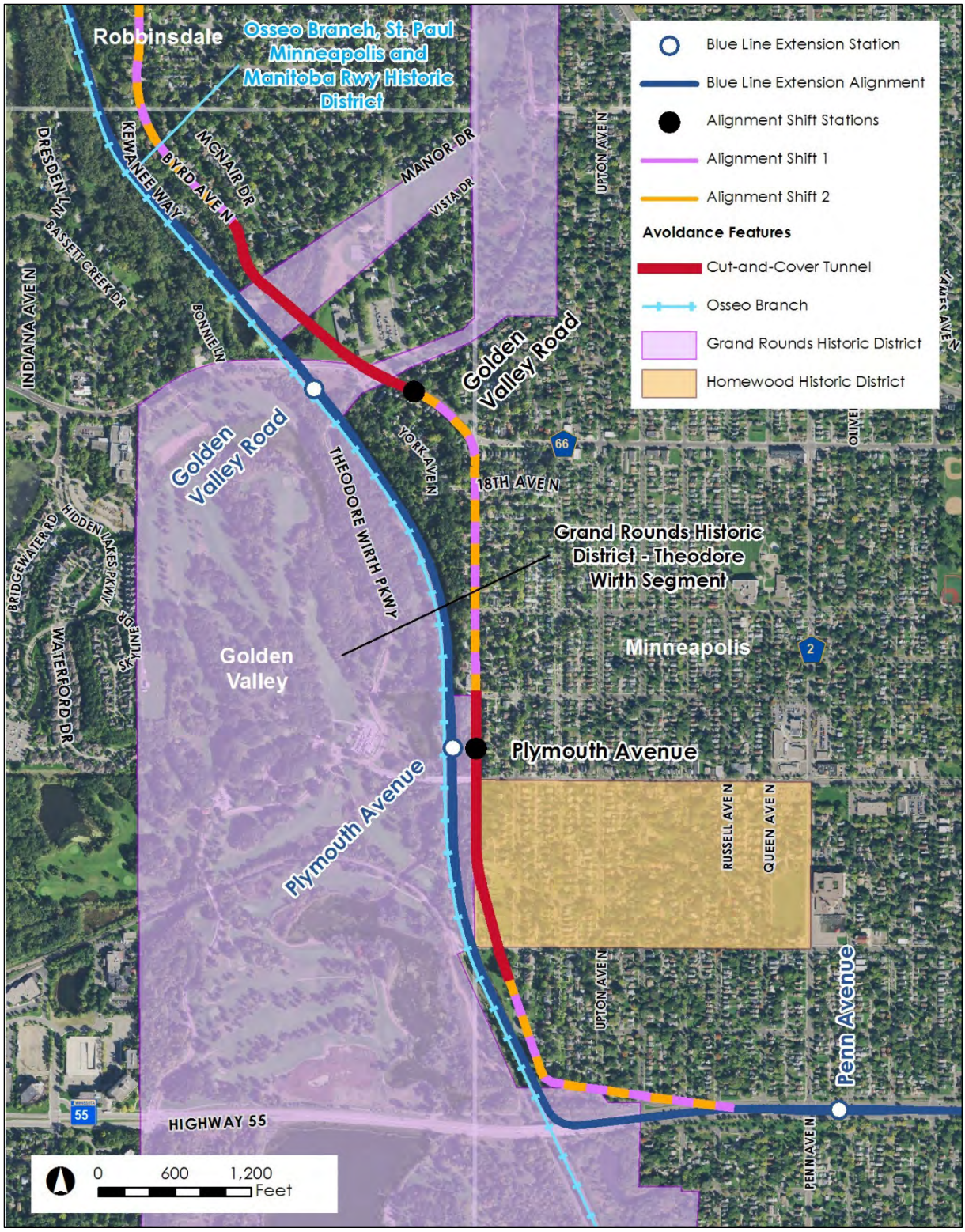
The Deep Tunnel Alternative would avoid uses of all Section 4(f) resources and is feasible to construct, but is deemed not prudent under the criteria in paragraph (3) of 23 CFR Part 774.17.

Alignment Shift 1 and Alignment Shift 2 Alternatives

Shifting the BLRT alignment and moving the Plymouth Avenue and Golden Valley Road stations in an effort to avoid impacts on the Grand Rounds Historic District was considered. The alignment shift in the area of the Grand Rounds Historic District is part of the common segment of the Alignment Shift 1 and Alignment Shift 2 alternatives (see **Figure 8.7-21**) associated with impacts to the Osseo Branch, St. Paul Minneapolis and Manitoba Railway Historic District, which is discussed in detail under **Section 8.7.2.10**. The alignment shift in the area of the Grand Rounds Historic District moves the alignment and the Plymouth Avenue and Golden Valley Road stations east along several public roadways in order to stay outside the historic district (see **Figure 8.7-21**).

[5] A shallow, cut and cover tunnel option was also considered but eliminated since it would not completely avoid a Section 4(f) use of the Grand Rounds Historic District or the Osseo Branch. The cut and cover option would still require relocation of the existing freight rail, and several segments of the corridor would need to be constructed at-grade because of shallow groundwater and surface water features. In a cut and cover alternative, the Golden Valley Road Station would need to be constructed at-grade because of these engineering limitations; therefore the impact to Theodore Wirth Parkway (which is the only impacted contributing element of the Grand Rounds Historic District) would still occur.

Figure 8.7-21. Alignment Shift Alternatives



Evaluation of Feasibility

Section 8.4.3 describes the process and criteria to be used in determining whether or not an alternative is feasible.

As described in **Section 8.7.2.10**, FTA and the Council have determined that the Alignment Shift 1 and Alignment Shift 2 alternatives are feasible from a technical engineering perspective.

Evaluation of Prudence

Section 8.4.3 describes the process and criteria to be used in determining whether or not an alternative is prudent. The analysis of prudence for the Alignment Shift 1 and Alignment Shift 2 alternatives as avoidance alternatives for the Grand Rounds Historic District is the same as the prudence analysis for the Osseo Branch. See **Section 8.7.2.10** for a detailed discussion of the prudence evaluation criteria for the Alignment Shift 1 and Alignment Shift 2 alternatives.

Avoidance Alternative Determination

The Alignment Shift 1 and Alignment Shift 2 alternatives would avoid uses of all Section 4(f) resources and are feasible to construct, but are deemed not prudent under the criteria defined in paragraph (3) of 23 CFR Part 774.17 for feasible and prudent alternatives.

All Possible Planning to Minimize Harm Analysis

In evaluating the reasonableness of measures to minimize harm under §774.3(a)(2), FTA will consider the preservation purpose of the Section 4(f) statute and:

- The views of the official(s) with jurisdiction over the Section 4(f) property;
- Whether the cost of the measures is a reasonable public expenditure in light of the adverse impacts of the project on the Section 4(f) property and the benefits of the measure to the property, in accordance with §771.105(d) of this chapter; and
- Any impacts or benefits of the measures to communities or environmental resources outside of the Section 4(f) property.

FTA and the Council have consulted with MnHPO and identified consulting parties during the design of the proposed BLRT Extension project in the Grand Rounds Historic District to avoid, minimize, and/or mitigate adverse effects from construction and operation of the proposed BLRT Extension project through sensitive design and the incorporation of protective measures. The design of the LRT alignment and facilities continue to be developed as part of the advancement of the design for the proposed BLRT Extension project.

Section 8.7.2.10 summarizes the roles and responsibilities of FTA, the Council, and cooperating agencies with respect to the Section 106 process. **Table 8.7-4** lists the Section 106 coordination meetings that the Council has held under the Section 106 process. **Appendix H** includes documentation of Section 106 consultation meetings.

The analysis of measures to minimize harm for the Grand Rounds Historic District focuses on the contributing elements to the district.

Several options that were developed during the analysis of avoidance alternatives were considered as potential measures to minimize harm to the contributing elements of the district. These options include:

- Reducing the Golden Valley Road Station park-and-ride footprint
- Eliminating the park-and-ride at the Golden Valley Road Station
- Shifting the Golden Valley Road Station to the north
- Shifting the Golden Valley Road Station to the south
- Eliminating the Golden Valley Road Station

None of these options were considered viable avoidance alternatives as they still would result in a Section 4(f) use of another resource; the Osseo Branch. However, these options would potentially reduce impacts to the contributing elements of the Grand Rounds Historic District.

Reducing or Eliminating the Golden Valley Road Station Park-and-Ride

As shown in **Figure 8.7-22**, reducing the footprint of the Golden Valley Road Station park-and-ride would result in an approximate 0.2-acre impact to Theodore Wirth Parkway, which is a contributing element to the Grand Rounds Historic District. Similarly, eliminating the park-and-ride would also result in an approximate 0.2-acre impact to the parkway, as shown in **Figure 8.7-23**. The 0.2-acre impact is caused by the need for ADA-compliant pedestrian access facilities to the station platform.

Reducing or eliminating the Golden Valley Road Station park-and-ride would not eliminate the impact to Theodore Wirth Parkway, which is a contributing element to the Grand Rounds Historic District. Therefore, reducing or eliminating the park-and-ride is not considered a viable measure to minimize harm.

Shifting the Golden Valley Road Station Location

The construction of the Golden Valley Road Station either north or south of the proposed location, would eliminate impact to the Theodore Wirth Parkway portion of the Grand Rounds Historic District. Specifically, moving the station location to outside the right-of-way of Theodore Wirth Parkway would avoid the Section 4(f) use of the resource (see **Figure 8.7-24 and Figure 8.7-25**).

However, the amount of right-of-way and relocations and the substantial increase in automobile and bus traffic in residential areas would be in conflict with local and regional economic development goals and objectives, and would be objectionable to the public. A shift of the station to the north would impact at least 14 residential properties along Kewanee Way and Byrd Avenue North. A shift of the station location to the south would impact at least 15 residential properties along Zephyr Place, Golden Valley Road, and York Avenue North.

Finally, shifting the Golden Valley Road Station away from the intersection of Golden Valley Road and Theodore Wirth Parkway and into residential neighborhoods would not be supported by Golden Valley residents, staff or elected officials because it would lead to additional impacts on

residential properties and would adversely impact the community character and cohesion for the neighborhood within the City of Golden Valley.

These factors indicate that shifting the Golden Valley Road Station to the north or south would not be viable measures to minimize harm.

Elimination of the Golden Valley Road Station

By eliminating the Golden Valley Road Station, impacts to Theodore Wirth Parkway could be eliminated. Elimination of the station would diminish the City of Golden Valley's access to the LRT service that would be provided by the proposed BLRT Extension project, and therefore would not meet one of the goals of the purpose and need for the proposed BLRT Extension project, namely addressing long-term regional transit mobility and local accessibility needs.

Both the city of Golden Valley and MPRB have provided strong written support for the construction of the Golden Valley Road Station to facilitate access to both the City and to TWRP.

These factors indicate that eliminating the Golden Valley Road Station is not a viable measure to minimize harm.

Mitigation Measures

Altering the layout or location of the Golden Valley Road Station, or eliminating the station altogether, are not viable options as discussed above. Therefore, mitigation efforts are anticipated to be the primary measures to minimize harm. During the March 24, 2016 Section 106 Consultation meeting, mitigation measures for impacts to the Grand Rounds Historic District were discussed. Designing proposed BLRT Extension project elements in accordance with Secretary of the Interior Standards, developing preservation and treatment plans for the Theodore Wirth Segment of the Grand Rounds Historic District, design review processes, and historic district interpretation elements were considered.

Based on the Section 106 consultation meetings, the following proposed mitigation measures for impacts to the Grand Rounds Historic District have been agreed upon by MnHPO and the proposed BLRT Extension project's consulting parties, and documented in the proposed BLRT Extension project Section 106 MOA (see also **Appendix H**):

- All proposed BLRT Extension project elements within, and in the vicinity of, the Grand Rounds Historic District will be designed in accordance with the Secretary of the Interior's Standards and the National Park Service's (NPS) *Guidelines for the Treatment of Cultural Landscapes*.
- During the proposed BLRT Extension project design development (before completion of the 30 percent, 60 percent, and 90 percent plans) FTA shall continue to consult with MnHPO, concurring parties, and the public, as appropriate, on the design of PROJECT elements within, and in the vicinity of, the Grand Rounds Historic District to consider ways to minimize effects on the district and address design concerns.
- All BLRT design plans (30 percent, 60 percent, 90 percent, and 100 percent plans and subsequent modifications) shall be subject to FTA review. The purpose of the review is to determine if substantive proposed BLRT Extension project changes that have the potential to

change the effects or mitigation for historic property have been made, and would need to be addressed. FTA will submit the 60 percent plans to MnHPO for concurrence.

- A Construction Protection Plan would be developed that would detail the measures to be implemented during construction to avoid and minimize adverse effects on the Grand Rounds Historic District from construction activities.
- Interpretation of the Theodore Wirth Segment of the Grand Rounds Historic District would be incorporated into the design of the Plymouth Avenue and Golden Valley Road stations. The park-and-ride lot at the Golden Valley Road Station shall include a trailhead at the intersection of Theodore Wirth Parkway and Golden Valley Road, and this trailhead shall also include interpretation of the Grand Rounds Historic District.
- Vegetation and landscaping would be incorporated into the proposed BLRT Extension project design to screen and minimize views of the proposed BLRT Extension project from Theodore Wirth Parkway. Proposed BLRT Extension project infrastructure, as well as alterations to the landscape, shall be developed in a manner that minimizes the net loss of existing vegetation.
- Preservation and treatment plans would be developed to guide the overall preservation of the Theodore Wirth Segment of the Grand Rounds Historic District and to guide preservation activities for up to twelve different historic features or feature types within this area.

All Possible Planning to Minimize Harm Determination

Based on the summary within this section, FTA has determined in accordance with 23 CFR Part 774.17 that all possible planning to minimize harm to the Theodore Wirth Segment of the Grand Rounds Historic District will be conducted and implemented through the completion of the proposed BLRT Extension project's Section 106 process and with execution of the proposed BLRT Extension project's Section 106 MOA.

Figure 8.7-22. Golden Valley Road Station with Reduced Park-and-Ride Footprint

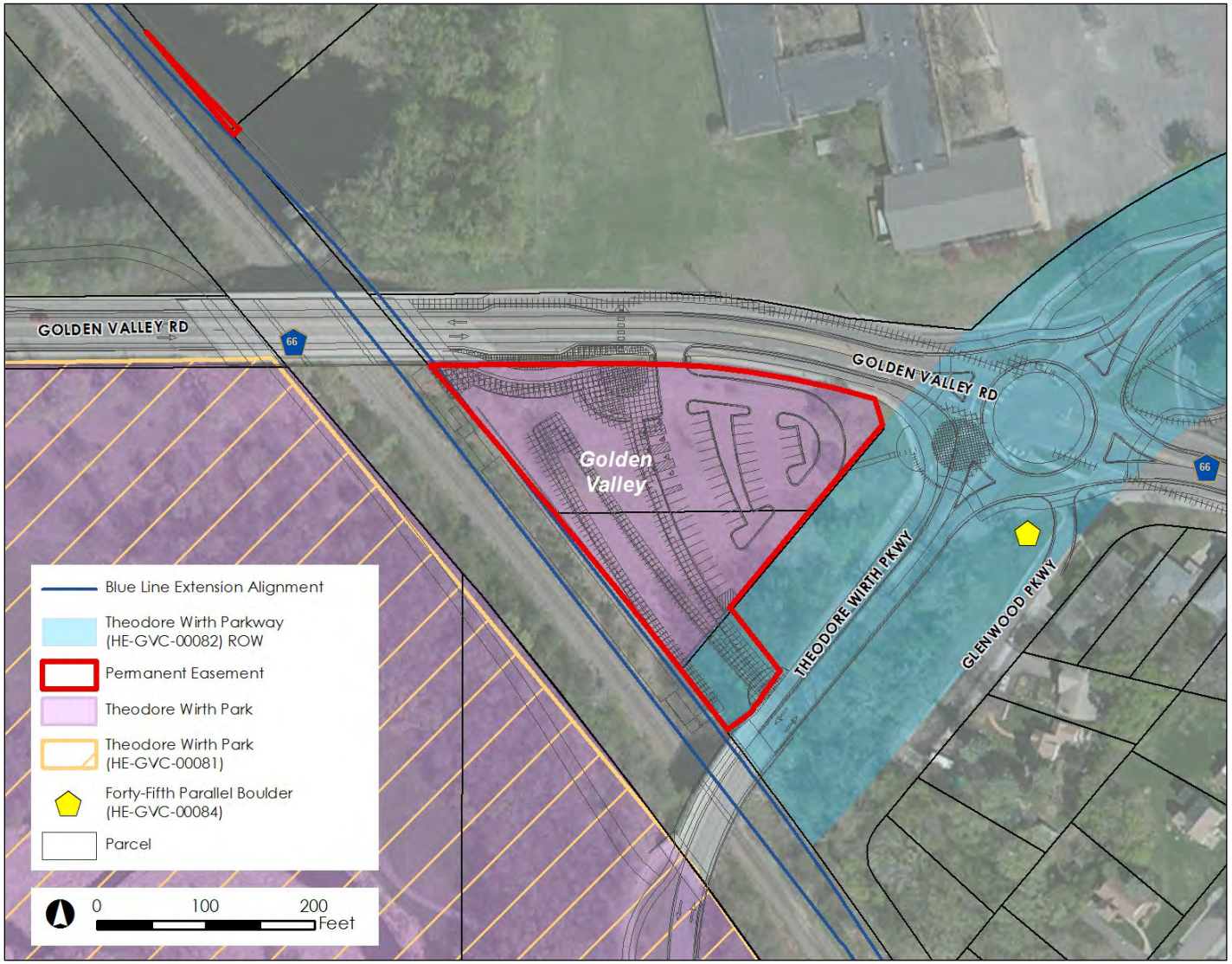


Figure 8.7-23. Golden Valley Road Station without Park-and-Ride Footprint

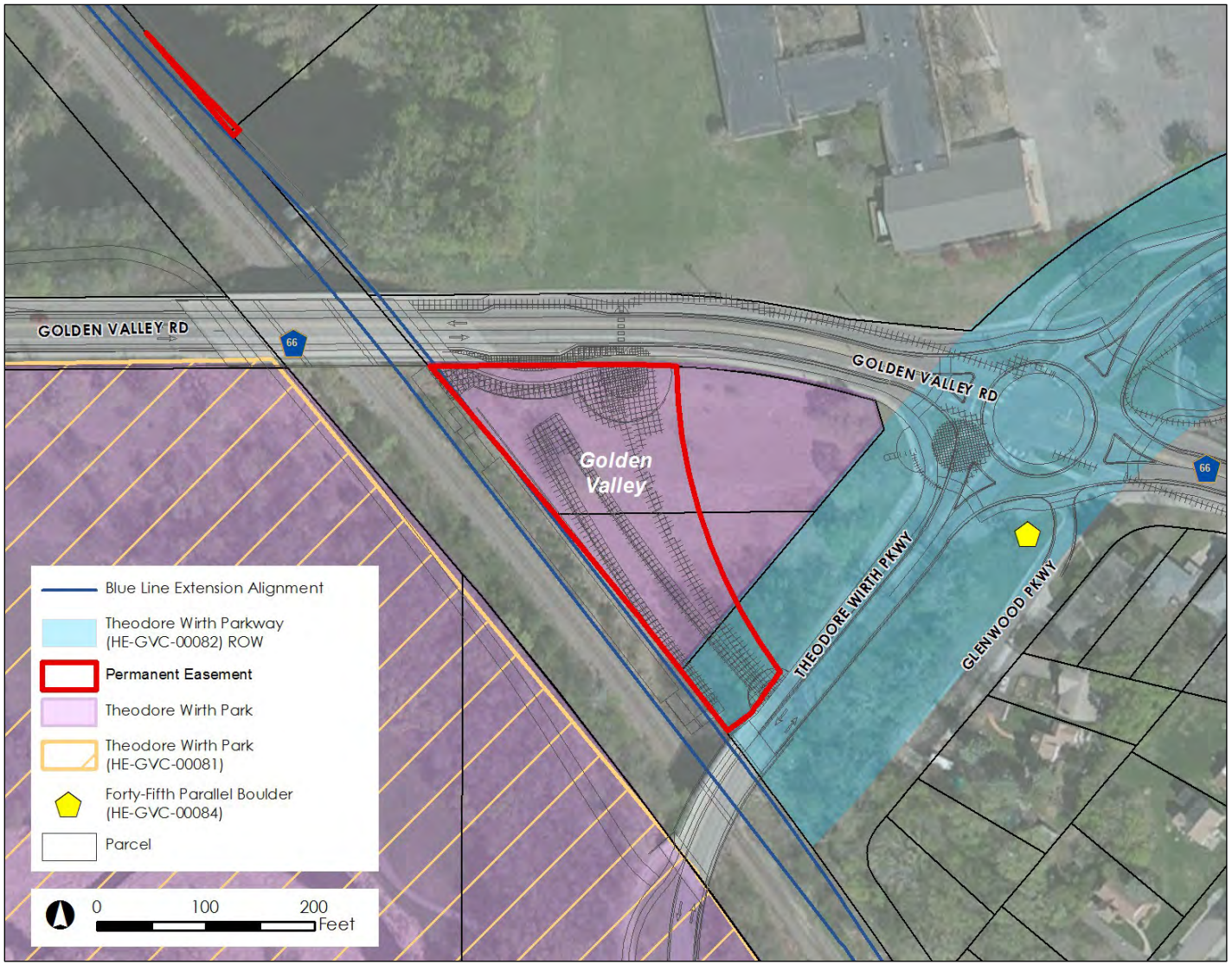


Figure 8.7-24. Shift of Golden Valley Road Station to the North

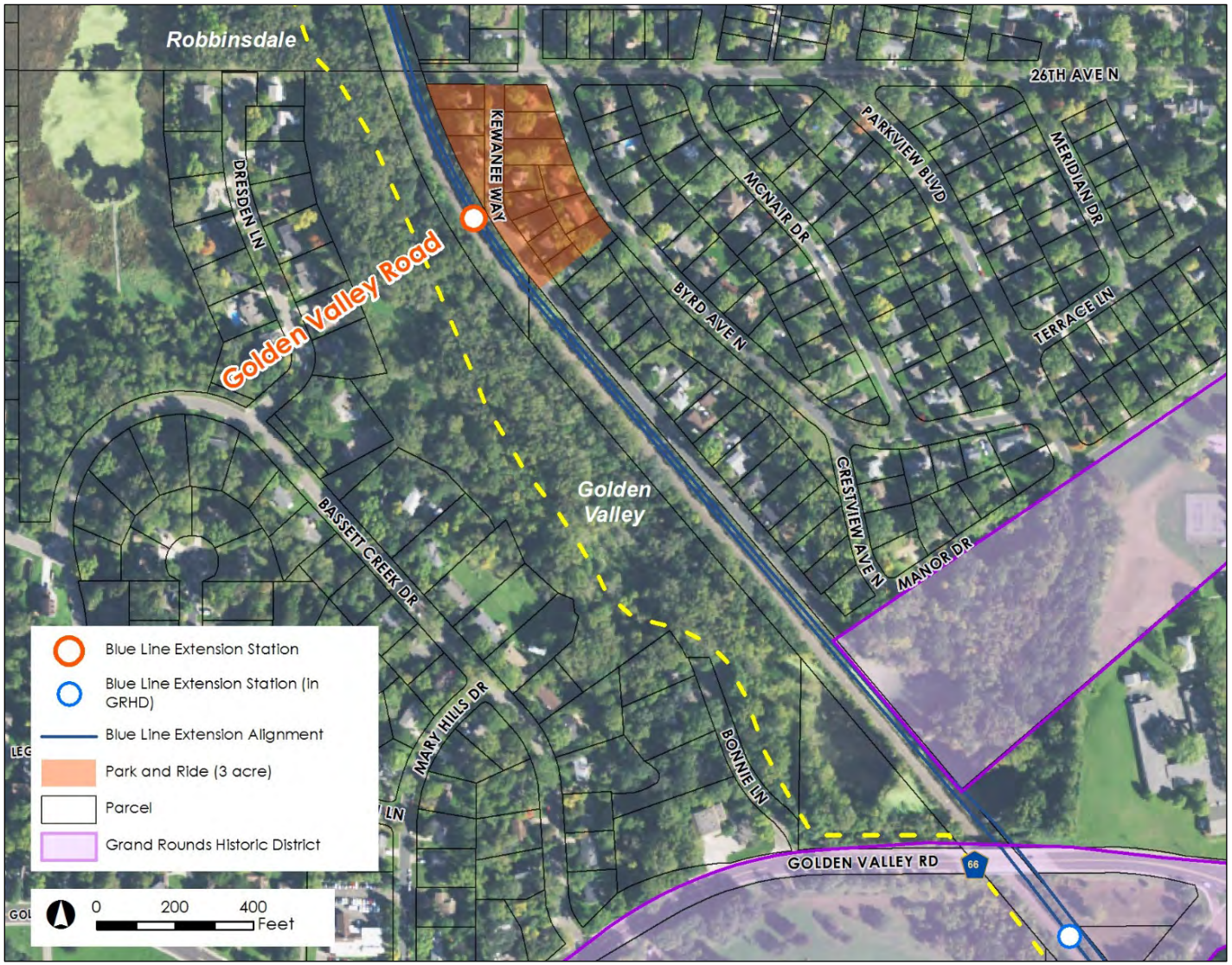
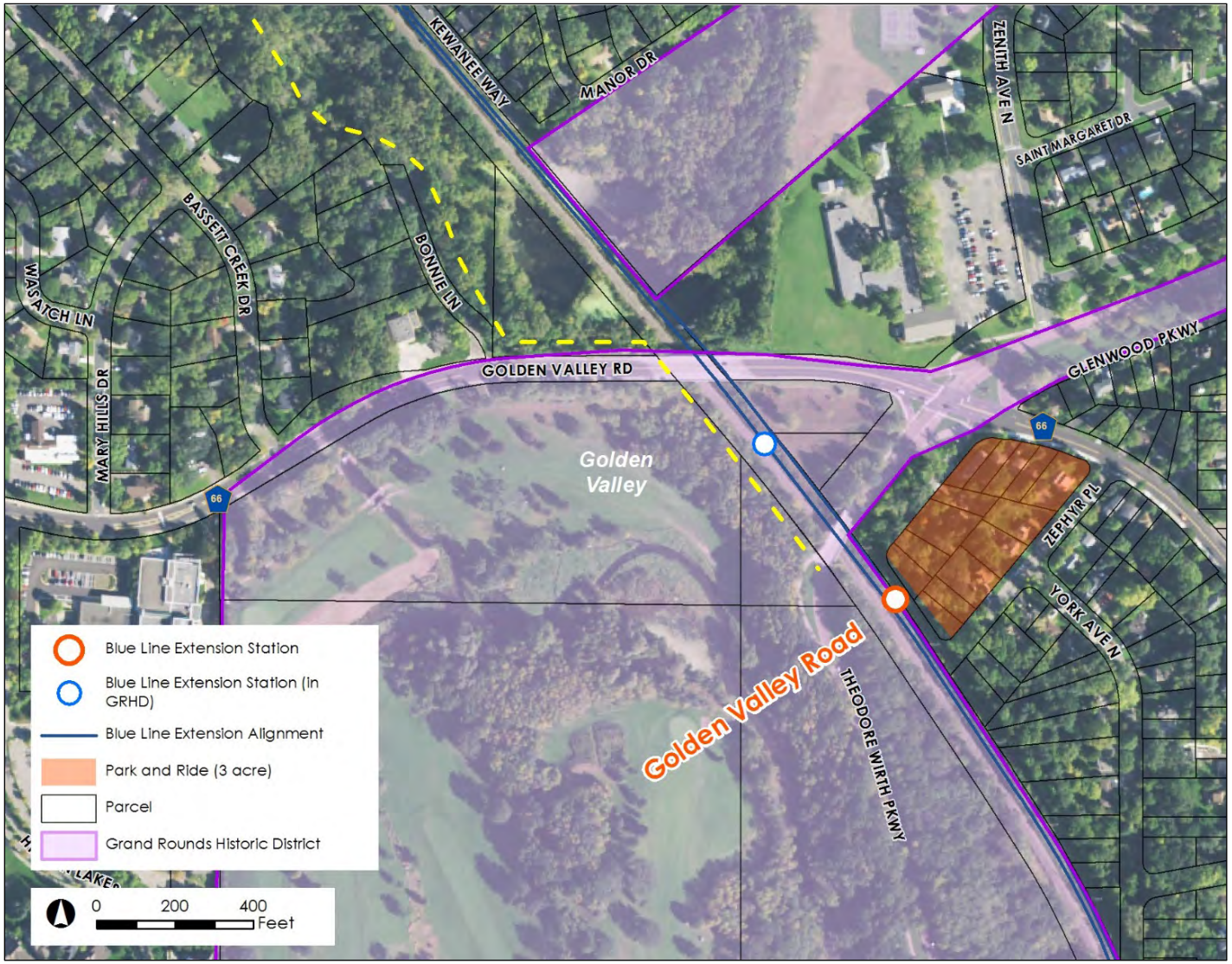


Figure 8.7-25. Shift of Golden Valley Road Station to the South



8.7.2.12 Sacred Heart Catholic Church

Section 4(f) Property Description

Sacred Heart Catholic Church is located in Robbinsdale at 4087 West Broadway Avenue. This historic property is eligible for the NRHP under Criterion C. For more detailed information on this historic property, see **Section 4.4** and **Appendix H**.

