



Gold Line

BUS RAPID TRANSIT PROJECT ENVIRONMENTAL ASSESSMENT

Appendix F

Environmental Assessment Worksheet

September 2019



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ACRONYMS AND ABBREVIATIONS

2040 TPP	<i>2040 Transportation Policy Plan</i>
ADA	Americans with Disabilities Act
ADT	Average Daily Traffic
APE	Area of Potential Effect
ASTM	American Society of Testing and Materials
BMP	Best Management Practice
BRT	Bus Rapid Transit
BRTOD	Bus Rapid Transit Oriented Plans
BWSR	Board of Water and Soil Resources
CCP	Construction Contingency Plan
Council	Metropolitan Council
CFR	Code of Federal Regulations
CRWD	Capitol Region Watershed District
CTIB	Counties Transit Improvement Board
DNR	Minnesota Department of Natural Resources
DWSMA	Drinking Water Supply Management Areas
EA	Environmental Assessment
EAW	Environmental Assessment Worksheet
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EQB	Environmental Quality Board
ESA	Environmental Site Assessment
ETSC	Endangered, Threatened Special Concern
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FPPA	Farmland Protection Policy Act
FTA	Federal Transit Administration
GCC	Gateway Corridor Commission
I-	Interstate
LCA	Livable Communities Act
LOS	Level of Service
LPA	Locally Preferred Alternative
LRTPP	Long-Range Transportation Policy Plan
LUST	Leaking Underground Storage Tanks
MCES	Metropolitan Council Environmental Services
MDH	Minnesota Department of Health



MLS	Multiple Listing Service
MnDOT	Minnesota Department of Transportation
MnDOT CRU	MnDOT Cultural Resources Unit
MnSHPO	Minnesota State Historic Preservation Office
MNRRRA	Mississippi National River and Recreation Area
MPCA	Minnesota Pollution Control Agency
MRCCA	Mississippi River Critical Corridor Area
MSATs	Mobile Source Air Toxics
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act of 1966
NHIS	Natural Heritage Information System
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
OES	MnDOT Office of Environmental Stewardship
OMF	Operations and Maintenance Facility
PA	Programmatic Agreement
PAHs	Polycyclic Aromatic Hydrocarbon
PFAS	Polyfluorinated Alkyl Substances
Project	METRO Gold Line Bus Rapid Transit Project
RAP	Response Action Plan
RECS	Recognized Environmental Conditions
RGU	Responsible Government Unit
RWMWD	Ramsey-Washington Metro Watershed District
SDS	State Disposal System
SIPS	State Implementation Plans
SSTS	Subsurface Sewage Treatment Systems
SSURGO	Soil Survey Geographic
SWWD	South Washington Watershed District
TH	Trunk Highway
TIP	Transportation Improvement Program
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USFWS	U.S. Fish and Wildlife Service
VMT	Vehicle Miles Traveled
WCA	Wetland Conservation Act



F. ENVIRONMENTAL ASSESSMENT WORKSHEET

This Environmental Assessment Worksheet (EAW) form and EAW Guidelines are available at the Environmental Quality Board's website at: <http://www.egb.state.mn.us/EnvRevGuidanceDocuments.htm>. The EAW form provides information about a project that may have the potential for significant environmental effects. The EAW Guidelines provide additional detail and resources for completing the EAW form.

Cumulative potential effects can either be addressed under each applicable EAW Item or can be addressed collectively under EAW Item F.19.

Note to reviewers: Comments must be submitted to the Responsible Government Unit (RGU) during the 30-day comment period following notice of the EAW in the *EQB Monitor*. Comments should address the accuracy and completeness of information, potential impacts that warrant further investigation and the need for an EIS.

F.1. Project Title

METRO Gold Line Bus Rapid Transit Project, Ramsey and Washington Counties

F.2. Proposer

Metropolitan Council

Contact person: Charles Carlson

Title: Director, BRT (Bus Rapid Transit) Projects

Address: 121 7th Place East, Suite 102

City, State, ZIP: St. Paul, MN 55101

Phone: (612) 349-7639

Email: charles.carlson@metrotransit.org

F.3. RGU

Metropolitan Council

Contact person: Chelsa Johnson

Title: Environmental Lead

Address: 121 7th Place East, Suite 102

City, State, ZIP: Saint Paul, MN 55101

Phone: (651) 602-1997

Email: Chelsa.Johnson@metrotransit.org



F.4. Reason for EAW Preparation

Check one:

Required:	Discretionary:
<input type="checkbox"/> EIS Scoping	<input type="checkbox"/> Citizen petition
<input type="checkbox"/> Mandatory EAW	<input checked="" type="checkbox"/> RGU discretion
	<input type="checkbox"/> Proposer initiated

If EAW or EIS is mandatory give EQB rule category subpart number(s) and name(s): Not applicable

F.5. Project Location

- **County:** Ramsey and Washington
- **City/Township:** Saint Paul, Maplewood, Landfall, Oakdale and Woodbury
- **PLS Location (1/4, 1/4, Section, Township, Range):** see Table F.5-1.
- **Watershed (81 major watershed scale):** Mississippi River – Twin Cities (#20)
- **GPS Coordinates:** Not applicable
- **Tax Parcel Number:** Not applicable

TABLE F.5-1: PUBLIC LAND SURVEY LOCATIONS

1/4, 1/4	Section	Township	Range
None	31, 32, 33, 34, 35, 36	29N	22W
None	5 and 6	28N	22W
None	31 and 32	29N	21W
None	5 and 8	28N	21W

a) At a minimum attach each of the following to the EAW:

- County map showing the general location of the project: see **Figure F1-1**
- U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable): see **Figure F1-2** and **Figure F1-3**
- Site plans showing all significant project and natural features. Pre-construction site plan and post-construction site plan:
 - 15% Concept Plans in **Appendix B** to the EA
 - **Attachment F-1: Environmental Assessment Worksheet Figures**
 - » Figure F1-1: County General Location Map
 - » Figure F1-2: U.S. Geological Survey Project Boundaries Map – Saint Paul



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F.6. Project Description

a) Provide the brief project summary to be published in the EQB Monitor, (approximately 50 words).

The Metropolitan Council (Council) proposes a 9- to 10-mile transitway located in Ramsey and Washington counties in the eastern part of the Twin Cities Metropolitan Area. The Project corridor is generally parallel to Interstate 94 (I-94) and would better connect downtown Saint Paul with the suburban cities of Maplewood, Landfall, Oakdale and Woodbury.

b) Give a complete description of the proposed project and related new construction, including infrastructure needs. If the project is an expansion include a description of the existing facility. Emphasize:

i) Construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes.

The Federal Transit Administration (FTA) and the Council identified two Build Alternatives for analysis:

- Build Alternative 1: A1-BC-D3 (Locally Preferred Alternative (LPA))
- Build Alternative 2: A2-BC-D3

Figure F1-4 shows the two Build Alternatives.

Build Alternative 1: A1-BC-D3 (Locally Preferred Alternative)

Starting at the west end of the corridor in downtown Saint Paul, Build Alternative 1 includes the following alignments:

- Alignment A1



- » Would include all-day routing operating from 5 a.m. to midnight on weekdays and weekends, terminating at the Smith Avenue Transit Center in downtown Saint Paul. All-day BRT service would support convenient transfers for riders to more existing and planned transit routes in downtown Saint Paul
 - » Westbound buses would travel on Kellogg Boulevard in mixed traffic, turning right and making a first downtown stop at the Union Depot/Sibley Street Station
 - » Buses heading north along Sibley Street would run in mixed traffic before turning west on 6th Street, traveling in dedicated bus lanes with stops at the 6th Street/Robert Street Station and the 6th Street/Minnesota Street Station
 - » Westbound buses would travel in mixed traffic after Wabasha Street, stopping at the Hamm Plaza Station before terminating at the existing Smith Avenue Transit Center
 - » Heading eastbound, buses would stop at the Smith Avenue/5th Street Station, traveling in mixed traffic along 5th Street, with a stop at the Rice Park Station
 - » Dedicated bus lanes continue after Wabasha Street and eastbound buses would stop at the 5th Street/Cedar Street Station and the 5th Street/Robert Street Station before turning south on Wacouta Street
 - » Eastbound buses would run in mixed traffic along Wacouta Street with a final downtown stop at Union Depot/Wacouta Street Station before continuing east on Kellogg Boulevard in mixed traffic
 - » Buses from downtown Saint Paul would run in mixed traffic from the Union Depot/Wacouta Street Station to the Kellogg Boulevard/Broadway Street intersection, where it would turn northeast and continue in mixed traffic on the Kellogg Boulevard Bridge to the Mounds Boulevard intersection
- Alignment B
 - » Buses would begin at the intersection of Kellogg Boulevard and Mounds Boulevard in Dayton's Bluff and travel to White Bear Avenue mostly in dedicated guideway
 - » From the Mounds Boulevard Station, buses would head east on the northeast side of Mounds Boulevard and along the I-94 off-ramp in dedicated guideway
 - » Would reconstruct the westbound I-94 off-ramp at Mounds Boulevard to accommodate the guideway, pedestrian connections and a noise barrier
 - » Between Wilson Avenue and Johnson Parkway, buses would be located between a modified Hudson Road and I-94
 - » Buses would stop at the Earl Street Station and cross over Johnson Parkway on a new BRT-exclusive bridge
 - » Buses would run in the dedicated guideway along the north side of the TH 61 interchange before stopping at the Etna Street Station
 - » Buses would operate on a new BRT-exclusive bridge over the Wilson Avenue/Etna Street/TH 61 intersection, staying north of I-94 and its interchange ramps
 - » Would shift the TH 61 westbound ramp slightly south to accommodate the guideway and a noise barrier



- » At the intersection of Old Hudson Road and Hudson Road, buses would transition into mixed traffic before continuing in dedicated guideway east of Kennard Street, passing under the White Bear Avenue Bridge
- Alignment C
 - » Buses would begin at White Bear Avenue and end on the west side of the 4th Street Bridge over I-694
 - » From White Bear Avenue, buses would continue east in a dedicated guideway on the north side of I-94, stopping at Van Dyke Street Station, passing under Ruth Street, and stopping at the Sun Ray Station
 - » Buses would continue east in a dedicated guideway, crossing on a new BRT-exclusive bridge over McKnight Road
 - » From McKnight Road, buses would transition to the north side of Hudson Road in a dedicated guideway, adjacent to the 3M campus, stopping at the Maplewood Station and cross over Century Avenue on a BRT-exclusive bridge
 - » Buses would operate in mixed traffic on the east side of Century Avenue and south of Tanners Lake
 - » Near Tanners Lake, buses would stop at the Greenway Avenue Station and operate in mixed traffic until just east of Greenway Avenue, where they would enter a dedicated guideway split along the north and south sides of Hudson Boulevard; the split guideway would turn north and follow Hadley Avenue to 4th Street, where buses would transition into mixed traffic

Build Alternative 1 includes the following two design options in Alignment C:

- » **Hazel Street Station Option:** From White Bear Avenue, buses would continue east in a dedicated guideway, stopping at the Hazel Street Station instead of the Van Dyke Street Station, approximately 700 feet east of Van Dyke Street Station¹
- » **Dedicated Guideway Option at Hadley Avenue and 4th Street:** On Hadley Avenue and 4th Street, buses would operate in a center running dedicated guideway across a reconstructed bridge over I-694 before turning south near Helmo Avenue (instead of operating in mixed traffic and crossing I-694 on the existing bridge). The Project would reconstruct the bridge and would include a pedestrian facility and dedicated lanes for the guideway and roadway.
- Alignment D3
 - » Buses would begin where 4th Street crosses the bridge over I-694 in mixed traffic, then follow 4th Street east of I-694 in a center running guideway and turn south near Helmo Avenue, stopping at the Helmo Avenue Station
 - » At the intersection of Helmo Avenue and Hudson Boulevard, buses would operate in center running dedicated guideway and would continue south across I-94 on a new bridge, connecting to Bielenberg Drive on the south side of I-94 and continue to the Tamarack Station

¹ In February 2019, the City of Saint Paul amended its Gold Line Station Area Plan to change the recommended station location from Van Dyke Street to Hazel Street based on public input received during the Project's design advancement. Prior to the amended plan, Van Dyke Street was the recommended station location, therefore this Environmental Assessment evaluates a station at both locations.



- » Buses would continue south on Bielenberg Drive in a center running guideway to Nature Path, where buses would transition into mixed traffic
- » Buses would continue south in mixed traffic on Bielenberg Drive, turn west on Guider Drive, then south on Queens Drive, stopping at the Woodbury Theatre Station and terminating at the Woodbury 494 Park-and-Ride Station

Build Alternative 2: A2-BC-D3

Alignments B, C and D3 are the same for Build Alternative 2 and Build Alternative 1, including the Hazel Street Station Option and the Dedicated Guideway Option at Hadley Avenue and 4th Street in Alignment C.

The difference between the two alternatives is within Alignment A in downtown Saint Paul (see **Figure F1-4**). Alignment A2 of Build Alternative 2 would terminate at Union Depot and Alignment A1 of Build Alternative 1 would terminate approximately 1 mile to the west at the Smith Avenue Transit Center.

Starting at the west end of the corridor in downtown Saint Paul, Build Alternative 2 would include the following elements and route for Alignment A2:

- Would terminate at the bus deck of Union Depot in downtown Saint Paul
- Riders would utilize Union Depot, a regional multimodal hub, to make transfers to existing and future planned routes in downtown Saint Paul. Station infrastructure would include a pylon for signage, a tactile warning strip, heat, a ticket-vending machine, and ticket validators for inbound and outbound riders
- Buses from downtown Saint Paul would run in mixed traffic from Union Depot to the Kellogg Boulevard/Broadway Street intersection, where they would turn northeast and continue in mixed traffic on the Kellogg Boulevard Bridge to the Mounds Boulevard intersection

Stations

The Project proposes the following two station types:

- **Walk-up** stations that do not include designated parking for transit-riders
- **Park-and-ride** stations that include a new or existing parking facility designated for transit-riders

Build Alternative 1 would include a total of 21 stations and Build Alternative 2 would include a total of 12 stations. **Figure F1-4** shows the locations of both Build Alternatives' proposed stations.

All of the following stations would be walk-up stations, except those noted as park-and-ride stations:

- Proposed stations included under Alignment A1 of Build Alternative 1 only
 - » Union Depot/Sibley Street
 - » 6th Street/Robert Street
 - » 6th Street/Minnesota Street
 - » Hamm Plaza
 - » Smith Avenue/5th Street
 - » Smith Avenue/6th Street
 - » Rice Park



- » 5th Street/Cedar Street
- » 5th Street/Robert Street
- » Union Depot/Wacouta Street
- Proposed stations included under Alignment A2 of Build Alternative 2 only
 - » Union Depot Station (at bus deck)
- Proposed stations included under both Build Alternative 1 and Build Alternative 2
 - » Mounds Boulevard
 - » Earl Street
 - » Etna Street
 - » Van Dyke Street
 - » Sun Ray (new 150-space surface park-and-ride lot)
 - » Maplewood
 - » Greenway Avenue
 - » Helmo Avenue (new 100-space surface park-and-ride lot)
 - » Tamarack Road
 - » Woodbury Theatre (existing surface park-and-ride lot, utilizing 150 spaces)
 - » Woodbury 494 Park-and-Ride (new 200-space surface park-and-ride lot)

The stations' raised platforms would be designed to integrate with existing non-BRT service platforms. The following locations would share stations with existing non-BRT service:

- 6th Street/Minnesota Street
- Hamm Plaza
- Smith Avenue/5th Street
- Smith Avenue/6th Street
- Rice Park
- 5th Street/Cedar Street

Coordination on the design of platforms shared with existing non-BRT service will continue as the Project advances through the Project Development and Engineering phases.

Except for those located downtown Saint Paul, most stations would have a pair of platforms for westbound and eastbound buses. Stations would be approximately ½- to 1 mile apart outside of downtown. In downtown Saint Paul stations would be 2 to 3 blocks (approximately 0.15 to 0.30 miles) apart due to infrastructure constraints. In general, the Council would design the stations to include essential components for traveler safety and security, and amenities for passenger comfort and convenience. Station designs



would comply with federal Americans with Disabilities Act² requirements. Primary station elements would include platforms, off-board fare collection systems, shelters, wheelchair ramps and structural features such as heat, lights, benches, bike racks, trash receptacles, security systems, functional landscaping and information displays. Landscape features may include trees and other vegetation that would be introduced as part of the Project.

Pedestrian and Bicycle Facilities

The Project is expected to benefit pedestrians and bicyclists by providing new pedestrian and bike facilities. The pedestrian and bike connections would be ADA-compliant, and all station platforms would be aligned with crosswalks for pedestrian safety. Other examples of improvements to pedestrian and bicycle facilities constructed with the Project include:

- Sidewalk bump-outs in downtown Saint Paul to provide more space for pedestrians
- Connections for easy access to stations
- Adding facilities to fill gaps between existing facilities and station areas

The 15% Concept Plans in **Appendix B** to the EA show the locations of the proposed new facilities.

Park-and-Ride Facilities

The Project would utilize approximately 150 spaces at the existing Metro Transit express bus route park-and-ride at the Woodbury Theatre, and it would construct the following three park-and-ride facilities:

- At the Sun Ray Station in Saint Paul, a new park-and-ride surface lot with 150 spaces would be located north of the station, next to the existing Sun Ray Transit Center
- At the Helmo Avenue Station in Oakdale, a new park-and-ride surface lot with 100 spaces would be located at the west side of the guideway near the new multimodal bridge that the Project would construct over I-94 that would connect Helmo Avenue and Bielenberg Drive
- In Woodbury, a new park-and-ride would be located at Guider and Woodlane drives near I-494; this surface lot would have 200 parking spaces and a layover facility for BRT buses and drivers

Project Vehicle Characteristics

The Project would procure 12 articulated BRT vehicles for Build Alternative 1 and 11 for Build Alternative 2 with the following characteristics:

- **Length:** 60 feet
- **Fuel type:** Diesel, hybrid or electric
- **Capacity:** 48 passengers
- **Door location:** Right side
- **Fare collection:** At stations only; no collection on BRT vehicles

² Americans With Disabilities Act of 1990, Pub. L. No. 101-336, 104 Stat. 328 (1990). Available at: http://library.clerk.house.gov/reference-files/PPL_101_336_AmericansWithDisabilities.pdf. Accessed October 2018.