Potential Impacts to the Sacred Heart Catholic Church

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in a permanent incorporation of land from Sacred Heart Catholic Church.

Temporary Occupancy

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in the temporary use of property from Sacred Heart Catholic Church during construction.

Potential Constructive Use

Based on the proposed BLRT Extension project's engineering drawings (**Appendix E**) and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to the proposed BLRT Extension project impacts at Sacred Heart Catholic Church. This No Adverse Effect finding is subject to the implementation of mitigation measures identified in the Section 106 MOA (see the Section 106 consultation documentation in **Appendix H**).

Based on the Section 106 finding of No Adverse Effect (with mitigation), FTA has concluded that Sacred Heart Catholic Church will not be substantially impaired by proximity impacts associated with the proposed BLRT Extension project.

8.7.2.13 Robbinsdale Waterworks

Section 4(f) Property Description

The Robbinsdale Waterworks is located in Robbinsdale at 4127 Hubbard Avenue North. This historic property is eligible for the NRHP under Criterion A. For more detailed information on this historic property, see **Section 4.4** and **Appendix H**.

Potential Impacts to the Robbinsdale Waterworks

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in a permanent incorporation of land from the Robbinsdale Waterworks.

Temporary Occupancy

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in the temporary use of property from the Robbinsdale Waterworks during construction.

Potential Constructive Use

Based on the proposed BLRT Extension project's engineering drawings (**Appendix E**) and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to the proposed BLRT Extension project impacts at the Robbinsdale Waterworks. This No Adverse Effect finding is subject to the implementation of mitigation measures identified in the Section 106 MOA (see the Section 106 consultation documentation in **Appendix H**).

Based on the Section 106 finding of No Adverse Effect (with mitigation), FTA has concluded that the Robbinsdale Waterworks will not be substantially impaired by proximity impacts associated with the proposed BLRT Extension project.

8.7.2.14 Hennepin County Library, Robbinsdale Branch

Section 4(f) Property Description

The Hennepin County Library, Robbinsdale Branch is located in Robbinsdale at 4915 42nd Avenue North. This historic property is listed on the NRHP under Criterion A. For more detailed information on this historic property, see **Section 4.4** and **Appendix H**.

Potential Impacts to the Hennepin County Library, Robbinsdale Branch

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in a permanent incorporation of land from the Hennepin County Library, Robbinsdale Branch.

Temporary Occupancy

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in the temporary use of property from the Hennepin County Library, Robbinsdale Branch during construction.

Potential Constructive Use

Based on the proposed BLRT Extension project's engineering drawings (**Appendix E**) and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to the proposed BLRT Extension project impacts at the Hennepin County Library, Robbinsdale Branch. This No Adverse Effect finding is subject to the implementation of mitigation measures identified in the Section 106 MOA (see the Section 106 consultation documentation in **Appendix H**).

Based on the Section 106 finding of No Adverse Effect (with mitigation), FTA has concluded that the Hennepin County Library, Robbinsdale Branch will not be substantially impaired by proximity impacts associated with the proposed BLRT Extension project.

8.7.2.15 West Broadway Avenue Residential Historic District

Section 4(f) Property Description

The West Broadway Avenue Residential Historic District is located in Robbinsdale along West Broadway Avenue, between 42nd Avenue North and TH 100, Lakeland Avenue North to the BNSF right-of-way. The West Broadway Avenue Residential Historic District is eligible for the NRHP under Criterion C. For more detailed information on this historic district, see **Section 4.4** and **Appendix H**.

Potential Impacts to the West Broadway Avenue Residential Historic District

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in a permanent incorporation of land from the West Broadway Avenue Residential Historic District.

Temporary Occupancy

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in the temporary use of property from the West Broadway Avenue Residential Historic District during construction.

Potential Constructive Use

Based on the proposed BLRT Extension project's engineering drawings (**Appendix E**) and continued consultation with MnHPO, a Section 106 finding of Adverse Effect has been made with respect to the proposed BLRT Extension project impacts at the West Broadway Avenue Residential Historic District. In summary, the proposed BLRT Extension project would diminish the historic district's integrity of setting and feeling through the introduction of both severe and moderate noise impacts to residential property in the historic district, and would sever the district's visual connection across the existing BNSF rail corridor. However, these impacts to the historic district's setting and feeling would not be to a degree that would affect the West Broadway Avenue Residential Historic District's eligibility for the NRHP. A MOA developed in consultation with MnHPO and other parties includes measures that will be incorporated into the proposed BLRT Extension project to mitigate the Adverse Effect on the historic district. Specifically, the implementation of a Federal Railroad Administration Quiet Zone at the 42nd Avenue crossing will address severe noise impacts. Residual moderate noise impacts will be addressed through interior noise testing, and as appropriate, sound insulation. Additionally, a public meeting will be held with the residents of the West Broadway Avenue Residential Historic District in order to solicit input on proposed BLRT Extension project designs (see the Section 106 consultation documentation in **Appendix H** for additional detail).

Based on the Section 106 finding of Adverse Effect and the measures to mitigate the Adverse Effect included in the Section 106 MOA, FTA has concluded that the features and attributes that qualify the West Broadway Avenue Residential Historic District for protection under Section 4(f) will not be substantially impaired by proximity impacts associated with the proposed BLRT Extension project. This is supported by the Section 106 finding that the Adverse Effect on the West Broadway Avenue Historic District would not be to a degree that would affect its eligibility for the NRHP.

8.7.2.16 Jones-Osterhus Barn

Section 4(f) Property Description

The Jones-Osterhus Barn is located in Robbinsdale at 4510 Scott Avenue North. This historic property is eligible for the NRHP under Criterion C. For more detailed information on this historic property, see **Section 4.4** and **Appendix H**.

Potential Impacts to the Jones-Osterhus Barn

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in a permanent incorporation of land from the Jones-Osterhus Barn.

Temporary Occupancy

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in the temporary use of property from the Jones-Osterhus Barn during construction.

Potential Constructive Use

Based on the proposed BLRT Extension project's engineering drawings (**Appendix E**) and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to the proposed BLRT Extension project impacts at the Jones-Osterhus Barn (see the Section 106 consultation documentation in **Appendix H**).

Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Jones-Osterhus Barn will not be substantially impaired by proximity impacts associated with the proposed BLRT Extension project.

8.7.2.17 Minneapolis & Pacific/Soo Line Railway Historic District

Section 4(f) Property Description

The Minneapolis & Pacific/Soo Line Railway Historic District is located in Crystal. This historic district is eligible for the NRHP under Criterion A. For more detailed information on this historic district, see **Section 4.4** and **Appendix H**.

Potential Impacts to the Minneapolis & Pacific/Soo Line Railway Historic District

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in a permanent incorporation of land from the Minneapolis & Pacific/Soo Line Railway Historic District.

Temporary Occupancy

As illustrated in the proposed BLRT Extension project's engineering drawings (**Appendix E**), the proposed BLRT Extension project will not result in the temporary use of property from the Minneapolis & Pacific/Soo Line Railway Historic District during construction.

Potential Constructive Use

Based on the proposed BLRT Extension project's engineering drawings (**Appendix E**) and continued consultation with MnHPO, a Section 106 finding of No Adverse Effect has been made with respect to the proposed BLRT Extension project impacts at the Minneapolis & Pacific/Soo Line Railway Historic District (see the Section 106 consultation documentation in **Appendix H**).

Based on the Section 106 finding of No Adverse Effect, FTA has concluded that the Minneapolis & Pacific/Soo Line Railway Historic District will not be substantially impaired by proximity impacts associated with the proposed BLRT Extension project.

8.7.3 Corridor-Wide Least Overall Harm Analysis

Per 23 CFR Part 774.3(c), if the Section 4(f) analysis for a property that will be used by a project concludes that there is no feasible and prudent avoidance alternative, FTA may approve, from among the remaining alternatives that use Section 4(f) property, only the alternative that causes the least overall harm in light of the statute's preservation purpose. If the assessment of least overall harm finds that two or more alternatives are substantially equal, FTA can approve any of those alternatives. To determine which of the alternatives will cause the least overall harm, FTA must compare seven factors set forth in 23 CFR Part 774.3(c)(1) concerning the alternatives under consideration (**Section 8.4.3** above). The results of the assessment are discussed below by factor.

The Section 106 consultation process, including meetings, is ongoing and will continue to proceed through execution of the proposed BLRT Extension project's Section 106 MOA. The Council and FTA have also committed to continue Section 4(f) coordination activities with the OWJs related to the park and historic properties. In general, these Section 4(f) coordination activities will focus on the visual and noise effects of the proposed BLRT Extension project's impacts on the Section 4(f) protected properties identified in this Amended Evaluation.

A final determination of least overall harm requires the completion of the process to determine if all possible planning to minimize harm has been satisfied. Because the Osseo Branch and the Grand Rounds Historic District are Section 106 resources, all possible planning to minimize harm for these two resources will be completed when the proposed BLRT Extension project's Section 106 process concludes with an approved Section 106 MOA. The section below includes a least overall harm analysis based on an anticipated proposed BLRT Extension project's Section 106 MOA that will

address the adverse effect to the Osseo Branch and Grand Rounds Historic District. The final determination of least overall harm will be documented in the proposed BLRT Extension project ROD, after consideration of comments received from the Department of the Interior.

8.7.3.1 Ability to Mitigate Adverse Impacts to Each Section 4(f) Property

Prior to the identification of the proposed BLRT Extension project, FTA and the Council considered potential use of all Section 4(f) resources (parks/recreational properties and historic properties) in connection with the Draft EIS alternatives.[6] In assessing the alternatives, numerous design refinements were considered, such as alignment shifts, to reduce impacts to Section 4(f) properties. Differences among the four Draft EIS build alternatives primarily exist between Alignment D1 (BNSF Railway–Olson Highway—part of the proposed BLRT Extension project) and Alignment D2 (West Broadway–Penn Avenue), therefore the analysis focuses on these two alignments. Based on the design refinements, both options would require direct use of park/recreational properties and historic properties. Alignment D1 would impact approximately 2 acres of TWRP (total size: 759 acres), but not disrupt any existing or planned park amenities. Alignment D2 would impact the approximately 0.5 acre of the Minneapolis Public Athletic Fields (total size: 3 acres). While the Minneapolis Athletic Field could continue to function as a football field, it would no longer be large enough to accommodate a full-size soccer field under Alignment D2.

Alignment D1 would involve a use of the Grand Rounds Historic District, while Alignment D2 would not. Alignment D1 would have a greater use of the Osseo Branch Historic District as it includes an additional 2.5 miles of the freight rail corridor compared to Alignment D2. Alignment D2 involved the use of the Homewood Historic District as designed in the Draft EIS, while Alignment D1 avoids the Homewood Historic District. A cut-and-cover tunnel for Alignment D2 in the vicinity of the Homewood Historic District would avoid the use of the historic resource entirely. A cut-and-cover option for Alignment D2 was dismissed because property impacts would be essentially the same as the impacts from construction of the alignment at grade because of the close proximity of residences and businesses, and costs would be greater for a cut-and-cover option.

FTA has the same ability to mitigate impacts associated with the different alternatives discussed in this section, as compared to the proposed BLRT Extension project.

8.7.3.2 Relative Severity of the Remaining Harm after Mitigation

Considering the relative severity of remaining harm to Section 4(f) properties, a severity rating was assigned to each property, with "high" being removal of the entire property or significantly compromising the ability to continue to use the property for its intended purpose, "moderate" being partial use of the property that does not qualify for a *de minimis* use determination, "low" being a partial use of the property that does qualify for a *de minimis* use determination, and "no use" being avoidance of the property.

[6] The Draft EIS evaluated four alternatives consisting of combinations of Segments A, B, C, D1, and D2 (Alternative A-C-D1, Alternative A-C-D2, Alternative B-C-D1 [the BLRT Extension project], and Alternative B-C-D20. All alternatives had Alignment C in common; Alignment C lies entirely within the Osseo Branch and the construction of Alignment C would result in a Section 4(f) use of the Osseo Branch resource. As documented here, the primary Section 4(f) differences between the Draft EIS alternatives lie with Alignments D1 and D2.

Remaining Severity of Harm Ratings

Table 8.7-5 presents the Section 4(f) resource uses along Draft EIS alternative Alignments D1 and D2, and the severity of harm that would be incurred upon each resource by each alignment.

Table 8.7-5. Severity of Harm by Alignment

Section 4(f) Resource	Alignment D1	Alignment D2
Minneapolis Schools Athletic Field	No Use	High
Grand Rounds Historic District	Moderate	No Use
Homewood Historic District	No Use	Moderate
TWRP	Low	No Use
Glenview Terrace Park	Low	No Use

Implementation of Alignment D1 (part of the proposed BLRT Extension project) would result in moderate harm to one resource (a use of the Grand Rounds Historic District), and low harm to two resources (*de minimis* uses of TWRP and Glenview Terrace Park). Implementation of Alignment D2 would result in high harm to one resource (a use of Minneapolis Schools Athletic Field) and moderate harm to one resource (a use of the Homewood Historic District).

The assessment results indicate that there would be one more property affected by Alignment D1 as compared to Alignment D2. However, the severity of remaining harm would be greater at the properties affected by Alignment D2.

8.7.3.3 Relative Significance of Each Section 4(f) Property

FTA and the Council consider each Section 4(f) property to be equally significant in this evaluation.

8.7.3.4 Views of the OWJs over Each Property

The OWJs over the Section 4(f) properties have provided views and input on the design refinements regarding the proposed BLRT Extension project. These officials include:

- MPRB – for TWRP and Glenview Terrace Park
- MPRB – for Glenview Terrace Park
- City of Golden Valley and the JPA Board – for Sochacki Park: Mary Hills Management Unit
- City of Robbinsdale – for South Halifax Park
- City of Robbinsdale and the JPA Board – for Sochacki Park: Sochacki Management Unit
- City of Crystal – for Becker Park
- TRPD – for Park Property Adjacent to Rush Creek Regional Trail

FTA and the Council have developed mitigation plans and agreements specific to each affected Section 4(f) property. These plans and agreements capture the negotiated mitigation for impacts to parkland. See **Table 8.7-6** for a summary of OWJ coordination and mitigation commitments.

Table 8.7-6. Coordination with Officials with Jurisdiction

Section 4(f) Resource	Section 4(f) Use	OWJ	Section 4(f) Coordination	Mitigation Measure(s)
TWRP	*De Minimis*	MPRB	x	Replacement parkland; trail reconstruction, new trail construction and trail connections; trailhead construction; reconstruct Theodore Wirth Parkway/Golden Valley Road intersection; revegetation of disturbed areas
Glenview Terrace Park	*De Minimis*	MPRB	x	Enhanced trail connections and wayfinding signage
Sochacki Park: Mary Hills Management Unit	No Use (Temporary Occupancy)	City of Golden Valley; JPA Board	x	Trail reconstruction; revegetation of disturbed areas; new trail construction and trail connections
Sochacki Park: Sochacki Management Unit	No Use (Temporary Occupancy)	City of Robbinsdale; JPA Board	x	Trail reconstruction; revegetation of disturbed areas; park enhancements
South Halifax Park	No Use (Temporary Occupancy)	City of Robbinsdale	x	Revegetation of disturbed area
Becker Park	No Use (Temporary Occupancy)	City of Crystal	x	Restoration of disturbed area
Park Property Adjacent to Rush Creek Regional Trail	No Use (Temporary Occupancy)	TRPD	x	Restoration of disturbed area
Osseo Branch	Use	MnHPO	x	Implement measures in Section 106 MOA
Grand Rounds Historic District	Use	MnHPO	x	Implement measures in Section 106 MOA

8.7.3.5 Degree to Which Each Alternative Meets the Project Purpose and Need

Each alternative would achieve the proposed BLRT Extension project purpose to effectively address the long-term regional transit mobility and local accessibility needs, while providing efficient, travel-time competitive transit service that supports economic development goals and objectives of local, regional, and statewide plans. Therefore the degree to which each alternative meets the project purpose and need is not a distinguishing factor in this evaluation.

8.7.3.6 The Magnitude of Adverse Effects to Resources Not Protected by Section 4(f)

The adverse impacts of the alignment alternatives to non-Section 4(f) properties would be considerable when comparing Alignment D1 and Alignment D2. The D2 alignment follows Penn Avenue between Olson Memorial Highway to West Broadway Avenue. This section of Penn Avenue is densely developed with residential, institutional, and commercial developments present along both sides of the existing roadway corridor. This area has a high concentration of minority and low income populations, as identified in Chapter 7 – Environmental Justice of the Draft EIS. **Table 8.7-7** summarizes key factors from the Environmental Justice analysis for Alignments D1 and D2.

Table 8.7-7. Comparison of Environmental Justice Impacts – Alignments D1 and D2

Section 4(f) Resource	Potentially High or Disproportionate Impacts	
	Alignment D1	Alignment D2
Pedestrian and Bicycle Facilities	**No** – limited impacts to pedestrian and bicycle facilities since Alignment D1 is in an existing trench and therefore grade-separated from pedestrian and bicycle traffic	**Yes** – closure of residential street crossings and interruption of street grid system decrease walkability and accessibility to and within the neighborhoods
Parking	**No** – no parking spaces lost along the D1 alignment	**Yes** – loss of 270 on-street parking spaces
Community Facilities/ Community Character and Cohesion	**No** – use of the existing rail corridor trench isolates LRT facilities from community facilities and maintains connections within and between neighborhoods	**Yes** – changes in community character due to removal of residential properties and community facilities, access changes, and loss of parking
Acquisitions and Displacements	**No** – no residential or commercial relocations along Alignment D1	**Yes** – 103 residential displacements and three commercial displacements

The environmental justice impacts associated with Alignment D2 are a key distinguishing factor between the Alternatives; Alignment D2 has notable environmental justice impacts, while Alignment D1 does not.

8.7.3.7 Cost Difference

The cost difference of each of the alternatives is not a distinguishing factor in this evaluation. The relative cost of the Draft EIS alternatives that include Alignment D2 is approximately 10 percent greater than the costs of the Draft EIS Alternatives that include Alignment D1; these costs are mainly associated with the acquisition/displacement of residential and commercial properties located along the Penn Avenue segment.

8.8 Coordination

This section summarizes the proposed BLRT Extension project's Section 4(f) coordination activities that have occurred since publication of the Draft Section 4(f) Evaluation and the Draft EIS, which address Section 4(f) coordination and concurrence requirements set forth in 23 CFR Part 774.

8.8.1 US Department of the Interior

The Draft Section 4(f) Evaluation was provided to the US Department of the Interior (USDOI) for review and comment during the Draft EIS comment period, which concluded on May 29, 2014. A copy of USDOI's letter to FTA regarding the Draft Section 4(f) Evaluation is included in **Appendix J**.

USDOI has been provided a copy of the Final EIS. FTA will address USDOI's comments on both the Draft Section 4(f) Evaluation and the Final EIS in the ROD.

8.8.2 OWJs

See **Appendix H** for documentation of the Section 106 consultation process and for documentation of Section 4(f) coordination meetings with OWJs. OWJs include:

- Minnesota State Historic Preservation Officer
- MPRB
- City of Golden Valley
- City of Robbinsdale
- Sochacki Park JPA Board
- City of Crystal
- City of Brooklyn Park
- TRPD

8.9 Preliminary Determination of Section 4(f) Use

Based on BLRT preliminary engineering plans and analysis conducted to-date, FTA has made the following preliminary Section 4(f) determinations:

- The proposed BLRT Extension project would result in a direct use of the Grand Rounds Historic District and the Osseo Branch of the St. Paul Minneapolis & Manitoba Railway Historic District and there is no feasible and prudent alternative that would avoid a use of these Section 4(f) resources. In addition, based on the summary within this section, FTA has determined in accordance with 23 CFR Part 774.17 that all possible planning to minimize harm has been conducted and implemented. Further, FTA and the Council have determined that the proposed BLRT Extension project is the alternative that would result in the least overall harm to these two historic resources.
- The proposed BLRT Extension project would have a Section 4(f) *de minimis* impact on two Section 4(f) park/recreational properties – Glenview Terrace Park and TWRP. Measures to

minimize harm, such as avoidance, minimization, mitigation and enhancement measures, include the following:

- **Glenview Terrace Park:** The recreational amenities of Glenview Terrace Park will be unaffected by the proposed BLRT Extension project. The proposed LRT alignment will be visually screened by an existing stand of mature trees. New trail connections, enhancements to existing trails, and a new trailhead with wayfinding signage will improve park accessibility. The small area of temporary impact (0.25 acre) adjacent to the 0.01-acre permanent impact will be restored to existing or better condition following construction.
- **TWRP:** The recreational amenities of TWRP will not be permanently affected by the proposed BLRT Extension project. The proposed LRT alignment will be visually screened from the majority of the park by existing and restored vegetation. Areas of temporary disturbance will be restored to existing or better conditions. An existing trail along Bassett Creek will be reconstructed in a location approved by MPRB outside of railroad right-of-way. New trail connections to the Plymouth Avenue Station and the Golden Valley Road Station will be provided. A new trail connection to the Sochacki Park system to the north will be constructed. A trailhead will be provided at the Golden Valley Road Station park-and-ride lot; this trailhead will provide connections to two regional trails and other local trail connections. Wayfinding signage will be included at this trailhead.

- The proposed BLRT Extension project would result in Section 4(f) temporary occupancies during construction of five Section 4(f) park/recreation properties – Sochacki Park: Mary Hills Management Unit, Sochacki Park, South Halifax Park, Becker Park, and the park property adjacent to Rush Creek Regional Trail. It has been preliminarily determined that Section 4(f) temporary occupancy exception criteria in 23 CFR Part 774.13(d) would be met in all instances and therefore no use would result at any of these five properties (see **Section 8.7.1.4 through Section 8.7.1.6**, **Section 8.7.1.9**, **and Section 8.7.1.12**).
- FTA has preliminarily determined that none of the Section 4(f) resources along the proposed BLRT Extension project corridor would be subject to a constructive use (see **Section 8.7.1.1**, **Section 8.7.1.4 through Section 8.7.1.12**, **Section 8.7.2.1 through Section 8.7.2.9**, and **Section 8.7.2.12 through Section 8.7.2.17**).