The Project includes diesel buses; however, Metro Transit may decide later that the Project will use electric buses, and it would then consider installing charging stations for the buses at the following locations:³

- Build Alternative 1 would include an electric charging station at the Smith Avenue Transit Center and Woodbury 494 Park-and-Ride Station; the buses would charge for about 10 minutes during layovers and would gain approximately 10 miles of energy, so the vehicles can complete scheduled routes for the day
- Build Alternative 2 would include a charging station at the Union Depot bus deck and the Woodbury 494 Park-and-Ride Station; the buses would charge for about 10 minutes during layovers and would gain approximately 10 miles of energy, so the vehicles can complete scheduled routes for the day
- Both Build Alternatives would include charging stations at the operations and maintenance facility (OMF)

Overhead charging stations would have a mastlike appearance and connect to the bus through a pantograph on the vehicle's roof. In addition to the mast, each charging station would require a utility transformer and connection cabinet, and a power converter cabinet.

Operations and Maintenance Facility

Under both Build Alternatives, the Project would not construct a new OMF. Project vehicles would instead use the existing East Metro Transit Facility located east of I-35E just north of downtown Saint Paul (see **Figure F1-4**). This facility has the capacity to house 214 buses, and currently maintains 214 buses. Some of the current buses assigned to the OMF will be moved to another OMF with capacity to provide space for the 12 60-foot-long vehicles the Project would use. The Project vehicles would be inspected, maintained, cleaned, and stored at this location, which already includes administrative offices, employee facilities and an employee parking lot. Electric charging stations could also be added at the OMF, if the Project uses electric vehicles. These charging stations would be added to the interior of the OMF. There would be enough interior space for charging infrastructure for the Gold Line fleet without needing to reduce the OMF's current bus capacity of 214 buses.

Bridges, Underpasses and other Project Improvements

The Project would construct four new BRT-exclusive bridges that would cross TH 61/Etna Street, Johnson Parkway, McKnight Road, and TH120/Century Avenue (see the 15% Concept Plans in **Appendix B** to the EA). The McKnight Road and Century Avenue bridges would also include a multiuse trail to provide grade-separated crossings at these high-traffic intersections.

The Project would construct a new mixed traffic bridge over I-94 connecting Helmo Avenue and Bielenberg Drive. This bridge would include a center running guideway, a multiuse trail and roadway lanes for local traffic. The Dedicated Guideway Option at Hadley Avenue and 4th Street in Oakdale would reconstruct the bridge over I-694 at 4th Street to accommodate a dedicated guideway along 4th Street. The reconstructed bridge would include a center running guideway and multiuse trail. The Council coordinated with the Federal Highway Administration (FHWA) and Minnesota Department of Transportation (MnDOT) on the design of these bridges. The agencies will continue to coordinate as the design advances through the Project Development and Engineering phases. Other potential improvements constructed with the Project include a pedestrian overpass at Maple Street and redecking of the Earl Street bridge in Saint Paul and underpasses for the dedicated guideway at White Bear Avenue and Ruth Street. The Project would also relocate existing noise barriers along I-94 to accommodate the BRT dedicated guideway. The addition of

³ The EA/EAW evaluates impacts based on diesel bus operations. If electric buses are determined for use in a later phase of Project advancement, the FTA and Council will determine if additional analysis is required to assess new significant impacts.



retaining walls and implementation of stormwater best management practices (BMPs) would also be required for the Project.

ii) Modifications to existing equipment or industrial processes.

The Project does not modify existing equipment or industrial processes.

iii) Significant demolition, removal or remodeling of existing structures.

The Project includes demolition and reconstruction of one bridge under the Dedicated Guideway Option at Hadley Avenue and 4th Street in Oakdale. The existing bridge would be reconstructed over I-694 at 4th Street to accommodate a dedicated guideway along 4th Street. The reconstructed bridge would include a center running guideway and multiuse trail.

Both Build Alternatives would include transit-related improvements such as roadway modifications and pedestrian connections within the Project corridor. In general, most BRT stations would include direct pedestrian connections, both new and reconstructed, that would improve BRT operations, public safety and access to stations.

Table F.6-1 summarizes these changes, including additional structures that would be demolished and reconstructed or remodeled, which the Project's 15% Concept Plans in **Appendix B** also include.



TABLE F.6-1: BUILD ALTERNATIVES' CHANGES TO ROADWAY AND PEDESTRIAN INFRASTRUCTURE

Alignment	Type	Location	Description
Alignments A1 and A2	Roadway	Wacouta Street/ Kellogg Boulevard	<ul style="list-style-type: none"> • Would modify median to allow buses to turn left onto Kellogg Boulevard
Alignment B	Roadway and Pedestrian	I-94/Mounds Boulevard	<ul style="list-style-type: none"> • Would shift westbound I-94 off-ramp south to accommodate guideway • Would construct pedestrian crosswalk on I-94 off-ramp for access to Mounds Boulevard Station
	Roadway	Hudson Road between Mounds Boulevard and Earl Street	<ul style="list-style-type: none"> • Would change to one-way (westbound-only) access along Hudson Road between Wilson Avenue and Frank Street
	Roadway	Plum Street/ Hudson Road	<ul style="list-style-type: none"> • Would close access from Plum Street to Hudson Road
	Driveway	Earl Street/Hudson Road	<ul style="list-style-type: none"> • Would close southern driveway access from Hudson Road
	Pedestrian	Hudson Road at Johnson Parkway	<ul style="list-style-type: none"> • Would construct pedestrian connection from 1145 Hudson Road driveway to Johnson Parkway
	Roadway and Pedestrian	TH 61/Etna Street	<ul style="list-style-type: none"> • Would shift westbound I-94 on-ramp south to accommodate guideway • Would construct pedestrian connections and crosswalks near Etna Street Station • Would construct pedestrian connection to Pacific Street on east side of TH 61
	Pedestrian	West Side Etna Street to Burns Avenue	<ul style="list-style-type: none"> • Would construct pedestrian connection from Etna Street Station along west side of TH 61 to Burns Avenue • Would construct pedestrian tunnel under southbound ramp of I-94 at TH 61
	Pedestrian	East Side Pacific Street to Burns Avenue	<ul style="list-style-type: none"> • Would construct pedestrian connection from Pacific Street to Burns Avenue along the east side of TH 61
	Pedestrian	Burns Avenue/TH61	<ul style="list-style-type: none"> • Would upgrade existing signal system at Burns Avenue and TH 61 to bring system into compliance with the Americans with Disabilities Act
	Roadway	Old Hudson Road	<ul style="list-style-type: none"> • Would reconstruct roadway to accommodate mixed-traffic BRT
	Roadway	I-94/White Bear Avenue	<ul style="list-style-type: none"> • Would reconstruct westbound on- and off-ramps slightly south to accommodate guideway and underpass at White Bear Avenue



Alignment	Type	Location	Description
	Roadway	I-94/Ruth Street	<ul style="list-style-type: none"> • Would reconstruct westbound on-ramp slightly south to accommodate guideway and underpass at Ruth Street
Alignment C	Pedestrian	Hazel Street Station Option to Ruth Street	<ul style="list-style-type: none"> • Would construct pedestrian connection from Hazel Street Station Option to Ruth Street
	Roadway and Pedestrian	Sun Ray Shopping Center	<ul style="list-style-type: none"> • Would reconstruct access to Sun Ray Shopping Center along Hudson Road to accommodate guideway • Would construct pedestrian connections along the north side of Hudson Road for access to the Sun Ray Station • Would widen existing sidewalk west of Pedersen Street to Ruth Street and east of Sun Ray Shopping Center to McKnight Road
	Driveway	Pedersen Street	<ul style="list-style-type: none"> • Would close two driveways to St. Paul Youth Services
	Roadway and Pedestrian	McKnight Road	<ul style="list-style-type: none"> • Would construct grade and grade-separated pedestrian crossings at McKnight Road for access to Sun Ray and Maplewood stations
	Roadway	3M campus/ Hudson Road	<ul style="list-style-type: none"> • Would reconstruct Hudson Road to accommodate acceleration/deacceleration lanes for 3M campus traffic stopping for BRT crossings at entrances • Would construct east-west multiuse trail for Sun Ray and Maplewood station access
	Roadway and Pedestrian	Century Avenue	<ul style="list-style-type: none"> • Would construct grade and grade-separated pedestrian crossings at Century Avenue for access to Maplewood and Greenway stations • Would construct pedestrian connection along west side of Century Avenue under existing I-94 Bridge • Would close ramp from Century Avenue south to Hudson Road west and replace with new right turn lane slightly to the south
	Pedestrian	Tanners Lake/ Hudson Road	<ul style="list-style-type: none"> • Would construct pedestrian connections along north side of Hudson Road for access to the Greenway Avenue Station • Would construct pedestrian connections along west side of Greenway Avenue for access to the Greenway Avenue Station



Alignment	Type	Location	Description
	Roadway and Driveway	Hudson Boulevard/Hadley Avenue	<ul style="list-style-type: none"> • Would modify roadway curves at Hudson Boulevard/Hadley Avenue and Hadley Avenue/4th Street to improve BRT operations • Would relocate driveway to Apostolic Bible Institute approximately 180 feet to the north
Alignment D3	Roadway and Pedestrian	4th Street/Hayward Avenue	<ul style="list-style-type: none"> • Would reconstruct 4th Street/Hayward Avenue intersection to control BRT traffic crossing • Would construct pedestrian facilities from 4th Street Lane to Hayward Avenue along north side of 4th Street
	Roadway and Pedestrian	Helmo Avenue Station	<ul style="list-style-type: none"> • Would reconstruct 2nd Street/Helmo Avenue intersection to control BRT traffic crossing • Would construct pedestrian connections along Helmo Avenue for station access
	Roadway and Pedestrian	Bielenberg Drive/Hudson Road	<ul style="list-style-type: none"> • Would reconstruct Bielenberg Drive/Hudson Road intersection to control BRT traffic crossing • Would construct pedestrian connections along Bielenberg Drive for access to Helmo and Tamarack stations
	Roadway	Bielenberg Drive/Tamarack Station	<ul style="list-style-type: none"> • Would construct intersection to control BRT traffic crossing for local businesses along Bielenberg Drive
	Roadway and Pedestrian	Bielenberg Drive/Tamarack Road	<ul style="list-style-type: none"> • Would reconstruct Bielenberg Drive/Tamarack Road intersection to control BRT traffic crossing • Would construct pedestrian connections along Bielenberg Drive for access to Tamarack Station
	Roadway and Pedestrian	Bielenberg Drive/Nature Path	<ul style="list-style-type: none"> • Would reconstruct Bielenberg Drive/Nature Path intersection to control BRT traffic crossing • Would construct pedestrian connections along Bielenberg Drive for access to Tamarack Station
	Roadway	Bielenberg Drive/Guider Drive	<ul style="list-style-type: none"> • Would reconstruct intersection of Bielenberg and Guider drives to control BRT traffic crossing



iv) Timing and duration of construction activities.

Construction is anticipated to start in 2022 and be completed in 2024. Gold Line BRT service is expected to begin in 2024. Sequencing and durations of construction activities during this time will be determined during the Engineering Phase of the Project.

c) Project magnitude

TABLE F.6-2: PROJECT DIMENSIONS

Total project acreage	326 – 348 acres
Linear project length	9 – 10 miles
Number and type of residential units	Not applicable
Commercial building area (in square feet)	Not applicable
Industrial building area (in square feet)	Not applicable
Institutional building area (in square feet)	Not applicable
Other uses – specify (in square feet)	Not applicable
Structure height(s)	Not applicable

d) Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.

i) Project purpose

The purpose of the Project is to provide transit service to meet the existing and long-term regional mobility and local accessibility needs for businesses and the traveling public within the Project area.

ii) Project need

The following primary factors contribute to the need for the Project:

- **Limited existing transit service throughout the day and demand for more frequent service over a larger portion of the day:** The Project area and the I-94 corridor lacks all-day, bidirectional transit service that would operate from 5 a.m. to midnight on weekdays and weekends, particularly east of Saint Paul and Maplewood. This limits the ability of users in the Project area to use transit to meet their transportation needs.
- **Policy shift toward travel choices and multimodal investments:** I-94 and local roadways in the Project area are congested today during peak periods. Forecasts expect traffic volumes and congestion to increase in the future. Funding for roadway projects will not be adequate to address the congestion problem. State and regional transportation policies identify the need to provide alternatives to traveling in congested conditions.
- **Population and employment growth, increasing access needs and travel demand:** Forecasts anticipate population and employment growth in the Project area. This growth will in turn increase access needs and travel demand, particularly in the I-94 corridor.
- **Needs of people who depend on transit:** Deficiencies in transit service limit the ability of people in the Project area who depend on transit to access employment and other needs.



- **Local and regional objectives for growth and prosperity:** Without improved transit service, Project area communities are limited in their abilities to implement local and regional policies that encourage multimodal transportation, transit, compact development and environmental preservation.

e) Are future stages of this development including development on any other property planned or likely to happen?

Yes No

i) If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review.

Not Applicable.

f) Is this project a subsequent stage of an earlier project?

Yes No

i) If yes, briefly describe the past development, timeline and any past environmental review.

Not Applicable.

F.7. Cover Types

a) Estimate the acreage of the site with each of the following cover types before and after development:

Table F.7-1 identifies cover types before and after construction of the Project.

TABLE F.7-1: PROJECT COVERAGE TYPES

	Build Alternative 1 Before ^a	Build Alternative 1 After	Build Alternative 2 Before ^a	Build Alternative 2 After
Wetlands	3.6 ^b	1	3.6 ^b	1
Deep water/streams	3	3	3	3
Wooded/forest	0	0	0	0
Brush/grassland	0	0	0	0
Cropland	0	0	0	0
Lawn/landscaping	177	138	171	135
Impervious surface	165	197	145	177
Stormwater pond	3 ^c	10 ^c	3 ^c	10 ^c
Other (describe)	0	0	0	0
TOTAL	349	349	326	326

^a TCMA 1-Meter Land Cover Classification, Remote Sensing and Geospatial Analysis Laboratory, University of Minnesota – Version 1

^b “Level 2 Wetland Delineation Report,” September 19, 2018, WSB & Associates

^c SRF Consulting Group, July 2019



F.8. Permits and Approvals Required

a) List all known local, state and federal permits, approvals, certifications and financial assistance for the project. Include modifications of any existing permits, governmental review of plans and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure. All of these final decisions are prohibited until all appropriate environmental review has been completed. See Minnesota Rules, Chapter 4410.3100.

TABLE F.8-1: PERMITS AND APPROVALS REQUIRED STATUS

Unit of Government	Type of Application	Status
FTA, FHWA	Environmental Decision Document	To be completed
FTA, Department of Interior as applicable	Section 4(f) Determination	To be completed
FTA	Capital Investment Grant	To be completed
FTA, Advisory Council on Historic Preservation	Section 106 Programmatic Agreement (PA)	To be completed
FHWA	Right-of-Way Use Agreement	To be completed
U.S. Army Corps of Engineers	Section 404 Wetland Permit	To be completed
U.S. Fish and Wildlife Service	Endangered Species Act, Section 7 Determination	Completed
Minnesota Department of Natural Resources (DNR)	Public Waters Work Permit	To be completed
DNR	Water Appropriation Permit	To be acquired by the contractor, if needed
Board of Water and Soil Resources	Joint Application Form for Activities Affecting Water Resources in Minnesota	To be completed
Minnesota State Historic Preservation Office (MnSHPO)	Section 106 PA	To be completed
MnDOT	Right-of-Way Permit	To be completed
MnDOT	Application for Drainage Permit	To be completed
MnDOT	Application for Utility Accommodation on Trunk Highway Right-of-Way	To be completed
MnDOT	Application for Miscellaneous Work on Trunk Highway Right-of-Way	To be completed
Minnesota Pollution Control Agency	National Pollutant Discharge Elimination System Permit	To be completed



Unit of Government	Type of Application	Status
Minnesota Pollution Control Agency	Section 401 Water Quality Certification	To be completed
Minnesota Department of Agriculture	Noxious Weed Management Plan	To be completed
Metropolitan Council	Environmental Decision Document under state environmental process	To be completed
Counties Transit Improvement Board (CTIB) ^a	Cooperative funding agreement	Completed
Washington County and Ramsey County	Property tax levy, bonds	To be completed
Ramsey County	Property tax revenue	Completed
Ramsey County Regional Railroad Authority	Sales tax revenues	Completed
Washington County, Ramsey County, Saint Paul, Maplewood, Landfall, Oakdale and Woodbury	Road Crossing/Right-of-Way Permits	To be completed
Saint Paul, Maplewood, Landfall, Oakdale and Woodbury	Building Permits	To be completed
Saint Paul, Maplewood, Oakdale, Woodbury, CRWD, South Washington Watershed District and RWMWD	Erosion/Sediment Control/Grading Permits	To be completed
Saint Paul Heritage Preservation Commission	Certificate of Appropriateness	To be completed
Saint Paul, Maplewood, Washington Conservation District, Woodbury, CRWD and RWMWD	Wetland Conservation Act Permit	To be completed

^a The Counties Transit Improvement Board dissolved in September 2017, and the board then transferred its funds to the counties to manage.

*Cumulative potential effects may be considered and addressed in response to individual EAW Items **F.9-F.19**, or the RGU can address all cumulative potential effects in response to EAW **Item F.19**. If addressing cumulative effect under individual items, make sure to include information requested in EAW **Item F.19**.*

F.9. Land Use

a) Describe:

- ij) Existing land use of the site as well as areas adjacent to and near the site, including parks, trails, prime or unique farmlands.*

The study area is located in Ramsey and Washington counties in the eastern part of the Twin Cities Metropolitan Area. For the land use analysis, the study area is defined as the jurisdictions in which the Project would be located. Operating phase impacts to land use are evaluated within ½-mile of the proposed alternatives. Transit planners commonly use the ½-mile radius to represent the distance transit-users are willing to walk to access a station. Along Alignments B and C, the study area is limited to land north of I-94 within ½-mile of the alternatives because the freeway interrupts the potential momentum of station-adjacent new development and land use changes. Therefore, this analysis excludes evaluation of potential impacts to land uses south of I-94 along Alignments B and C.



Alignment A1 is in downtown Saint Paul and is bordered by the Mississippi River and open space along the riverbank to the south and primarily industrial, high-density mixed use commercial and retail, institutional, and medium-high density residential uses to the north and west. **Figure F1-5** shows existing land use near Alignment A1. To the east of downtown and on the east end of Alignment A1, existing land use transitions to transportation and commercial uses associated with the Union Depot in Saint Paul, open space in the Bruce Vento Nature Sanctuary, and then into residential uses in the Dayton's Bluff neighborhood.

Alignment A1 crosses over the sanctuary on the Kellogg Avenue bridge. The sanctuary is within Mississippi River Critical Corridor Area and the Mississippi National River and Recreation Area (river park) that is under National Parks Service jurisdiction. Alignment A1 traverses two distinct Saint Paul districts: The portion of Alignment A1 west of Lafayette Road is located within the Capitol River District, and the portion east of Lafayette Road is in the Dayton's Bluff District. .

Alignment A2 starts in downtown Saint Paul at the Union Depot. Land uses near Union Depot primarily consist of retail and other commercial, along with multifamily residential. At the east end, Alignment A2 follows the same route as Alignment A1 along Kellogg Boulevard crossing through open space in the Bruce Vento Nature Sanctuary, and then transitioning into residential use in the Dayton's Bluff neighborhood. **Figure F1-5** shows existing land use near Alignment A2.

Existing land use along Alignment B is mostly single family residential and scattered multifamily housing, with some exceptions: two large institutional uses near the Mounds Boulevard Station⁴; a small cluster of commercial uses at the intersection of Earl Street and Hudson Road; a multi-tenant office complex and several large apartment buildings near the Etna Street Station; and automobile-oriented commercial uses and clustered multifamily housing near the Van Dyke Street Station and Hazel Street Station Option. **Figure F1-5** shows existing land use near Alignment B.

Existing land use along Alignment B did not change; rather, the City rezoned the areas around stations to allow denser development in a pedestrian-friendly pattern.⁵

Alignment B passes through two Saint Paul neighborhoods. Areas west of Etna Street are located within the Dayton's Bluff neighborhood, and areas to the east are in the Conway-Battle Creek-Highwood Hills neighborhood.

Within the Dayton's Bluff neighborhood is the Dayton's Bluff Heritage Preservation District, designated by the City of Saint Paul in 1992.

The western section of Alignment C between White Bear Avenue and McKnight Road is in the City of Saint Paul. Established single-family residential land uses with some clusters of multifamily housing comprise most land uses north of Wilson Avenue, which runs parallel to Alignment C. South of Wilson Avenue along I-94 are commercial and retail land uses, mostly in strip-mall format and anchored by the Sun Ray Shopping Center, the only large-scale shopping center in the corridor west of I-494/I-694. Existing land use along Alignment C is shown in **Figure F1-6**. Based on the adoption of the *Gold Line Station Area Plans*, the City of Saint Paul has rezoned the immediate areas around stations to allow for denser development in a pedestrian-friendly pattern.⁶

Alignment C would pass through the Conway, Battle Creek and Highwood Hills neighborhoods of Saint Paul.

⁴ Metropolitan State University and Dayton's Bluff Elementary School and Recreation Area.

⁵ The Saint Paul City Council adopted the associated rezonings on Oct. 14, 2015.

⁶ The Saint Paul City Council adopted the associated rezonings on Oct. 14, 2015.



The middle portion of Alignment C extends approximately 1 mile, from McKnight Road to Century Avenue, in the City of Maplewood. The 3M campus, a mixed-use industrial land use, comprises most of the area's land use. The campus is centered around a 14-story headquarters building and surrounded by 3- to 6-story office and research and development facilities. North of the campus are established, single-family residential neighborhoods with some multifamily housing. **Figure F1-6** shows existing land use along Alignment C in Maplewood.

The City of Landfall is located north of I-94 between the east side of Tanners Lake and Greenway Avenue. Alignment C does not pass through Landfall but follows its southern border on Hudson Boulevard. Landfall residents would be served by a station at Greenway Avenue. Landfall is home to approximately 760 residents. The majority of its 53-acre land area is occupied by Landfall Terrace, a 301-unit manufactured home site. The city is home to two commercial businesses along the north side of Hudson Boulevard. **Figure F1-6** shows existing land use along Alignment C in Landfall.

The easternmost portion of Alignment C is in the City of Oakdale between Century Avenue and I-694. Land use adjacent to the alignment is a mix of commercial, public, industrial, office, and vacant uses. Low-density, single family residential neighborhoods are located north of the commercial and institutional parcels along Hudson Boulevard. **Figure F1-6** shows existing land use along Alignment C in Oakdale.

The northern portion of Alignment D3 is in the City of Oakdale in the northeast quadrant of I-694 and I-94. Alignment D3 would cross I-94 on a new bridge connecting Helmo Avenue with Bielenberg Drive in the City of Woodbury. This bridge is included in both cities' comprehensive plans.

Existing land uses along this portion of Alignment D3 include office, industrial, undeveloped, a pocket of single family residential along Hudson Boulevard near the I-94/I-694 interchange, and institutional, office and medium-density single family residential uses north of 4th Street. At the intersection of Helmo Avenue and Hudson Boulevard, mixed-use industrial uses are to the west with open spaces to the east. Existing land use along Alignment D3 in Oakdale is shown in **Figure F1-6**.

Within the City of Woodbury, existing land uses along Bielenberg Drive between Hudson Road and Tamarack Road include office, commercial, and undeveloped. The businesses in this area have natural features such as water, trees, open space, and wetlands separating the larger buildings, each with large parking lots. Along the southeast quadrant of the Tamarack Road and Bielenberg Drive intersection, existing land use is primarily single family residential, duplexes, and water/wetlands located at the southern end of Alignment D3. In the southwest quadrant of the Tamarack Road and Bielenberg Drive intersection, open space, undeveloped, and water/wetland uses dominate until reaching Guider Drive, where mixed use and commercial properties and parking surround the Woodbury Theatre Station and the Woodbury 494 Park-and-Ride Station. Existing land use along Alignment D3 in Woodbury is shown in **Figure F1-6**.

The potential limits of disturbance include unique and prime farmland; however, the study area is within an urbanized area, as designated by the U.S. Census Bureau. Therefore, this land is exempt from protection by the Farmland Protection Policy Act (FPPA).

- ii) Plans. Describe planned land use as identified in comprehensive plan (if available) and any other applicable plan for land use, water, or resources management by a local, regional, state, or federal agency.*

The analysis used land use data from comprehensive plans for the cities of Saint Paul, Maplewood, Landfall, Oakdale and Woodbury. In addition, the Saint Paul Planning Commission and City Council adopted station area plans for the Mounds Boulevard, Earl Street, Etna Street, White Bear Avenue and Sun Ray stations in October 2015 and amended the plans in February 2019. The station area plans update the city's comprehensive plan and supersede other area plans. Also, the cities of Oakdale and Maplewood adopted Bus Rapid Transit Oriented Plans (BRTOD) in April 2018 and March 2019, respectively, as part of their 2040 comprehensive plan updates. Source documents for this information include the following plans:



- *Saint Paul for All: 2040 Comprehensive Plan* (draft - 2019)⁷
- *City of Saint Paul Gold Line Station Area Plans* (adopted October 2015; amended February 2019)⁸
- *City of Maplewood 2040 Draft Comprehensive Plan* (draft - November 2018)⁹
- *Maplewood Station BRTOD Plan* (adopted January 28, 2019)¹⁰
- *City of Landfall Village 2040 Comprehensive Plan* (adopted 2017)¹¹
- *City of Oakdale 2040 Comprehensive Plan* (draft – 2018)¹²
- *Helmo Station BRTOD Plan* (adopted May 2018)¹³
- *Woodbury 2040 Comprehensive Plan* (draft - July 2018)¹⁴

Information from the comprehensive plans was supplemented by historic and recent aerial photography, field inspections and local knowledge of the study area. Assessment of compatibility with existing land uses was based on the Council's 2016 Generalized Land Use Inventory. Assessment of 2040 planned land uses was based on a review of local comprehensive plans. The Council's 2040 Generalized Planned Land Use file was not available at the time of this analysis; therefore, the Project collected 2040 land use plan data from the local communities and created a generalized 2040 land use file to examine the study area planned land use. The 2040 planned land use near Alignment A1 in Saint Paul is categorized as downtown. The *Saint Paul for All: 2040 Comprehensive Plan* describes the downtown area around Alignment A1 as the mixed-use core of Saint Paul that provides the greatest employment and housing density in the city. The land use plan also identifies "Neighborhood Nodes" throughout the city that are planned as compact, mixed use areas close to residences that would be denser concentrations of development compared with adjacent land use. The 2040 land use plan identified four Neighborhood Nodes in the downtown area near Alignment A1.

Figure F1-7 shows planned land use near Alignment A1.

The 2040 planned land use near Alignment A2 in Saint Paul is categorized as downtown. The draft *Saint Paul for All: 2040 Comprehensive Plan* describes the downtown area as the mixed-use core of Saint Paul that provides the greatest employment and housing density in the city.

⁷ *City of Saint Paul. Saint Paul for All: 2040 Comprehensive Plan. Available at: <https://www.stpaul.gov/departments/planning-economic-development/planning/2040-comprehensive-plan>. Last modified May 2019. Accessed June 2019.*

⁸ *City of Saint Paul. Gold Line Station Area Plans. Available at: <https://www.stpaul.gov/sites/default/files/Media%20Root/Planning%20%26%20Economic%20Development/2019%20Gold%20Line%20Station%20Area%20Plans%20amended%20%28reduced%29.pdf>. Last modified February 20, 2019. Accessed April 2019.*

⁹ *City of Maplewood. 2040 Comprehensive Plan (Draft). Available at: <https://www.maplewoodmn.gov/1718/2040-Comprehensive-Plan>. Last modified November 2018. Accessed December 2018.*

¹⁰ *Gold Line Partners. Maplewood Station BRTOD Plan. Available at <http://thegatewaycorridor.com/station-area-planning/maplewood-maplewood-station-area/>. Last modified January 2019. Accessed April 2019.*

¹¹ *City of Landfall Village. 2040 Comprehensive Plan. Available at: <http://citcms.cityoflandfall.com/FileUpload/2040%20Comp%20Plan%20Update%2009182017.pdf>. Last modified September 18, 2017. Accessed May 2018.*

¹² *City of Oakdale. Oakdale 2040 Comprehensive Plan. Available at <https://indd.adobe.com/view/082d99c5-6f6a-41e5-98d8-3df67df508b1>. Last modified 2018. Accessed May 2018.*

¹³ *Gold Line Partners. Helmo Station BRTOD Plan. Available at: <https://www.ci.oakdale.mn.us/DocumentCenter/View/3644/Helmo-Station-BRTOD-Plan-PDF>. Last modified May 2018 (Reformatted-April 2019). Accessed June 2019.*

¹⁴ *City of Woodbury. 2040 Comprehensive Plan (Draft). Available at: https://www.woodburymn.gov/departments/planning/draft_2040_comprehensive_plan.php. Last modified 2018. Accessed November 2018.*



Figure F1-7 shows planned land use near Alignment A2.

The 2040 planned land use near Alignment B is categorized as urban neighborhood with mixed use nodes around the Etna Street station, Van Dyke Street Station and Hazel Street Station Option.

According to the draft *Saint Paul for All: 2040 Comprehensive Plan*, the urban neighborhood areas along Alignment B are planned for primarily residential areas with a range of housing types. The mixed-use areas are planned for a mix of land uses and allow the highest densities outside of downtown. The 2040 plan designates three neighborhood nodes along Alignment B that incorporate the Mounds Boulevard, Earl Street and Etna Street station areas.

In the Dayton's Bluff Heritage Preservation District, the Saint Paul Heritage Preservation Commission reviews land use changes or planned new construction. The Dayton's Bluff Historic District Handbook provides guidance on the conservation of historic buildings in this district.

Figure F1-7 shows planned land use near Alignment B.

The 2040 planned land use along Alignment C in Saint Paul is mixed use. The *Gold Line Station Area Plans* for White Bear Avenue and Sun Ray station areas call for land use intensity commensurate with adjacency to a transitway. The mixed uses planned along Alignment C in Saint Paul include commercial, retail, office, small-scale industry, and institutional, with densities ranging from 30 to 150 units per acre. The 2040 plan also designates the White Bear Avenue and Sun Ray station areas as Neighborhood Nodes.

The planned 2040 land use along Alignment C to the north of I-94 in Maplewood is employment. This area includes the 3M Campus. According to Maplewood's draft *2040 Comprehensive Plan*, planned land use for this area supports major employment centers along with the construction of frequent and reliable transit service to benefit large employment centers.

The 2040 planned land use for Landfall to the north of Alignment C is commercial and low-density residential. According to Landfall's adopted *2040 Comprehensive Plan*, planned land use within the city is residential and commercial, consistent with existing land use.

The north side of I-94 along Alignment C in Oakdale is planned for commercial, low-density residential, institutional, employment and industrial land uses. According to Oakdale's draft *2040 Comprehensive Plan*, land uses are expected to remain consistent throughout the planning timeframe, except for areas specifically identified for redevelopment and new development projects within the study area.

Oakdale created the *Tanners Lake Proposed Redevelopment Plan* to address the aging businesses on the western edge of Tanners Lake. The proposed plan seeks to utilize the shoreline and scenic views along Tanners Lake and redevelop with new retail, restaurant and office opportunities.

Developable parcels remain along Hudson Boulevard, and development of office and limited business uses is expected in the northwest quadrant of the I-94/I-694 interchange. Industrial and commercial uses are planned to intensify in areas north of 4th Street. Reconstruction of the 4th Street Bridge over I-694 is included in Oakdale's comprehensive plan.

Figure F1-8 shows the 2040 planned land use along Alignment C.

The planned 2040 land use along the northern portion of Alignment D3 (north of 4th Street) in Oakdale is industrial, employment and mixed use. Medium-density residential and parks/open space is planned for the area northeast of this portion of Alignment D3.

In response to plans for the Project, the portion of Helmo Avenue south of 4th Street and extending to Hudson Boulevard, is planned for mixed-use BRTOD. This designation allows for higher-density uses such as townhomes and apartment buildings, office-industrial, professional office, and commercial/retail.



The planned 2040 land use along Alignment D3 in Woodbury is employment around the Tamarack Station, and predominately commercial use around the Woodbury Theatre and Woodbury 494 Park-and-Ride stations.

According to Woodbury's draft *2040 Comprehensive Plan*, high-quality office developments are the focus of the employment use area around the Tamarack Station. High-quality retail shopping and services along major roadways near higher-density housing and employment centers is the focus for the planned commercial use area around the Woodbury Theatre and Woodbury 494 Park-and-Ride stations. Woodbury policies within each of these 2040 land use designations call for consideration of pedestrian and transit-users, promoting high-density development, and encouraging and cooperating with businesses and transit-providers to offer the most effective and efficient transit system possible.

The draft *2040 Comprehensive Plan* includes a "Gold Line Station Area Planning" section to guide more specifically BRTOD practices around the proposed Woodbury stations.

Planned 2040 land use along Alignment D3 is shown in **Figure F1-8**.

iii) Zoning, including special districts or overlays such as shoreland, floodplain, wild and scenic rivers, critical area, agricultural preserves, etc.

Special land use zoning districts are noted above in **Items F.9.a.i)** and **F.9.a.ii)**. Portions of the Project are within the Mississippi River Critical Corridor Area (MRCCA) and the Mississippi National River and Recreation Area (MNRRA). The MRCCA is cooperatively managed by local governments, the DNR, the Council and the National Park Service (NPS); the MNRRA is a unit of the NPS. No wild and scenic rivers or agricultural preserves are within the study area.

Floodplains and floodways within the potential limits of disturbance are associated with the Mississippi River, its tributaries such as Battle Creek, and waterbodies with fluctuating water elevations. Ramsey-Washington Metro Watershed District (RWMWD) primarily regulates floodplains that fall within the Project potential limits of disturbance; Federal Emergency Management Agency (FEMA) also regulates the Zone A floodplains.

*b) Discuss the project's compatibility with nearby land uses, zoning, and plans listed in **Item F.9.a)** above, concentrating on implications for environmental effects.*

As required by Minnesota Statutes Chapter 473.864, each city, township and county in the seven-county Twin Cities Metropolitan Area must review and update comprehensive plans at least once every 10 years. The latest required comprehensive plan update was for a 2040 planning horizon.

The communities in the study area have prepared 2040 comprehensive plans, with most plans currently under review by the Council. The City of Landfall has adopted an updated 2040 comprehensive plan and the cities of Saint Paul, Maplewood, Oakdale and Woodbury have draft updates available for public review while under review by the Council. The land use policies described in the 2040 draft comprehensive plans are compatible with the Project. These plan updates frequently identify and consider the Project route when envisioning future land use, growth and development in the proposed station areas.

City of Saint Paul

The Project is compatible with the City of Saint Paul's local land use planning policies. The City released a draft of its *Saint Paul for All: 2040 Comprehensive Plan* in November 2018. The Project is compatible with the City of Saint Paul's local land use planning policies found within the draft 2040 plan.



The land use chapter of the draft plan encourages multimodal and transit-oriented development (TOD) through planned and associated land use policies. The first citywide land use policy reads: “... *encourage transit-supportive density and direct the majority of growth to areas with the highest existing or planned transit capacity.*” The draft plan seeks to achieve more evenly distributed community amenities, employment opportunities and housing choices across 56 Neighborhood Nodes, which include transit station areas. The draft 2040 plan supports mixed use and high-density developments that promote walking and transit.

The transportation chapter of the draft 2040 plan also supports TOD and transit. Under the goal of providing more transportation choices, transportation policy T-27 reads, “*Improve public transit mode share and support quality public transit in all parts of the city through strategic establishment of transit-supportive land use intensity and design, working with transit providers to improve their services offerings, and supporting transit facilities.*” The plan recognizes the importance of providing quality transit options in high-density areas and working with Metro Transit to ensure all transit users have safe access to employment opportunities and community events.

In 2015 the City of St. Paul adopted the *City of Saint Paul Gold Line Station Area Plans*, and the Council authorized in April 2016 that the station area plans go into effect. The document includes plans for the areas around the proposed Mounds Boulevard, Earl Street, Etna Street, White Bear Avenue and Sun Ray stations. The Station Area Plans were amended in February 2019 to update the White Bear station location. The White Bear Station Area Plan now states the station should be south of Hazel Street where it is visible from Old Hudson Road.

The Gold Line Station Area Plans designate the Earl Street Station, Etna Street Station, White Bear Avenue Station and Sun Ray Station areas as “neighborhood centers.” The City of Saint Paul comprehensive plan calls for targeting growth in Neighborhood Centers while balancing density and scale of development with other objectives, including consistency with the prevailing character and overall density of the area. The comprehensive plan explicitly recognizes that growth in Neighborhood Centers would be achieved through the development of housing types at densities that support transit and promote walking. The station plan for Mounds Boulevard anticipates little change as this area is predominately residential.

City of Maplewood

Within the City of Maplewood, the Project is compatible with local land use planning policies. The City of Maplewood released a draft version of its *2040 Comprehensive Plan* in November 2018. The draft plan supports efforts to encourage high-density and mixed-use neighborhoods in targeted areas near transit options. Additionally, the draft 2040 plan speaks directly of the Project as a regional transit investment that would improve accessibility and mobility in the region. The City of Maplewood is pursuing strategies to ensure the safety of transit-riders; for example, the draft plan identifies a future bridge project over I-94 that would provide pedestrians and bicyclists safe access to the Maplewood Station.