8.10 Federally and State Funded Parks

8.10.1 Introduction

Many parks and recreational facilities are developed through funding that restricts the use of the property. Some federally and state-funded programs require the land to be retained and operated solely for outdoor recreation, and any conversion of any portion of the land to a different use would require approval of the funding entity and the replacement of the converted land. This section describes the two programs under which impacted parks and recreation areas were funded that restrict their use—the federal Land and Water Conservation Act Program of Assistance to States and Urban Parks and Minnesota's Outdoor Recreation Grant Program.

8.10.1.1 Section 6(f)(3) of the Land and Water Conservation Fund Act

Established by the Land and Water Conservation Fund (LWCF) Act of 1965 (Public Law 88-578) which is codified as 16 USC § 460, the LWCF Program of Assistance to States and Urban Parks has provided funding for parks and recreational facilities across the United States for over 50 years. Section 6(f)(3) of the LWCF Act, commonly referred to as Section 6(f), contains provisions to protect federal investments in park and recreation resources and ensure the public outdoor recreation benefits achieved through the use of these funds are maintained. Section 6(f)(3) of the LWCF Act states:

> No property acquired or developed with assistance under this section shall, without prior approval of the Secretary [of the Interior], be converted to other than public outdoor recreation uses. The Secretary shall approve such conversion only if he finds it to be in accord with the then existing comprehensive Statewide outdoor recreation plan and only upon such conditions as he deems necessary to assure the substitution of other recreation properties of at least equal fair market value and of reasonably equivalent usefulness and location.

Regulations at 36 CFR Part 59, "Land and Water Conservation Fund Program of Assistance to States; Post-Completion Compliance Responsibilities" implement the requirements of Section 6(f). These regulations delegate approval authority under Section 6(f) to the Regional Directors of NPS. In the state of Minnesota, the LWCF Act is administered by the Minnesota Department of Natural Resources (DNR). The Director of Parks and Trails at DNR is the State Liaison Officer to NPS for LCWF Act coordination.

A review of the LWCF grants database and consultation with DNR indicate that one property developed with LWCF grant assistance within the proposed BLRT Extension project study area would potentially be impacted with the proposed BLRT Extension project—Walter Sochacki Park, hereinafter referred to as Sochacki Park: Sochacki Management Unit (see **Figure 8.7-8**).

8.10.1.2 Minnesota Department of Natural Resources Outdoor Recreation Grant Program

The Outdoor Recreation Grant Program administered by DNR assists local governments in acquiring parkland and developing or redeveloping outdoor recreation facilities. Established in Minnesota Statute 85.019, 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.

The State Comprehensive Outdoor Recreation Plan (SCORP), Minnesota's outdoor recreation policy plan, was developed with the input of Minnesota outdoor and natural resource leaders. It establishes outdoor recreation priorities for Minnesota to assist outdoor recreation and natural resource managers, the state legislature, and the executive branch in decision-making about the state's outdoor recreation system and sets out criteria for awarding grants consistent with these identified priorities. All applications for funding under the Outdoor Recreation Grant Program are

assessed to ensure that the proposed BLRT Extension project is consistent with priorities established in the most recent SCORP document.

A review of the DNR database of Grant-Funded Parks and Natural Areas Subject to Permanent Grant Program Requirements indicated that three properties developed through Program funding are located within the study area potentially impacted by the proposed BLRT Extension project—Glenview Terrace Park, Sochacki Park: Mary Hills Management Unit, and Sochacki Park: Sochacki Management Unit (see **Figure 8.7-6**, **Figure 8.7-7**, **and Figure 8.7-8**).

8.10.2 Section 6(f)(3) of the Land and Water Conservation Fund Act

8.10.2.1 Regulatory Requirements and Section 6(f)(3) Process

Section 6(f)(3) of the LWCF Act requires the evaluation of any project that would convert properties that were acquired or developed with LWCF grant assistance. The Section 6(f)(3) process, as described in the LWCF State Assistance Program Federal Financial Assistance Manual, begins with early consultation between DNR and NPS to agree on the Section 6(f)(3) acreage, boundaries, extent of impact, and approach to conformity with the regulations. A conversion occurs when the use of all or part of a Section 6(f)(3) site is changed for longer than 6 consecutive months to a non-outdoor recreation use, or when a project occurs on the Section 6(f)(3) property and would affect access to or other reasonable use of the Section 6(f)(3) resource on the site for more than 6 months (NPS, 2008).

Under the LWCF Act, conversion of parkland may be approved only if NPS finds that the following criteria have been met:

1. All practical alternatives to the proposed conversion have been evaluated;
2. The fair market value of the park property to be converted has been established and that the property proposed for substitution is of at least equal fair market value, as established by an approved appraisal in accordance with the Uniform Appraisal Standards for Federal Land Acquisition, excluding the value of structures or facilities that will not serve recreational purposes;
3. The proposed replacement property is of reasonably equivalent usefulness and location as the converted property;
4. The property proposed for substitution meets the eligibility requirements for LWCF-assisted acquisition;
5. For properties that are proposed to be partially rather than wholly converted, the impact of the converted portion on the remainder must be considered and the unconverted area must remain recreationally viable, or be replaced as well;
6. All necessary coordination with other federal agencies has been satisfactorily accomplished;
7. The guidelines for environmental evaluation have been satisfactorily completed and considered by the NPS during its review of the conversion proposal;
8. The proposed conversion is in accordance with the applicable SCORP and/or equivalent recreation plans.

Formal conversion proposal submittals to NPS include the following items:

- Proposal Description and Environmental Screening Form (PD/ESF)
- Environmental document (Environmental Assessment or EIS) analyzing the entire conversion proposal (the converted parkland and the replacement parkland in one document)
- LWCF project amendment form identifying changes to the original Section 6(f)(3) boundary caused by the conversion and to establish a new 6(f) boundary around the replacement site(s)
- Signed and dated Section 6(f)(3) boundary map for any remaining parkland resulting from a partial conversion, and for the replacement site(s)

8.10.2.2 Relationship between Section 4(f) and Section 6(f)(3)

Section 4(f) of the US Department of Transportation Act is broader in scope than Section 6(f)(3) of the LWCF Act and each is governed by a different federal law. Section 4(f) protects publicly owned parks, recreational areas, and waterfowl and wildlife refuges, as well as historic sites considered to have national, state, or local significance; for the proposed BLRT Extension project, FTA is the lead federal agency for compliance with Section 4(f). Section 6(f)(3) resources are protected by regulations that apply specifically to recreational areas acquired or developed with the LWCF Act funds, with NPS as the lead federal agency, as described above.

Often, one or more Section 4(f) recreational resource has received LWCF Act funding, thereby also triggering the need for compliance with Section 6(f)(3) and an integrated mitigation plan for any impacts resulting from the project. Section 6(f)(3) requires any converted lands to be replaced, as described above, whereas Section 4(f) mitigation is more flexible and may or may not include replacement lands.

Because of the differences between Section 4(f) and Section 6(f)(3) regulations, the resource impact findings may also be different. In the case of the Sochacki Park: Sochacki Management Unit, application of the Section 4(f) regulations yields a preliminary determination of temporary occupancy, and, with the agreement of the OWJ, the requirement is to restore the park to pre-construction conditions or better (see **Section 8.4.4.2**). Under Section 6(f)(3) regulations, a non-recreational use of part of the park property for longer than 6 months (as is proposed by the proposed BLRT Extension project) results in a conversion of that portion of the park, regardless of the fact that the park property would remain in its current ownership and the property would be restored and enhanced after construction is complete.

8.10.2.3 Description of the Section 6(f)(3) Resource

Portions of Sochacki Park: Sochacki Management Unit, located at 3500 June Avenue North in the City of Robbinsdale, were acquired with LWCF funds, as shown in **Figure 8.10-1**. A total of $133,333 in funding was approved for the city on May 18, 1981, and the park was completed before the funds expired in 1986. The Sochacki Management Unit is contained within a 37.4-acre roughly narrow triangular site along BNSF right-of-way. The park contains picnic tables, a picnic pavilion, and several paths and trails. According to the city of Robbinsdale's 2030 Comprehensive Plan, the Sochacki Management Unit is classified by the city of Robbinsdale as a "Community Conservancy."

Community parks are intended to serve the entire community, with diverse environmental character and active and passive recreational features; however, conservancy areas have limited facilities and their primary objective is the protection and management of the natural environment through compatible passive recreational uses.

The Sochacki Management Unit also has certain property conditions of concern, including:

- The presence of demolition debris:
  - Concrete and rebar have been observed in several areas of the park
  - The park site is listed in the Minnesota Pollution Control Agency database as an unpermitted dump site
- A notable amount of nuisance vegetation, including buckthorn (a listed invasive plant species in Minnesota)
- Erosion features such as steep banks along North Rice Pond (a pond/wetland area present along much of the eastern portion of the park which extends eastward beyond the park boundary into the proposed BLRT Extension project corridor)
- Poor water quality in North Rice Pond

As noted in **Section 8.2** of this document, the Sochacki Park/Mary Hills/Rice Lake Nature Area Initiative proposed the unification of Sochacki Park with the Mary Hills and Rice Lake Nature Areas in Golden Valley to form one park, Sochacki Park, managed through a JPA between TRPD, the city of Robbinsdale, and the city of Golden Valley.[7] **Figure 8.10-2** illustrates the planned Sochacki Park elements developed by the Sochacki Park/Mary Hills/Rice Lake Nature Area Initiative, proposed by TRPD in collaboration with the cities of Robbinsdale and Golden Valley. Improvements planned for the park include: paved trails, trail extensions north and south, an off-leash dog area, landscape buffers adjacent to rail right-of-way, prairie areas, and improved access.

[7] The Joint Powers Agreement for the provision of park system services for Sochacki Park was executed in March 2015.

Figure 8.10-1. LWCF Map

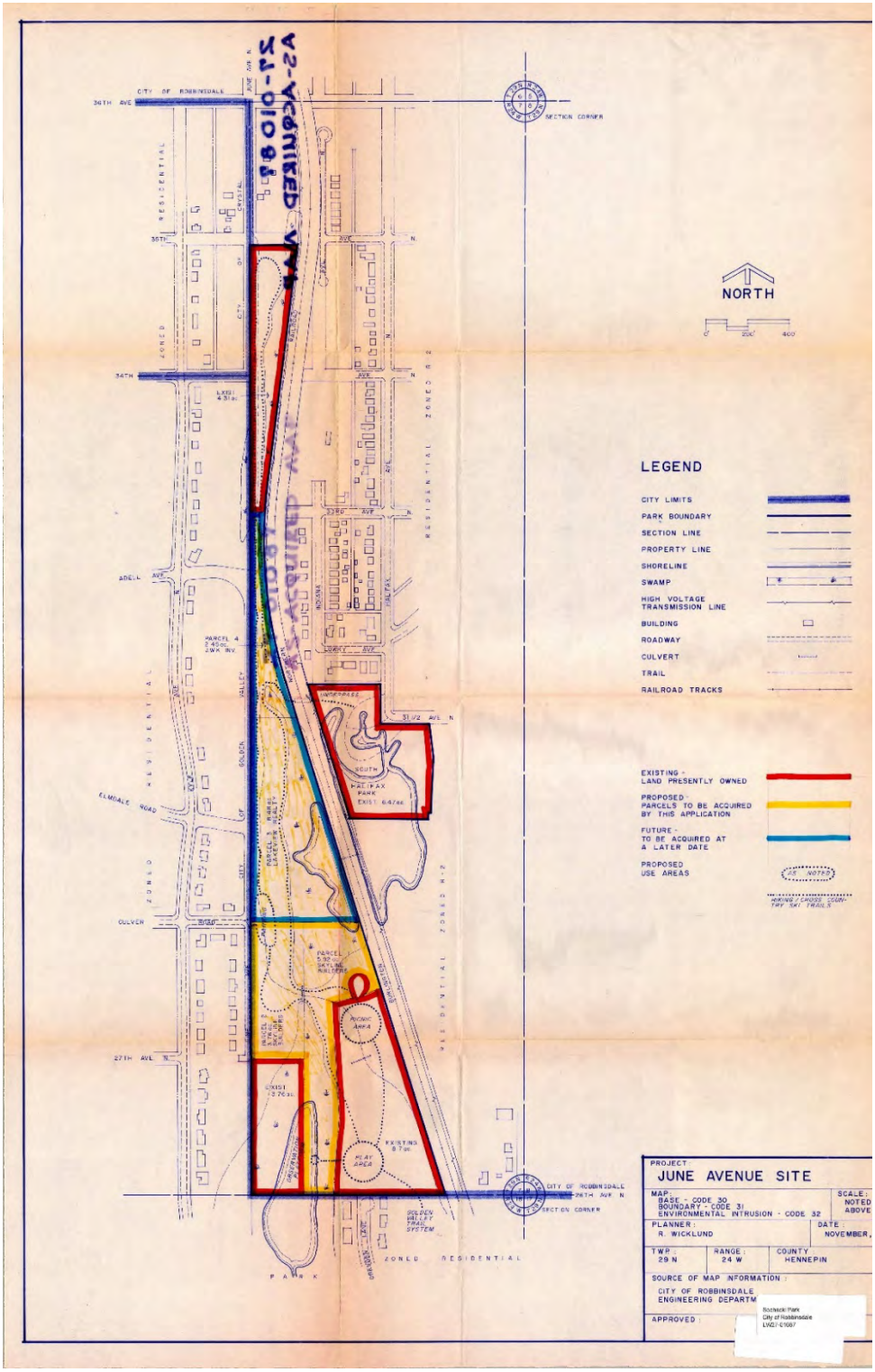


Figure 8.10-2. Sochacki Park Plan – TRPD

8.10.2.4 Effects of the Proposed BLRT Extension Project on the Section 6(f)(3) Resource

In the City of Robbinsdale, the proposed BLRT alignment is in the existing BNSF rail corridor, a 100-foot-wide transportation right-of-way that is surrounded by a variety of land uses, including Sochacki Park: Sochacki Management Unit. During design activities, the Council has determined that it is necessary to obtain temporary access to part of the Sochacki Park: Sochacki Management Unit to construct a new 1,250-foot-long bridge crossing of Grimes Pond. This temporary access would likely be needed for one to two construction seasons, or approximately 18 months.

The area within the Sochacki Park: Sochacki Management Unit needed for construction access, which totals 5.6 acres, is shown in **Figure 8.7-8**. Modifications to the park to allow for construction access include new temporary access roads and fenced and gated construction lay down areas. The main north-south access road would generally follow an existing park path, which would be widened to accommodate construction traffic on the east side, and park users on the west side. The construction traffic lane would be separated from park users by temporary construction fencing. Two new temporary access roads connecting the main access to the railroad right-of-way would be constructed and gated, one each near the north and south ends of North Rice Pond. See **Section 8.7.1.5** for more information. A detailed plot of proposed construction impacts can be found in **Appendix J.**

8.10.2.5 Measures to Avoid and/or Minimize Impacts

The LWCF Act requires that prior to conversion of Section 6(f) properties, the agency proposing the conversion must ensure that "all practical alternatives" to converting Section 6(f) properties have been evaluated. The following sections summarize the alternatives that have been evaluated through the Alternatives Analysis and Draft EIS phases of the proposed BLRT Extension project, as well as the alternatives considered as part of the Section 4(f) analysis that would avoid impacts to the Sochacki Park: Sochacki Management Unit.

Alternatives Considered

The development of the proposed BLRT Extension project has included analyses of a number of alternatives. The results of these analyses support the selection of the proposed BLRT Extension project alignment as the preferred route for transit service improvements in the proposed BLRT Extension project area. The following sections summarize the alternative analyses that have occurred to date.

Alternatives Analysis/Draft EIS/Locally Preferred Alternative Processes

Chapter 2 – Alternatives presents a summary of the decision-making process that led to the selection of the current proposed BLRT Extension project alignment. Between spring 2008 and spring 2010, the Council, Hennepin County and FTA completed an Alternatives Analysis (AA) for the proposed BLRT Extension project. Several transit modes and alignments were considered through technical analysis and the input of proposed BLRT Extension project stakeholders. At the conclusion of the AA process, four LRT alternatives and one BRT alternative were recommended for further analysis. These alternatives are shown in **Figure 2.2-1** in **Chapter 2 – Alternatives**. Two alignment segments at the southern end of the alternatives, Alignment D1 and Alignment D2,

represent the differences in impacts to Sochacki Park: Sochacki Management Unit. Alignment D1 would be adjacent to the eastern edge of Sochacki Park: Sochacki Management Unit, while Alignment D2 would mostly run in a different corridor and would have little or no impact to the park.

In 2012, the EIS process for the proposed BLRT Extension project was initiated. During Scoping for the EIS, the four LRT alternatives and one BRT alternative were analyzed further, and additional public input was obtained. The result of the Scoping analysis was to eliminate the BRT alternative, and continue studying the four LRT alternatives, as well as a No-Build Alternative and an Enhanced Bus Alternative.

The Draft EIS, published in March 2014, presented the social, economic, and environmental impacts of the four LRT alternatives, as well as the impacts associated with the No-Build Alternative and the Enhanced Bus Alternative. Based on this analysis, the Draft EIS recommended that Alternative B-C-D1 (the proposed BLRT Extension project) be considered the Preferred Alternative. During the development of the Draft EIS, the Council (with the support of Hennepin County and the cities of Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park) adopted Alternative B-C-D1 (the proposed BLRT Extension project alignment) as the LPA.

The Draft EIS Preferred Alternative recommendation and the LPA selection were based largely on key differences between Alignment D1 and Alignment D2. The analyses revealed that Alignment D1 would result in significantly less property and neighborhood impact, improved travel time, greater cost effectiveness, and less disruption of roadway traffic operations. Furthermore, the presence of concentrations of low income and minority populations along Alignment D2 indicated that there would be notable environmental justice concerns with alternatives using Alignment D2 (see **Table 8.7-7**).

Section 4(f) Evaluation

As discussed in **Section 8.4.3**, an Individual Section 4(f) Evaluation requires analysis of avoidance alternatives. **Section 8.7.2.10** presents the Draft Section 4(f) Evaluation specific to the Osseo Branch Line of the St. Paul Minneapolis & Manitoba Railway/Great Northern Railroad Historic District (Osseo Branch), including a discussion of avoidance alternatives (see **Section 8.7.2.10**). Avoidance alternatives by definition must avoid impacts to all Section 4(f) resources, including the Sochacki Park: Sochacki Management Unit. Therefore the avoidance alternative analysis conducted for the Osseo Branch is applicable to the examination of "all practical alternatives" to the Section 6(f)(3) conversion of Sochacki Park: Sochacki Management Unit.

The avoidance alternative analysis examines the No-Build and Enhanced Bus alternatives, and dismisses them since they do not meet the purpose and need of the proposed BLRT Extension project. A deep tunnel alternative and two alignment shift alternatives are also considered in **Section 8.7.2.10**. The Deep Tunnel Alternative was determined to not be prudent because the Deep Tunnel would have excessive capital and operating costs, and would cause significant impacts to residential property as a result of the necessary surface access features. The alignment shift alternatives were determined to not be prudent because of extensive residential and business impacts.

Grimes Pond Bridge Construction Alternatives

In addition to location alternatives, alternatives to avoid or minimize impacts to the Sochacki Park: Sochacki Management Unit during construction have been evaluated and the proposed BLRT Extension project, as defined, results in less overall impact to the resource. Conditions adjacent to the Sochacki Park: Sochacki Management Unit present several challenges to the construction of the proposed BLRT Extension project, as discussed in the following review of construction alternatives.

- **Building on an Embankment –** Building the proposed BLRT Extension project through the Grimes Pond/North Rice Pond area would either require significant filling of the ponds to build an embankment, or bridging over one or both of the ponds. Building an embankment could be achieved without needing the access and laydown space in Sochacki Park: Sochacki Management Unit, because with an embankment construction, there would not be the need to stage bridge piles and bridge beams. However, extensive wetland and floodplain impacts would occur if the proposed BLRT Extension project were built on fill in this area and mitigation for those impacts would require permanent excavation for compensatory flood storage. Furthermore, the soils in this portion of the corridor are soft and highly organic, and would require extensive engineering to allow the proposed BLRT Extension project to be built on fill. In order to avoid permanent water resource impacts and to help alleviate concerns over soft soils, constructing a bridge structure over Grimes Pond has been identified as the preferred solution.
- **Alternative Construction Access Points –** Access to construct the bridge structure over Grimes Pond was considered to be difficult given the topography and surrounding land uses. Several potential access points in the Sochacki Management Unit and the surrounding area were reviewed. In general, access points outside the park have several limitations; they either are in very steep areas, very wet and swampy areas, or would require the acquisition and demolition of homes. In addition, construction staging and laydown space (for the delivery and storage of construction materials such as piling, bridge beams, and other similar items) is not available in the area of the proposed bridge over Grimes Pond, with the exception of areas within the Sochacki Park: Sochacki Management Unit.

Alternatives Analysis Conclusion

Several alternatives to the proposed BLRT Extension project alignment that would not require a conversion of a portion of Sochacki Park: Sochacki Management Unit have been considered; these include location alternatives, mode alternatives, a tunnel alternative, and construction access and staging alternatives. The impacts associated with these alternatives to the proposed BLRT Extension project are greater than the effect of converting a portion of the park. Therefore, there are no practical alternatives to the conversion of 5.6 acres of Sochacki Park: Sochacki Management Unit for the construction of the proposed BLRT Extension project.

Mitigation Considerations

As a result of coordination among the Council, DNR, FTA, NPS, and the Sochacki Park JPA partners (i.e., the city of Robbinsdale, the city of Golden Valley, and TRPD), a proposed restoration plan has been developed and shared with these entities and the public. The portion of the park to be temporarily occupied during construction would be restored to existing conditions or better—this includes the following mitigation commitments (see **Appendix J** for a copy of the JPA Board action):

- Removal of existing vegetation as agreed to by Council staff and JPA staff within the restoration zone, defined as A) the southern construction staging area, and B) the northern staging area (see Map Attachment A), blending into the adjacent disturbed areas in the northeast quadrant of the park.
- Removal and disposal of all surface rubble within the restoration zone, in accordance with MPCA permitting requirements.
- Addition of clean fill and top soil in the restoration zone in accordance with MPCA permitting requirements and consistent with the re-use of this area as guided by stakeholders.
- Development and implementation of a revegetation plan approved by the JPA staff. The plan would address all areas disturbed by construction activities, including secondary construction activities in BNSF right-of-way, such as moving the Xcel power lines. In addition, the plan would identify practicable additional thickening of the vegetative buffer such as plantings of evergreen trees between the park and the LRT Corridor for the purposes of reducing visual impacts of the LRT on park visitors.
- In the southern staging area, North Rice Lake water edge restoration work and vegetation plantings to provide learning opportunities for park users (design and species TBD).
- Restoration of the existing paved interior road to provide for safe two way traffic.
- Removal or replacement of the northern parking lot to be determined in consultation with JPA staff.
- Reconstruction and expansion of the interior paved parking lot (exact site TBD in consultation with JPA staff), to include room for a school bus turnaround.
- Clearing, revegetation and fencing of an area immediately east and north of the interior parking lot within the northern staging area for future use as a dog off leash area.
- Providing practicable utility services to a site adjacent to the interior parking lot for future development of a bathroom/storm shelter, and drinking water fountain.
- Ground preparation for a future education shelter sized for 50 students in a location TBD.
- Construction of a water education platform on North Rice Lake
- Redevelopment of a safe 10-foot-wide paved trail through the length of the park, running from the northern entrance to the current trail terminus by Bonnie Lane; with restoration along the trail edge as needed.
- Construction of an off-road trail connection from the existing terminus of the Sochacki Park trail at Bonnie Lane, crossing underneath the reconstructed Golden Valley Road Bridge and connecting to the existing trail in TWRP.

8.10.2.6 Section 6(f)(3) Conversion of Sochacki Park: Sochacki Management Unit

As previously discussed, when an area acquired or developed with LWCF assistance would be used for other than public outdoor recreation use for a period longer than 6 months, this use constitutes a conversion under Section 6(f)(3). The proposed BLRT Extension project proposes to use a portion of the Section 6(f)(3) property, the Sochacki Park: Sochacki Management Unit during construction, and would thus be subject to the conversion requirements of Section 6(f)(3). Following construction, the park property would be restored and enhanced, and would remain under the ownership and control of the city of Robbinsdale and the JPA partners.

Eight steps in the Section 6(f)(3) conversion process are presented in **Section 8.10.2.1**. The following is a summary of the status of each of those steps.

1. **All practical alternatives to the proposed conversion have been evaluated** – The information presented in **Section 8.10.2.5** demonstrates that all practical alternatives have been considered, and that the conversion of a portion of Sochacki Park: Sochacki Management Unit is the only practical alternative for the proposed BLRT Extension project.
2. **The fair market value of the park property to be converted has been established and that the property proposed for substitution is of at least equal fair market value, as established by an approved appraisal in accordance with the Uniform Appraisal Standards for Federal Land Acquisition, excluding the value of structures or facilities that will not serve recreational purposes** – The Council will be conducting the appropriate appraisal activities for the easement in Sochacki Park: Sochacki Management Unit in the summer or fall of 2016, and will be working with the JPA partners and DNR to identify and appraise replacement property in a similar timeframe.
3. **The proposed replacement property is of reasonably equivalent usefulness and location as the converted property** – The coordination process with the JPA partners and DNR will include assessment of the usefulness and location of the replacement property; only property that meets those criteria will be proposed as replacement property.
4. **The property proposed for substitution meets the eligibility requirements for LWCF-assisted acquisition** – The Council will work with DNR to confirm that the replacement property meets the appropriate eligibility requirements.
5. **For properties that are proposed to be partially rather than wholly converted, the impact of the converted portion on the remainder must be considered and the unconverted area must remain recreationally viable, or be replaced as well** – During the construction of the proposed BLRT Extension project, approximately 5.6 acres of the 37.4-acre Sochacki Park: Sochacki Management Unit resource would be unavailable for recreational purposes for about 18 months. Access to the remaining portions of the park will be maintained throughout construction. At the end of that 18 month period, the 5.6 acres would be restored and returned to the city of Robbinsdale and the JPA partners. Since the proposed BLRT Extension project requires only the temporary use, albeit it for a period of longer than 6 months, of a portion of the Sochacki Park: Sochacki Management Unit, and since the property will be returned to park

use and park enhancements will be provided, the entirety of Sochacki Park: Sochacki Management Unit will remain recreationally viable.