City of Landfall

The Project is compatible with the *City of Landfall Village 2040 Comprehensive Plan* that includes the goal of providing access to transit for all residents. A supporting objective of this goal is to maintain a working partnership with the regional transit provider. The plan identifies the Project as a planned service facility for the community. Landfall’s draft 2040 plan notes that the Greenway Avenue Station in Oakdale would provide close and convenient transit access for the residents of Landfall.

City of Oakdale

The Project is compatible with Oakdale’s draft *2040 Comprehensive Plan*. The draft plan promotes the continual improvement of transit access and has a goal of providing transit service for all residents. The draft plan recognizes that a strong transit system provides benefits for residents, businesses, and the environment. Consistent with the Project, the plan supports the rebuilding of the 4th Street bridge over I-694 to include



space for a dedicated pedestrian walkway and Gold Line BRT guideway. Further, the plan added a “BRT-oriented development” land use designation for the area surrounding the Helmo Avenue Station.

One policy within the draft 2040 plan relates to small area plans that guide investment and provide recommendations for land use, density and pedestrian and transit use, among other factors. Oakdale recently adopted its *Helmo Station BRTOD Plan* in response to the planned Project route. This plan calls for the development of a new mixed-use neighborhood, which Oakdale anticipates would include the Project BRT station and an adjoining public plaza, medium- and high-density residential units, professional offices and retail, and open space.

The plan also includes parking to accommodate commuters who use the Project BRT, with future consideration for a shared-use parking structure for increased development intensity. The plan for the Helmo Avenue Station area calls for a 100-space park-and-ride facility which is consistent with the Project’s 15% Concept Plans (see **Appendix B**) that also anticipate 100 spaces at the park-and-ride facility.

The cities of Oakdale and Landfall also prepared a similar plan for the Greenway Avenue Station. The station is envisioned as a neighborhood station serving the community of Landfall and the adjacent Oakdale single-family residential neighborhood.¹⁵

City of Woodbury

The Project is compatible with the City of Woodbury’s local land use planning policies. The draft 2040 plan calls for a multimodal approach to transportation, inclusive of transit, pedestrian and bicycle travel. This draft plan includes a Gold Line station-area planning section, which provides BRTOD principles for development around the proposed Woodbury stations. The first goal of the station area would be to “define and implement Woodbury’s vision for a vibrant, transit-supportive station area that meets Woodbury’s community and architectural standards,” the plan states. Further, the draft 2040 plan lists coordinating with Metro Transit on the Project among its short-term (zero to two years) and midterm (two to five years) improvements.

County Plan Compatibility

The draft *Ramsey County 2040 Comprehensive Plan*¹⁶ is guided by the county’s “All Abilities Transportation Network Policy” for implementing an integrated and fully interconnected, multimodal transportation system. The plan further supports transit solutions including Transit-Oriented Development (TOD) and compact growth strategies. The plan identifies the METRO Gold Line Project.

The *Washington County 2040 Comprehensive Plan*¹⁷ includes a series of policies and strategies aimed at effectively planning for and implementing transit (Transportation Goal 1) and encouraging TOD (Land Use Goals 2 and 3). The plan identifies the METRO Gold Line Project.

Regional Plan Compatibility

¹⁵ City of Landfall. City of Oakdale. April 2019. Available at: <http://www.ci.oakdale.mn.us/DocumentCenter/View/3643/Greenway-Station-BRTOD-Plan-PDF>. Accessed June 2019.

¹⁶ Ramsey County 2040 Comprehensive Plan. Available at: https://www.ramseycounty.us/sites/default/files/Projects%20and%20Initiatives/RamseyCounty2040_FullDraft_Jan2019.pdf. Accessed June 2019.

¹⁷ Washington County. Washington County 2040 Comprehensive Plan – A Policy Guide to 2040. Approved December 2018. Available at: <https://www.co.washington.mn.us/DocumentCenter/View/21955/Washington-County-2040-Comprehensive-Plan-Draft-Submitted-to-Met-Countil>. Accessed June 2019.



The Council's 2040 TPP includes the Project and identifies the LPA in its fiscally-constrained transit investment plan. The 2040 TPP acknowledges that the CTIB identified the Project as a funding priority for its Phase 1 Program of Projects.

A 2018 update to the 2040 TPP identifies the Project as a planned "transitway expansion assumed to be funded within the current revenue scenario." The 2018 update acknowledges the importance of BRT scalability and adaptability to meet changes in transit demand over time.¹⁸

The *Thrive MSP 2040 Transportation Policy Plan* also supports the Project. The plan recommends that the region increase transit service and transit-supporting land uses around transit stations. The Project is specifically identified as a planned transitway expansion with funding priority.

Special Districts

Alignment A1 borders the MRCCA/MNRRRA boundary on Kellogg Boulevard between Sibley Street and I-94. Within this area, BRT would operate on the existing roadway in mixed traffic (not in a dedicated lane). The Project would not construct new stations within the MRCCA/MNRRRA. Therefore, the Project would conform with MCRRA requirements and would not constitute a use of MNRRRA.

- c) *Identify measures incorporated into the proposed project to mitigate any potential incompatibility as discussed in **Item F.9.b)** above.*

The Council does not anticipate impacts to land use because the Build Alternatives would be compatible with land use planning documents; therefore, the Council does not propose avoidance, minimization or mitigation measures. Ongoing coordination with local communities would occur for the placement of BRT stations and park-and-ride facilities.

F.10. Geology, Soils and Topography/Land Forms

- a) *Geology – Describe the geology underlying the project area and identify and map any susceptible geologic features such as sinkholes, shallow limestone formations, unconfined/shallow aquifers, or karst conditions. Discuss any limitations of these features for the project and any effects the project could have on these features. Identify any project designs or mitigation measures to address effects to geologic features.*

Glacial ice and meltwater during the last glaciation (Wisconsinan Stage) primarily deposited the surface sediments of both Ramsey and Washington counties. The advance and retreat of the Superior lobe and Grantsburg sublobe, an offshoot of the Des Moines lobe, and meltwater from these lobes deposited the sediments through most of the study area. The St. Croix Moraine, a hilly landscape formed near the edge of the Superior lobe, is present in most of the study area. As glacial ice from the Superior lobe retreated, the Glacial River Warren deepened and left sediments ranging from gravel to sand to silt along the terraces of the river. The analysis did not identify karst features, or geologic hazards, within the study area. The Build Alternatives would not produce long-term impacts to geology.

¹⁸ City of Saint Paul. "DRAFT Saint Paul For All – Chapter 6". Available at: <https://metro council.org/Transportation/Planning-2/Key-Transportation-Planning-Documents/Transportation-Policy-Plan/tpp-update/2018-Transportation-Policy-Plan-Update/Chapter-6-Transit-Investment-Direction-and-Plan.aspx>. Last modified March 2018. Accessed May 2018. "



Physical impacts to geology would occur during construction, however the analysis did not identify karst formations (geologic hazards) in the study area; therefore, the Build Alternatives would not produce short-term impacts to geologic features or hazards.

*b) Soils and topography – Describe the soils on the site, giving NRCS (SCS) classifications and descriptions, including limitations of soils. Describe topography, any special site conditions relating to erosion potential, soil stability or other soils limitations, such as steep slopes, highly permeable soils. Provide estimated volume and acreage of soil excavation and/or grading. Discuss impacts from project activities (distinguish between construction and operational activities) related to soils and topography. Identify measures during and after project construction to address soil limitations including stabilization, soil corrections or other measures. Erosion/sedimentation control related to stormwater runoff should be addressed in response to **Item F.11.b.ii**).*

The analysis used soil data was from digital surveys of Ramsey and Washington counties produced by the Soil Survey Geographic (SSURGO) dataset of the NRCS,¹⁹ considered by technical experts to be Minnesota's best available soil data. **Attachment A-5-2 to Appendix A** includes details about the soil types within the study area. **Figure F1-9** shows soil erosion susceptibility based on DNR information. Erosion susceptibility in the study area varies from low-medium (light orange on the figure) to medium-high (light green).²⁰

Alignment A1 (Smith Avenue to Mounds Boulevard), Alignment A2 (Union Depot to Mounds Boulevard), Alignment B (Mounds Boulevard to White Bear Avenue) and Alignment C (White Bear Avenue to I-694)

Most of Alignments A1, A2, B and C are located on developed land or previously disturbed land adjacent to roadways. Disturbed soils exist within these areas.

Steep slopes and soils with moderate erosion hazard exist within portions of the study area for these alignments. Most of these soils are associated with the Mississippi River Valley and Bluff Creek area and are outside of the potential limits of disturbance. Some steep slopes exist along interchanges with I-94, including the interchange at TH 61 and the crossing of I-694.

The SSURGO database generally classifies soils within the study area for these alignments as poorly drained to somewhat excessively drained; however, most of the area within the potential limits of disturbance is urban land. DNR mapping shows this area as between medium and high soil erosion susceptibility.

Hazel Street Station Option

The area in the vicinity of intersection of Hazel Street and Old Hudson Road is developed or previously disturbed land. This area has an urban land classification. DNR mapping shows the area as low-medium soil erosion susceptibility.

Dedicated Guideway Option at Hadley Avenue and 4th Street

The west side of Hadley Avenue at 4th Street is developed. The east side of Hadley Avenue immediately adjacent to the roadway is not developed. DNR mapping shows the area as having between low and medium soil erosion susceptibility.

Alignment D3 (I-694 to Woodbury 494 Park-and-Ride)

¹⁹ U.S. Department of Agriculture. Natural Resources Conservation Service Web Soil Survey. Available at: <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>. Accessed July 2018.

²⁰ Minnesota Department of Natural Resources. Available at: <http://arcgis.dnr.state.mn.us/ewr/whaf/Explore/>. Accessed September 2018.



Most of the soil within the study area for Alignment D3 is located on developed land or previously disturbed land adjacent to roadways. Some steep slopes and soils with a moderate erosion hazard rating exist within small portions of the Alignment D3 study area.

The SSURGO database generally classifies the soils within the Alignment D3 study area as well-drained to somewhat excessively drained and with a slight erosion hazard rating. The SSURGO database classifies about half the soils within the potential limits of disturbance as well-drained with a slight erosion hazard rating. The database does not rate 14 percent of the soils, and it rates the remaining soils as a combination of very poorly drained, poorly drained, moderately well drained, excessively drained and somewhat excessively drained with slight to moderate hazards for erosion. DNR mapping shows the area as between low and medium soil erosion susceptibility.

After construction, there will be no exposed soils. All soils within the construction limits will be either turf-established, or covered with impervious surface, not changing the underlying conditions of the soils.

Physical impacts to soils would occur during construction, however the analysis did not identify karst formations (geologic hazards) in the study area; therefore, the Build Alternatives would not produce short-term impacts to geologic features or hazards.

The potential limits of disturbance include soils with slight and moderate erosion hazard ratings. Erosion is unlikely under ordinary climatic conditions in areas with a slight erosion hazard. Erosion is likely in areas with a moderate erosion hazard rating, and the Project would apply erosion-control measures in these areas as needed. The potential limits of disturbance also include poorly drained soils that may require corrections (such as removal or replacement with stable soils or treatment in-place) for construction of the guideway, pavement or other structures. If construction activities remove these soils, the Project would need to dispose of the excavated soils off-site or reuse them in areas that do not require consolidated soils.

Because most of the Project would follow the existing roadway network, substantial grading in areas with steep slopes or other constraints are not anticipated; however, the need for grading in a few locations with steep slopes adjacent to roadways, such as areas where the guideway would be located between I-94 and the frontage road are anticipated. The Council would utilize additional slope stabilization measures and potential retaining walls at these locations to mitigate the potential for erosion.

The Council does not anticipate impacts to soils from the Project; therefore, the Council does not propose avoidance, minimization and mitigation measures. All Project-related construction activities would adhere to the applicable grading and erosion-control standards and permitting requirements of the Minnesota Pollution Control Agency (MPCA), MnDOT, CRWD, RWMWD and the corridor communities.

F.11. Water Resources

a) Describe surface water and groundwater features on or near the site in a.i. and a.ii. below.

i) Surface water – lakes, streams, wetlands, intermittent channels, and county/judicial ditches. Include any special designations such as public waters, trout stream/lake, wildlife lakes, migratory waterfowl feeding/resting lake, and outstanding resource value water. Include water quality impairments or special designations listed on the current MPCA 303d Impaired Waters List that are within 1 mile of the project. Include DNR Public Waters Inventory number(s), if any.

Urban and suburban residential, commercial and mixed use development categories comprise the land use within the resource study area. The *Level 2 Wetland Delineation Report* provides a list of surface waters within the resource study area.



A total of seven wetlands were identified and delineated in the preparation of this report, as summarized in **Table F.11-1**. For a visual representation of the wetland locations, and DNR Public Waters Inventory number, please see **Figure F1-10, Figure F1-11, Figure F1-12, Figure F1-13, Figure F1-14, Figure F1-15** and **Figure F1-16**.



TABLE F.11-1: SUMMARY OF DELINEATED WETLANDS

Wetland ID	Delineation Method	No. Transects	Plant Community ^a	Type ^b	NWI ^c	DNR PWI ^d	County Soil Survey (Hydric/Non-Hydric) ^e
22-1	Level 2	1	Seasonally flooded basin	Type 1 (PEMA)	Yes	8200 9100	1027, W
36-2	Level 2	1	Shallow Marsh	Type 3 (PEMC)	No	NA	226, 189 ^e
42-1	Level 2	1	Seasonally flooded basin	Type 1 (PEMA)	No	NA	342C, 189 ^e
48-1	Level 2	1	Deep marsh with Shallow marsh fringe	Type 4 with a Type 3 fringe (PEMF/ PEMC)	Yes	NA	189 ^e , 342C
48-1	Level 2	1	Deep marsh with Shallow marsh fringe	Type 4 with a Type 3 fringe (PEMF/ PEMC) ^f	Yes	NA	189 ^e , 342C
62-1	Level 2	1	Shallow marsh	Type 3 (PEMC)	Yes	NA	189 ^e , 452, 342C,
139-1	Level 2	1	Shallow marsh	Type 3 (PEMC) ^f	Yes	NA	266, 153B

^a Eggers, Steve and Reed, Donald. July 2015. "Wetland Plants and Plant Communities of Minnesota and Wisconsin." USACE St. Paul District). Available at: <https://usace.contentdm.oclc.org/digital/collection/p266001coll1/id/2845>. Accessed October 2018.

^b Circular 39 wetland types. Shaw and Fredine. 1956. Available at: <https://ia801901.us.archive.org/8/items/wetlandsofunitied00shaw/wetlandsofunitied00shaw.pdf>. Accessed October 2018.

^c "Yes" indicates wetland is mapped in the NWI and "No" indicates the wetland is not mapped in the NWI.

^d "NA" indicates the wetland is not mapped in the PWI. Numbers listed are the DNR ID, indicating the wetland is mapped in the PWI.

^e Hydric soils.

^f Impacts associated with stormwater facilities at Wetland 48-1 and Wetland 139-1 are based on the 15% Concept Plans. As the Project's design is advanced and more analysis completed for anticipated stormwater needs for the Project, impacts are anticipated to be reduced to requirements needed to qualify for the Transportation Regional General Permit.



Table F.11-2 lists the four impaired waters that fall within 1 mile of the Project’s potential limits of disturbance. All four would receive runoff from the Project area. The table includes information about the MPCA impaired waters within the study area, including the types of impairments and their respective TMDL status according to the Environmental Protection Agency (EPA). **Figure F1-17** shows the locations of these impaired waters.

TABLE F.11-2: IMPAIRED WATERS WITHIN 1 MILE OF PROJECT POTENTIAL LIMITS OF DISTURBANCE

Name	Impairments	EPA-Approved TMDL Plans
Mississippi River (Minnesota River to Metropolitan Wastewater Treatment Plant)	<ul style="list-style-type: none"> Mercury Fecal coliform Polychlorinated biphenyl Perfluorooctane sulfonate Turbidity 	TMDL plan for mercury and turbidity
Battle Creek (Battle Creek Lake to Pig’s Eye Lake)	<ul style="list-style-type: none"> Aquatic macroinvertebrate bioassessments Fishes bioassessments Chloride 	TMDL plan for aquatic macroinvertebrate bioassessments, fishes bioassessments, chloride
Tanners Lake	<ul style="list-style-type: none"> Mercury Chloride 	TMDL plans for mercury and chloride
Battle Creek Lake	<ul style="list-style-type: none"> Mercury Chloride 	TMDL plans for mercury and chloride

^a As of December 2016.

ii) Groundwater – aquifers, springs, seeps. Include:

1. depth to groundwater

The analysis identified surface geology, bedrock geology and groundwater resources using the geologic atlases of Ramsey County²¹ and Washington County,²² and it used the DNR’s Cooperative Groundwater Monitoring program data to identify approximate groundwater depths. The analysis reviewed groundwater data from the DNR’s Cooperative Groundwater Monitoring program.²³ According to the data, static water levels across the study area varied from approximately 36 feet from the land surface in downtown Saint Paul (Minnesota Department of Health (MDH) Unique Well No. 200517) to approximately 245 feet from the land surface in eastern Maplewood (MDH Unique Well No. 200054). According to the geologic atlases for

²¹ Meyer, G.N.; Swanson, L., C-07, Geologic atlas of Ramsey County, Minnesota, Minnesota Geological Survey, 1992. Available from the University of Minnesota Digital Conservancy at: <https://conservancy.umn.edu/handle/11299/58233>. Accessed October 2018.

²² Bauer, Emily J., C-39, Geologic Atlas of Washington County, Minnesota, Minnesota Geological Survey, 2016. Available from the University of Minnesota Digital Conservancy at: <https://conservancy.umn.edu/handle/11299/178852>. Accessed October 2018.

²³ Minnesota Department of Natural Resources. Cooperative Groundwater Monitoring Program, 2016. Available at: <http://www.dnr.state.mn.us/waters/cgm/index.html>. Accessed July 2018.



Ramsey and Washington counties, susceptibility to groundwater pollution across the study area ranges from moderately susceptible to very highly susceptible.^{24, 25} The western portion of the study area east of downtown Saint Paul and in the vicinity of White Bear Avenue, the 3M campus and Battle Creek Lake includes areas very susceptible to groundwater pollution.

2. if project is within a MDH wellhead protection area

The project is located within, or within a ½ mile of, several wellhead protection areas and Drinking Water Supply Management Areas (DWSMA):²⁶

- Oakdale South WPA/ Oakdale DWSMA
- Woodbury 1 WPA/ Woodbury 1 DWSMA
- Woodbury Central WPA / Woodbury Central DWSMA

No infiltration practices will be located in these WPAs. Oakdale South and Woodbury 1 are listed as moderate vulnerability and the Woodbury Central is listed as low vulnerability.

3. identification of any onsite and/or nearby wells, including unique numbers and well logs if available. If there are no wells known on site or nearby, explain the methodology used to determine this.

A search of the Minnesota County Well Index data base indicates that wells are located in the downtown Saint Paul area and within the I-94 corridor, however these wells are outside of the Project’s limits of disturbance.²⁷ Impacts to wells are not anticipated from operation or construction of the Project. If any unused or unsealed wells are discovered during construction, they will be sealed in accordance with Minnesota Rules Chapter 4725.

Table F.11-3 provides a list of wells within one block of the Project’s limits of disturbance.

TABLE F.11-3: WELLS WITHIN 1 BLOCK OF PROJECT POTENTIAL LIMITS OF DISTURBANCE

Unique ID No.	Status	Use	Depth to Bedrock (Feet)
200045	Active	Test Well	31
200049	Active	Commercial	416
151574	Active	Undefined	325
200027	Active	Commercial	379
200026	Active	Commercial	300
200029	Active	Commercial	373
200022	Active	Commercial	355

²⁴ Minnesota Department of Natural Resources. Ramsey County Geologic Atlas. 1992. Available at: http://www.dnr.state.mn.us/waters/programs/gw_section/mapping/platesum/ramscga.html. Accessed August 2015.

²⁵ Minnesota Department of Natural Resources. Washington County Geologic Atlas. 1990. Available at: http://www.dnr.state.mn.us/waters/programs/gw_section/mapping/platesum/washcga.html. Accessed August 2015.

²⁶ Minnesota Department of Agriculture website. Available at: <https://mnaq.maps.arcgis.com/apps/webappviewer/index.html?id=7105310e562041749a240ebad844538b>. Accessed June 2019.

²⁷ Minnesota Department of Health. 2016. Minnesota Well Index. Available at: <https://mnwellindex.web.health.state.mn.us/>. Accessed June 2019.



Unique ID No.	Status	Use	Depth to Bedrock (Feet)
200021	Active	Commercial	50
200020	Active	Commercial	50
200019	Active	Commercial	308
200515	Active	Commercial	365
200024	Active	Undefined	1022
200018	Active	Commercial	347
200023	Active	Commercial	358
247497	Inactive	Commercial	263
200029	Active	Commercial	373
200040	Active	Commercial	1048
200038	Active	Commercial	405
200034	Active	Commercial	359
200032	Active	Commercial	365
200031	Active	Commercial	309
200014	Active	Commercial	466
200013	Active	Air conditioning	347
247497	Inactive	Commercial	263
600976	Active	Monitoring well	60
600978	Active	Monitoring well	60
600977	Active	Monitoring well	60
600975	Active	Monitoring well	70
200521	Active	Commercial	175
207968	Active	Industrial	126
767867	Active	Irrigation	490
233911	Active	Domestic	98
247112	Unknown	Unknown	100
644558	Active	Elevator	18
208466	Active	Commercial	290
127275	Active	Commercial	126
604344	Active	Monitor Well	28
675974	Active	Monitor Well	47
675975	Active	Monitor Well	45



Unique ID No.	Status	Use	Depth to Bedrock (Feet)
738900	Active	Elevator	29
738919	Active	Elevator	31

*b) Describe effects from project activities on water resources and measures to minimize or mitigate the effects in **Item F.11.b.i)** through **Item F.11.b.iv)** below.*

i) Wastewater – For each of the following, describe the sources, quantities and composition of all sanitary, municipal/domestic and industrial wastewater produced or treated at the site.

1. If the wastewater discharge is to a publicly owned treatment facility, identify any pretreatment measures and the ability of the facility to handle the added water and waste loadings, including any effects on, or required expansion of, municipal wastewater infrastructure.

Not applicable. The Project would not generate wastewater.

2. If the wastewater discharge is to a subsurface sewage treatment systems (SSTS), describe the system used, the design flow, and suitability of site conditions for such a system.

Not applicable.

3. If the wastewater discharge is to surface water, identify the wastewater treatment methods and identify discharge points and proposed effluent limitations to mitigate impacts. Discuss any effects to surface or groundwater from wastewater discharges.

Not applicable.

ii) Stormwater – Describe the quantity and quality of stormwater runoff at the site prior to and post construction. Include the routes and receiving water bodies for runoff from the site (major downstream water bodies as well as the immediate receiving waters). Discuss any environmental effects from stormwater discharges. Describe stormwater pollution prevention plans including temporary and permanent runoff controls and potential BMP site locations to manage or treat stormwater runoff. Identify specific erosion control, sedimentation control or stabilization measures to address soil limitations during and after project construction.

The Council anticipates the Project would increase stormwater runoff due to the introduction of new and reconstructed impervious surfaces. Impervious surfaces include roadways such as transitways and local streets; sidewalks and trails; parking facilities; and transit station platforms and structures such as bridges and parking areas. Various regulatory authorities require treatment for water quality, rate control and quantity (or volume) for these increases. In addition, the Capitol Region Watershed District (CRWD) and Ramsey-Washington Metro Watershed District (RWMWD) also require projects to control runoff volume from the reconstructed impervious surfaces with practices such as infiltration, which could potentially benefit groundwater recharge and water quality, and it could reduce peak discharges to local streams.

In general, the stormwater and water quality resource study area varies from highly altered, urbanized and developed conditions in the corridor’s western sections to suburban, mostly developed conditions in the eastern sections.

The Build Alternatives are entirely located in the Mississippi River major watershed, so all drainage from the Project would eventually flow into the Mississippi River. MPCA lists the Mississippi River as impaired due to mercury, fecal coliform, polychlorinated biphenyl, perfluorooctane sulfonate and turbidity (see **Table F.11-2**).



Alignment A1 (Smith Avenue to Mounds Boulevard)

Existing drainage areas for Alignment A1 are located within the City of Saint Paul in CRWD's Downtown subwatershed. This alignment has a mix of Saint Paul and private right-of-way, and most of the area is impervious. The contributing drainage area is characterized by urban roadway with curb and gutter and grass boulevards with runoff conveyed by catch basins and underground storm sewer. All drainage from the area flows toward the Mississippi River.

Alignment A2 (Union Depot to Mounds Boulevard)

Like Alignment A1, the existing drainage areas for Alignment A2 are located within the City of Saint Paul in the CRWD's Downtown subwatershed. This alignment has a mix of Saint Paul and private right-of-way, and most of the area is impervious. The contributing drainage area is characterized by urban roadway with curb and gutter and grass boulevards with runoff conveyed by catch basins and underground storm sewer. All drainage from the area flows toward the Mississippi River.

Alignment B (Mounds Boulevard to White Bear Avenue)

Alignment B existing drainage areas are located entirely within the City of Saint Paul. The alignment travels within both the CRWD and RWMWD, and its contributing drainage area is characterized by urban roadway with curb and gutter and grass boulevards, undeveloped and vegetated roadside ditches, and vegetated median areas. The alignment crosses the Phalen Creek, Urban, Mississippi River Bottomlands and Beltline subwatersheds.

Alignment B's infrastructure typically includes regularly placed catch basins that convey runoff to stormwater management facilities, wetlands and trunk storm sewer pipes. The RWMWD-owned Beltline Interceptor storm sewer pipe system crosses the alignment at the TH 61 and I-94 interchange. This system consists of a 72-inch diameter reinforced concrete pipe that conveys significant amounts of stormwater runoff from the east side of Saint Paul that discharge to the Mississippi River.

The Phalen Creek subwatershed drains the area immediately adjacent to the Project guideway from Kellogg Boulevard to Maple Street. This area's contributing drainage area includes urban roadway with some vegetated median areas between Mounds Boulevard and I-94. The drainage here collects in the trunk system along I-94 and flows toward the Mississippi River. MnDOT and the City of Saint Paul own the right-of-way. This portion of the corridor is compact with limited space between the residential neighborhood to the north and I-94 to the south of Hudson Road.

The Urban subwatershed begins at Maria Avenue, and it covers the residential areas north and south of I-94. The Urban watershed continues to Earl Street and the boundary between the CRWD and RWMWD. MnDOT and the City of Saint Paul own the right-of-way. This portion has contributing drainage area characteristics like those of the Phalen Creek subwatershed. Drainage collects in a trunk storm sewer running along Hudson Road, which crosses I-94 along Cherry Street and discharges into the Mississippi. The City of Saint Paul has flooding concerns downstream of this area. Like the Phalen Creek subwatershed, this area has limited space to the north and south of Hudson Road for use as stormwater management areas.

The Mississippi River Bottomlands subwatershed drains the section of Alignment B from Earl to Kennard streets, and areas just north of the proposed guideway from Kennard Street to White Bear Avenue. MnDOT and the City of Saint Paul own the right-of-way in this portion of Alignment B. This area's contributing drainage area includes urban roadway with some undeveloped, vegetated median located around the TH 61 interchange. The City of Saint Paul is concerned about flooding in the TH 61 and Johnson Parkway areas downstream, and in a few areas containing contaminated soils, and MnDOT is concerned about its ability to implement future improvements to I-94 in this area. These issues reduce the potential available



space for stormwater management adjacent to I-94. All drainage from the area flows toward the Mississippi River.

The Beltline subwatershed covers the drainage from TH 61 to White Bear Avenue to the north and south of the proposed guideway. This area's contributing drainage area includes urban roadway, grass boulevards and curb and gutter with catch basins and storm sewer to convey storm runoff. The storm sewer discharges into the MCES interceptor, which eventually discharges to the Mississippi River. The City of Saint Paul and private entities own right-of-way in this subwatershed.

Alignment C (White Bear Avenue to I-694)

Alignment C existing drainage areas are within the RWMWD and the cities of Saint Paul, Maplewood, Landfall and Oakdale. The Battle Creek subwatershed drains the area between White Bear Avenue and Ruth Street into Suburban Pond, which outlets southward to Battle Creek before discharging into the Mississippi River. This area's contributing drainage area includes urban roadway and vegetated boulevards that create runoff that flows to storm sewers that drain to trunk storm lines along the south side of I-94. These lines then drain into the Suburban Pond by Van Dyke Street. MnDOT primarily owns the right-of-way.

Along Sun Ray Shopping Center and 3M campus properties, the corridor's contributing drainage area includes urban roadway that transitions to a mix of urban and rural roadway east of Century Avenue. Alignment C spans the Battle Creek, Tanners Lake and Battle Creek Lake subwatersheds, all of which drain into the Mississippi River.

The Battle Creek subwatershed drains portions of Alignment C between Ruth Street and Century Avenue. West of McKnight Road, a trunk storm sewer runs to the west along I-94 towards the Suburban Pond, which drains to Battle Creek and the Mississippi River. RWMWD has identified the Suburban Pond as having flooding issues, but these concerns extend throughout the watershed and could impact any proposed stormwater management measures. A large trunk storm sewer also runs to the south along McKnight toward Battle Creek. Battle Creek does not meet water quality standards due to nutrients and mercury. The Battle Creek portion of Alignment C falls within the cities of Saint Paul and Maplewood. Much of the Project corridor falls within MnDOT right-of-way, however, other right-of-way owners include Cities of Saint Paul and Maplewood, along with private property owners of Sun Ray Shopping Center and 3M.

The Tanners Lake subwatershed drains a portion of Alignment C between Century Avenue and Hadley Avenue North. Most of the existing drainage in this area is along Hudson Boulevard North, which has a rural section on the north side that conveys runoff to roadside ditches or to Tanners Lake, and an urban section on the south side that keeps runoff directly from entering the I-94 corridor. The Tanners Lake portion of Alignment C falls within the cities of Oakdale and Landfall. Most of the proposed corridor is within the City of Oakdale's right-of-way. Tanners Lake is impaired due to mercury. Tanners Lake contains an outfall in the south portion of the lake that drains to Battle Creek Lake, which is impaired due to mercury and chloride.

The Battle Creek Lake subwatershed includes a portion of Alignment C at the eastern end of Alignment C. The contributing drainage area is characterized by rural roadway that conveys surface water runoff to vegetated roadside ditches. The area drains south toward Battle Creek Lake, which discharges to Battle Creek. The Battle Creek Lake portion of Alignment C falls within the city of Oakdale.

Alignment D3 (I-694 to Woodbury 494 Park-and-Ride)

Alignment D3 existing drainage areas are within the RWMWD, and the area's contributing drainage area include roadside ditches (undeveloped and vegetated) within the City of Oakdale, urban roadway within the City of Woodbury, and other impervious areas. Alignment D3 is located entirely within the Battle Creek Lake subwatershed.



The Battle Creek Lake subwatershed, as it relates to Alignment D3, has a contributing drainage area consisting mostly of rural road segments that convey surface runoff to vegetated roadside ditches. The area north of I-94 within the City of Oakdale drains south and west, through a few wetlands and the I-94/I-494 interchange, toward Battle Creek Lake. The City of Woodbury has seen flooding downstream of the I-94/I-494 interchange at Weir Drive. The area south of I-94 within the City of Woodbury drains west to Battle Creek Lake via a series of storm sewers, ditches and wetlands – one of which is the Tamarack Reserve. The entire Alignment D3 corridor discharges to Battle Creek.

The Build Alternatives would include new and reconstructed impervious surfaces including guideway, roadways, sidewalks and trails, parking facilities, station platforms, and other structures such as bridges and retaining walls.

4 summarizes Project-related changes to impervious surface area within the areas immediately impacted by Project construction for Build Alternative 1 that are considered in the regulatory requirements for control of stormwater runoff volume. The impervious surfaces provide an indicator as to how much runoff is generated in the Project area.

TABLE F.11-4: BUILD ALTERNATIVES CHANGES TO IMPERVIOUS AREA

Alignment	Existing Impervious Area (Acres)	New and Reconstructed Impervious Area (Acres) ^a
Alignment A1	0.7	0.7
Alignment A2	0.1	0.1
Alignment B	10.2	18.2
Alignment C	13.4	24.9
<i>With Hazel Street Station Option</i>	13.4	24.9
<i>With Dedicated Guideway Option at Hadley Avenue and 4th Street</i>	14.7	30.1
Alignment D3	20.4	29.0

^a Includes the existing impervious area reconstructed as part of the Project and new surfaces.

Table F.11-5 summarizes Project-related changes to existing and new and reconstructed impervious surface area within the areas immediately impacted by Project construction for the two Build Alternatives that are considered in the regulatory requirements for control of stormwater runoff volume.

TABLE F.11-5: SUMMARY OF BUILD ALTERNATIVES' CHANGES TO IMPERVIOUS AREA

Alternative	Existing Impervious Area (Acres)	New and Reconstructed Impervious Area (Acres) ^a
Build Alternative 1	44.7	72.8
<i>With Hazel Street Station Option</i>	44.7	72.8
<i>With Dedicated Guideway Option at Hadley Avenue and 4th Street</i>	46.0	78.0
Build Alternative 2	44.1	72.2



Alternative	Existing Impervious Area (Acres)	New and Reconstructed Impervious Area (Acres) ^a
<i>With Hazel Street Station Option</i>	44.1	72.2
<i>With Dedicated Guideway Option at Hadley Avenue and 4th Street</i>	45.4	77.4

^a Includes the existing impervious area reconstructed as part of the Project and new surfaces.

The Build Alternatives construction activities associated with utilities, guideway pavement areas and structures, park-and-ride facilities, and Project-specific roadway and sidewalk improvements would disturb soils. These disturbed soils combined with Project area runoff could potentially erode soil surfaces and drainage ways, form gullies and deposit sediment in adjacent waterbodies. Without temporary BMPs (required through the permitting process), these activities could destabilize slopes and affect water quality.

Construction impacts would also occur in small, isolated areas in which temporary retaining walls or soil berms would be located to minimize wetland fill. Some construction staging areas would reside on temporary impervious pavement, which may increase stormwater runoff in some locations. The Council would determine short-term impacts to specific locations during future Project phases, but these impacts would not extend more than 10 feet from the final Project limits.

Construction activities for the Build Alternatives also would likely require temporary dewatering to install structure abutments and walls, and to do grading activities.

The Build Alternatives would require mitigation measures for all Project-related new and reconstructed impervious surfaces, which range in size from 73 to 78 acres. **Table F.11-6** lists the volume requirements to treat Project-related new and reconstructed impervious areas draining to each low point. **Figure F1-18**, **Figure F1-19** and **Figure F1-20** show the potential stormwater BMP locations.

TABLE F.11-6: BUILD ALTERNATIVES WATER QUALITY REQUIREMENTS

Alignment	Total Volume Required ^a (ac-ft)	Approximate Volume Available at Primary BMP Sites (ac-ft)	Volume Needed at Secondary/ Alternative BMP Sites (ac-ft)
Alignment A1	0.1	0.0	0.1
Alignment A2	0.0	0.0	0.0
Alignment B	1.7	0.9	0.8
Alignment C	2.3	2.2	0.1
<i>With Hazel Street Station Option</i>	2.3	2.2	0.1
<i>With Dedicated Guideway Option at Hadley Avenue and 4th Street</i>	2.8	2.2	0.6
Alignment D3	2.7	2.9	0.0

^a Based on Capitol Region and Ramsey-Washington Metro watershed districts' rules.



iii) Water appropriation – Describe if the project proposes to appropriate surface or groundwater (including dewatering). Describe the source, quantity, duration, use and purpose of the water use and if a DNR water appropriation permit is required. Describe any well abandonment. If connecting to an existing municipal water supply, identify the wells to be used as a water source and any effects on, or required expansion of, municipal water infrastructure. Discuss environmental effects from water appropriation, including an assessment of the water resources available for appropriation. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation.

The Build Alternatives would not produce long-term or short-term impacts to groundwater. The Council does not anticipate needs for a permanent surface or groundwater appropriation permit. Construction activities for the Build Alternatives would likely require temporary dewatering to install structure abutments and walls, and to do grading activities.

Construction documents would include erosion-control measures, dewatering and establishing the final surfaces, and these activities would be designed to meet the various agencies' requirements. The contractor would also be part of this process. The Council will give special consideration to environmentally sensitive areas along the Project corridor.

iv) Surface waters

1. Wetlands – Describe any anticipated physical effects or alterations to wetland features such as draining, filling, permanent inundation, dredging and vegetative removal. Discuss direct and indirect environmental effects from physical modification of wetlands, including the anticipated effects that any proposed wetland alterations may have to the host watershed. Identify measures to avoid (e.g., available alternatives that were considered), minimize, or mitigate environmental effects to wetlands. Discuss whether any required compensatory wetland mitigation for unavoidable wetland impacts will occur in the same minor or major watershed and identify those probable locations.

The analysis addressed wetlands within the Project's potential limits of disturbance and all areas that could potentially support stormwater management facilities.

The analysis found that the Build Alternatives would produce approximately 2.60 acres of long-term impacts to wetlands, with an additional 0.002 acre of impacts at Tanners Lake. According to RWMWD classifications,²⁸ the Project would not impact any "high-quality" surface waters.