6. **All necessary coordination with other federal agencies has been satisfactorily accomplished** – The proposed BLRT Extension project development process has included coordination with all appropriate federal agencies, including coordination with the US Fish and Wildlife Service under Section 7 of the Endangered Species Act, and coordination between FTA and MnHPO in compliance with Section 106 of the National Historic Preservation Act. In addition, the Council and FTA have coordinated with NPS on the conversion of the portion of Sochacki Park: Sochacki Management Unit required for the proposed BLRT Extension project. All applicable federal agency coordination that has been conducted as part of the proposed BLRT Extension project development process will be updated as necessary, and incorporated in the environmental documentation for the Section 6(f)(3) conversion of a portion of Sochacki Park: Sochacki Management Unit.
7. **The guidelines for environmental evaluation have been satisfactorily completed and considered by the NPS during its review of the conversion proposal** – The Council and FTA, in cooperation with DNR, will complete a separate Environmental Assessment (EA) and a PD/ESF for both the conversion property (i.e., the portion of Sochacki Park: Sochacki Management Unit to be used for the proposed BLRT Extension project) and the replacement property in accordance with NPS requirements and for NPS review and approval. The anticipated timeframe for the completion of this documentation is fall-winter 2016.
8. **The proposed conversion is in accordance with the applicable Statewide Comprehensive Outdoor Recreation Plan (SCORP) and/or equivalent recreation plans** – The Council and FTA have consulted and will continue to consult with DNR to confirm that the proposed conversion is in accordance with the Minnesota SCORP.

The Council and FTA anticipate that the conversion process will be completed in early to mid-2017, and acknowledge that no BLRT Extension project construction activities will be allowed until the NPS has approved the Section 6(f)(3) conversion of a portion of Sochacki Park: Sochacki Management Unit.

8.10.3 DNR Outdoor Recreation Grant Program

8.10.3.1 State Regulatory Requirements

According to the Outdoor Recreation Grant Program FY2016 Program Manual, "All land improved or acquired with assistance from this grant program must be retained and operated solely for outdoor recreation." Similarly to Section 6(f)(3) of the LWCF Act, DNR would consider conversions of these state-funded outdoor recreation areas to other uses only if all practical alternatives to the conversion have been evaluated and rejected on a sound basis, and the converted lands are replaced with other lands of at least equal fair market value and reasonably equivalent recreational usefulness as determined by the State.

8.10.3.2 Description of Resources Funded by the Outdoor Recreation Grant Program

Sochacki Park: Sochacki Management Unit has received DNR Outdoor Recreation Grant funds; impacts and findings under Section 6(f)(3) would be the same as those under DNR's Outdoor Recreation Grant Program. No additional analysis or documentation is required for the Sochacki Management Unit.

Two additional parks received funds from DNR's Outdoor Recreation Grant Program: Glenview Terrace Park and Sochacki Park: Mary Hills Management Unit.

Glenview Terrace Park

In September 1977, the city of Golden Valley was granted a total of $6,655 in funding through the Outdoor Recreation Grant Program for the lighting of two tennis courts at the existing Glenview Terrace Park.

Glenview Terrace Park is a city of Golden Valley–operated section of the Glenview Terrace/Valley View Park on property owned by MPRB. Glenview Terrace/Valley View Park is a 17.5-acre park, and the Glenview Terrace section is a 12.6-acre neighborhood park located at 2351 Zenith Avenue in the City of Golden Valley. A "Neighborhood Park" is defined by the city of Golden Valley as an "active area designed for intensive use by children and family groups close to home and affording opportunities for informal recreation and possibly some scheduled activities for all ages" (City of Golden Valley Comprehensive Plan 2008–2018). Glenview Terrace Park consists of walkways and trails, playground equipment, two lighted tennis courts, and game squares. Ten off-street parking spots are available to visitors.

Sochacki Park: Mary Hills Management Unit

In October 1981, the city of Golden Valley was granted $1,630 in funding for the development of a 2,500-foot biking and hiking trail within the existing Mary Hills Park, the former design designation of the Sochacki Park: Mary Hills Management Unit.

The Mary Hills Management Unit is a 15.7-acre open-space nature area located at 2190 Bonnie Lane in the City of Golden Valley. A "Nature Area" is defined by the city of Golden Valley as "public land set aside for preservation of natural resources and visual aesthetics/buffering, which may include areas for trails and other passive recreation uses" (City of Golden Valley Comprehensive Plan 2008–

2018). The Mary Hills Management Unit is comprised of upland and wetland woodland communities and has picnic and seating areas. A meandering internal trail system connects to the Sochacki Management Unit to the north in the City of Robbinsdale. The existing rail corridor borders the east side of the recreational property. As noted above, the Mary Hills Management Unit has been operationally incorporated into Sochacki Park, and is managed through a JPA between TRPD, the city of Robbinsdale, and the city of Golden Valley.

8.10.3.3 Effects of the Proposed BLRT Extension Project on Resources Funded by the Outdoor Recreation Grant Program

In the City of Golden Valley, the proposed BLRT Extension project alignment is in the existing BNSF rail corridor in the eastern portion of the City and flanked by parklands (TWRP and Sochacki Park: Mary Hills Management Unit) to its west and residential neighborhoods and Glenview Terrace Park to its east.

Glenview Terrace Park

As part of the proposed BLRT Extension project, a new 700-foot-long LRT bridge would be constructed adjacent to the western edge of Glenview Terrace Park, crossing the wetlands immediately north of Golden Valley Road. As described in **Section 8.7.1.3**, approximately 0.25 acre of temporary construction easements within the park would be required for access and construction work along the proposed BLRT Extension project corridor (see **Figure 8.7-6**). In addition, a 0.01-acre unimproved portion of designated parkland (currently a wetland) in the southwestern corner of the park would be impacted with the construction of the proposed BLRT Extension project (see **Figure 8.7-6**). Both the temporary and permanent uses of the park are located in a wetlands area of the park not used for active recreation, substantially remote from the intended uses of the park.

Sochacki Park: Mary Hills Management Unit

The proposed BLRT Extension project would require a temporary occupancy of approximately 0.57 acre along the eastern border of the Mary Hills Management Unit to facilitate construction activities and stormwater conveyance improvements. In addition, enhanced pedestrian and bicycle connections between TWRP and other parks to its north including the Mary Hills Management Unit, are included in the proposed BLRT Extension project design. These enhancements include a new trail connection to be constructed under the Golden Valley Road Bridge that would provide a safe and convenient connection between TWRP and the Mary Hills Management Unit and ultimately all of Sochacki Park.

8.10.3.4 Measures to Avoid and/or Minimize Impacts

Similarly to the LWCF Act, DNR's Outdoor Recreation Grant Program requires that prior to the conversion of any Program-funded parks to non-outdoor recreational uses, all practical alternatives to the conversion have been evaluated and rejected on a sound basis. As described in **Chapter 2**, the siting of the proposed BLRT Extension project alignment was evaluated in the Draft EIS and the alternative that includes the BNSF rail corridor adjacent to the Program-funded parks was selected.

Glenview Terrace Park

For the proposed BLRT Extension project construction elements within Glenview Terrace Park, temporary use of the park property is necessary for the construction of bridge structures. There are no practical alternatives to the locations of the new LRT bridge over the wetlands pond north of Golden Valley Road. The LRT bridge over the wetlands area of Glenview Terrace Park is preferred over the option of building the LRT tracks on fill, which would result in substantial permanent wetlands impacts and required mitigation.

The 0.01-acre permanent easement is required for the operations of the proposed BLRT Extension project just north of the Golden Valley Road Station. Operations of the proposed BLRT Extension project east of the BNSF tracks requires minimal distances between tracks and that distance widens at approaches to LRT stations with center platforms. The proposed BLRT Extension project includes the minimal distance between tracks at the new LRT bridge over the wetlands/pond area north of Golden Valley Road; therefore, there is no practical alternative to avoid this permanent impact.

The Council and FTA have participated in coordination activities with the city of Golden Valley and MPRB to identify avoidance, minimization, and mitigation measures to address the proposed BLRT Extension project's use of and effects on the recreational attributes, facilities, and activities of the Glenview Terrace Park. The coordination efforts between the Council, the city, and MPRB included the development of additional design concepts and enhancements for the Golden Valley Road Station area that would improve trail connections to park resources, provide wayfinding signs to direct potential park users to park resources, and improve pedestrian and bicycle safety at the Golden Valley Road/Theodore Wirth Parkway intersection.

Sochacki Park: Mary Hills Management Unit

For the proposed BLRT Extension project construction elements adjacent to the Mary Hills Management Unit, temporary use of the property is necessary to allow construction to occur within the BNSF rail corridor to tie in grades and to maintain drainage. The areas of the Mary Hills Management Unit to be occupied during construction would be restored prior to the proposed BLRT Extension project completion. In addition, a new pedestrian trail under the Golden Valley Road Bridge is proposed that would provide a connection between the Mary Hills Management Unit and TWRP to the south.

The Mary Hills Management Unit would still be accessible to the public throughout construction via existing trails and paths. Construction activities would be coordinated with staff from the city of Golden Valley to avoid conflicts with park activities. Moreover, impacts related to temporary changes to access would be mitigated by development of a Construction Communication Plan, which would include advance notice of construction activities and highlighting trail closures and detour routes.

8.10.3.5 Conversion of Resources Funded by the Outdoor Recreation Grant Program

The proposed BLRT Extension project results in impacts to two parklands partially funded by DNR's Outdoor Recreation Grant Program.

The city of Golden Valley was awarded funds to install lighting for two tennis courts in Glenview Terrace Park, and 3 years later to develop a trail within the Mary Hills Management Unit. The proposed BLRT Extension project not only does not impact the functions of the two parks funded by the Program (tennis court use and trail), but it also does not impact the overall active use of the parks. Moreover, the addition of trail connections with the proposed BLRT Extension project enhances the functions of the parks. The temporary construction access use of both parks would be of short duration and would be contained along the edge of each park.

Since the construction activities within the Mary Hills Management Unit would be temporary, and would either involve grading for LRT construction followed by restoration, or consist of the construction of a recreational trail, no conversion of a state grant-funded park would occur and no additional mitigation is necessary.

The acquisition of a 0.01-acre permanent easement at the southwestern corner of Glenview Terrace Park to accommodate LRT operations would not diminish the public enjoyment of the park. However, the acquisition does constitute a conversion of state grant-funded park property. Normally, replacement property of equal value and recreational usefulness is required when a conversion of state grant-funded park land occurs. However, in this case the land to be converted was not acquired with grant assistance, the proposed conversion is of a very small area, and the identification and acquisition of replacement property is not practical. The Council has proposed alternate mitigation for the conversion of 0.01 acre of Glenview Terrace Park, including:

- Reconstruction of the nearby Golden Valley Road/Theodore Wirth Parkway intersection which would provide greater safety and improved accessibility for pedestrians and bicyclists traveling to Glenview Terrace Park.
- Incorporation of wayfinding signs at the Golden Valley Road Station park-and-ride and trailhead that include maps of and directions to area park resources, including Glenview Terrace Park.

DNR has concurred with the proposed alternate mitigation for the Glenview Terrace Park conversion in a communication dated June 17, 2016. A copy of the communication is provided in **Appendix J**.

9 Consultation and Coordination

The Metropolitan Council's (Council) planning for the proposed METRO Blue Line Light Rail Transit (BLRT) Extension project involved extensive outreach and coordination with the affected public, which included the community members residing in the proposed BLRT Extension project corridor as well as individuals, businesses, groups, clubs, civic organizations, and others interested in the proposed BLRT Extension project. Also engaged in the process were agencies, including local governments and state and federal agencies with regulatory oversight and permitting responsibilities.

This chapter summarizes the efforts and outcomes of the various consultation and coordination efforts made for the proposed BLRT Extension project during the National Environmental Policy Act (NEPA)/Minnesota Environmental Policy Act (MEPA) process. This chapter describes the proposed BLRT Extension project's advisory committee structures; agency participation; coordination activities, public meetings, and events; and other communication activities implemented during the project development and environmental processes. This chapter also summarizes public and agency comments received during the Draft Environmental Impact Statement (Draft EIS) public comment period, as well as permits and approvals that will be required to implement the proposed BLRT Extension project.

This chapter includes the following sections:

- **Section 9.1** describes public involvement for EIS Scoping, selection of a locally preferred alternative (LPA), the Draft EIS public comment period, and Final Environmental Impact Statement (Final EIS) development.
- **Section 9.2** summarizes the project advisory committees through the Draft and Final EISs.
- **Section 9.3** describes agency coordination throughout the Draft and Final EISs, including key coordination issues.
- **Section 9.4** summarizes public and agency comments on the Draft EIS.
- **Section 9.5** describes permits and approvals required for the proposed BLRT Extension project.

Project outreach and collaboration began with Hennepin County Regional Railroad Authority (HCRRA), which was the proposed BLRT Extension project's local lead agency for the environmental process through the Draft EIS. Outreach responsibilities were transferred to the Council, which became the local lead agency for the environmental process upon completion of the Draft EIS public comment period.

Project consultation and coordination have been implemented in compliance with the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) of 2005; the Moving Ahead for Progress in the 21st Century Act (MAP-21); Title VI of the Civil Rights Act of 1964; Federal Transit Administration (FTA) Circular FTA C 4702.1B, *Title VI Requirements and Guidelines for FTA Recipients*, effective October 1, 2012 (Title VI Requirements and Guidelines Circular); and Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, including the US Department of Transportation's (USDOT)

Final Environmental Justice Order [*Order 5610.2(a): Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*], updated May 2, 2012; and the FTA Circular FTA C 4703.1, *Environmental Justice Policy Guidance for FTA Recipients*, effective August 15, 2012 (Environmental Justice Circular [FTA, 2012]).

Outreach activities, agency coordination, and committee structure evolved as project development activities progressed. Public and agency coordination activities were consistent with NEPA, MEPA, and the Chapter 4410 Environmental Quality Board (EQB) Environmental Review Program of the State of Minnesota. Publications of notices of intent, document availability, public comment periods, and public open houses and hearings were published in the Federal Register and the EQB *Monitor*, as well as in local and regional publications. Requirements regarding the timing and length of public comment periods, as well as when public open houses and hearings could be held relative to publication of environmental documents, were also consistent with NEPA and MEPA.

9.1 Public Involvement

This section provides an overview of the public involvement activities completed during the Draft EIS and Final EIS stages of the proposed BLRT Extension project. Ongoing engagement and communication with the affected public has been a fundamental element of the proposed BLRT Extension project since its initiation and will continue to be a key component of project implementation.

In 2008, HCRRA initiated the Alternatives Analysis (AA) Study to investigate transit improvement alternatives along the Bottineau Transitway. The study considered a range of alternatives that would improve regional mobility and meet long-range transit needs. Early in the study process, the Council established a framework for stakeholder outreach that engaged nearly 1,000 stakeholders through public meetings, open houses, stakeholder presentations, email, website visits, and phone calls. Further information can be found in the *Bottineau Transitway Alternatives Analysis Study* (2010) at www.hennepin.us/~/media/hennepinus/residents/transportation/bottineau/bottineau-alternative-analysis-summary-report.pdf?la=en.

As the proposed BLRT Extension project moved into the EIS phase, a Public Involvement Plan (PIP) was developed to clarify the goals for public outreach. The PIP included engagement strategies, key stakeholders, decision-making and advisory bodies, communication methods, and public involvement activities. The PIP guided engagement through EIS project Scoping and LPA selection, as well as the Draft EIS public comment period.

This section summarizes engagement completed during EIS project Scoping, LPA selection, and the Draft EIS public comment period. Further information can be found in Chapter 9 of the Draft EIS at www.BlueLineExt.org.

9.1.1 Project Public Involvement for EIS Project Scoping and LPA Selection

Public involvement for the proposed BLRT Extension project's environmental review process began with the EIS Scoping process, which informed the public, interest groups, affected tribes, and government agencies of the Draft EIS. Six open houses were held in corridor cities in June 2011 to initiate EIS Scoping. Notices announced the beginning of the EIS Scoping comment period, which extended from December 26, 2011, to February 17, 2012, and included dates for four public EIS Scoping meetings and hearings.

The process provided opportunities to inform the public, government agencies, elected officials, organizations, and businesses that development of the Draft EIS was commencing and to solicit issues of concern. A Scoping booklet was prepared and distributed to inform the public about the Scoping meetings. A Scoping video was also prepared and made available on the website for the proposed BLRT Extension project for people who could not attend the open houses. Public comments were considered alongside technical data and analysis to inform project decisions and shape the content of the Draft EIS. Responses to public comments and documentation of the outcome of the EIS Scoping process were included in the *Bottineau Transitway Scoping Decision Document* (June 2012) at www.BlueLineExt.org.

The information collected in the EIS Scoping phase of the proposed BLRT Extension project, along with technical analysis, helped to identify a potential LPA. The selection of an LPA tells FTA which alternative local agencies expect to be the most competitive in achieving support at the local, regional, and federal levels. The LPA was selected through a public process with input from corridor residents, communities, businesses, and other organizations. Notifications and meetings held throughout the EIS Scoping and LPA selection process are shown in **Table 9.1-1** and **Table 9.1-2**.

Table 9.1-1. Summary of Meetings during Project Scoping and LPA Selection

Date	Meeting/Location	Meeting Purpose
June 2011	Six locations: Brooklyn Park (two locations), Robbinsdale, Golden Valley, Crystal, and Minneapolis	EIS Scoping initiation – open houses
September 15, 2011	Brookdale Library (6125 Shingle Creek Parkway, Brooklyn Center)	EIS Scoping initiation – roundtable discussion
October 6, 2011	Urban Research & Outreach-Engagement Center (2001 Plymouth Avenue North, Minneapolis)	Alignment D2 – open house
January 23, 2012	Theodore Wirth Chalet (1301 Theodore Wirth Parkway, Minneapolis)	EIS Scoping – open house
January 24, 2012	Brooklyn Park City Hall (5200 85th Avenue North, Brooklyn Park)	EIS Scoping – open house
January 25, 2012	Urban Research and Outreach-Engagement Center (2001 Plymouth Avenue North, Minneapolis)	EIS Scoping – open house
January 31, 2012	Robbinsdale City Hall (4100 Lakeview Avenue North, Robbinsdale)	EIS Scoping – open house
May 10, 2012	Policy Advisory Committee Meeting (Hennepin County)	LPA – public hearing
June 12, 2012	HCRRA Meeting (Minneapolis)	LPA – public hearing

Table 9.1-2. Summary of Notices and Flyers during EIS Scoping

Date	Activity	Distribution
May 2011	Distribution of posters in community facilities to announce June 2011 open houses	Approximately 40 corridor-wide
August 2011	Email invitation to roundtable discussions held September 15, 2011	Email
September 2011	Door-to-door distribution of flyers announcing Alignment D2 open house held October 6, 2011	>500 in neighborhoods surrounding Alignment D2
September 2011	Distribution of posters in community facilities to announce Alignment D2 open house held October 6, 2011	Approximately 40 corridor-wide
December 2011	Distribution of Scoping booklet and poster announcing EIS Scoping meetings	Corridor-wide, 327 hard copies of Scoping booklet and about 50 posters

9.1.2 Public Involvement for the Draft EIS Public Comment Period

FTA and HCRRA published the Draft EIS in April 2014. The Notice of Availability was published in the Federal Register on April 11, 2014, and in the EQB *Monitor* on April 14, 2014. These notices were followed by a public comment period that concluded on May 29, 2014. Copies of the Draft EIS were available at the following locations for public review during the comment period:

- Hennepin County, 701 Fourth Avenue South, Suite 400, Minneapolis
- Metropolitan Council, 290 Robert Street North, St. Paul
- Libraries
  - Brookdale Library
  - Brooklyn Park Library
  - Hennepin County Public Library
  - Maple Grove Library
  - North Regional Library
  - Osseo Library
  - Rockford Road Library
  - Sumner Library
- City Halls
  - Brooklyn Park City Hall
  - Crystal City Hall
  - Golden Valley City Hall
  - Maple Grove Government Center
  - Minneapolis City Hall
  - Robbinsdale City Hall

During the Draft EIS public comment period, the Draft EIS was available on Hennepin County's website and can now be found at www.BlueLineExt.org. Public hearings on the Draft EIS were held on:

- Wednesday, May 7, 2014, at the Golden Valley City Hall
- Thursday, May 8, 2014, at the Urban Research and Outreach-Engagement Center
- Tuesday, May 13, 2014, at the Brooklyn Park City Hall
- Wednesday, May 14, 2014, at the Crystal Community Center

Each public hearing was preceded by an open house. A total of 262 people attended the public hearings. Translation services and Americans with Disabilities Act (ADA) accommodations were provided upon request. Substantive comments received during the Draft EIS public comment period and subsequent responses are included in **Appendix G** of this Final EIS and summarized in **Section 9.4** below.

9.1.3 Public Involvement for the Final EIS

Public involvement for the Final EIS built on the foundation established during the AA, EIS Scoping, LPA selection, and Draft EIS stages of project development. This section summarizes outreach activities during the Final EIS stage.

9.1.3.1 Public Outreach Activities Framework

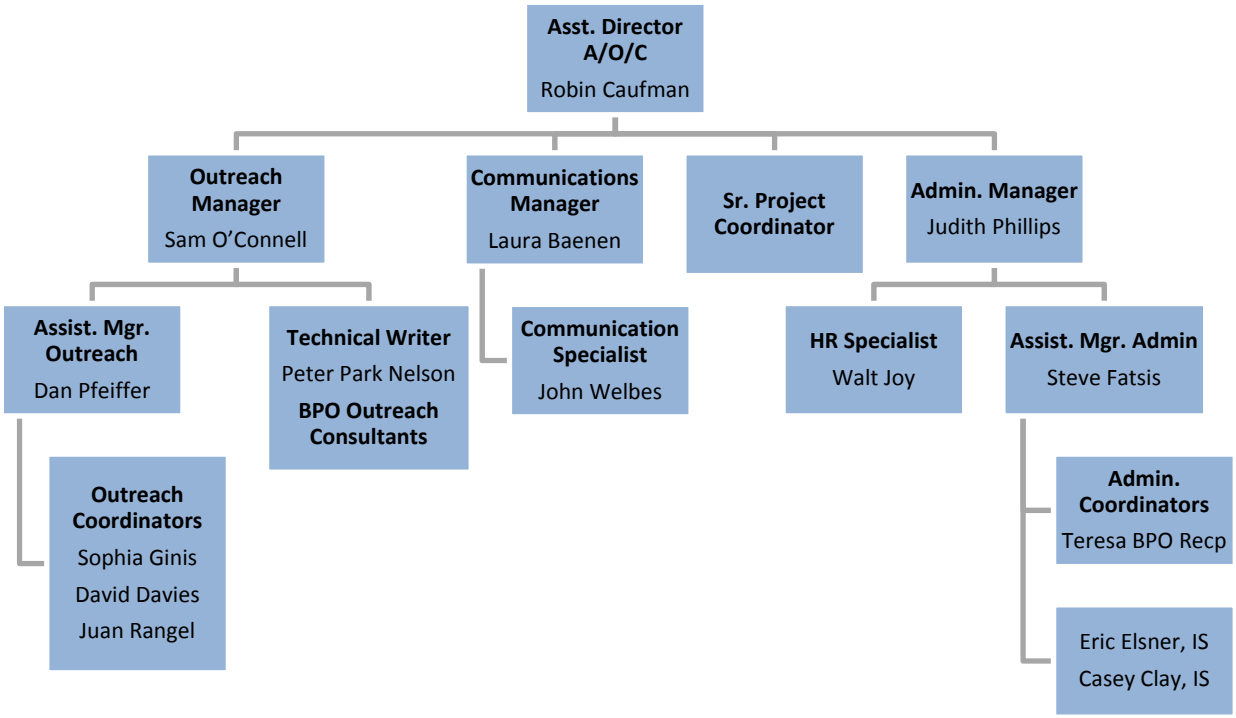
Public involvement through the Draft EIS public comment period established the framework for the preparation of the Final EIS. The goal of public outreach for the proposed BLRT Extension project has been to continue momentum and facilitate stakeholder engagement, input, and understanding through a meaningful public involvement process. The technical, social, economic, and environmental issues that were identified through early stages of public involvement have been considered throughout project development. This emphasis on building confidence and credibility in the environmental process by assuring the public that they will be heard and understood has carried through to the preparation of the Final EIS.

9.1.3.2 Outreach and Communications Team

Council staff dedicated to communications and outreach for the proposed BLRT Extension project include the Assistant Director for Administration, Public Involvement, and Communications; the Communications Manager; the Public Involvement Manager; the Assistant Public Involvement Manager; the Communications Specialist; three Community Outreach Coordinators; and a Technical Writer. An organizational chart of project outreach and communications staff for the proposed BLRT Extension project is shown in **Figure 9.1-1**.