- Alignment A1 (Smith Avenue to Mounds Boulevard): The analysis did not identify wetlands within the potential limits of disturbance for Alignment A1; therefore, the Council does not anticipate this alignment would produce long-term impacts to wetlands. **Figure F1-10** shows the location of Alignment A1.
- Alignment A2 does not include any wetlands; therefore, Build Alternative 2 would produce the same long-term impacts to surface waters as Build Alternative 1. **Figure F1-11** shows the location of Alignment A2.
- Alignment B (Mounds Boulevard to White Bear Avenue): The analysis identified one stormwater pond, Pond 136-1, within the potential limits of disturbance for Alignment B. No impacts are expected to the stormwater pond; therefore, the Council does not anticipate the alignment would produce long-term impacts to surface water. **Figure F1-12** and **Figure F1-13** show the location of Alignment B.

²⁸ Wetland management classifications are from Ramsey-Washington Metro Watershed District Watershed Management Plan (2007), Figure I.A-7. Available at: <http://www.rwmwd.org/vertical/Sites/%7BBAB493DE7-F6CB-4A58-AFE0-56D80D38CD24%7D/uploads/%7BBAB23E5AB-6E1C-4D31-A180-32F1F284D6AE%7D.PDF>. Accessed October 2018.



- Alignment C (White Bear Avenue to I-694): The analysis found that the Project would produce impacts to two of the eleven surface waters within the potential limits of disturbance for Alignment C (see **Table F.11-7**): Tanners Lake, Wetland 22-1, Wetland 39-1, Wetland 49-2, Pond 140-1, Pond 140-2, Pond 140-3, Pond 140-4, Pond 140-5, Pond 140-6, and Pond 55-1.

TABLE F.11-7: ALIGNMENT C WETLAND IMPACTS

NWI No.	Type ^a	Plant Community ^b	Impact (Acres)	Impact Facility
Tanners Lake	N/A	N/A	0.002	Guideway
Wetland 22-1	1	Seasonally Flooded Basin	0.01	Stormwater
Total			0.012	

^a Circular 39 wetland types. Shaw and Fredine. 1956. Available at: http://www.bwsr.state.mn.us/wetlands/mnram/MnRAM_Guidance.pdf. Accessed October 2018.

^b Eggers, Steve and Reed, Donald. October 2011. "Wetland Plants and Plant Communities of Minnesota and Wisconsin." USACE St. Paul District). Available at: http://www.bwsr.state.mn.us/wetlands/delineation/WPPC_MN_WI/. Accessed October 2018.

The Project would fill up to 0.01 acre of wetland for stormwater pond construction at Menomini Park in Woodbury. The potential limits of disturbance for Alignment C overlaps with Tanners Lake,²⁹ where the Project would impact approximately 0.002 acres of surface water below the Ordinary High Water elevation due to removal of a retaining wall and slope correction. Within Wetland 22-1, which is the wetland fringe west of Battle Creek Lake,³⁰ the Project would produce approximately 0.01 acres of impact due to construction of an outlet for a stormwater feature. **Figures F1-13** and **Figure F1-14** show the wetlands within the potential limits of disturbance for Alignment C.

Alignment D3 (I-694 to Woodbury 494 Park-and-Ride): **Figure F1-15** and **Figure F1-16** show the locations of the 10 wetlands the analysis identified within the potential limits of disturbance for Alignment D3: Wetland 36-1, Wetland 36-2, Wetland 42-1, Wetland 44-1, Wetland 45-1, Wetland 48-1, Wetland 62-1, Wetland 71-1, Wetland 139-1, and Wetland 139-4. The Project would impact a combined total of 2.59 acres at six of these locations (see **Table F.11-8**) – 1.59 acres for guideway construction, 0.36 acres for park-and-ride construction, and 0.64 acres for stormwater facilities construction. Impacts related to stormwater facilities are expected to be reduced as design progresses based on design advancement and analysis that will limit impacts at proposed stormwater facilities. Impact reductions associated with advanced design include and limited to stormwater BMP outfalls and associated energy dissipation features, such as rip rap. Based on these reductions, anticipated cumulative impacts for non-linear facilities (stormwater and park-and-ride facilities) are expected to be less than 0.5 acre and fall under the Transportation Regional General Permit.

²⁹ Minnesota Department of Natural Resources. Public Waters Inventory Map 82-115P. Available at: https://www.dnr.state.mn.us/waters/watermgmt_section/pwi/maps.html. Accessed October 2018.

³⁰ Minnesota Department of Natural Resources. Public Waters Inventory Map 82-91P. Available at: https://www.dnr.state.mn.us/waters/watermgmt_section/pwi/maps.html. Accessed October 2018.



- Two tributaries were identified within Alignment D3. Neither of the identified tributaries are classified as a DNR public watercourse. One tributary is located between Wetland 36-2 and the downgradient pond and the other is located between Wetland 42-1 and 48-1. Approximately 0.02 acre of impact is expected to the tributary between Wetland 36-2 and the downgradient pond due to park-and-ride construction. Minor impacts to the tributary between Wetland 42-1 and 48-1 may occur as the result of culvert extension.
- Two wet ditches were also identified within Alignment D3, located west of Wetland 62-1 and Wetland 42-1, north and south of 4th Street North. These wet ditches will be filled due to guideway construction. Impacts are estimated to be approximately 0.03 acres.
- Eleven stormwater ponds were identified within Alignment D3 are: Pond 37-1, Pond 38-1, Pond 56-1, Pond 57-1, Pond 61-1, Pond 70-1, Pond 70-2, Pond 70-3, Pond 114-1, Pond 120-1, and Pond 123-1. Impacts to stormwater ponds are not expected but may occur due to culvert construction or extension for stormwater management. These impacts are expected to be minor and will be finalized as the design progresses.

TABLE F.11-8: ALIGNMENT D3 WETLAND IMPACTS

Inventory No.	Type ^a	Plant Community ^b	Impact (Acres)	Impact Facility
36-2	3	Shallow Marsh	0.36	Park-and- Ride
42-1	1	Seasonally Flooded Basin	0.14	Guideway
62-1	3	Shallow Marsh	0.16	Guideway
48-1	3,4	Shallow Marsh/Deep Marsh	1.29	Guideway
48-1	3,4	Shallow Marsh/Deep Marsh	0.09 ^c	Stormwater
139-1	3	Shallow Marsh	0.55 ^c	Stormwater
Total			2.59	

^a Circular 39 wetland types from Shaw and Fredine. 1956. Available at: <https://ia801901.us.archive.org/8/items/wetlandsofminnesota/wetlandsofminnesota00shaw/wetlandsofminnesota00shaw.pdf>. Accessed October 2018.

^b Eggers, Steve and Reed, Donald. July 2015. Wetland Plants and Plant Communities of Minnesota and Wisconsin. USACE St. Paul District. Available at: <https://usace.contentdm.oclc.org/digital/collection/p266001coll1/id/2845>. Accessed October 2018.

^c Impacts associated with stormwater facilities at Wetland 48-1 and Wetland 139-1 are based on the 15% Concept Plans. As the Project’s design is advanced and more analysis completed for anticipated stormwater needs for the Project, impacts are anticipated to be reduced to requirements needed to qualify for the Transportation Regional General Permit.

The Council does not anticipate the Build Alternatives would produce short-term impacts to surface waters. The Council will closely monitor design and planning efforts prior to the construction phase of the Project to avoid or minimize impacts to surface waters.

The Council has avoided and minimized to the extent possible, at the current level of design, Project-related impacts to surface waters. The Engineering Phase would incorporate, where feasible, additional avoidance and minimization measures, which could include constructing steeper inslopes, broken backslopes, and treating of stormwater prior to discharge. The Council has also proposed placing stormwater ponds in upland areas, if feasible.



The Project would require a CWA wetland permit from the USACE, a Public Waters Work Permit from DNR and a Section 401 certification from the MPCA and RWMWD. The City of Saint Paul has waived LGU jurisdiction to RWMWD (see **Attachment A-5-1 in Appendix A**) and MnDOT’s right-of-way does not contain wetlands; therefore, RWMWD would be the designated LGU for the Project and would require a WCA wetland replacement plan.

RWMWD’s rules dictate the siting of both onsite and banking wetland replacement, and the rules specify that the Council must prioritize these replacement locations as follows:

- Onsite (most preferred)
- Within the same sub-watershed
- Within RWMWD
- Outside of RWMWD (least preferred)

The Project area has limited available space conducive to creating wetland; therefore, the Council anticipates it would mitigate impacts to wetlands through the purchase of wetland credits from a state-managed wetland bank, rather than providing on-site replacement of wetlands. Neither the sub-watershed nor the RWMWD contains available wetland banks, so unless a bank becomes available during the Engineering Phase and prior to construction, the Council will likely purchase credits from a wetland bank located outside of the RWMWD.

The current replacement ratio for wetland credits in the Project area’s part of Minnesota is 2.5 to 1, although the following conditions may reduce by 0.25 credits each (to a minimum replacement ratio of 2 to 1):

- Replacement within the same Bank Service Area as the impacted wetland
- Replacement in advance of the proposed impact
- Replacement in kind with the impacted wetland type

The permitting agencies would determine the final amounts, types, and locations of wetland replacement or bank credits during the permit review process, which would occur during the Project Development Phase, after completion of the National Environmental Policy Act (NEPA) and Minnesota Environmental Policy Act (MEPA) processes. **Table F.11-9** identifies wetland replacement based on current rules and regulations.

If necessary, the Council would investigate further potential construction areas for on-site or project-specific wetland replacement as the Project design advances. Areas the Council would consider could include public land adjacent to the Project corridor and/or lands the Project acquired.

TABLE F.11-9: REQUIRED WETLAND REPLACEMENT BY ALTERNATIVE

Alternative	Anticipated Impact	Acres Replaced with Minimum 2:1 Replacement Ratio	Acres Replaced with Potential 2.5:1 Replacement Ratio
Build Alternative 1 (A1-BC-D3)	2.602 acres	5.20 acres	6.50 acres
Build Alternative 2 (A2-BC-D3)	2.602 acres	5.20 acres	6.50 acres
<i>With Hazel Street Station Option</i>	2.602 acres	5.20 acres	6.50 acres



Alternative	Anticipated Impact	Acres Replaced with Minimum 2:1 Replacement Ratio	Acres Replaced with Potential 2.5:1 Replacement Ratio
With Dedicated Guideway on Hadley Avenue and 4th Street Option	2.602 acres	5.20 acres	6.50 acres

- Other surface waters – Describe any anticipated physical effects or alterations to surface water features (lakes, streams, ponds, intermittent channels, county/judicial ditches) such as draining, filling, permanent inundation, dredging, diking, stream diversion, impoundment, aquatic plant removal and riparian alteration. Discuss direct and indirect environmental effects from physical modification of water features. Identify measures to avoid, minimize, or mitigate environmental effects to surface water features, including in-water Best Management Practices that are proposed to avoid or minimize turbidity/sedimentation while physically altering the water features. Discuss how the project will change the number or type of watercraft on any water body, including current and projected watercraft usage.

Lakes

Two lakes, Tanners Lake (DNR No. 82011500) and Battle Creek Lake (DNR No. 82009100) are located adjacent to the Project, near the I-94 and Century Avenue interchange. Tanners Lake has an Ordinary High Water (OHW) elevation of 963.5 feet. Battle Creek Lake has an OHW of 956 feet. Minor impacts (<0.01 acre) are expected at Tanners Lake for the construction of the guideway. A retaining wall will be constructed to minimize impacts to the lake. Due to the minor impact area, mitigation is not expected to be necessary but will be determined in coordination with the DNR during permitting.

Tributaries

Two tributaries were identified within the Project area. Neither is classified as a DNR public watercourse. One is located between Wetland 36-2 and the downgradient pond and the other is located between Wetland 42-1 and Wetland 48-1 south of 4th Street and west of Helmo Avenue. Approximately 0.02 acre of impact is expected to the tributary between Wetland 36-2 and the downgradient pond as a result of park-and-ride construction. Minor impacts to the tributary southwest of 4th Street and Helmo Avenue may occur as the result of culvert extension. Mitigation is not expected for impacts to these tributaries.

Wet Ditches

Two wet ditches were delineated within the Project area. Wet ditches are areas, such as constructed roadside ditches, that have formed wetland characteristics over time due to the topographic position and the frequency of hydrology from runoff. These areas may meet wetland criteria but were not constructed for the purpose of creating a wetland area. These wet ditches will be filled as a result of guideway construction. Impacts are estimated to be approximately 0.03 acres. Mitigation for impacts to wet ditches is not expected to be required.

Stormwater Ponds

Nineteen stormwater ponds were delineated within the Project area. Stormwater ponds are areas that were constructed for the management of stormwater runoff from developed areas (e.g., roadways, buildings, parking lots). Like wet ditches, these areas may display wetland characteristics but were not constructed with the purpose of creating a wetland. Proposed impacts to stormwater ponds may occur



as the result of culvert construction or extension. These impacts are expected to be minor and will be finalized as the design progresses. No mitigation is expected to be required for these impacts.

These impacts will not substantially alter the surface waters within the Project area. BMPs will be used to avoid unnecessary impacts to surface waters during construction and will be included in the Project SWPPP and dewatering plans. Potential BMPs to be considered will include down-gradient perimeter sediment control such as silt fence, ditch checks, rapid stabilization measures, pump inlet/outlet protection from scouring, stabilized construction access, etc.

Project-related indirect impacts to surface waters would be possible to the extent that any new development the Project induces results in impacts to wetlands. These impacts are less likely to occur if actions include typical BMPs.

Floodplains

Alignment A1 (Smith Avenue to Mounds Boulevard)

Alignment A1 would not produce long-term impacts to 100-year floodplains. This alignment includes potential limits of disturbance in downtown Saint Paul that would extend into the Mississippi River floodplain; however, the Council would construct this alternative in an already-developed area which would not impact the floodplain with additional fill. The remaining floodplains and floodways along Alignments A1 are located outside of the potential limits of disturbance and would not be impacted.

Figure F1-43 shows the floodplains located within the limits of disturbance for Alignment A1.

Alignment B (Mounds Boulevard to White Bear Avenue)

Alignment B does not include floodplains or floodways within the potential limits of disturbance; therefore, this alignment would not produce long-term impacts to 100-year floodplains or floodways (see **Figure F1-44** and **Figure F1-45**).

Alignment C (White Bear Avenue to I-694)

The following five floodplains are located within the limits of disturbance for Alignment C (see **Figure F1-45** and **Figure F1-46**):

- **Tanners Lake** (FEMA, RWMWD): This alignment would place approximately 400 cubic yards of fill in the Tanners Lake floodplain.
- **Battle Creek Lake** (FEMA, RWMWD): Based on the elevation of the floodplain (961.0 feet) and proposed alignment elevation (970 feet), the Council does not anticipate impacts from the Project. The alignment elevation is approximately 9 feet above the 100-year floodplain elevation.
- **BC-63S** (RWMWD): Based on the proposed guideway's location in relation to the waterbody, the Council does not anticipate impacts from the Project.
- **BC-62** (FEMA, RWMWD): Based on the proposed guideway's location in relation to the waterbody, the Council does not anticipate impacts from the Project.
- **BC-75A** (RWMWD): Based on the proposed guideway's location in relation to the waterbody, the Council does not anticipate impacts from the Project.

Neither the Hazel Street Station Option nor the Dedicated Guideway Option at Hadley Avenue and 4th Street would produce long-term impacts to 100-year floodplains or floodways.

Alignment D3 (I-694 to Woodbury Theatre Park-and-Ride)

The following 13 floodplains are located within the potential limits of disturbance for Alignment D3:



- **BC-57X** (FEMA, RWMWD) (see **Figure F1-47**): Two floodplains are labeled “BC-57X” – one with an unknown floodplain elevation and one with an RWMWD ID. Alignment D3 would place approximately 622 cubic yards of fill in the floodplain of waterbody BC-57X, which has a known floodplain elevation. Based on the proposed guideway’s location in relation to the other waterbody, the Council does not anticipate impacts from the Project to the BC-57X waterbody that has an unknown elevation.
- **BC-52** (FEMA, RWMWD) (see **Figure F1-47**): Based on the elevation of the floodplain (1014.2 feet) and grading tie-in elevation (1017.0 feet), the Council does not anticipate impacts from the Project. The grading tie-in elevation is approximately 2.8 feet above the floodplain elevation.
- **BC-53** (FEMA, RWMWD) (see **Figure F1-47**): There are three floodplains labeled BC-53 (two with unknown floodplain elevations and one with an identified floodplain by RWMWD). Approximately 3,820 cubic yards of fill in the floodplain of waterbody BC-53 that has a known floodplain elevation. Based on the proposed guideway’s location in relation to the other two waterbodies, the Council does not anticipate impacts from the Project to the BC-53 waterbodies that have unknown floodplain elevations.
- **BC-31** (RWMWD) (see **Figure F1-47**): Based on the bridge abutment’s location in relation to the waterbody floodplain elevation (1010.3 feet), the Council does not anticipate impacts from the Project.
- **BC-29** (RWMWD) (see **Figure F1-47**): Based on the elevation of the 100-year floodplain (1015.2 feet) and grading tie-in elevation (1025.0 feet), the Council does not anticipate impacts from the Project. The grading tie-in elevation is approximately 9.8 feet above the floodplain elevation.
- **BC-25X** (RWMWD) (see **Figure F1-48**): The floodplain elevation is unknown for this waterbody. Based on the grading tie-in elevation (1017.0 feet), there are anticipated impacts; however, impacts cannot be determined until detailed modeling of the basin occurs during the Engineering phase of the Project.
- **BC-25** (RWMWD) (see **Figure F1-48**): This waterbody’s floodplain elevation is unknown. Based on the grading tie-in elevation (1022.0 feet), the Council anticipates impacts from the Project; however, the extent of the impacts cannot be determined until detailed modeling of the basin occurs during the Engineering phase of the Project.
- **BC-26** (FEMA, RWMWD) (see **Figure F1-48**): This waterbody’s floodplain elevation is unknown. Based on the proposed guideway’s location in relation to the other waterbody, the Council does not anticipate impacts from the Project.
- **BC-17X** (RWMWD) (see **Figure F1-48**): Lane striping is the only proposed work in this area. The Council does not anticipate impacts from the Project.
- **BC-17** (RWMW) (see **Figure F1-48**): Lane striping is the only proposed work in this area. The Council does not anticipate impacts from the Project.
- **BC-21** (RWMWD) (see **Figure F1-48**): The Council does not anticipate impacts from the Project.
- **BC-22** and **BC-23** (RWMWD) (see **Figure F1-48**): The Council does not anticipate impacts from the Project.

Alignment A2 (Union Depot to Mounds Boulevard)

Build Alternative 2 would produce the same impacts to 100-year floodplains and floodways as Build Alternative 1. **Figure F1-48** shows the floodplains located within the potential limits of disturbance for Alignment A2.



F.12. Contamination/Hazardous Materials/Wastes

a) *Pre-project site conditions* – Describe existing contamination or potential environmental hazards on or in close proximity to the project site such as soil or ground water contamination, abandoned dumps, closed landfills, existing or abandoned storage tanks, and hazardous liquid or gas pipelines. Discuss any potential environmental effects from pre-project site conditions that would be caused or exacerbated by project construction and operation. Identify measures to avoid, minimize or mitigate adverse effects from existing contamination or potential environmental hazards. Include development of a Contingency Plan or Response Action Plan.

To identify and evaluate sites potentially containing regulated materials (pollutants, contaminants and/or hazardous materials), the Council completed a Phase I ESA in 2018³¹ and a Phase II ESA in 2019³². This assessment identified the possible risk for soil and groundwater contaminants that have the potential to migrate from nearby sites to the Project study area.

The Phase I ESA was based on the MnDOT Office of Environmental Stewardship (OES) guidelines for completion of Phase I ESAs using a modified version of the American Society of Testing and Materials (ASTM) methodology E1527-13. The study area for the Phase I ESAs was 500 feet from the centerlines of the proposed Project alignments within the Build Alternatives. The Project's potential limits of disturbance provides a more refined study area, and the analysis used it to identify potential construction-related impacts.

This Phase I ESA provided a risk ranking related to the potential risk associated with possible contamination in the area based on existing or past uses. Sites without identified environmental conditions were referred to as "no-risk." Sites with identified environmental conditions were ranked as high-, medium- or low-risk sites. Sites were noted as *de minimis* in the Phase I ESA if there generally was no identified threat to human health or the environment based on the review. MnDOT OES defines the following sites as either high-, medium- or low-risk:

- Low environmental risk sites:
 - Hazardous waste generators
 - Railroad lines
 - Current lumber yards
 - Golf courses
 - Some farmsteads, residences and commercial properties with poor housekeeping practices
- Medium environmental risk sites:
 - All closed leaking underground storage tanks (LUST) sites;
 - All sites with underground storage tanks or aboveground storage tanks
 - Machine shops
 - All sites with historical vehicle repair activities
 - All bulk grain/feed storage

³¹ WSB & Associates Inc. and HNTB Corporation. Modified Phase I Environmental Site Assessment, Gold Line Bus Rapid Transit Alignments A, B, C and D3. August 2018.

³² SEH Inc. Phase II Environmental Site Assessment, METRO Gold Line Bus Rapid Transit Alignments A, B, C and D3. August 2019.



- › All historical lumber yards
- › All closed agricultural release sites
- › Graveyards
- High environmental risk sites:
 - › Active and inactive MPCA Voluntary Investigation and Cleanup Program and Minnesota Environmental Response and Liability Act/Superfund sites
 - › All active and inactive dump sites
 - › All active LUST sites
 - › All dry cleaners (with onsite or unknown chemical processing)
 - › All bulk chemical/petroleum facilities
 - › All active agricultural release sites
 - › Railroad facilities (fueling, yards or maintenance)
 - › Clandestine chemical/drug laboratories
 - › All historical industrial sites with likely chemical use at the premises

The Phase II ESA evaluated site-specific risks and identified actions to minimize or avoid these risks. The Phase II ESA investigated the presence of contamination and identified restrictions associated with potential soil reuse based on MPCA guidance at high and medium risk sites, as identified in the Phase I ESA. The sites chosen for investigation also included locations of new easements or acquisitions and areas of design features that would likely require subsurface work including excavation, foundations, dewatering, or infiltration that were not identified as high or medium risk sites in the Phase I ESA.

The Phase II ESA included collecting soil and groundwater samples for laboratory analysis. During May and June 2019, the Phase II ESA investigation encompassed 108 soil borings, 21 test pits and 10 hand auger borings. These samples were taken throughout Alignments B, C and D3. The Council did not sample Alignments A1 and A2 in downtown Saint Paul because there will be minimal subsurface disturbance based on the guideway operating along existing streets. Additionally, subsurface work for the Project will be limited to the proposed station locations, avoiding subsurface utilities outside of these areas.

The Phase II ESA found the following three categories of soil in the Project study area:

- **Unregulated Material:** Soil meets all MPCA requirements to be classified as unregulated material that can be reused anywhere on or off the Project without restriction.
- **Regulated Reuse Material:** Soil contains debris or other field indications of contamination and/or soil laboratory analytical results exceed the Tier 1 Residential SRVs for one or more contaminants but are less than the Tier 2 Industrial SRVs for those contaminants detected. The soil is considered impacted and may be reused on-site in certain restricted locations pre-determined with proper permitting.
- **Regulated Material:** Soil laboratory analytical results exceed the Tier 2 Industrial SRVs for one or more contaminants. The soil is considered impacted and any material removed as part of Project construction is required to be disposed at a landfill permitted to accept the material.

Acquiring contaminated land or land that contains hazardous or regulated materials for the Project adds cost and potential liability risks, the extent of which would be based on the types and extents of the contamination. As the Project design advances during the Project Development and Engineering phases, the Council will



continue to review the potential limits of disturbance for additional operations-related impacts. The Council will use the findings of the Phase II ESA to avoid, to the extent possible, acquiring land with known contamination that is not easily remediated or contained.

Table F.12-1 lists by alignment, risk classification and location the number of potentially contaminated sites within the Phase I ESA study area and the potential limits of disturbance for the Build Alternatives. **Figures F1-21, -22, -23, -24, -25, -26** and **-27** show the regulated material and regulated reuse material sites identified from the Phase I ESA and investigated during the Phase II ESA.

TABLE F.12-1: NUMBER OF HIGH-, MEDIUM- AND LOW-RISK SITES WITHIN THE PHASE I ENVIRONMENTAL SITE ASSESSMENT STUDY AREA AND LIMITS OF DISTURBANCE

Risk:	High		Medium		Low	
	Phase I ESA Study Area	Potential Limits of Disturbance	Phase I ESA Study Area	Potential Limits of Disturbance	Phase I ESA Study Area	Potential Limits of Disturbance
Alignment A1	85	32	79	21	18	4
Alignment A2	40	5	22	3	2	0
Alignment B	11	7	31	14	15	3
Alignment C	8	4	18	7	15	7
<i>With Hazel Street Station Option</i>	8	4	18	7	15	7
<i>With Dedicated Guideway Option at Hadley Avenue and 4th Street</i>	8	4	18	7	15	7
Alignment D3	2	2	6	4	11	6

Table F.12-2 lists by alignment the soil categories encountered based on the Phase II ESA investigation. The Phase I ESA results in **Table F.12-1** are used to evaluate impacts for Alignments A1 and A2.

TABLE F.12-2: SITES IDENTIFIED AS CONTAINING REGULATED MATERIAL, REGULATED REUSE MATERIAL, OR UNREGULATED MATERIAL BASED ON THE PHASE II ESA

Alignment ^a	Regulated Material Sites	Regulated Reuse Material Sites	Unregulated Material Sites	Total
Alignment B	6	23	42	71
Alignment C	0	12	25	37
<i>With Hazel Street Station Option</i>	0	12	25	37
<i>With Dedicated Guideway Option at Hadley Avenue and 4th Street</i>	0	12	25	37



Alignment D3	0	6	25	31
TOTAL	6	41	92	139

^a Alignments A1 and A2 located in downtown Saint Paul were not included in the Phase II ESA. These alignments will require minimal subsurface disturbance since the guideway will be along existing streets and construction limited to station locations. Additionally, there were substantial barriers to subsurface investigation due to the density of subsurface utilities

Contaminants detected in soil analytical samples were typical of an urban area and included low levels of petroleum hydrocarbons, metals, and Polycyclic Aromatic Hydrocarbon (PAHs). In addition, small amounts of debris, including brick, bituminous, concrete, and slag, were identified in fill materials at a number of sample locations. An area investigated for the Phase II ESA appeared to be part of the former Johnson Parkway dump, located near the intersection of Hudson Road and Wakefield Avenue within Alignment B. Test pits in this area revealed soil with 10 to 60% debris consisting of concrete, metal, glass, and other refuse, and moderate concentrations of petroleum, metals, herbicides, polychlorinated biphenyl (PCBs) and PAHs in soil analytical samples (see **Figure F1-22** for test pit locations B030, B031, B032, B033, B035, B036, B037, B038, and B038r). The Phase II ESA identified low level concentrations of contaminants in groundwater analytical samples (petroleum hydrocarbons and PAHs).

The Minnesota Department of Health (MDH) has identified Per- and Polyfluorinated Alkyl Substances (PFAS) as an emerging contaminant of concern in the area east of Saint Paul. The Lake Elmo/Oakdale Special Well and Boring construction Area (SWBCA) was established by the MDH Well Management Program (updated 2007) to regulate construction, repair and sealing of regulated wells and borings within the SWBCA. The boundary of the SWBCA follows Century Avenue on the west and I-94 on the south. A small portion of the Project area (from Century Avenue to I-494) lies partially within the SWBCA. The Phase II ESA did not include analysis of groundwater samples for PFAS because work completed by MDH prior to the Phase II ESA indicated that PFAS is confined to deeper bedrock aquifers in the I-94/I-694 area, at the eastern Project limit. MDH also detected trace levels of PFAS in surface waters in the area, including Tanners Lake and Battle Creek Lake.

The Council has undergone the initial environmental due diligence steps with the completion of the Phase I ESA and Phase II ESA. Based on the results of these documents and continued design to avoid and minimize impacts to contaminated areas, where disturbance of hazardous and contaminated material cannot be avoided, the next step the Council will take is to enter into the MPCA Brownfield program so that appropriate letters of assurance may be requested.

The Council will also develop a Response Action Plan (RAP) prior to the start of construction that addresses proper management techniques for the management (handling, storage treatment, and disposal) of hazardous materials, contaminated media (soil, groundwater, sediment, etc.), and other regulated materials/wastes. The Council will also develop as part of the RAP, a Construction Contingency Plan (CCP) for handling previously unknown contaminants that construction activities discover. All contaminated media encountered during construction will be managed in accordance with state and federal regulations and in keeping with MPCA BMPs and the RAP/CCP. For any petroleum or chemical release that is encountered or may occur, the Minnesota Duty Officer would be contacted within 24 hours of the release, and the Officer would then immediately make the required agency contacts.

The Council will assess structures for asbestos-containing materials, lead-based paint and other regulated materials/wastes before demolition. The Council will prepare a demolition and disposal plan for identified contaminants that construction activities may discover.



- b) Project related generation/storage of solid wastes – Describe solid wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from solid waste handling, storage and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of solid waste including source reduction and recycling.*

Construction of the Project will generate solid waste and construction debris normal to construction. Management of this material will be in accordance with state guidelines and regulations. All solid wastes generated by construction of the proposed Project will be disposed of properly in a permitted, licensed solid waste facility. Project demolition of concrete, asphalt, and other potentially recyclable construction materials will be directed to the appropriate storage, crushing, or renovation facility for recycling.

Following construction, the Project will not generate solid wastes.

- c) Project related use/storage of hazardous materials – Describe chemicals/hazardous materials used/stored during construction and/or operation of the project including method of storage. Indicate the number, location and size of any above or below ground tanks to store petroleum or other materials. Discuss potential environmental effects from accidental spill or release of hazardous materials. Identify measures to avoid, minimize or mitigate adverse effects from the use/storage of chemicals/hazardous materials including source reduction and recycling. Include development of a spill prevention plan.*

Toxic or hazardous materials, such as fuel for construction equipment, and construction materials (sealant, paint, contaminated rags, acids, bases, herbicides, and pesticides) will likely be used during site preparation and construction. The potential for substantial fuel or other chemical spills during and after construction activities is considered low. BMPs will be used to minimize the chance of such spills. If a spill were to take place during construction, appropriate action to remedy the situation will be taken immediately in accordance with MPCA guidelines and regulations.

Any contaminated spills or leaks that occur during construction will be the responsibility of the contractor, who will notify the Duty Officer and work with the MPCA to contain and remediate contaminated soil/materials in accordance with state and federal standards. The Council will develop a Spill Prevention, Control, and Countermeasure Plan to address proper handling, treating, storing and disposing of solid wastes, hazardous materials, petroleum products, and other regulated materials/wastes used or generated during construction. This plan would also establish protocols to minimize impacts to soil and groundwater in the event a release of hazardous substances occurs during construction. The Minnesota Duty Officer would be contacted within 24 hours of the release, and the Officer would then immediately make the required agency contacts. The Council would develop as part of the RAP a CCP for handling previously unknown contaminants that construction activities discover.

Once the Project has been constructed, there will be no above or below ground petroleum storage tanks within the limits of disturbance.

- d) Project related generation/storage of hazardous wastes – Describe hazardous wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from hazardous waste handling, storage, and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of hazardous waste including source reduction and recycling.*

Construction of the Project is not anticipated to generate significant amounts of hazardous wastes. If contaminated soils are encountered during construction, they will be address in accordance to state standards. Once construction is completed, it is anticipated that the waste generated will be similar to current Metro Transit bus facilities and will be handled in conformance with state requirements.



F.13. Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources (Rare Features)

a) Describe fish and wildlife resources as well as habitats and vegetation on or in near the site.

See Item **F.13.b.**

b) Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota County Biological Survey Sites of Biodiversity Significance, and other sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-942) from which the data were obtained and attach the Natural Heritage letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.

Federally Listed Species

Based on its review of the U.S. Fish and Wildlife Service’s (USFWS) County Distribution list for Ramsey and Washington counties, and the USFWS *Information for Planning and Consultation* (IPaC) Official Species List, the analysis found the following threatened, endangered species within the two counties:

- One threatened mammal species (northern long-eared bat)
- One endangered insect species (rusty patched bumble bee)
- Four endangered mussel species (Higgins eye pearl mussel, snuffbox, winged mapleleaf, and spectaclecase)

The Project resource study area includes the northern long-eared bat, Higgins eye pearl mussel and rusty patched bumble bee.³³ **Table F.13-1** provides more information about habitat for these species. Ramsey and Washington counties do not contain designated critical habitat.³⁴

TABLE F.13-1: FEDERALLY LISTED SPECIES IN RAMSEY AND WASHINGTON COUNTIES

Scientific Name	Common Name	Status	Habitat	County
<i>Myotis septentrionalis</i>	Northern long-eared bat	Threatened	Hibernates in caves and mines, swarming in surrounding wooded areas in autumn. Roosts and forages in upland forests during spring and summer.	Ramsey and Washington ^a
<i>Lampsilis higginsii</i>	Higgins eye pearl mussel	Endangered	Mississippi River	Ramsey and Washington ^a
<i>Epioblasma triquetra</i>	Snuffbox	Endangered	Mississippi River	Ramsey and Washington

³³ U.S. Fish and Wildlife Service. IPaC Information for Planning and Consultation. Available at: <http://ecos.fws.gov/ipac/>. Species list generated September 2018.

³⁴ U.S. Fish and Wildlife Service. IPaC Information for Planning and Consultation. Available at: <http://ecos.fws.gov/ipac/>. Species list generated September 2018.



Scientific Name	Common Name	Status	Habitat	County
<i>Quadrula fragosa</i>	Winged mapleleaf	Endangered	St. Croix River	Ramsey and Washington
<i>Bombus affinis</i>	Rusty patched bumble bee	Endangered	Grasslands with flowering plants from April through October, underground and abandoned rodent cavities or clumps of grasses above ground as nesting sites, undisturbed soil for hibernating queens to overwinter	Ramsey and Washington ^a
<i>Cumberlandia monodonta</i>	Spectaclecase	Endangered	St. Croix River	Washington

^a The U.S. Fish and Wildlife Service’s Information for Planning and Consultation website (available at <https://ecos.fws.gov/ipac/>) notes this species as present within the Project area.

Other Federally Protected Species

The resource study area includes no known occurrences of bald eagles or golden eagles’ nests.

State-Listed Species

Based on the DNR’s Endangered, Threatened Special Concern (ETSC) species data,³⁵ the analysis identified the following state-listed species – including plants, animals and insects – within Ramsey and Washington counties:

- Endangered species:36
 - Within Ramsey County, per ETSC Rare Species Guide: 22
 - Within Washington County, per ETSC Rare Species Guide: 30
- Threatened species: 44
 - Within Ramsey County, per ETSC Rare Species Guide: 26
 - Within Washington County, per ETSC Rare Species Guide: 42
- Special-concern species: 69
 - Within Ramsey County, per ETSC Rare Species Guide: 42
 - Within Washington County, per ETSC Rare Species Guide: 55

Based on the National Heritage Information System (NHIS) database the analysis identified the following state-listed species within Ramsey and Washington counties:

- Endangered species: 32
 - Within Ramsey County, per NHIS Database: 18
 - Within Washington County, per NHIS Database: 27

³⁵ Minnesota Department of Natural Resources. “Rare Species Guide: Filtered Search”. Available at: https://www.dnr.state.mn.us/rsg/filter_search.html. Accessed November 2018. https://www.dnr.state.mn.us/rsg/filter_search.html?action=doFilterSearch&allspecies=Y&allstatus=Y&county_query=82&82=Washington&county_query=62&62=Ramsey.



- Threatened species: 42
 - Within Ramsey County, per NHIS Database: 22
 - Within Washington County, per NHIS Database: 39
- Special-concern species: 52
 - Within Ramsey County, per NHIS Database: 35
 - Within Washington County, per NHIS Database: 52

Table F.13-2 includes the state-listed species for which the analysis identified potential habitats within the resource study area.



TABLE F.13-2: STATE-LISTED SPECIES IN THE RESOURCE STUDY AREA PER NHIS DATABASE (NOVEMBER 2018)

Alignment	Scientific Name	Common Name	Status	Last Observed	Habitat
A1 and A2	<i>Marpissa grata</i>	A Jumping Spider	Delisted	1978	Wetlands, ponds, or rivers near cattail marshes, in grass, and on cattails and willows
	<i>Quadrula nodulata</i>	Wartyback	Threatened	2007	Large rivers; can be found in fine or coarse substrates in areas of slow or moderate current
	<i>Quadrula metanevra</i>	Monkeyface	Threatened	2001	River habitats dominated by stable substrates in water over two meters (6.6 feet) deep
	<i>Actinonaias ligamentina</i>	Mucket	Threatened	2007	Medium to large rivers; substrates that are most preferred include coarse sand and gravel
	<i>Fusconaia ebena</i>	Ebonyshell	Endangered	2007	Large rivers in sand or gravel
	<i>Truncilla donaciformis</i>	Fawnsfoot	Threatened	2007	Large rivers or the lower reaches of medium-sized streams; most commonly found in sand or gravel
	<i>Elliptio crassidens</i>	Elephant-ear	Endangered	2007	Large rivers in mud, sand, or fine gravel
	<i>Arcidens confragosus</i>	Rock Pocketbook	Endangered	2005	Medium to large rivers; may be found in fine substrates such as silt or sand in slow-current areas
	<i>Obovaria olivaria</i>	Hickorynut	Delisted	2004	Large rivers; rarely found in smaller streams
	<i>Lasmigona costata</i>	Fluted-shell	Threatened	2004	Medium to large rivers
	<i>Falco peregrinus</i>	Peregrine Falcon	Special Concern	2011	Previously nested on cliff ledges along rivers or lakes; presently nesting primarily on buildings and bridges in urban settings and use historic eyries on cliffs along Lake Superior and the Mississippi River
	<i>Plethobasus cyphus</i> ^a	Sheepnose	Endangered	2007	Large rivers such as the Mississippi, Ohio, and Tennessee Rivers
	<i>Schinia lucens</i>	Leadplant Flower Moth	Special Concern	1940	Upland prairie and savannas.