The efforts of the communications and public outreach staff are guided by the PIP. The staff works closely with stakeholders, including several established stakeholder groups, to provide continual engagement with the public as a part of the overall decision-making process.

Figure 9.1-1. Outreach and Communications Organization Chart



9.1.3.3 Accessibility to the Public

Public and agency coordination for the proposed BLRT Extension project are managed by the BLRT Extension Project Office (BPO) at 5514 West Broadway Avenue, Suite 200, Crystal, Minnesota, 55428. The BPO can be reached by telephone at (612) 373-5301 and by email at BlueLineExt@metrotransit.org. Media events, news releases, advisory and management committee agendas, presentations, meeting minutes, environmental documents, and engineering plans for the proposed BLRT Extension project are available on the project website (www.BlueLineExt.org). These materials and this Final EIS comply with the requirements of Minnesota Statute 363A.42 regarding the accessibility of public records. **Recp**

9.1.3.4 Public Outreach and Events

Council staff hosted public events in locations throughout the proposed BLRT Extension project corridor to provide the public with the opportunity to provide input on design efforts and receive updates and information about proposed BLRT Extension project activities. Public events were tailored to present information and solicit feedback on specific aspects of the proposed BLRT Extension project, including:

- Coordination with the Hennepin County West Broadway Avenue Reconstruction project
- Noise impacts and mitigation
- Effects on wetlands, floodplains, and biological resources
- Effects on parks and historic properties
- Light rail transit (LRT) station locations and configuration
- Pedestrian safety
- Trail connections
- Traffic effects
- Parking
- Configuration of Olson Memorial Highway (Trunk Highway [TH] 55)
- Coordination with BNSF Railway

These public events offered an opportunity for the public to provide feedback on various features of the proposed BLRT Extension project and make connections with Council staff. Ideas and requests regarding the proposed BLRT Extension project provided by the public were documented and considered in engineering. Input received from public meetings and events on the proposed BLRT Extension project is posted on the project website located at this link: www.metrocouncil.org/Transportation/Projects/Current-Projects/METRO-Blue-Line-Extension.aspx. Public events involving the proposed BLRT Extension project were typically conducted in an open-house format and were publicized on the project website and through newspaper articles, newspaper advertisements, press releases, social media, and email alerts.

Public events were accessible to those with disabilities in accordance with the ADA. Translation services and other accommodations were provided on request. The Council selected meeting locations based on ease of access to the location and meeting room, and proximity to affected areas. Lists of public outreach and events held during the preparation of the Draft EIS are provided in Section 9.2 of the Draft EIS. **Table 9.1-3** summarizes the open houses held during Final EIS preparation.

In addition to hosting public open houses and other events, Council staff frequently attended and presented at community meetings throughout the proposed BLRT Extension project vicinity. Attending such meetings allowed groups with specific concerns or questions to interact with staff and to provide feedback in a more personal, less formal setting. Any concerns expressed at these meetings were shared with the appropriate team members.

Table 9.1-3. Summary of Open Houses Held during Final EIS Preparation

Date	Meeting/Location	Meeting Purpose
February 26, 2015	Church of St. Margaret Mary (Visitation Hall, 2323 Zenith Avenue North, Golden Valley, MN)	Station locations for Golden Valley and North Minneapolis – open house
March 5, 2015	North Hennepin Community College Center for Business Technology (Room 195/Grand Hall, 7411 85th Avenue North, Brooklyn Park, MN)	West Broadway Avenue roadway concepts – open house
March 19, 2015	North Hennepin Community College Center for Business Technology (Room 195/Grand Hall, 7411 85th Avenue North, Brooklyn Park, MN)	West Broadway Avenue roadway concepts – open house
April 7, 2015	North Hennepin Community College Center for Business Technology (Room 195/Grand Hall, 7411 85th Avenue North, Brooklyn Park, MN)	West Broadway Avenue roadway concepts – open house
May 28, 2015	Crystal Community Center (4800 Douglas Drive North, Crystal, MN)	Proposed stations and light rail alignment – open house
June 4, 2015	Harrison Neighborhood Park and Community Center (503 Irving Avenue North, Minneapolis, MN)	Proposed stations and light rail alignment – open house
June 11, 2015	Robbinsdale Middle School (3730 Toledo Avenue North, Robbinsdale, MN)	Proposed stations and light rail alignment – open house
June 17, 2015	Community Activity Center (5600 85th Avenue North, Brooklyn Park, MN)	Proposed stations and light rail alignment – open house
July 27, 2015	Crystal Community Center (A&B Meeting Rooms, 4800 Douglas Drive North, Crystal, MN)	Proposed stations, parking, and pedestrian/bicycle access – open house
July 28, 2015	Robbinsdale Middle School (3730 Toledo Avenue North, Robbinsdale, MN)	Proposed stations, parking, and pedestrian/bicycle access – open house
July 29, 2015	Harrison Recreation Center (503 Irving Avenue North, Minneapolis, MN)	Proposed stations, parking, and pedestrian/bicycle access – open house
August 11, 2015	North Hennepin Community College (CBT Grand Hall, 7411 85th Avenue North, Brooklyn Park, MN)	Proposed stations, parking, and pedestrian/bicycle access – open house
August 12, 2015	Golden Valley City Hall (7800 Golden Valley Road, Golden Valley, MN)	Proposed stations, parking, and pedestrian/bicycle access – open house
September 14, 2015	Downtown Robbinsdale (Corner of Broadway and 41st Avenue)	39½ Avenue Railroad crossing – open house
October 18, 2015	Crystal Community Center (4800 Douglas Drive, North Crystal, MN)	Environmental analysis – open house
October 20, 2015	Hennepin Technical College Cafeteria (9000 Brooklyn Boulevard, Brooklyn Park, MN)	Environmental analysis – open house
October 21, 2015	Robbinsdale Middle School (3730 Toledo Avenue North, Robbinsdale, MN)	Environmental analysis – open house
October 28, 2015	Golden Valley City Hall (7800 Golden Valley Road, Golden Valley, MN)	Environmental analysis – open house
October 29, 2015	Harrison Community Center (503 Irving Avenue North, Minneapolis, MN)	Environmental analysis – open house

Table 9.1-3. Summary of Open Houses Held during Final EIS Preparation

Date	Meeting/Location	Meeting Purpose
January 4, 2016	Crystal City Hall (4141 Douglas Drive North, Crystal, MN)	Crystal municipal consent open house
January 19, 2016	Minneapolis Central Library (300 Nicollet Mall, Minneapolis, MN)	Joint Council/HCRRA municipal consent hearing and open house
January 25, 2016	Brooklyn Park City Hall (5200 85th Avenue, Brooklyn Park, MN)	Brooklyn Park municipal consent hearing and open house
February 2, 2016	Golden Valley City Hall (7800 Golden Valley Road, Minneapolis, MN)	Golden Valley municipal consent open house and public hearing
February 16, 2016	Crystal City Hall (4141 Douglas Drive North, Minneapolis, MN)	Crystal municipal consent open house and public hearing
February 16, 2016	Robbinsdale City Hall (4100 Lakeview Avenue North, Robbinsdale, MN)	Robbinsdale municipal consent open house and public hearing

9.1.3.5 Communication Methods

A variety of electronic and "traditional" (hard-copy) communication methods were used for the proposed BLRT Extension project. Although electronic communications might appear inappropriate for an area with a substantial number of low-income residents, area organizers advised that electronic media remains an effective method of outreach to low-income communities. Computers at area libraries are well-used, and smartphones are increasingly being used to access websites and other social networking applications. Communication methods are summarized below. Specific outreach efforts to target environmental justice populations are summarized in **Chapter 7 – Environmental Justice** of this Final EIS.

Project Website

The website that was maintained during the AA Study (www.bottineautransitway.org) was updated as the proposed BLRT Extension project moved into the EIS Scoping and Draft EIS phases. Upon completion of the Draft EIS, the website for the proposed BLRT Extension project migrated to the Council website at www.BlueLineExt.org. The purpose of the website is to serve as a resource for upcoming meetings, provide project development information, facilitate contact with Council staff, and provide a forum for submitting comments. On average, the website for the proposed BLRT Extension project received about 4,000 unique views per month. Information on the website for the proposed BLRT Extension project includes:

- Current status information and timeline for the proposed BLRT Extension project
- Project facts and frequently asked questions for the proposed BLRT Extension project
- Route information for the proposed BLRT Extension project
- Information about the proposed stations
- Public meeting announcements and presentations

- Environmental process information
- Links to project partners for the proposed BLRT Extension project
- Committee information and meeting documents
- Contact information, including community outreach coordinators and location of the project office for the proposed BLRT Extension project
- Announcements and newsletters for the proposed BLRT Extension project
- Funding information for the proposed BLRT Extension project
- Documents, including public and committee meeting documents, environmental documents, and other reports for the proposed BLRT Extension project
- Route visualization video

City Websites

Cities within the proposed BLRT Extension project boundaries provided links to the website for the proposed BLRT Extension project and updates on project development and upcoming meetings.

Email List

An email list was created to provide updates and advertise upcoming open houses and other public events for the proposed BLRT Extension project. The email list was generated through open house sign-ins, comments, and requests received by Council staff and through the website for the proposed BLRT Extension project. Local media contacts, elected officials, and agency representatives were also added to the email list. The list was, and will continue to be, used throughout the proposed BLRT Extension project to notify stakeholders about new or updated information, upcoming meeting information, and opportunities for public comment. The emails provide links to the website for the proposed BLRT Extension project to facilitate quick and easy access to project materials. The list had grown to more than 2,500 subscribers as of January 2016.

Social Media

The Council used Twitter to provide project updates, including new website information, press releases, upcoming public meetings, project visualizations, project newsletters, and other project-related material for the proposed BLRT Extension project. The account can be found at www.twitter.com/BlueLineExt. The Council used its Twitter and Facebook accounts to share selected project information on the proposed BLRT Extension project.

Newsletters

Throughout project development, the Council published and printed a newsletter: *Tracking the Blue Line Extension*. This was also published during preparation of the Final EIS. The newsletter was produced in the following months:

- January 2015
- May 2015
- July 2015
- December 2015
- March 2016

Distribution of Posters and Flyers

Hard-copy posters and flyers were distributed to community gathering places along the proposed BLRT Extension project corridor to provide information and notify the public about upcoming events. These materials also informed readers about how to obtain further information on the proposed BLRT Extension project via either the project website or by contacting Council staff. Materials were provided at libraries, community centers, and churches along the proposed BLRT Extension project corridor. Public libraries included:

- Maple Grove Library, 8001 Main Street, Maple Grove, MN
- Osseo Library, 415 Central Avenue, Osseo, MN
- Brooklyn Park Library, 8600 Zane Avenue North, Brooklyn Park, MN
- Brookdale Library, 6125 Shingle Creek Parkway, Brooklyn Center, MN
- Rockford Road Library, 6401 42nd Avenue North, Crystal, MN
- North Regional Library, 1315 Lowry Avenue North, Minneapolis, MN
- Sumner Library, 611 Van White Memorial Boulevard, Minneapolis, MN
- Minneapolis Central Library, 300 Nicollet Mall, Minneapolis, MN

News Releases

Council communication staff issued news releases regarding the time, location, and purpose of open houses and other events for the proposed BLRT Extension project. Releases were sent to about 200 media contacts, including all the major print, broadcast, radio, and web outlets in the Twin Cities, including specific media in the proposed BLRT Extension project area. Specific local outlets included neighborhood newspapers, local radio station KMOJ, neighborhood association websites, neighborhood web mail lists, and Cable Channel 12. A summary of news releases issued during the preparation of the Final EIS is shown in **Table 9.1-4**. News releases can be found on the website for the proposed BLRT Extension project at www.BlueLineExt.org.

Table 9.1-4. News Releases Issued during Final EIS Preparation

Date	News Release Purpose
August 22, 2014	Notice that the Council was receiving federal approval to begin design for the proposed BLRT Extension project
March 10, 2015	Notice of potential station locations and reconstruction of West Broadway Avenue
October 29, 2015	Update on proposed BLRT Extension project scope and cost estimate
December 9, 2015	Notice that the proposed BLRT Extension project was entering the municipal consent process

Media

Council communication staff coordinated with nearly 100 local reporters who represent print, electronic, and television network media that are following the proposed BLRT Extension project. News sources include city and neighborhood newspapers and minority and ethnic media sources. Coordination with media includes media tours and press releases regarding upcoming events, such as open houses and significant milestones, for the proposed BLRT Extension project.

9.2 Advisory Committees

This section summarizes the advisory committee structure used through development of the Final EIS. This section includes the structure used for developing the Draft EIS, during which time the advisory committee process was led by HCRRA, and for developing the Final EIS, during which time the advisory committee process was led by the Council.

9.2.1 Advisory Committees through the Draft EIS

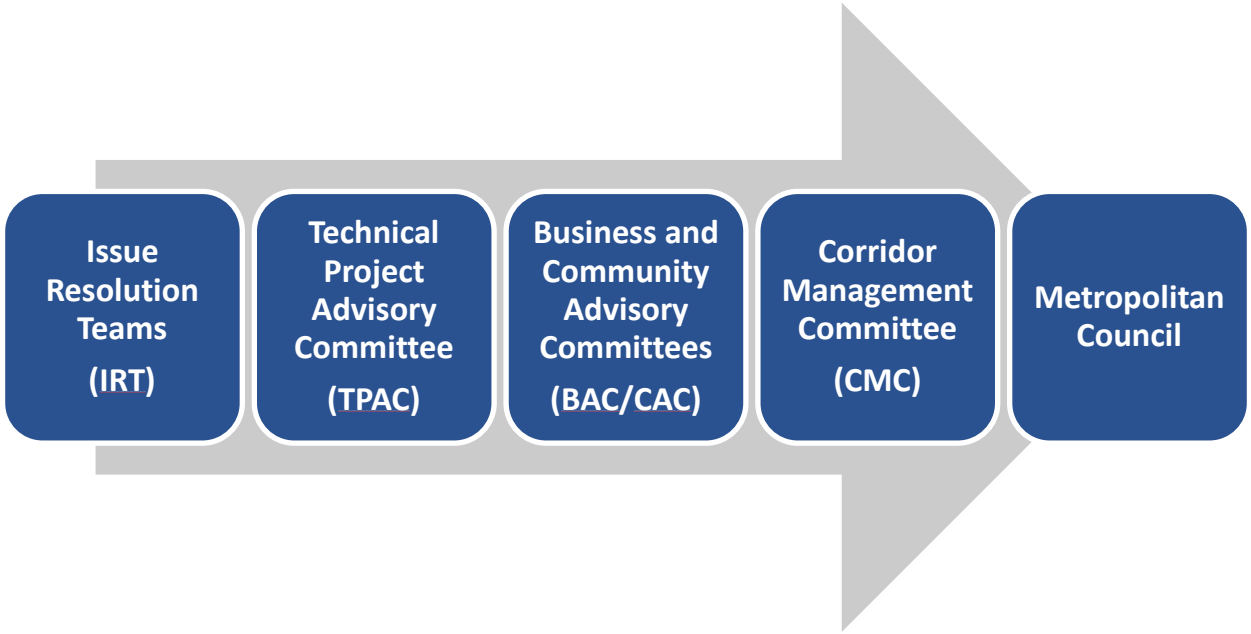
Key stakeholder outreach activities conducted during EIS Scoping and the development of the Draft EIS are summarized below.

- **Advise, Review, and Communicate Committee (ARCC).** The ARCC included technical staff from agencies convened to advise project development. The ARCC provided advice regarding local governmental perspectives, issues of concern, technical methodologies, and study process details. The ARCC comprised staff from Hennepin County; the cities of Brooklyn Park, Crystal, Golden Valley, New Hope, Maple Grove, Minneapolis, Osseo, and Robbinsdale; the Minneapolis Park and Recreation Board (MPRB); Metro Transit; Maple Grove Transit; the Council; the Minnesota Department of Transportation (MnDOT); and consultants. The ARCC met on an approximately monthly basis to advise development of the alternatives and aid in the alternatives evaluation.
- **Policy Advisory Committee (PAC).** The PAC included elected officials, key policy leaders for Participating Agencies, business leaders, and institutional leaders. Members convened to review and contemplate policy decisions during development of the proposed BLRT Extension project. The PAC met on an approximately quarterly basis to advise on key decisions including refinement of the D2 alignment, EIS Scoping, and LPA recommendations.
- **Community Advisory Committee (CAC).** The CAC, established during the AA Study, included representatives from the cities as well as businesses and institutions in the study area for the proposed BLRT Extension project. Members provided a conduit for integrating the values and perspectives of citizens, communities, businesses, and institutions into the study process. The CAC met on several occasions to identify issues and to advise on refinement of the alternatives.

9.2.2 Advisory Committees from the Draft EIS through the Final EIS

After publication of the Draft EIS, the Council led the proposed BLRT Extension project's advisory committee process. During this phase of project development, the focus was on resolving technical, environmental, economic, and social issues. The process for decision-making is shown in **Figure 9.2-1**, and each advisory committee is summarized below.

Figure 9.2-1. Advisory Committee Decision-Making Process



9.2.2.1 Issue Resolution Teams (IRTs)

The IRTs were formed to carry out the issue-resolution process for each of the 16 issues identified (for detailed information about the IRT process, see **Section 2.5.2.1**). IRTs were composed of representatives of the Council engineering and environmental staff from the proposed BLRT Extension project team and other Metro Transit departments, and staff from Hennepin County, MnDOT, municipalities along the proposed BLRT Extension project alignment, and administrators of park properties in the corridor. Each of the technical and system-wide issues was examined, and possible design adjustments to the Draft EIS LPA were analyzed. Results and recommendations from each of the IRTs were documented in a technical issue summary and incorporated into the elements for the proposed BLRT Extension project as presented in the Final EIS.

9.2.2.2 Technical Project Advisory Committee (TPAC)

The TPAC was established to provide technical input on BLRT Extension project-related design, engineering, construction, and operation issues. The TPAC includes senior-level staff as well as engineering and planning staff from BPO, Metro Transit Rail Operations, city and county staff, and MnDOT. The TPAC also advises on the communication of technical issues with other committees; supports integration of design work with community land-use and development goals and objectives; and identifies issues to avoid, minimize, and mitigate the impacts of the proposed BLRT Extension project. The TPAC is chaired by the Project Director for the proposed BLRT Extension project.

9.2.2.3 Corridor Management Committee (CMC)

The CMC comprises elected and appointed members to advise project development. The CMC advises the Council on all issues relating to the design and construction of the proposed BLRT Extension project. The CMC comprises representatives from Hennepin County; the cities of Brooklyn Park, Crystal, Golden Valley, Minneapolis, and Robbinsdale; MPRB; Metro Transit; the Council; MnDOT; and the Blue Line Coalition. The CMC has met on an approximately monthly basis to advise the Council on development of the proposed BLRT Extension project. CMC meeting summaries and membership can be found on the website for the proposed BLRT Extension project, www.BlueLineExt.org.

9.2.2.4 Community Advisory Committee (CAC)

The CAC serves as a voice for the community and advises the CMC during the planning and implementation phases of the proposed BLRT Extension project. The CAC comprises representatives from the Transportation Accessibility Advisory Committee; Masjid An-Nur; Metropolitan Interfaith Council on Affordable Housing; the Asian Economic Development Association; the cities of Brooklyn Park, Crystal, Golden Valley, Minneapolis, and Robbinsdale; and MPRB. The CAC has met on an approximately monthly basis to advise the Council on development of the proposed BLRT Extension project. CAC meeting summaries and membership can be found on the website for the proposed BLRT Extension project, www.BlueLineExt.org. The CAC is chaired by a resident of Brooklyn Park, and the co-chair is a resident of Robbinsdale.

9.2.2.5 Business Advisory Committee (BAC)

The BAC serves as a voice for the business community and advises the CMC during the planning and implementation phases of the proposed BLRT Extension project. The BAC comprises representatives from the TwinWest Chamber of Commerce; the North Hennepin Chamber of Commerce; the cities of Brooklyn Park, Crystal, Golden Valley, Minneapolis, and Robbinsdale; the Robbinsdale Chamber of Commerce; and the Minneapolis Regional Chamber of Commerce. BAC meeting summaries and membership can be found on the website for the proposed BLRT Extension project, www.BlueLineExt.org. The BAC is chaired by a business owner from Crystal.

9.3 Agency Coordination

This section describes the proposed BLRT Extension project's Cooperating and Participating Agencies and the Council's agency coordination efforts that supported the development and evaluation of design adjustments to the proposed BLRT Extension project.

9.3.1 Cooperating and Participating Agencies

Applicable federal, state, regional, and local agencies were invited to be involved in the EIS process by becoming a Cooperating or Participating Agency via an invitation letter issued in March 2012. FTA was responsible for inviting Native American tribes (discussed more in **Section 4.4**) and federal agencies, while HCRRA invited state, regional, and local agencies.

Based on responses to the initial letters and subsequent follow-up, the agencies listed in **Table 9.3-1** are considered Cooperating or Participating Agencies in the EIS process.

Participating Agencies are agencies with an interest in the proposed BLRT Extension project. Cooperating Agencies have a more specific role and participate in the permitting and/or jurisdictional determination process for impacts related to the proposed BLRT Extension project. They work cooperatively with the lead agencies to resolve issues that could result in denial of regulatory approvals required for the proposed BLRT Extension project. Cooperating Agencies were also granted a preliminary review of the Draft EIS.

Cooperating and Participating Agencies began active participation early in the EIS process. Responsibilities of both types of agencies included the following:

- Identifying the proposed BLRT Extension project's potential environmental and socioeconomic impacts and potential mitigation measures
- Providing input on the proposed BLRT Extension project's purpose and need, how impacts to resources will be evaluated, how alternatives will be evaluated, and the level of detail to be used in the analysis of alternatives
- Providing written comments on other deliverables for the proposed BLRT Extension project

Table 9.3-1. Cooperating and Participating Agencies in the Environmental Process

Agency	Type of Participation
Federal Agencies	
US Army Corps of Engineers	Cooperating
US Department of Transportation, Federal Aviation Administration	Cooperating
US Department of the Interior, National Park Service	Cooperating
US Department of Transportation, Federal Highway Administration	Participating[1]
US Department of Housing and Urban Development	Participating
US Department of the Interior, Office of Environmental Policy and Compliance	Participating
US Environmental Protection Agency	Participating
US Department of Homeland Security, Federal Emergency Management Agency	Participating
State Agencies	
Minnesota Department of Transportation	Participating[1]
Minnesota Department of Natural Resources	Participating
Minnesota Pollution Control Agency	Participating
Minnesota Department of Health	Participating
Minnesota Department of Agriculture	Participating
Regional and Local Agencies	
Three Rivers Park District	Participating
Minneapolis Park and Recreation Board	Participating
Bassett Creek Watershed Management Commission	Participating
Shingle Creek and West Mississippi Watershed Management Commission	Participating
City of Minneapolis	Participating
City of Golden Valley	Participating
City of Robbinsdale	Participating
City of Crystal	Participating
City of New Hope	Participating
City of Brooklyn Park	Participating
City of Osseo	Participating
City of Maple Grove	Participating
Maple Grove Transit	Participating

[1] The Federal Highway Administration (FHWA) and MnDOT were Cooperating Agencies during the Draft EIS phase of the proposed BLRT Extension project, but requested to be reclassified as Participating Agencies for the Final EIS phase. While the proposed BLRT Extension project does not create jurisdictional involvement for FHWA, FHWA is interested in staying involved with the project from a technical expertise standpoint since the proposed BLRT Extension project would cross several major roads (TH 55, TH 100, Interstate Highway 94, and TH 610). FHWA is interested in the proposed designs implemented at these locations in terms of any potential for impacts associated with roadway operations and safety.

9.3.2 Agency Coordination since Publication of the Draft EIS

This section provides an overview of the Council's agency coordination efforts since publication of the Draft EIS that supported efforts to develop and evaluate design adjustments to the proposed BLRT Extension project, and that supported preparation of this Final EIS. These efforts were also supported by and implemented in coordination with the public involvement activities and advisory committees (CMC, CAC, and BAC). Substantive comments received on the Draft EIS are documented and responded to in this Final EIS below in **Section 9.4**.

Key elements of the proposed BLRT Extension project's agency coordination efforts since publication of the Draft EIS included the following:

- **Technical Issue Resolution.** Following publication of the Draft EIS, the Council implemented a process to help identify and evaluate design adjustments to the LPA. The design adjustment process was organized around technical issues. Each issue was addressed in detail by the Council, working closely with cities, MPRB, the Three Rivers Park District, and representatives of other affected agencies.
- **Section 106 of the National Historic Preservation Act Coordination.** Methods for avoidance, minimization, or mitigation of effects on historic properties (any prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places) were developed by FTA in consultation with the Minnesota State Historic Preservation Office and other Section 106 consulting parties. On March 1, 2016, pursuant to the Section 106 regulations [36 CFR Part 800.6(a)(1)], FTA notified the Advisory Council on Historic Preservation (ACHP) of the final determination of an adverse effect and was provided an opportunity to enter into the consultation process. ACHP declined the invitation in correspondence dated March 15, 2016. FTA delegated authority to the MnDOT Cultural Resources Unit to aid FTA in many aspects of the Section 106 process. For more information about the Section 106 process, see **Section 4.4**.
- **Clean Water Act Section 404 Coordination.** Coordination throughout the Final EIS on the Clean Water Act included cities, watershed management organizations, Hennepin County, the Minnesota Board of Water and Soil Resources, and the US Army Corps of Engineers. Coordination efforts focused on Wetlands Technical Evaluation Panel meetings at which agency representatives reviewed and approved delineated wetland boundaries, discussed jurisdictional issues, reviewed impacts, and evaluated avoidance, minimization, and mitigation strategies.
- **Floodplains.** Coordination throughout the Final EIS on floodplain impacts included cities, watershed management organizations, MPRB, and the Minnesota Department of Natural Resources (DNR).

- **Section 7 Consultation/State-listed Species.** Coordination throughout the Final EIS on endangered species included the U. S. Fish and Wildlife Service (USFWS) and DNR. The Council and FTA discussed with USFWS the approach to addressing the federally listed threatened northern long-eared bat and the appropriate avoidance and minimization measures. Discussions with DNR focused on state-listed species, especially Blanding's turtle, and the implementation of appropriate avoidance and minimization measures.
- **Section 4(f) and Section 6(f) and State Grant-Funded Parks.** Parkland coordination throughout the Final EIS included cities, MPRB, the Three Rivers Park District, DNR, FTA, the US Department of the Interior (USDOI), and the National Park Service. Evaluation of project design elements, potential effects on park property, avoidance alternatives, and measures to minimize harm were discussed in periodic Parks Issue Resolution Team meetings. Compliance with Section 4(f), Section 6(f), and state grant-funded park requirements were discussed with DNR, FTA, USDOI, and the National Park Service.
- **Runway Protection Zone.** Runway Protection Zone coordination throughout the Final EIS included the Metropolitan Airports Commission and the Federal Aviation Administration. For additional information, see **Section 3.6**.
- **Tribal Coordination.** In January 2012, FTA sent coordination letters to Native American tribes that might have an interest in the proposed BLRT Extension project. The letters requested that tribes identify any historic, cultural, archaeological, or other concerns regarding the proposed BLRT Extension project and invited them to public EIS Scoping meetings scheduled later that month. The letters also invited tribes to let FTA know if they would prefer to schedule a separate meeting to discuss any specific tribal issues and concerns. No requests for separate meetings were made. For additional information, see **Section 4.4.4.2**.

9.4 Summary of Public and Agency Comments on the Draft EIS

The public comment period for the Draft EIS began upon the Notice of Availability published in the Federal Register on April 11, 2014 and concluded on May 29, 2014. Complete public comments and their responses are in **Appendix G** of this Final EIS. A summary of this information is provided below.

9.4.1 Draft EIS Comments Received and Responses

A total of approximately 1,250 comments were submitted in the form of letters, emails, public testimony at the public hearings, and comment cards received at the public open houses and public hearings (for more information about public involvement, see **Section 9.1**). Comments were received from individuals, businesses, public interest groups, and public agencies, including local communities and regulatory agencies.

The Council summarized the comments and responses as follows:

- Related to the purpose of and need for the proposed BLRT Extension project
  - Several commenters questioned the need for the proposed BLRT Extension project. The Council responded to these types of comments by noting that the purpose and need had been studied extensively, and that the proposed BLRT Extension project best meets the transportation goals and objectives (for example: more travel choices, faster travel times, connections to activity centers, supporting economic development) while minimizing impacts.
- Related to the fiscal effects and schedule
  - Several commenters questioned the cost of the proposed BLRT Extension project, especially when compared to other transportation options such as highways. The Council responded to these types of comments by informing the commenter of the location of cost information in the Draft EIS, demonstrating that the proposed BLRT Extension project meets federal cost criteria for these types of projects, and that one of the key purposes is to provide a transportation option that is viable for transit-dependent populations.
- Related to NEPA process and public involvement
  - Several commenters stated that not enough time was available to review the Draft EIS. The Council responded to these types of comments by confirming that the Draft EIS notification of availability and comment period followed the legal requirements.
  - Several commenters stated that they felt public opinion was being ignored. The Council responded to these types of comments by directing commenters to **Chapter 9** of the Draft and Final EIS documents and to the website for the proposed BLRT Extension project, where a summary of the public outreach events is provided. The Council also noted the community representation on the committees (CAC, BAC, and CMC) for the proposed BLRT Extension project, and how public comments were brought forth by community representatives for consideration in the project development process.

- Related to social and economic effects, including economic and business impacts, right-of-way, and safety and security
  - Several comments were received regarding property values; many were concerned that the proposed BLRT Extension project would reduce the value of their homes. The Council responded to these types of comments by noting that a variety of market conditions affect property values, and that the impacts of a specific LRT project on property values are difficult to conclusively assess. However, a study of property values along the existing Blue Line LRT (formerly known as the Hiawatha LRT) corridor indicated that a general increase in property values occurred beyond that attributable to broader market forces.
  - Several comments were received regarding the potential for the proposed BLRT Extension project to split connections within and between communities. The Council responded to these types of comments by directing people to review **Section 4.2**, which discusses community cohesion. The Council also noted that the pedestrian crossing improvements and trail enhancements that are part of the proposed BLRT Extension project would result in better connections across the corridor and between neighboring communities.
  - Several comments were received indicating concern about the loss of homes and/or businesses. The Council responded to these types of comments by indicating that preliminary design efforts have resulted in a significant reduction in acquisitions. The Final EIS documents 14 total acquisitions; 1 undeveloped residential property and 13 commercial/industrial properties.
  - Several comments were received regarding concerns about crime, safety, and security. The Council responded to these types of comments by indicating that **Section 4.7** addresses safety and security. Safety for rail users, area residents, local pedestrians and bicyclists, operators, and vehicle occupants is an important consideration for the proposed BLRT Extension project. The framework for ensuring the safety of these groups will be established through conformance with the Council's Safety and Security Management Plan and the Met Transit Security and Emergency Preparedness plan. Proposed BLRT Extension project operations in conformance with these plans will necessarily be closely coordinated with local area law enforcement, medical, fire, transportation, and other organizations with related emergency responsibilities within the proposed corridor.
  - Several comments were received regarding impacts to and benefits for environmental justice communities (minority and low-income populations); many of these focused on a perceived lack of transit service to North Minneapolis. The Council responded to these types of comments by noting how the Van White Boulevard, Penn Avenue, and Plymouth Avenue stations would serve North Minneapolis communities without the extensive residential and business acquisitions, parking, and traffic impacts of the D2 (Penn Avenue) alignment. The Council also noted that a bus rapid transit line is being developed that would provide additional service to North Minneapolis residents without the extensive social, economic, and environmental impacts of the D2 alignment.

- Related to environmental effects, including water resources, wetlands, species and habitat, air quality, and Section 4(f) properties
  - Several comments were received regarding concerns about impacts to wetland and water resources. The Council responded to these types of comments by indicating that water resource impacts associated with the proposed BLRT Extension project were considered in relation to the extensive residential and business impacts along the D2 (Penn Avenue) alignment. While the proposed BLRT Extension project has greater water resource impacts than the D2 alignment, the proposed BLRT Extension project had fewer overall social, economic, and environmental impacts. In addition, preliminary design efforts on the proposed BLRT Extension project have reduced the amount of water resource impacts from what was reported in the Draft EIS.
  - Several comments were received regarding impacts to wildlife and wildlife habitat. The Council responded to these types of comments by indicating that the proposed BLRT Extension project includes mitigation commitments to address impacts to terrestrial and aquatic habitat. Terrestrial habitat mitigation will be accomplished through revegetation of areas not permanently incorporated into the proposed BLRT Extension project. Aquatic habitat will be mitigated through the creation of wetland mitigation sites and purchase of wetland credits. Wetland mitigation is anticipated to be completed at a 2 (mitigation acreage) to 1 (impact acreage) ratio, so no net loss of aquatic habitat would result.
  - Several comments expressed concerns about air quality during proposed BLRT Extension project construction and operation. The Council responded to these types of comments by noting the construction-phase air quality mitigation measures (avoiding idling of construction equipment, use of water trucks to reduce particulate matter, and similar methods). No operating-phase air quality impacts would occur.
  - Several comments expressed concerns about impacts to park property adjacent to the proposed BLRT Extension project, especially Theodore Wirth Regional Park and Sochacki Park. The Council responded to these comments by noting how Council staff coordinated closely with staff from MPRB, the Three Rivers Park District, and the cities along the corridor to develop designs that minimized impacts to park property, and to identify opportunities to mitigate impacts to park features or enhance park features. Revegetation, aesthetic design details, and new or improved trail connections were highlighted as examples of mitigation and/or enhancements.
- Related to noise and vibration
  - Several commenters were concerned about the impacts of noise and vibration on homes and other resources along the proposed BLRT Extension project corridor. The Council responded to these types of comments by providing the results of noise and vibration analyses, and the potential mitigation options that would be implemented in specific areas of impact.

- On various alternatives, engineering, and design elements including alignments, the Operations and Maintenance Facility (OMF), and station(s)
  - Several comments were received indicating a preference for the D2 (Penn Avenue) alignment over the proposed BLRT Extension project. The Council responded to these comments by highlighting the key factors that were used to make the decision on the proposed BLRT Extension project alignment. These factors were primarily the extent of impacts to homes, businesses, parking, and traffic along Penn Avenue, and the fact that these impacts would be borne primarily by environmental justice populations.
  - Several comments were received regarding the location of the OMF. The Council responded to these types of comments by reviewing the process by which the OMF alternatives were originally selected, and by highlighting the process by which the current OMF location (101st Avenue) was refined to avoid park and wetland impacts.
  - Several comments were received regarding the need for stations at Plymouth Avenue and/or Golden Valley Road. The Council responded to these types of comments by summarizing the process by which both station locations were evaluated in coordination with stakeholders, especially the cities of Golden Valley and Minneapolis, and MPRB. The Council noted that the result of this process was the inclusion of both stations in the proposed BLRT Extension project scope by the Corridor Management Committee.
- On transportation system effects
  - Several comments were received regarding the impacts to pedestrian and bicycle traffic, especially along Olson Memorial Highway. The Council responded to these types of comments by highlighting the focused effort of the Council and stakeholders on developing safe pedestrian and bicycle facilities at and near stations and crossings. Specific to Olson Memorial Highway, the Council indicated that **Chapter 2** of the Final EIS summarizes the process that the Council conducted with the city of Minneapolis on the design of Olson Memorial Highway. While a six-lane roadway will be maintained, the lane widths will be reduced to 11 feet to accommodate pedestrian crossing length. The design speed and posted speed limit will be reduced to 35 miles per hour. Existing sidewalks will be replaced with 6-foot-wide sidewalks on the north and south sides of the highway. Pedestrian refuges will be added in the median of the highway. ADA-compliant pedestrian crossings of Olson Memorial Highway will be facilitated by proposed signalized intersections at Bryant Avenue North, Van White Boulevard, Humboldt Avenue, James Avenue, Morgan Avenue, and midblock crossings between Newton Avenue and Oliver Avenue, Penn Avenue, Russell Avenue, and Thomas Avenue. The proposed BLRT Extension project will provide space on the north side of Olson Memorial Highway for a 10-foot two-way cycle track (to be constructed by others) between Thomas Avenue and Van White Memorial Boulevard. The proposed BLRT Extension project will construct a multi-use trail on the north side of the reconstructed westbound Olson Memorial Highway bridge. These proposed BLRT Extension project elements will enhance the safety of pedestrian and bicycle traffic in the Olson Memorial Highway corridor.

- Several comments were received regarding concerns about impacts to vehicular traffic at intersections along and adjacent to the proposed BLRT Extension project corridor. The Council responded to these types of comments by referring to the traffic analysis presented in **Section 3.3**, and noting that impacts to traffic operations would be mitigated through intersection improvements, and the results were that degradation of traffic operations was not anticipated.

All substantive comments received during the Draft EIS comment period and responses to the comments are provided in **Appendix G** of this Final EIS.

9.5 Permits and Approvals

Permits, approvals, or reviews required for the proposed BLRT Extension project are summarized in **Table 9.5-1**. The Council continues to work with the applicable agencies on the permits, approvals, and reviews required for the proposed BLRT Extension project.

Table 9.5-1. Permits and Approvals Required

Permit or Decision	Jurisdiction(s)
Federal Approvals	
Record of Decision	Federal Transit Administration
Section 4(f) Determination	Federal Transit Administration
Section 6(f) Conversion Approval	National Park Service
Section 106 Memorandum of Agreement	Federal Transit Administration, Advisory Council on Historic Preservation
Section 404 Wetland Permit	US Army Corps of Engineers
Section 7 Concurrence	US Fish and Wildlife Service
Letter of No Objection for Use within Runway Protection Zone	Federal Aviation Administration
Letter of Map Revision Approval	Federal Emergency Management Agency
State Approvals	
Section 106 Memorandum of Agreement	State Historic Preservation Office
Right-of-Way Permit	Minnesota Department of Transportation
Application for Drainage Permit	Minnesota Department of Transportation
Application for Utility Accommodation on Trunk Highway Right-of-Way	Minnesota Department of Transportation
Application for Miscellaneous Work on Trunk Highway Right-of-Way	Minnesota Department of Transportation
National Pollutant Discharge Elimination System Permit	Minnesota Pollution Control Agency
Section 401 Water Quality Certification	Minnesota Pollution Control Agency
Public Waters Wetland Permit	Minnesota Department of Natural Resources
Water Appropriation Permit	Minnesota Department of Natural Resources
Grant-funded Park Conversion Approval	Minnesota Department of Natural Resources

Table 9.5-1. Permits and Approvals Required

Permit or Decision	Jurisdiction(s)
Response Action Plan	Minnesota Pollution Control Agency
Noxious Weed Management Plan	Minnesota Department of Agriculture
Local Approvals	
EIS Adequacy Determination	Metropolitan Council
Road Crossing/Right-of-Way Permits	Hennepin County and cities of Brooklyn Park, Crystal, Golden Valley, Maple Grove, Minneapolis, and Robbinsdale
Utility permits	Cities of Brooklyn Park, Crystal, Golden Valley, Maple Grove, Minneapolis, and Robbinsdale
Building permits	Cities of Brooklyn Park, Crystal, Golden Valley, Maple Grove, Minneapolis, and Robbinsdale
Sediment- and erosion-control permits	Cities of Brooklyn Park, Crystal, Golden Valley, Maple Grove, Minneapolis, and Robbinsdale; Mississippi Watershed Management Organization; Bassett Creek Watershed Management Commission; and Shingle Creek and West Mississippi Watershed Management Organization
Wetland Conservation Act Approval	Cities of Crystal, Golden Valley, and Minneapolis; Bassett Creek Watershed Management Commission; Shingle Creek Watershed Management Commission; and West Mississippi Watershed Management Commission

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10 Financial Analysis

This chapter summarizes the financial analysis for the No-Build Alternative and the proposed METRO Blue Line Light Rail Transit (BLRT) Extension project. This chapter also describes the local funding partners and the capacity of the partners to fund the proposed BLRT Extension project. This chapter includes the following sections:

- **Section 10.1** – Capital Funding Strategy
- **Section 10.2** – Operating Funding Strategy
- **Section 10.3** – Potential Responses to Operating Shortfalls

10.1 Capital Funding Strategy

This section describes the basis of the capital cost estimate, the methodology used to develop the capital cost estimates, and the year-of-expenditure cost estimates and funding plan for the proposed BLRT Extension project.

10.1.1 Basis of the Capital Cost Estimate

The capital cost estimate included in this financial analysis for the proposed BLRT Extension project was developed by the Metropolitan Council (Council) based on the Preliminary Engineering Plans and shown in the Federal Transit Administration (FTA) *Standard Cost Categories Workbook for New Starts Projects* (see *Financial Analysis in Support of the FEIS* in **Appendix F** .

10.1.2 Methodology

The year-of-expenditure (YOE) capital cost estimates were developed by the Council using the FTA Standard Cost Category (SCC) workbook.[1] The YOE capital cost estimates for the light rail components of the proposed BLRT Extension project are based on quantity measurements from the Preliminary Engineering Plans and unit costs derived from local and national sources. The YOE capital cost estimate is based on an annual inflation rate of 3 percent (see *Financial Analysis in Support of the FEIS* in **Appendix F** for the proposed BLRT Extension project base year cost estimates).

10.1.3 Schedule

The base-year costs (2015) were inflated to YOE dollars based on the current project schedule. Specifically, 2018 is identified as the start year of heavy construction and 2021 as the start year of revenue operations.

[1] See www.fta.dot.gov/12305_15612.html.

10.1.4 Year-of-Expenditure Capital Cost Estimates

Capital cost estimates for the proposed BLRT Extension project are in YOE dollars and shown in **Table 10.1-1**. The cost estimates will be refined during the engineering phase. A description of the plan for funding the proposed BLRT Extension project operations, which will be funded separately, is provided in **Section 10.2**.

Table 10.1-1. YOE Capital Cost Estimate for the Proposed BLRT Extension Project, by FTA Standard Cost Category

Project Element	Cost Estimate (millions)
Guideway and track elements	$333.775
Stations, stops, terminals, intermodal	74.875
Support facilities: yards, shops, administration buildings	85.865
Sitework and special conditions	173.267
Systems	191.616
Right-of-way, land, existing improvements	66.801
Vehicles	136.245
Professional services	245.783
Unallocated contingency	158.204
Finance	30.000
Total	**$1,496.431**

Source: *Financial Analysis in Support of the FEIS* (Council, 2016)

10.1.5 Capital Funding

The Council's *2040 Transportation Policy Plan* (*2040 TPP*) is based on the assumption that, for rail projects, the region will secure federal New Starts funds for 49 percent of the cost. For the proposed BLRT Extension project, the remaining 51 percent of the cost is proposed to be funded from the following sources: 10 percent from the state of Minnesota, 31 percent from the Counties Transit Improvement Board (CTIB), and 10 percent from the Hennepin County Regional Railroad Authority (HCRRA) (see **Table 10.1-2**).

Table 10.1-2. Proposed BLRT Extension Project Capital Cost Funding by Source (YOE)

Funding Source	Percentage	Capital Cost (millions)
FTA	49%	$733.251
State of Minnesota	10%	149.643
CTIB	31%	463.894
HCRRA	10%	149.643
Total	**100%**	**$1,496.431**

Following is additional information on funding from New Starts, the state of Minnesota, CTIB, and HCRRA.

10.1.5.1 Federal Section 5309 Capital Investment Grant Program

The Council intends to seek Capital Investment Grant (CIG) Program funding from FTA for one or more of the alternatives examined in this National Environmental Policy Act (NEPA) document. The CIG Program, more commonly known as the New Starts, Small Starts, and Core Capacity program, involves a multi-year, multi-step process that project sponsors must complete before a project is eligible for funding. The steps in the process and the basic requirements of the program can be found on FTA's website at www.fta.dot.gov.

FTA must evaluate and rate proposed projects seeking funding from the CIG Program under a set of project justification and local financial commitment criteria specified in law. The criteria evaluate the merits of the project and the project sponsor's ability to build and operate it as well as the existing transit system. FTA assigns ratings from low to high based on information that project sponsors submit on the project cost, benefits, requested amount of CIG Program funds, and overall financial plan. Projects must receive a medium or better overall rating to advance through the steps in the process and be eligible for funding from the program.

As projects proceed through the steps in the process, information concerning costs, benefits, and impacts is refined, and the ratings are updated to reflect new information. The Fixing America's Surface Transportation (FAST) Act requires FTA to evaluate and rate the project for federal funding after the completion of the NEPA process should the Council request a New Starts funding recommendation for the project or request entry into the Engineering phase of the New Starts process.

In the third quarter of calendar year 2016, the Council plans to submit to FTA the necessary information to obtain a project rating and to enter the engineering phase of the New Starts process. The Council anticipates receiving a project rating in the first quarter of calendar year 2017. The proposed BLRT Extension project entered New Starts Project Development in August 2014. Approval into the Engineering phase of the New Starts process is anticipated in early 2017, which would translate into a full funding grant agreement in early 2018. Under the proposed Full Funding Grant Agreement, FTA's project cost share would be about $733 million.

10.1.5.2 Counties Transit Improvement Board

The principal local funding source for the proposed BLRT Extension project, and a source of transit funding stability in the region, is CTIB. CTIB was authorized by the Minnesota legislature in 2008. After the legislation was enacted, boards of eligible counties in the metropolitan region were required to vote whether to levy the tax and join the Joint Powers Board. Anoka, Dakota, Hennepin, Ramsey, and Washington counties voted to join the Board, thus fulfilling the legislative requirement that at least two counties enact the tax in order to create the Board. The Board's membership includes representatives of each member county as well as a representative of the Council. The anticipated CTIB BLRT Extension project cost share is estimated at $465 million, representing 31 percent of the proposed BLRT Extension project cost.

10.1.5.3 State of Minnesota

The state is currently anticipated to fund about 10 percent of the proposed BLRT Extension project cost through a combination of a new transit sales tax, bonding, or appropriations. The Council anticipates that the bonds will be general-obligation debt. The state of Minnesota has earned the following ratings from the three rating services: Aa1 from Moody's, AAA from Standard & Poor's, and AAA from Fitch. The anticipated state of Minnesota proposed BLRT Extension project cost share is approximately $150 million.

10.1.5.4 Regional Railroad Authorities

Regional Railroad Authorities (RRAs) are established as political subdivisions of the state under Minnesota Statute 398A. RRAs have powers similar to the county for the specific purpose of providing for the planning, preservation, and improvement of rail service including passenger rail service and to provide for the preservation of abandoned rail right-of-way for future transportation uses. RRAs have the authority to levy a property tax up to 0.04835 percent of the market value of all taxable property within the county. RRAs are also authorized to issue debt under chapter 398A.

HCRRA obtains its funds from a property tax levied under the authority of Minnesota Statute 398A, plus interest earned on balances. The Council currently anticipates that HCRRA will fund about 10 percent of the proposed BLRT Extension project cost. This tax is distinct from the Council's property tax authority. The tax was levied in the amount of $30,000,000 for the 2016 budget year, which is considerably less than the levy limit established in Minnesota Statute 398A, which would yield about $70,500,000 per year. The anticipated HCRRA cost share of the proposed BLRT Extension project is about $150 million.

10.2 Operating Funding Strategy

This section summarizes the proposed BLRT Extension project's estimated operations and maintenance (O&M) costs and proposed revenues.

10.2.1 Operations and Maintenance Costs

2040 No-Build Alternative and proposed BLRT Extension project O&M cost estimates for Metro Transit bus and light rail service were generated by the Council by using the same methodology in the *Financial Analysis in Support of the FEIS* (Council, 2016).

Table 10.2-1 presents No-Build Alternative and proposed BLRT Extension project operating and maintenance cost estimates in 2040 dollars based on an inflation rate of 3.15 percent. In 2040 dollars, the total annual incremental system-wide O&M cost with the proposed BLRT Extension project is estimated to be $50 million more than it would be with the No-Build Alternative, increasing from about $1,392 million to $1,442 million (see **Table 10.2-1**). The proposed BLRT Extension project accounts for about $47 million of the estimated $50 million incremental increase in 2040, while other[2] transit services and providers account for about $3 million.

Table 10.2-1. Annual System-wide O&M Costs in 2040 for the No-Build Alternative and Proposed BLRT Extension Project

2040 dollars, in millions

Metro Transit/Metropolitan Transportation Services[1]	No-Build Alternative	Proposed BLRT Extension Project
Light rail	$191.931	$239.206
Bus	1,012.924	1,015.857
Northstar	39.859	39.859
Paratransit (Metro Mobility and Transit Link)	147.322	147.322
Total (all modes)	**$1,392.036**	**$1,442.244**

Source: *Financial Analysis in Support of the FEIS*, January 2016

[1] Includes all Twin Cities suburban transit authorities and contracted providers.

[2] Other transit services and providers include suburban Twin Cities carriers that have chosen not to participate in the Metro Transit network. The largest of these providers are Minnesota Valley Transit Authority, Maple Grove Transit, and Southwest Transit.

10.2.2 Operating Revenues

Operating revenues come from various sources as described below and summarized in Table 10.2-2. The transit operating revenues with the proposed BLRT Extension project would include fare revenues, state general funding, and CTIB funding. The funding for the O&M costs for the proposed BLRT Extension project comes first from the fare revenues; the remaining costs are split 50 percent state general funds and 50 percent CTIB. Minnesota Sessions Laws (2008) Section 473.4051 subd. 2 states that, after operating revenue and federal money have been used to pay for light rail operations, 50 percent of the remaining balance must be paid by the state of Minnesota (Minnesota Session Laws, 2008, Regular Session, Chapter 365 – House File No. 4072). State funding for transit operations is derived from general fund appropriations and is appropriated by the state legislature on a biennial basis.

Table 10.2-2. Annual System-wide O&M Revenue in 2040: No-Build Alternative and Proposed BLRT Extension Project

2040 dollars, in millions

Metro Transit/Metropolitan Transportation Services/SW Transit[1]	No-Build Alternative	Proposed BLRT Extension Project
Cost		
Total O&M cost	$1,392.036	$1,442.244
Revenue		
Fares	$337.998	$354.544
Motor vehicle sales tax	804.036	804.036
CTIB	86.722	101.813
Other revenue	17.112	17.659
Local operating assistance	5.254	5.254
Federal operating assistance	15.245	15.245
State operating assistance	206.460	221.551
Interest on operation balance	1.133	1.133
Total revenue	**$1,473.960**	**$1,521.235**

Source: *Financial Analysis in Support of the FEIS* (Council, 2016)

Revenue sources for the proposed BLRT Extension project are unchanged from those presented for Southwest Light Rail Transit (SWLRT) Build in the *SWLRT Financial Analysis Report* and include a full-build scenario that includes SWLRT, the proposed BLRT Extension project, and Orange Line bus rapid transit. Note that O&M revenues exceed O&M costs. Revenues for the Orange Line are included in this analysis, but the O&M costs for the Orange Line are unknown and not included.

[1] Includes all Twin Cities suburban transit authorities and contracted providers.

10.2.2.1 Fare and Motor Vehicle Sales Tax Revenues

Fare revenues are received from passengers for the use of the service. Ridership is anticipated by the Council to grow along with increasing population and employment in the proposed BLRT Extension project corridor. The average operating revenue per passenger, including cash fare and convenience fare such as 31-day pass revenue, was $0.96 for a light rail transit (LRT) passenger, $3.04 for a Northstar commuter rail line passenger, and $1.14 for a bus passenger (including express bus premiums) in 2014. The Council's policy is to increase fares by 10 percent whenever inflating costs cause the bus recovery ratio to drop below 28.5 percent.[3] In October 2008, the Council implemented a fare increase in accordance with this policy; the base fare was increased to $1.75, where it is today.

In 2040, the estimated system-wide fare revenue is about $355 million. Motor vehicle sales tax (MVST) revenues are the largest source of local transit operating funds, accounting for about 36 percent of operating revenues in 2014. This financial analysis uses an average annual increase of 4.90 percent to project MVST revenues between 2015 and 2040. In 2040, the estimated MVST revenue is $804 million.

10.2.2.2 Counties Transit Improvement Board Operating Funding

CTIB has agreed to provide 50 percent of the net operating assistance required for the proposed BLRT Extension project, METRO Green Line, and Southwest LRT (METRO Green Line Extension), and 41.95 percent for the Northstar commuter rail line that began revenue service in November 2009. In 2040, the estimated CTIB revenue is $102 million.

10.2.2.3 Other Transit-related Operating Revenue

Historically, the Council has received other transit-related revenues that are generated by or for transit operations, which consist of advertising revenue, contract revenue, and other miscellaneous sources. These other transit-related revenues are projected to grow over time in proportion to the projected growth in transit operations. In 2040, the estimated revenue received from other transit-related services and operations is $18 million.

10.2.2.4 State Operating Revenue

State funding for transit operations is derived from general fund appropriations and is appropriated by the state legislature on a biennial basis. In 2040, the estimated revenue from the state of Minnesota is $222 million.

[3] Farebox recovery ratio is the fraction of operating expenses that are met by the fares paid by passengers. It is computed by dividing the system's total fare revenue by its total operating expenses.

10.2.2.5 Federal Operating Revenue (FTA Section 5307 Urbanized Area Formula Grants)

Federal operating revenue (FTA Section 5307 urbanized area formula grants) is based on various demographic statistics, level of service, ridership, and operating cost variables. Factors in the formula that allocate grants to urbanized areas were estimated by the Council based on annual growth in total Section 5307 funds from 2013 to 2015 under the Moving Ahead for Progress in the 21st Century Act (MAP-21), FTA's prior authorizing legislation.

The FAST Act limits the application of these Section 5307 grants to capital purposes, but an exception is made for maintenance expenses that protect the system's assets in the operating budget. One percent of these grants must be applied for "enhancements" as defined in the statute. The FAST Act is the new authorizing legislation for surface transportation funding including transit in the United States. FTA Section 5307 urbanized area formula grants are expected by the Council to increase slightly under the new legislation. The financial plan assumes that these grants are applied to preventative maintenance or to the agency-wide capital plan. In 2040, the estimated revenue from the FTA Section 5307 urbanized area formula grant is $15 million.

10.2.2.6 Interest Income

Interest income is derived from the interest earned on available funds at existing interest income rates and is expected by the Council to generate over $1 million in 2040.

10.3 Potential Responses to Operating Shortfalls

Short-term shortfalls, forecasted for selected years in the cash flow projections, are covered by the operating reserves. In the longer term, the Council relies on the MVST growth and its fare policy. Currently, nearly 46 percent of the operating funds of the Council's Transportation Division are obtained from the statewide MVST. MVST is the Council's single largest source of transit operating funding. The baseline forecast assumes significant real growth over the long run from this source as a result of passage of the November 2006 referendum (which dedicated the MVST for transportation investment purposes).

The MVST revenues are projected by the Council to increase at a rate of 4.90 percent per year in the long run. This forecast is viewed by the Council as conservative for financial planning purposes, since historical-trended MVST receipts for the period of 1973 to 2014 averaged 5.10 percent. The fare policy is an even stronger guarantee of sustainability because it ensures that passenger revenue will grow with operating costs. The Council had its last fare increase in 2008. This policy applied recommends a 10-percent increase in average fares whenever the bus farebox recovery ratio declines to 28.5 percent.

Several sources of supplementary operating funding could be made available to the Council's Transportation Division if MVST revenues do not grow as expected. These include:

- **Metropolitan Council Transportation Division Operating Reserve.** The Council Transportation Division's reserve at the end of 2014 was $120.19 million and could be used to cover any deficits that might arise with or without the proposed BLRT Extension project in place.
- **State General Funds/State Commitments.** The state's commitment to transit in the metro region, and its specific commitment to developing the proposed BLRT Extension project, can be regarded as an opportunity for financial risk management of operations. State general fund operating subsidies have historically grown more rapidly than inflation in recent years. The state general fund appropriations for transit have also grown at a rate greater than inflation. However, in an attempt to be conservative, the state operating funds in the baseline capacity analysis are anticipated by the Council to increase slowly from their 2015–2016 level at 3.15 percent proportionately with inflation.
- **Moderate Additional Fare Increases.** Under the baseline projection by the Council, a fare increase was implemented in 2008. Fare increases could be accelerated if needed.[4] Transit fare increases typically result in increased fare revenues, but decreased ridership.
- **Apply New Operating Funding Sources.** This could include the implementation of new or expanded non-farebox revenue sources (for example, expanded advertising or joint development).
- **Reduce Service.** Reduce the length or number of daily trips, weekend and seasonal/holiday service, or the length of trains.
- **Apply New, Non-operating Sources.** Apply additional CTIB operating assistance if available and develop supplemental sources of state or other revenues.

The stability of the Council's financial environment will permit managing the long-term maintenance and operation of the proposed BLRT Extension project's service in a well-planned, deliberate, and financially prudent manner.

[4] The Council periodically implements fare increases so that the system-wide fare recovery ratio remains fairly stable as a percentage of the total system costs—currently at about 25 percent of system-wide costs. The *2040 TPP* assumes that over time fares will continue to grow with expenses (approximately 2.5 percent annually) to maintain a constant system-wide fare recovery ratio of 25 percent (*2040 TPP*, 4.10 Transportation Finance, page 4).

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11 Joint Development

This chapter describes the long-term direct and potential indirect impacts, and short-term direct and potential indirect impacts, of the proposed METRO Blue Line Light Rail Transit (BLRT) Extension project with the proposed Robbinsdale Station Joint Development project.

This chapter compares the effects of the proposed BLRT Extension project both with and without the proposed Robbinsdale Station Joint Development project. Included is an overview of the regulatory context and methodology used for the analysis, in addition to descriptions of the proposed Robbinsdale Station Joint Development project, anticipated environmental consequences, and mitigation measures.

The discussion of impacts in this chapter assumes the construction of the proposed BLRT Extension project as described in **Chapter 2** of this Final Environmental Impact Statement (Final EIS).

11.1 Regulatory Context and Methodology

This section describes the regulations affecting the evaluation and implementation of a joint development project that would use federal funds when it is associated with a larger overall project that would also use federal funds. This section also briefly describes how the Metropolitan Council (Council) assessed the impacts of the proposed Robbinsdale Station Joint Development project in this chapter.

Technical Advisory T6640.8A, Guidance for Preparing and Processing Environmental and Section 4(f) Documents (FHWA, 1987), provides guidance regarding the identification and discussion of joint development project measures that will preserve or enhance an affected community's social, economic, environmental, and visual values. In line with this guidance, this section discusses a proposed project that might be developed jointly with the proposed BLRT Extension project. *Joint development* is a term which, in the context of a federally assisted transportation project, encompasses potential development and expected impacts that are also addressed elsewhere in this Final EIS.

The Federal Transit Administration (FTA) Circular *Federal Transit Administration Guidance on Joint Development* (FTA C 7050.1) (FTA, 2014) provides guidance to recipients of FTA financial assistance on how to use FTA funds or FTA-funded real property for joint development projects. Although this is not within the purview of the National Environmental Policy Act to address, it is worth noting here that the Circular also includes four eligibility criteria that must be met by project sponsors of an FTA-assisted joint development project in order for that joint development project to be eligible for capital funding. The four criteria are economic benefit, transit benefit, revenue, and tenant contribution.

The Council's analysis of the proposed Robbinsdale Station Joint Development project in this chapter is based on the assessment of impacts of the proposed BLRT Extension project with the proposed Robbinsdale Station Joint Development project compared to the impacts of the proposed BLRT Extension project without the proposed Robbinsdale Station Joint Development project. The methodologies for the environmental categories addressed in this chapter are described in the

corresponding regulatory context and methodology sections of the environmental categories included in **Chapters 3, 4, 5, 7, and 8** of this Final EIS.

The proponent of any joint development project associated with the proposed BLRT Extension project would need to successfully complete appropriate state environmental permitting processes. The environmental review included in this chapter relates only to the parcels of property that would contain the proposed Robbinsdale Station Joint Development project. The Robbinsdale Station Joint Development project proposes the incorporation of a mixed-use structure that includes retail space, a medical clinic, and residential units on the existing 1.4-acre footprint of the Robbinsdale Station.

11.2 Joint Development Project Description

Table 11.2-1 summarizes the elements of the proposed BLRT Extension project without and with the proposed Robbinsdale Station Joint Development project. The scope of the proposed Robbinsdale Joint Development project is not fully developed, and a cost estimate is not yet available. The Council anticipates that the proposed Robbinsdale Joint Development project would be funded through a mix of federal and local funds and/or private funds.

Table 11.2-1. Proposed BLRT Extension Project Elements without and with the Proposed Robbinsdale Station Joint Development Project

Project Element	Without Joint Development Project	With Joint Development Project[1]
Site area	1.4 acres	1.4 acres
Transit use	Light rail transit (LRT) station/park-and-ride lot/bus turn-around/metro transit staff relief area	LRT station/park-and-ride lot/bus turn-around/metro transit staff relief area
Retail use	None	13,000 square feet
Medical use	None	9,000 square feet
Residential use	None	16 units (28,000 square feet)
Park-and-ride parking	Structured – 550 spaces	Structured – 550 spaces
Retail parking	0 spaces	Structured – 33 spaces
Medical parking	0 spaces	Structured – 30 spaces
Residential parking	0 spaces	Structured – 16 spaces

[1] All quantities are approximate and could change as the design advances for the proposed Robbinsdale Station Joint Development project.

This Final EIS assesses the proposed joint development project at the Robbinsdale Station location, described below.

Proposed BLRT Extension Project without the Proposed Robbinsdale Joint Development Project. Under the proposed BLRT Extension project without the proposed Robbinsdale Station Joint Development project, the Robbinsdale Station site would include construction of a 550-space structured park-and-ride facility, a bus stop/layover, and a passenger drop-off area. See **Chapter 3, Transportation Analysis, Figure 3.4-7** for an illustration of the proposed BLRT Extension project, Robbinsdale Station site without the proposed Joint Development component.

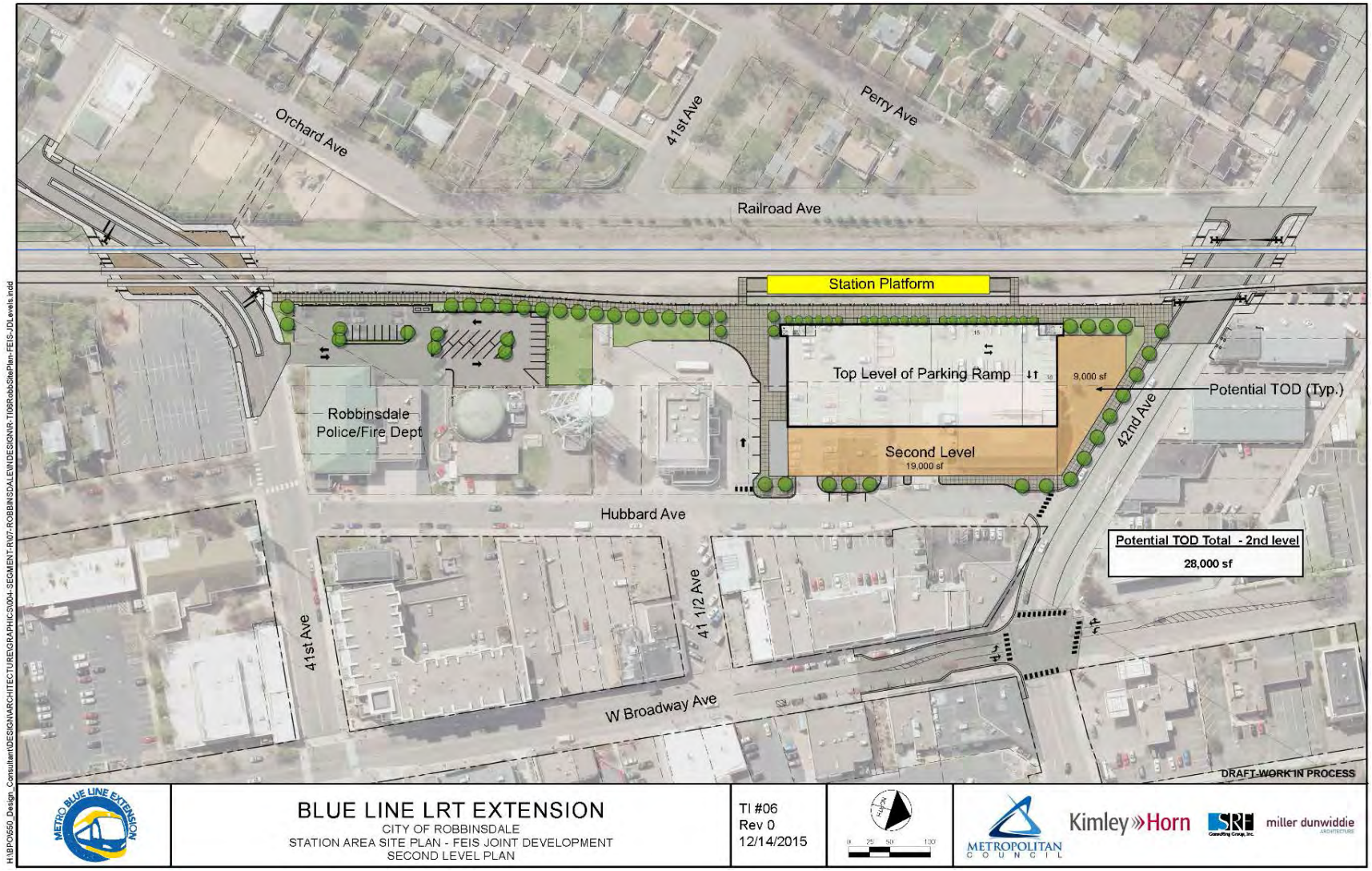
Proposed BLRT Extension Project with the Proposed Robbinsdale Station Joint Development Project. See **Figures 11.2-1 and 11.2-2** for illustrations of the proposed Robbinsdale Station Joint Development project superimposed on the proposed BLRT Extension project. Under the proposed BLRT Extension project with the proposed Robbinsdale Station Joint Development project, 550 park-and-ride spaces in a structured parking lot, as well as a bus stop/layover and a passenger drop-off area, would be provided (that is, the same features associated with the proposed BLRT Extension project). The proposed Robbinsdale Station Joint Development project would provide an additional 79 parking spaces. The additional parking spaces would be located below the mixed-use building, and would be available for medical, residential, and retail users. The proposed Robbinsdale Station Joint Development project would add a multi-story mixed-use retail, medical clinic, and residential space in a liner building surrounding the 550-space park-and-ride. The proposed Robbinsdale Station Joint Development project would generate revenue for Metro Transit through legal agreements with private parties.

The proposed Robbinsdale Station Joint Development project is a means to achieve economic growth and other local land-use and economic development goals, such as increasing the area's tax base, retaining and creating new jobs, and establishing a mix of uses around the proposed light rail station area. Additionally, an increase in density around the proposed light rail station would likely increase transit ridership.

Several factors would affect the schedule for implementing the proposed Robbinsdale Station Joint Development project. First, the proposed Robbinsdale Station Joint Development project would be implemented only after FTA issues the project's Record of Decision. Second, final approval of the proposed Robbinsdale Station Joint Development project and its inclusion in the proposed BLRT Extension project would occur with FTA's approval of a Full Funding Grant Agreement for the proposed BLRT Extension project and FTA's approval of the Formal Joint Development Application.

Figure 11.2-1. Proposed Robbinsdale Station Joint Development Project – First Level

Figure 11.2-2. Proposed Robbinsdale Station Joint Development Project – Second Level



11.3 Affected Environment

The parcel of property in the City of Robbinsdale where the Robbinsdale Station Joint Development project is proposed to be located has a zoning classification of DD2-Downtown District (a pedestrian- and transit-oriented mixed-use area). The site contains two businesses, a grocery store and an audio/visual rental/repair/installation business. Acquisition of these properties is proposed as part of the proposed BLRT Extension project. No additional acquisitions are required to implement the proposed Robbinsdale Station Joint Development project. The location is bounded by 42nd Avenue to the north, Hubbard Avenue to the east, the Hubbard Market Place site to the south, and railroad tracks to the west.

11.4 Environmental Consequences

This section identifies and compares the long-term and short-term direct and indirect impacts that the Council anticipates from the proposed BLRT Extension project with and without the proposed Robbinsdale Station Joint Development project. *Direct impacts* are defined as those reasonably foreseeable impacts that occur at the same time and place as the proposed action, while *indirect impacts* are defined as impacts that occur later in time or farther removed in distance from the proposed action, but that are still reasonably foreseeable (40 CFR Part 1508.8). *Long-term impacts* are those that would continue to occur after construction is complete, while *short-term impacts* are those that would be temporary and that would be associated with the proposed Robbinsdale Station Joint Development project's construction activities.

Table 11.4-1 summarizes additional impacts that would occur if the proposed BLRT Extension project were to include the proposed Robbinsdale Station Joint Development project. The table is organized by the environmental categories addressed in **Chapters 3, 4, 5, 7, and 8,** which do not consider impacts of the proposed Robbinsdale Station Joint Development project. Further details on the additional impacts are in the narrative following the table.

Table 11.4-1. Summary of Impacts from the Proposed Robbinsdale Station Joint Development Project

Environmental Category[1]	Summary of Impacts[2]
Transit Conditions	Anticipated additional increase in transit use as a result of commercial, office, and residential use.
Freight Rail Conditions	None.
Vehicular Traffic	About 860 new development-generated daily trips were assumed by the station under the proposed BLRT Extension project without the proposed Robbinsdale Station Joint Development project. Since the trips estimated to be generated by the proposed Robbinsdale Station Joint Development project land uses are fewer than the 860 daily trips already included in the proposed BLRT Extension project traffic analysis, no additional trips and no additional infrastructure improvements are expected. A short-term increase in construction traffic and congestion is anticipated with the construction of the proposed Robbinsdale Station Joint Development project.
Pedestrians and Bicyclists	None.

Table 11.4-1. Summary of Impacts from the Proposed Robbinsdale Station Joint Development Project

Environmental Category[1]	Summary of Impacts[2]
Parking	Additional 79 spaces for the retail, medical clinic, and residential mixed-use space.
Aviation	None.
Land Use Plan Compatibility	None.
Community Facilities/ Community Character and Cohesion	No effect on access to community facilities. A minimal change would occur in the neighborhood's visual character with the addition of the multi-story development. The impact is not anticipated to be substantial.
Displacement of Residents and Businesses	None.
Cultural Resources	None.
Visual/Aesthetics	Addition of the multi-story buildings would affect the visual environment around the Robbinsdale Station area by adding taller and larger structures, though this impact would not be substantial. The impact of the Joint Development facility would be positive, since it would help blend the parking ramp into the visual and architectural scale of Robbinsdale's downtown.
Economic Effects	None.
Safety and Security	None.
Utilities	Additional changes to utilities are anticipated within and connecting to the proposed Robbinsdale Station Joint Development site. No adverse electromagnetic interference impacts are anticipated.
Floodplains	None.
Wetlands	None.
Geology and Soils	None.
Hazardous Materials Contamination	None.
Noise	None.
Vibration	None.
Biological Environment	None.
Water Quality and Stormwater	None.
Air Quality/Greenhouse Gas Emissions	None.
Energy	None.
Parklands, Recreation Areas, and Open Spaces	None.
Environmental Justice Compliance	No change in the finding for the proposed BLRT Extension project that the project would not result in disproportionately high and adverse impacts to environmental justice populations.

[1] The environmental categories are those assessed in **Chapters 3, 4, 5, 7, and 8** of this Final EIS.

[2] Impacts are from the proposed BLRT Extension project with the proposed Robbinsdale Station Joint Development project compared to the proposed BLRT Extension project without the proposed Robbinsdale Station Joint Development project.

11.4.1 Long-Term Direct Impacts

11.4.1.1 Land-Use Plan Compatibility

The proposed Robbinsdale Station Joint Development project is compatible with planned land use. The direct impact to land use from the proposed Robbinsdale Station Joint Development project would be construction of the two-story mixed-use building that would have about 13,000 square feet of retail use, 9,000 square feet of medical use, and 16 residential units (28,000 square feet). The proposed Robbinsdale Station Joint Development project would be built in the footprint of the Robbinsdale Station site. The land is currently zoned as downtown district. The downtown district is described in the *Robbinsdale City Code* as:

> A district to permit uses that promote conversion of existing buildings and the development of new buildings in a manner that maintains the visual character and architectural scale of existing development within the district, to promote the transformation of the downtown into an even more compact pedestrian- and transit-oriented mixed-use area.

Based on this assessment, no adverse impacts with respect to land-use plan compatibility are anticipated by the Council as result of the proposed Robbinsdale Station Joint Development project.

11.4.1.2 Economic Activity

The proposed Robbinsdale Station Joint Development project could create a small number of direct short-term jobs and additional earnings associated with the construction of the mixed-use facility and associated development. The conceptual development plan includes retail and medical clinic space, which may increase the amount of long-term jobs and earnings for the region. The increased parking and increased density and transit access could provide an economic stimulus to local retail shops as customers frequent the area.

The proposed Robbinsdale Station Joint Development project would add about 13,000 square feet of retail use, 9,000 square feet of medical clinic, and 16 residential units. The residential units would be either owner-occupied or rented. Additional uses at the proposed Robbinsdale Station Joint Development site would tend to increase site economic activity, property value, and tax collections.

The Council expects the proposed Robbinsdale Station Joint Development project to have a positive impact on the local economy through the creation of jobs, increased density, and increased transit access. Based on this assessment, no adverse impacts with respect to economic activity are anticipated by the Council as a result of the proposed Robbinsdale Station Joint Development project. Since the proposed Robbinsdale Station Joint Development project would not require any additional property acquisition, no long-term adverse impacts to property tax collections are expected.

11.4.1.3 Neighborhood and Community Impacts

The following evaluation criteria were used by the Council to analyze impacts to neighborhoods and the community:

- **Access to community facilities.** No direct impacts in access to the community facilities in Robbinsdale are anticipated.
- **Community character.** Compared to the proposed BLRT Extension project, the proposed Robbinsdale Station Joint Development project would not cause additional noise or vibration impacts. As stated in **Section 11.4.1.5**, the additional multi-story buildings associated with the proposed Robbinsdale Station Joint Development project would change the visual setting to an in-substantial extent. The impact of the proposed Robbinsdale Joint Development project would be positive, since it would help blend the parking ramp into the visual and architectural scale of Robbinsdale's downtown.
- **Community cohesion.** The proposed Robbinsdale Station Joint Development project site would not add physical barriers to neighborhood connectivity or cause adverse impacts to parking. The proposed Robbinsdale Station Joint Development project would provide a mix of uses at the site, which would be consistent with the surrounding land use.

Based on the Council's review of potential changes in access to community facilities, community character, and community cohesion, the proposed Robbinsdale Station Joint Development project would not cause adverse impacts to neighborhoods or the community.

11.4.1.4 Acquisitions and Displacements

No additional property acquisitions would occur with the proposed Robbinsdale Joint Development project.

11.4.1.5 Visual Quality and Aesthetics

A visual simulation of the site with and without the proposed Robbinsdale Station Joint Development project is provided in **Figures 11.4-1 and 11.4-2**. The proposed Robbinsdale Station Joint Development project would add multi-story structures to the landscape on a site that currently has only one-story structures. However, the proposed Robbinsdale Station Joint Development project would not result in a high degree of change to the visual environment at this location, and the changes that would occur would be compatible with the existing urban visual setting.

Figure 11.4-1. Proposed Robbinsdale Station Joint Development Project Site – Existing Conditions

DRAFT-WORK IN PROCESS

BLUE LINE LRT EXTENSION
FEIS DESIGN DOCUMENTS
SKETCHUP VIEWS
CITY OF ROBBINSDALE
VIEW EAST ALONG 42ND AVENUE

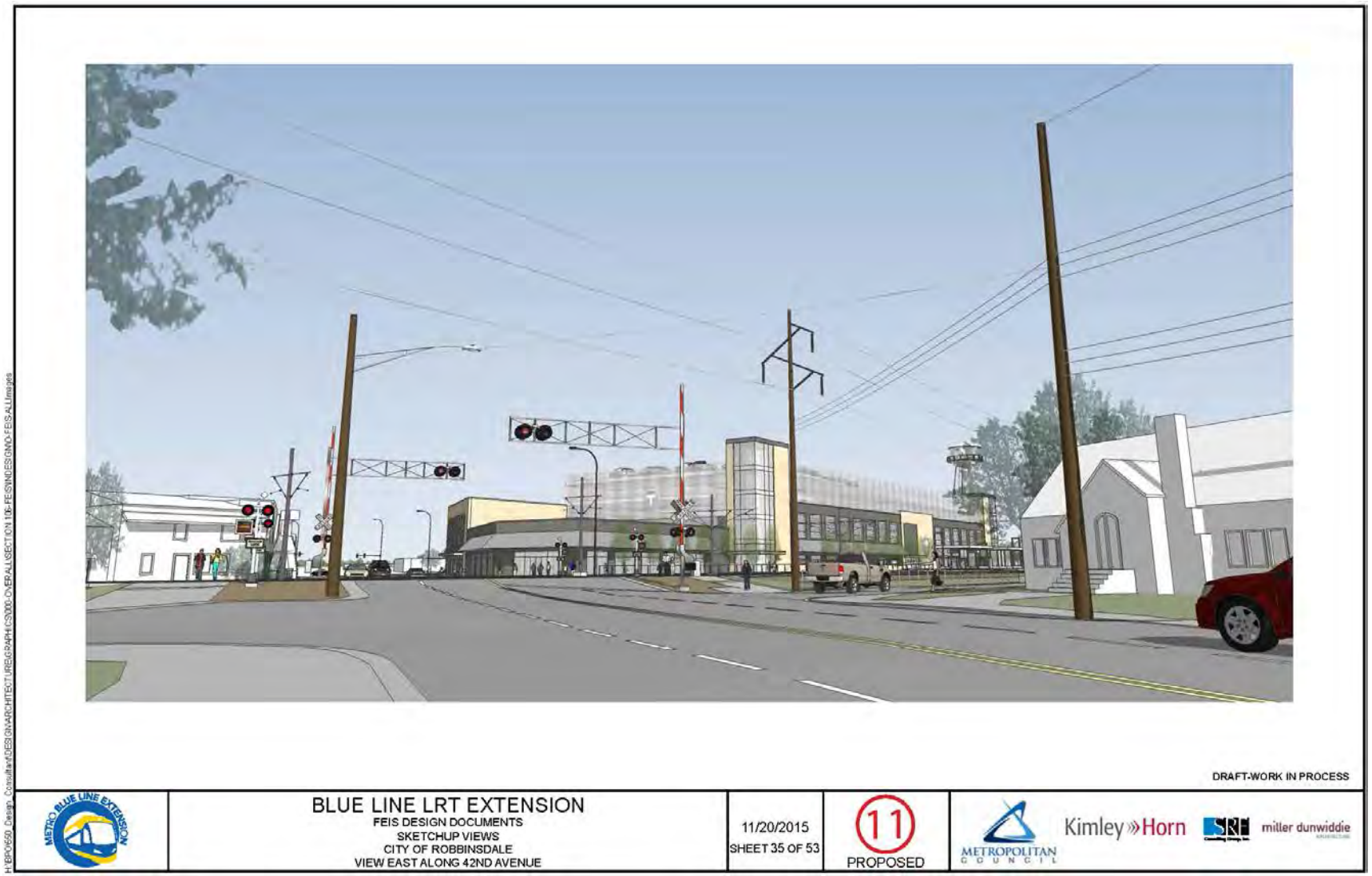
11/20/2015
SHEET 34 OF 53

11
EXISTING

METROPOLITAN COUNCIL · Kimley»Horn · SRF · miller dunwiddie

H:\BPO\050_Design_Consultant\DESIGN\ARCHITECTURE\SKP\HIC\9000-OVERALL\SECTION 106-FEIS\INDESIGN\O-FEIS-ALL.indd

Figure 11.4-2. Proposed Robbinsdale Station Joint Development Project Site – Proposed Design



11.4.1.6 Surface Water Resources

Floodplains

No additional impacts to floodplains would occur with the proposed Robbinsdale Station Joint Development project.

Wetlands

No wetlands are present on the proposed Robbinsdale Station Joint Development site.

Stormwater

Since the proposed Robbinsdale Station Joint Development project would be located within the footprint of the proposed BLRT Extension project's Robbinsdale Station park-and-ride facility, no additional stormwater management would be required and the amount of impervious surface area would remain the same. All stormwater would be treated in accordance with applicable state and local requirements using the best management practices described in this Final EIS.

11.4.1.7 Transit

The numbers of transit boardings and alightings could increase as a result of the retail, medical, and residential uses associated with the proposed Robbinsdale Station Joint Development project. Additional analysis would be needed to estimate the increase in ridership generated by the mixed-use project. However, since the Council's *Thrive MSP 2040 Transportation Policy Plan* (Council, 2015) forecasts included a certain level of trip generation associated with the Robbinsdale park-and-ride and transit center site (see **Section 11.4.1.9**), it is likely that the ridership modeling for the proposed BLRT Extension project has accounted for the majority of boardings and alightings associated with the proposed Robbinsdale Station Joint Development project.

11.4.1.8 Parking

The mixed-use building with the proposed Robbinsdale Station Joint Development project would include an additional 79 parking spaces, which would be located in an underground parking garage that is part of the mixed-use building. Thirty spaces would be designated for the medical clinic use; 33 spaces for the retail use; and 16 spaces for the residential space (one per unit).

11.4.1.9 Roadways and Traffic

The proposed Robbinsdale Station Joint Development project would produce an estimated 802 daily trips. The Council estimated trip generation using the Institute of Transportation Engineers' *Trip Generation Manual* (2012). The analysis was based on the proposed uses (apartment, specialty retail center, and medical clinic). The estimate assumes a multi-unit retail storefront with a 5-percent internal capture, or shared trips, from the apartment and clinic trips. The estimate also assumes a 15-percent reduction for transit-oriented development.

The level of traffic that has been analyzed by the Council in this Final EIS is based on the Thrive 2040 forecasts. The forecast for the transportation analysis zone (TAZ) that encompasses the

Robbinsdale park-and-ride and transit center site included growth in households and employment by 2040. Of that overall growth in the TAZ, the Council assumed that about 860 new development-generated (that is, not park-and-ride) daily trips would be created by the Robbinsdale park-and-ride and transit center site. Since the trips estimated to be generated by the proposed Robbinsdale Station Joint Development land uses are fewer than the 860 daily trips already included in the traffic analysis for the proposed BLRT Extension project, the Council did not conduct additional traffic analysis, and does not expect the need for additional infrastructure improvements.

11.4.2 Long-Term Indirect Impacts

11.4.2.1 Land Use

The transition of land use and the redevelopment of property near the Robbinsdale Station could be a long-term indirect impact of the proposed Robbinsdale Station Joint Development project. The *Robbinsdale 2030 Comprehensive Plan* (City of Robbinsdale, 2010) indicates increasing density as a goal in the downtown area, including transition of some single-use parcels to mixed use. The plan states that transit corridors provide the potential for concentrations of residential uses that could accommodate the goal of increased population. Therefore, the potential development-related indirect impacts of the proposed Robbinsdale Station Joint Development project would be consistent with the *Robbinsdale 2030 Comprehensive Plan*.

11.4.3 Short-Term Impacts

11.4.3.1 Economic Activity

Construction of the proposed Robbinsdale Station Joint Development project would represent further capital investment in the regional economy in the form of additional commercial and residential facilities. This additional construction activity would temporarily increase employment, earnings, and economic output during the construction period. Without the proposed Robbinsdale Station Joint Development project to replace the loss of existing commercial structure, a potential exists for an adverse impact to the property tax collections of the city.

11.4.3.2 Roadways and Traffic

The proposed Robbinsdale Station Joint Development project would affect adjacent roads and traffic on those roads due to an increase in construction activities at the site (for example, increased truck traffic to and from the site and temporary lane closures), compared to work at the location the proposed BLRT Extension project alone. However, this increase would be minor and is not anticipated by the Council to result in any additional adverse effects.

11.5 Mitigation Measures

This section describes measures to mitigate the proposed Robbinsdale Station Joint Development project's short-term impacts; no long-term impacts were identified. These mitigation measures will be implemented only if the proposed Robbinsdale Station Joint Development project were ultimately included within the proposed BLRT Extension project and constructed. This construction could occur concurrently with or subsequent to implementation of the proposed BLRT Extension project.

11.5.1 Mitigation Measures for Short-Term Impacts

11.5.1.1 Impact – Economic Activity

Short-term impacts to businesses associated with construction of the proposed Robbinsdale Station Joint Development project are described in **Section 11.4.3.1.**

11.5.1.2 Mitigation

Specific mitigation measures for short-term impacts to businesses will be identified in a Construction Communication Plan and a construction staging plan, which will be implemented prior to and during construction. The purpose of the Construction Communication Plan will be to prepare businesses and commuters in the proposed BLRT Extension project vicinity for construction, listen to their concerns, and develop plans to minimize harmful or disruptive effects. Specific mitigation measures included in the Construction Communication Plan would be location-specific and could include the following:

- Issue and post regular construction updates to the website for the proposed BLRT Extension project.
- Provide advanced written notice of roadway closures, driveway closures, and utility shutoffs.
- Conduct public construction meetings.
- Establish a 24-hour construction hotline.
- Prepare a brochure with applicable construction information.
- Post special open-for-business and way-finding signage.
- Address property access issues.
- Assign staff to serve as liaisons between the public and contractors during construction.

In addition, a construction staging plan, to be reviewed with the appropriate jurisdictions, railroads, and the contractor, would be required to secure the necessary permits. Components of a construction staging plan will include traffic management plans and a detailed construction timeline.

11.5.1.3 Impact – Roadways and Traffic

The short-term impacts of the proposed Robbinsdale Station Joint Development project would include increased traffic and congestion as a result of construction activities, as described in **Section 11.4.3.2**.

11.5.1.4 Mitigation

Traffic management plans will be reviewed by the appropriate jurisdictions before construction activities begin. In some cases, intersections might need to be modified temporarily during construction to minimize vehicle delay. Measures could include adding turn lanes, constructing temporary traffic signals, revising existing signal timing plans, and/or adding warning signs.

A detailed construction timeline, to be developed by the Council before construction activities begin, will inform roadway users and owners of adjacent properties about when the activities would begin, the type of work to be performed, an estimate of when the work would be completed, and recommendations about how individuals and entities can minimize disruption to their activities.

These mitigation measures for short-term impacts will be implemented only if the proposed Robbinsdale Station Joint Development project is ultimately included within the proposed BLRT Extension project and constructed. This construction could occur concurrently with or subsequent to construction of the proposed BLRT Extension project.

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12 Evaluation of Alternatives

This chapter evaluates the effectiveness of the No-Build Alternative and the proposed METRO Blue Line Light Rail Transit (BLRT) Extension project based on the information contained in **Chapters 2 through 11**. The comparison of these alternatives is based on the proposed BLRT Extension project's Purpose and Need Statement as described in **Chapter 1**. This evaluation provides a basis for decision-makers and the public to assess the benefits and consequences of implementing the proposed BLRT Extension project.

The evaluation in this chapter differs from the evaluation in Chapter 11 – Evaluation of Alternatives of the Draft Environmental Impact Statement (Draft EIS) in that this evaluation focuses on the ability of the proposed BLRT Extension project and No-Build Alternative to meet the Purpose and Need. This chapter does not include a discussion of each alternative's attainment of broader goals and objectives and cost-effectiveness that was included in the Draft EIS. These considerations were primarily used and presented in the Alternatives Analysis and the Draft EIS to support the identification of the locally preferred alternative (LPA) and to compare the LPA with other alternatives being evaluated.

12.1 Effectiveness in Meeting the Purpose and Need

As presented in **Chapter 1 – Purpose and Need**, the proposed BLRT Extension project is intended to improve transit service in the proposed BLRT Extension project study area by addressing the deficiencies and needs that have been identified. The following discussions analyze the effectiveness with which the No-Build Alternative and the proposed BLRT Extension project address the needs and achieve the intended purpose of the proposed BLRT Extension project, which is as follows:

- The proposed BLRT Extension project will provide transit service that will satisfy the long-term regional mobility and accessibility needs for businesses and the traveling public.
- The proposed BLRT Extension project will improve access and mobility to the jobs and activity centers in the Minneapolis central business district.
- The proposed BLRT Extension will provide competitive, cost-effective travel options that support economic development goals and objectives of local, regional, and statewide plans.

12.1.1 Provide Transit Service to Satisfy Long-Term Regional Mobility and Access Needs

As described in detail in **Chapter 1 – Purpose and Need**, residents and businesses in the proposed BLRT Extension project area need improved access to the region's activity centers in order to fully participate in the region's economy. Access to jobs in downtown Minneapolis and northbound reverse-commute transit options to serve jobs in the growing suburban centers are crucial to continued economic vitality. Moreover, traffic congestion is expected by the Metropolitan Council

(Council) to intensify in the Twin Cities metropolitan area through 2040,1 and fiscal conditions limit the ability of the region to address demand through highway capacity investment.

Chapter 1 – **Purpose and Need** and **Chapter 7 – Environmental Justice** also illustrate how there is a significant transit-dependent population in the proposed BLRT Extension project area (see **Section 1.4.3** and **Section 7.2**). **Chapter 1** also documents existing and future employment centers, which include downtown Minneapolis, North Memorial Medical Center in the City of Robbinsdale, and the planned development area north of Trunk Highway (TH) 610 in the City of Brooklyn Park where Target Corporation has one of its corporate campuses. Connecting transit-dependent populations to employment centers is a key piece of the Council's equitable transportation and housing strategies for the region. As noted in the Council's Fair Housing and Equity Assessment, titled *Choice, Place and Opportunity: An Equity Assessment of the Twin Cities Region*:

> Transportation choices are as important to lower-income households as housing choices. The Council will continue to strengthen transit connections between lower-income residents and opportunities such as jobs and education. To expand the transportation choices that all households have, including in some neighborhoods the choice to live without a car, the Council will … prioritize transportation investments that connect lower-income areas to job opportunities. (Council, 2014)

The proposed BLRT Extension project is consistent with this strategy.

12.1.1.1 No-Build Alternative

The No-Build Alternative would not add light rail or other high-capacity transit service to the proposed BLRT Extension project corridor and thus would not meet the purpose of and need for the project. With the No-Build Alternative, the bus network would have only modest changes to transit service in the proposed BLRT Extension project study area. Although transit vehicle-hours and vehicle-miles would increase with the No-Build Alternative, much of that increase would be devoted to allowing for increased bus travel times caused by increased traffic congestion.

With the No-Build Alternative, there would not be a substantial increase in either the quantity or quality of transit service between the proposed BLRT Extension project corridor and downtown Minneapolis in either the commute or reverse-commute directions. Increased transit system linkages, access to regional destinations, and multimodal transportation opportunities would occur only with the addition of committed arterial rapid transit routes. Therefore, transit access to housing, employment, schools, community services, health care facilities, and activity centers would not be substantially increased.

As discussed in **Chapter 1 – Purpose and Need**, there are Areas of Concentrated Poverty (ACPs) within and adjacent to the proposed BLRT Extension project corridor. Connecting the residents in these ACPs to job and employment opportunities is another factor in the need for transit improvements in North Minneapolis and the northwestern suburbs. The opportunity to make these critical connections between people, jobs, and education would be missed with the No-Build Alternative.

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[1] *Thrive MSP 2040 Transportation Policy Plan* (*2040 TPP*)

12.1.1.2 Proposed BLRT Extension Project

The proposed BLRT Extension project would introduce new light rail service that would meet the purpose of enhancing regional access to activity centers. The proposed BLRT Extension project would connect residential areas throughout the proposed BLRT Extension project corridor to employment and activity centers in downtown Minneapolis. The proposed BLRT Extension project, including its connecting feeder bus service and new park-and-ride lots, would substantially improve both access and mobility to those centralized jobs, educational institutions, and activity centers. Further, by providing one-seat rides to the existing METRO Blue Line, the proposed BLRT Extension project would extend the improved access and mobility to include other employment, educational institutions, and activity centers, such as the Minneapolis–St. Paul International Airport, Hennepin County Community College, and the Mall of America.

The proposed BLRT Extension project would substantially increase access and mobility to jobs and activity centers in the proposed BLRT Extension project corridor that are north and west of downtown Minneapolis. The reverse-commute trips would see substantial increases in the delivery and quality of transit service. The typical frequency of service for reverse-commute trips on the proposed light rail extension would be the same as for commute trips, thereby providing increased transit access.

The proposed BLRT Extension project would also meet the Council's strategy of making transit investments that connect residents in ACPs to employment centers and education opportunities, both those along the proposed BLRT Extension project alignment and those along other transit system corridors (for example, downtown St. Paul, the University of Minnesota, the Minneapolis–St. Paul International Airport, and the Mall of America).

12.1.2 Providing Efficient, Travel-Time-Competitive Transit Service

The second purpose of the proposed BLRT Extension project is to attract riders to the transit system by providing a competitive, reliable, cost-effective travel option in an area of the region that is experiencing congested roadway connections. In particular, the intent of this purpose is to efficiently attract new riders to the transit system by providing a new transitway that augments the existing roadway network, thereby reducing transit travel times in the proposed BLRT Extension project study area, especially between the Minneapolis central business district and the northwest areas of the Minneapolis.

Between 2013 and 2040, daily vehicle trips in the region will increase by about 26 percent and, as a result, congestion is forecast to worsen by 2040. With the expected traffic increases caused by population and employment growth and few roadway capacity increases due to funding constraints, the proposed BLRT Extension project study area will experience more intense and more extensive congestion on the region's regional highways and local streets. See the *Traffic Operations Technical Memorandum* in **Appendix F** for additional information regarding the substantial increase in traffic congestion that will occur by 2040.

Current transit options in the proposed BLRT Extension project area offer a limited number of travel-time-competitive alternatives to the single-occupant vehicle. Without major transit

investments, it will be difficult to effectively meet the transportation needs of people and businesses in the proposed BLRT Extension project corridor, manage highway traffic congestion in the proposed BLRT Extension project area, and achieve the region's 2040 goal, as identified in the Council's *2040 Transportation Policy Plan* (*2040 TPP*) (Council, 2015), of increasing transit ridership by providing multimodal options and encouraging transit-supportive land use.

12.1.2.1 No-Build Alternative

The No-Build Alternative would not introduce a new travel option that reduces travel time and attracts new transit riders, and thus it would not meet the purpose of and need for the proposed BLRT Extension project. First, the No-Build Alternative would not introduce a new transitway into the proposed BLRT Extension project corridor, and thus transit travel times in the corridor would not become more competitive. Instead, bus service in the corridor would continue to operate on the existing roadway network.

Second, bus service in the proposed BLRT Extension project corridor with the No-Build Alternative would continue to use local roads and regional highways that will become increasingly congested. Congested roads and intersections will result in longer delays for both automobile traffic and bus transit. Compared to today, corridor transit travel times with the No-Build Alternative would tend to increase and transit reliability would tend to decrease. Most importantly, buses in the corridor would tend to have no, or reduced, competitive advantages in travel time or reliability relative to automobiles. As traffic volumes exceed the capacity of roads and intersections along the corridor, travel times will increase. Longer traffic delays and reduced bus transit service reliability would be detrimental to the quality of life of residents and employees in the corridor.

12.1.2.2 Proposed BLRT Extension Project

The proposed BLRT Extension project would introduce a new transitway in the proposed BLRT Extension project corridor that would reduce transit travel times, improve transit reliability, increase the overall transit demand, and increase transit's mode share. That is, the new light rail transit service introduced in the corridor by the proposed BLRT Extension project would provide a competitive and reliable transit option that maximizes total transit riders with projected average weekday boardings of 27,000 in 2040. This level of weekday boardings is directly attributable to the improvement in travel time in the corridor that would be produced by the implementation of the proposed BLRT Extension project. Taken together, these measures demonstrate that the proposed BLRT Extension project would meet the purpose of and need for transit service in the corridor.

Further, transit travel times for commute trips in both directions via the new light rail service are projected to be substantially reduced, compared to existing and 2040 travel times with the No-Build Alternative. The No-Build Alternative end-to-end travel times by automobile would be 39 minutes and in excess of 70 minutes by bus transit as compared with the proposed BLRT Extension project travel time of 31 minutes. In addition, those commute transit travel times would be much more reliable, because the light rail service would not operate on congested roads, and it would be less likely to be impeded by adverse weather affecting roads. Those improvements in transit travel times and reliability would substantially improve mobility for commute trips.

12.2 Environmentally Preferable Alternative

The National Environmental Policy Act (NEPA) requires that, in cases where an EIS has been prepared, the Record of Decision must identify all alternatives that were considered, specifying the alternative or alternatives that were considered to be environmentally preferable (40 CFR Part 1505.2(b)). The environmentally preferable alternative(s) is (are) the alternative(s) that would promote the national environmental policy as expressed in NEPA's Section 101. Ordinarily, this means the alternative(s) that causes the least damage to the biological and physical environment and the alternative(s) that best protects, preserves, and enhances historic, cultural, and natural resources. However, the Council on Environmental Quality (CEQ) recognizes that the identification of the environmentally preferable alternative may involve difficult judgments, particularly when one environmental value must be balanced against another. Through the identification of the environmentally preferable alternative, the decision-maker may be faced with a choice between that alternative and others, and must consider whether the decision accords with the declared policies of NEPA (CEQ, 1981).

The proposed BLRT Extension project will avoid or minimize impacts to the natural, developed, and cultural environments. For the proposed BLRT Extension project, 16 technical segment-specific and system-wide issues were evaluated (see **Figure 2.5-2** and **Table 2.5-1**). Issue Resolution Teams (IRTs) were formed consisting of city staff and other stakeholders for each of the 16 issues identified to examine possible BLRT Extension project design and other adjustments to the Draft EIS LPA. The resolution of these technical issues resulted in design adjustments, including proposed adjustments to accommodate local goals and objectives, improve the performance of the proposed light rail extension, reduce project costs, and avoid or minimize adverse environmental impacts.

Results and recommendations from each of the IRTs form the basis for the proposed BLRT Extension project definition. The proposed BLRT Extension project will avoid or minimize effects associated with the LPA (as identified in the Draft EIS) as follows:

- Impacts to wetlands are similar to those disclosed in the Draft EIS at about 10 acres of permanent wetland impact, of which about 4.16 acres will require compensatory mitigation under Section 404 of the Clean Water Act and about 6.28 acres will require compensatory mitigation under the Minnesota Water Conservation Act.
- Impacts to floodplains will be reduced from the 18,700 cubic yards disclosed in the Draft EIS to 17,000 cubic yards.
- Impacts to cultural resources will result in adverse effects on six historic resources.
- Impacts to park resources will be reduced to 2.11 acres of permanent easement and 17.52 acres of temporary easement.
- The visual character of the proposed BLRT Extension project corridor as a whole will not be substantially changed.

- Noise effects from the proposed BLRT Extension project will result in 120 severe impacts to sensitive receptors with Quiet Zones[2] at all Federal Railroad Administration (FRA)-shared at-grade crossings and two residual severe impacts with further mitigation; 176 moderate impacts to sensitive receptors with Quiet Zones at all FRA-shared at-grade crossings will be reduced to five residual moderate impacts with further mitigation.
- Vibration effects for residential land uses will be eliminated with implementation of mitigation measures.
- Property acquisitions required for the proposed BLRT Extension project will affect 292 parcels with a combined area of 75.5 acres of permanent and temporary easements. Of these 75.5 acres, about 28.9 acres will be temporary easements, most commonly involving a strip of land needed to allow for construction activities to occur. The remaining acreage (about 46.7 acres) will be permanent acquisition or easement.
- Short- and long-term effects on property access and on-street parking will be reduced to a loss of 92 on-street parking spaces; mitigation for lost on-street parking will be coordinated with local jurisdictions as necessary.
- The proposed BLRT Extension project includes a variety of roadway modifications that will avoid new congested intersections, and, with one exception, the proposed BLRT Extension project will not worsen conditions at intersections that would be congested with the No-Build Alternative in 2040.
- Implementation of the proposed BLRT Extension project results in an overall finding of no disproportionately high and adverse effects on the region's minority and/or low-income communities.

The following are affirmative ways that the LPA was changed to address environmental justice and other community concerns.

- The proposed BLRT Extension project includes both the Plymouth Avenue and Golden Valley Road stations in order to serve the distinct markets and populations that are present in these locations in addition to adding a park-and-ride at the Golden Valley Road Station.
- The proposed BLRT Extension project will provide enhanced trail and other pedestrian facilities.
- The proposed BLRT Extension project will add signalized pedestrian crossings of Olson Memorial Highway (TH 55) and will enhance the pedestrian and bicyclist experience by narrowing travel lanes for a 35-miles-per-hour design speed.
- The proposed BLRT Extension project will provide space for the addition of a cycle track (by others) on the north side of Olson Memorial Highway.

[2] Quiet Zones are locations, at least one-half mile in length, where the routine sounding of horns has been eliminated because of safety improvements at at-grade crossings, including modifications to the streets, raised median barriers, four quadrant gates, and other improvements designed and implemented as a part of the proposed BLRT Extension project and consistent with Quiet Zone readiness. Horns are sounded in emergency situations at these locations. Municipalities must apply to FRA for approval of Quiet Zones.

- The proposed BLRT Extension project will add a park-and-ride at the Bass Lake Road Station and will build all at-grade crossings of the freight and light rail track as Quiet Zone–ready.
- The proposed BLRT Extension project will facilitate the future directed development of the City of Brooklyn Park in the area north of TH 610.

The proposed BLRT Extension project (the LPA as modified through the IRT process) meets the purpose of and need for the proposed BLRT Extension project corridor. It will best protect, preserve, and enhance social, historic, and cultural resources. However, because of the effects the proposed BLRT Extension project will have on biological and natural resources, the proposed BLRT Extension project will not cause the least damage to the physical environment. Consistent with CEQ guidance on selecting the environmentally preferable alternative, the Federal Transit Administration (FTA) and the Council are faced with a trade-off between the proposed BLRT Extension project's benefits and ensuing environmental impacts. FTA and the Council have determined that the proposed BLRT Extension project is the environmentally preferable alternative after consideration that their decision is in accord with the declared policies of NEPA.

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