Environmental Assessment Worksheet: Appendix F

FISH, WILDLIFE, PLANT COMMUNITIES, AND SENSITIVE ECOLOGICAL RESOURCES (RARE FEATURES)



Alignment	Scientific Name	Common Name	Status	Last Observed	Habitat
	<i>Bombus affinis</i>	Rusty patched bumble bee	Special Concern	1951	Grasslands and tallgrass prairies
	<i>Anguilla rostrata</i>	American eel	Special Concern	2013	Large rivers, medium rivers and streams
	<i>Ligumia recta</i>	Black Sandshell	Special Concern	2007	Riffle and run areas of medium to large rivers in areas dominated by sand or gravel
B	<i>Besseyia Bullii</i>	Kitten-tails	Threatened	1992	Bluffs and terraces of the St. Croix, Mississippi, and Minnesota River valleys, with many populations occurring in the greater Twin Cities Metropolitan Area
	<i>Cycleptus elongatus</i>	Blue Sucker	Special Concern	2007	Deep, swift water in pools and channels of large rivers with sand, gravel, or rubble bottoms
	<i>Bombus affinis</i>	Rusty patched bumble bee	Special Concern	1951	Grasslands and tallgrass prairies
	<i>Schinia lucens</i>	Leadplant Flower Moth	Special Concern	1940	Upland prairie and savannas.
C	<i>Emydoidea blandingii</i>	Blanding's turtle	Threatened	1992	Wetland complexes and adjacent sandy uplands; calm, shallow waters, including wetlands associated with rivers and streams, with rich, aquatic vegetation
	<i>Bombus affinis</i>	Rusty patched bumble bee	Special Concern	1951	Grasslands and tallgrass prairies
	<i>Schinia lucens</i>	Leadplant Flower Moth	Special Concern	1940	Upland prairie and savannas.
D3	None				

^a *Plethobasus cyphus* is a federally endangered mussel species. The USFWS does not include this species in its County Distribution of Federally Listed Threatened, Endangered, Proposed, and Candidate Species list for Ramsey or Washington counties. The occurrence record represents dead specimens found in subfossil conditions.



Wildlife Habitat

The resource study area includes two types of wildlife habitat: terrestrial and aquatic. The terrestrial habitat consists of two community types: deciduous trees/forested areas and grasslands (unmanicured, non-native grasslands located in upland areas). The aquatic habitat is of the wetlands/lakes community type.

Terrestrial Habitat

- Deciduous trees/forested areas
 - A few species this habitat can include are grey squirrels, white tailed deer, common songbirds and bats, among others
 - Tree cover in the resource study area primarily consists of urban boulevard trees with some scattered woodlots. Common trees include aspen, cottonwood, box elder, walnut, maple, locust, various coniferous trees and some oak trees.
- Grasslands
 - A few species this habitat can include are grey squirrels, raccoons, rabbits, field mice, voles, moles, Canada geese, white-tailed deer and red fox, among others
 - Because much of the potential limits of disturbance is located within or adjacent to right-of-way for vehicular traffic; mostly developed, maintained and manicured areas would surround the Build Alternatives

Aquatic Habitat

- Wetlands/lakes
 - A few species this habitat can include are bald eagles, common reptile and amphibian species, fish species, white-tailed deer and songbirds
 - Some aquatic habitats are located within the potential limits of disturbance, and a wetland dominated by tamarack trees (Tamarack Swamp) is adjacent to the Project corridor.

Habitat Quality

The analysis determined the quality of habitat within the resource study area using three state rating/classification systems: the MLCCS, the Regional Significant Ecological Assessment database, and the MBS Site Biodiversity Significance Ranks.

Minnesota Land Cover Classification System Ratings

MLCCS rates most of the natural habitat within the resource study area at C or below. One area of habitat, a cattail marsh located within the Tamarack Swamp on the east side of Bielenberg Drive along Alignment D3, earned an MLCCS B rating as a good-quality natural community. The DNR did not rate several sections of the resource study area because the agency did not observe them; however, the DNR likely would have rated these areas at C or below due to the moderate condition of the natural community and obvious past disturbance.

Regionally Significant Ecological Areas

The habitat resource study area includes five regionally significant ecological areas. The database ranks two of these areas as 1s (the lowest ranking), and it ranks the other three as 2s (the middle rating). The data evaluated includes assessment of areas in 2003 using LandSat data and aerial photo interpretation of grassland, in 2008 using MLCCS data, and in 2011 using NLCD data. This database ranks ecological areas based on attributes such as size, shape, cover-type diversity and adjacent land use. The database ranks



regionally significant ecological areas with a number 1, 2 or 3 based on their sizes, diversity in vegetation, and biodiversity significance. A No. 3 ranking indicates a larger, more diverse area; a No. 1 ranking indicates the area is smaller and less diverse.

Minnesota Biological Survey Site Biodiversity Significance Ranks

The resource study area includes the following two MBS-ranked sites for biodiversity significance:

- The Tamarack Nature Preserve – “high” biodiversity significance ranking
- Battle Creek Lake – “below-minimum” biodiversity significance ranking

See **Appendix D** for DNR correspondence.

c) Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project. Include a discussion on introduction and spread of invasive species from the project construction and operation. Separately discuss effects to known threatened and endangered species.

Federally Listed Species

The Council anticipates the following potential Project-related impacts to federally listed species (see correspondence with the USFWS in **Appendix D**):

- **Higgins eye pearl mussel:** Adverse impacts are not anticipated for the Higgins eye pearl mussel because the Project would not disturb the Mississippi River (or St. Croix River) or its tributaries.
- **Snuffbox mussel:** Adverse impacts are not anticipated for the snuffbox mussel because the Project would not disturb the Mississippi River (or St. Croix River) or its tributaries.
- **Spectaclecase mussel:** Adverse impacts are not anticipated for the spectaclecase mussel because the Project would not disturb the Mississippi River (or St. Croix River) or its tributaries.
- **Winged mapleleaf mussel:** Adverse impacts are not anticipated for the winged mapleleaf mussel because the Project would not disturb the Mississippi River (or St. Croix River) or its tributaries.
- **Northern long-eared bat:** The Project is not within ¼-mile of known species hibernacula or 150 feet from known species maternity-roost trees. Potential disturbance to other hardwood trees may affect the northern long-eared bat during the roosting season; therefore, the total amount of tree removal for the Project would be approximately 9 acres of trees within the potential limits of disturbance, which is about 8 percent of the tree coverage in the ¼-mile resource study area. As the Council advances the Project design, it will seek opportunities to minimize tree clearing, especially within naturalized areas. The Council does not anticipate Project-related impacts to the northern long-eared bat.
- **Rusty patched bumble bee:** The presence of this species is within ¼-mile of the potential limits of disturbance and it could be present within the I-94 right-of-way. No grasslands within the I-94 right-of-way will be disturbed by the Project. The Council does not anticipate the Build Alternatives would produce adverse impacts to the species, based on the Project’s 15% Concept Plans
- **Other federally protected species:** The study area does not contain known occurrences of bald eagles’ or golden eagles’ nests, therefore Project-related impacts are not anticipated to bald or golden eagles.

State-Listed Species



To evaluate potential impacts to state-listed species, the Council reviewed DNR NHIS data for the area within 1 mile of the Project corridor. Of the 19 species the data identified in the area, 13 have aquatic life cycles and are associated with the Mississippi River. State-listed species are not anticipated to have Project-related impacts because the Project would not disturb the Mississippi River or its tributaries.

The analysis noted documented occurrences of the following six species within 1 mile of the Project corridor:

- **Kitten-tails:** Kitten-tails are a state-listed threatened plant species; however, the species has no records of observation within the potential limits of disturbance. Project-related impacts to the population of kitten-tails are not anticipated.
- **Peregrine falcon:** Peregrine falcons are listed as a species of special concern by the State of Minnesota and are also protected under a variety of federal laws, such as the Migratory Bird Treaty Act. Peregrine falcons prefer nesting on high cliffs or structures, and there are several records of falcons nesting on buildings and structures around Saint Paul in the Mississippi River corridor. After evaluating the study area and considering the peregrine falcons' preferred nesting areas, the Council does not anticipate Project-related impacts to this species.
- **Blanding's turtle:** The Blanding's turtle is a state-listed threatened species that the analysis identified within 1 mile of the Build Alternatives; however, the species has no records of observation within the potential limits of disturbance. Therefore, the Council does not anticipate Project-related impacts to the Blanding's turtle.
- **Rusty patched bumble bee:** Rusty patched bumble bee is a state special concern species that the analysis identified within 1 mile of the Build Alternatives. The presence of this species within ¼-mile of the Project alignment may result in potential Project-related impacts due to roadway expansion or development within open spaces along the I-94 right-of-way.
- **Jumping spider:** Jumping spider is a state delisted species that analysis identified within 1 mile of the Build Alternatives however, the species has no records of observation within the potential limits of disturbance. The Council does not anticipate Project-related impacts to the jumping spider.
- **Leadplant flower moth:** Leadplant flower moth is a state special concern species that analysis identified within 1 mile of the Build Alternatives however, the species has no records of observation within the potential limits of disturbance. The Council does not anticipate Project-related impacts to the leadplant flower moth.

The Council does not anticipate long-term Project-related impacts to threatened and endangered species habitat. Threatened and endangered species in the Project area are generalist species that have adapted to the urbanized conditions and low-quality habitat of the resource study area. These species are generally more tolerant of human presence and activities including traffic (pedestrian, bus and vehicular), and they have demonstrated by their presence that they can adapt to an environment.

Habitat Quality

Wildlife in the Project area are generalist species adapted to the urbanized conditions and low-quality habitat of the resource study area. These species are generally more tolerant of human presence and activities including traffic (pedestrian, bus and vehicular) that can adapt to an environment, as their presence demonstrates.

Additionally, Build Alternative 1 would produce a loss of mostly low-quality habitat. The habitat in these areas is generally located in existing roadside right-of-way or within roadway medians.



Based on the minimal extent of the potential limits of disturbance and the availability of higher-quality adjacent habitat, the Council anticipates negligible Project-related impacts to wildlife habitat.

Figures F1-28, -29, -30, -31 and -32 show the locations of wildlife habitat within the study area. These figures also show three state ratings/classification systems: the MLCCS, the Regional Significant Ecological Assessment database, and the MBS Site Biodiversity Significance Ranks.

While many impacted trees in the potential limits of disturbance are isolated, some areas have clusters of trees that could be impacted, which may yield a greater loss of habitat.

Regionally Significant Ecological Areas

The Project or stormwater BMPs may affect four regionally significant ecological areas in the study area that are within or immediately adjacent to the potential limits of disturbance.

Battle Creek Lake is located near the eastern end of Alignment C. The database ranks this area as “2” or of medium regional significance on the 2003 LandSat regionally significant ecological area data set. Within the limits of disturbance there are no significant ecological areas.

Tamarack Nature Preserve is located along the south portion of Alignment D3. The database ranks this area as “2” or of medium regional significance on the 2003 LandSat, 2008 MLCCS and 2011 NLCD regionally significant ecological area data sets. Within the limits of disturbance there are no significant ecological areas as the Project will not be outside of the mowed and maintained right-of-way.

The 2008 MLCCS database listed the two remaining areas as regionally significant ecological areas with ranks of “1” or poorer regional significance. The first site is located at the southeast corner of Hadley Avenue and 4th Street and the second site is located between I-494 and Bielenberg Drive south of I-94, and both appear to be predominantly grassland with scattered trees. No significant ecological areas are within the potential limits of disturbance for these two sites.

Stormwater management BMPs may affect Battle Creek Lake and the two grassland sites. In accordance with the Council's *Thrive MSP 2040* plan,³⁶ the Project presents an opportunity to enhance these areas by implementing BMPs for habitat restoration and natural resource conservation. These opportunities will be evaluated as design is advanced for the Project.

Minnesota Biological Survey Site Biodiversity Significance Ranks

The Project would potentially impact only one of the five MBS-ranked sites of biodiversity significance within the resource study area: The Tamarack swamp, which has a “high” biodiversity significance ranking, is located along the southern portion of Alignment D3. It should be noted that Tamarack Nature Preserve extends both east and west of the existing right-of-way for Bielenberg Drive and is mapped as being continuous across the right-of-way. Therefore, calculated impacts to the nature preserve include areas which are not biologically significant.

Invasive Species

Invasive species are generally defined as those species that have been introduced or moved to an area where they have not historically occurred. These species are of concern because they are known to quickly colonize and dominate disturbed areas, crowding out native species. Once established, invasive species tend to

³⁶ Metropolitan Council. *Thrive MSP 2040: One Vision, One Metropolitan Region*. Adopted May 28, 2014. Available at: <https://metro council.org/Planning/Projects/Thrive-2040/Thrive-MSP-2040-Plan.aspx?source=child>. Accessed October 2018.



persist, and effective eradication may not be feasible. Given the urban landscape and disturbed nature of the resource study area, invasive species are common.

Terrestrial Invasive Species Observations³⁷ were reviewed to determine the presence of invasive species within the resource study area. Thirty-two records were identified within the resource study area, predominately outside the potential limits of disturbance. Three species were only noted at the western end of the study limits for Build Alternative 1. These include brown marmorated stink bug (*Halyomorpha halys*), common tansy (*Tanacetum vulgare*), and European buckthorn (*Rhamnus cathartica*). Other species noted within the resource study area for both Build Alternatives 1 and 2 include emerald ash bore (*Agrilus planipennis*), leafy spurge (*Euphorbia esula*), and spiny plumeless thistle (*Carduus acanthoides*). One record of emerald ash bore (*Agrilus planipennis*) was noted within the boundary of each of the build alternatives near the southern terminus at Queens Drive and Guider Drive.

Aquatic Invasive Species Observations were reviewed to determine the presence of invasive species within the resource study area. The analysis identified 10 records within the resource study area, predominately located outside the potential limits of disturbance. The analysis noted one species, curly-leaved pondweed (*Potamogeton crispus*), only at the western end of the Build Alternative 1 Project limits. Other species the analysis noted within the resource study area for both Build Alternatives 1 and 2 include common water hyacinth (*Eichhornia crassipes*), purple loosestrife (*Lythrum salicaria*) and zebra mussel (*Dreissena polymorpha*).

The Build Alternatives would not contribute further to the presence of invasive species in the Project corridor.

Noxious Weeds

The analysis reviewed the Minnesota and Federal Noxious Weed List,³⁸ the DNR Invasive Species Program³⁹ and the Terrestrial Invasive Species Observations⁴⁰ to determine whether the resource study area contains noxious weeds. According to the Noxious Weeds GIS Layers,⁴¹ no noxious weeds are present within the potential limits of disturbance. Multiple records previously identified one aquatic noxious weed, Eurasian watermilfoil (*Myriophyllum spicatum*), within the resource study area, but this species is located outside the potential limits of disturbance. The analysis found one record each for two terrestrial noxious weeds, common tansy (*Tanacetum vulgare*) and wild parsnip (*Pastinaca sativa*), located within the resource study area, but neither species is located within the potential limits of disturbance.

No known noxious weeds are within the potential limits of disturbance; however, the resource study area could include other common noxious weeds such as Canada thistle, spotted knapweed and common buckthorn. The long-term impacts of Build Alternative 1 would not contribute further to the presence of noxious weeds in the Project corridor.

³⁷ Ecological and Water Resources, Minnesota Department of Natural Resources. "Terrestrial Invasive Species Observations". Available at: <https://gisdata.mn.gov/dataset/env-invasive-terrestrial-obs>. Accessed November 2018.

³⁸ Minnesota Noxious Weed List, Minnesota Department of Agriculture (2016). Available at: www.dot.state.mn.us/roadsides/vegetation/pdf/noxiousweeds.pdf. Accessed November 2018.

³⁹ Minnesota Invasive Species Program, Minnesota Department of Natural Resources (2016). Available at: <http://www.dnr.state.mn.us/invasives/eco/index.html>. Accessed November 2018.

⁴⁰ Ecological and Water Resources, Minnesota Department of Natural Resources. "Terrestrial Invasive Species Observations". Available at: <https://gisdata.mn.gov/dataset/env-invasive-terrestrial-obs>. Accessed November 2018.

⁴¹ Minnesota Department of Natural Resources. "Eradicate List Noxious Weeds in Minnesota". Available at: <https://mnaq.maps.arcgis.com/apps/webappviewer/index.html?id=2e248e0a57fc486fb2493dcf4d5eab4c>. Accessed October 2018.



Table F.13-3 summarizes the Project’s potential impacts to threatened and endangered species and wildlife habitat by alignment. These areas generally include wooded and forested areas and wetlands which would provide habitat to the northern long-eared bat and the Blanding’s turtle.

TABLE F.13-3: POTENTIALLY IMPACTED SPECIES AND HABITAT BY ALIGNMENT AND ALTERNATIVE

Alignment	Federally Listed Species	State-Listed Species	Terrestrial Habitat (Acres) ^a	Aquatic Habitat (Acres)	Total Habitat (Acres)
Alignment A1	<ul style="list-style-type: none"> Northern long-eared bat Rusty patched bumble bee 	None	0	0	0
Alignment A2	<ul style="list-style-type: none"> Northern long-eared bat Rusty patched bumble bee 	None	0	0	0
Alignment B	<ul style="list-style-type: none"> Northern long-eared bat Rusty patched bumble bee 	None	3.4	0.3	3.7
Alignment C	<ul style="list-style-type: none"> Northern long-eared bat Rusty patched bumble bee 	Blanding’s turtle	1.8	0.9	2.7
<i>With Hazel Street Station Option</i>	<ul style="list-style-type: none"> Northern long-eared bat Rusty patched bumble bee 	Blanding’s turtle	1.8	0.9	2.7
<i>With Dedicated Guideway Option at Hadley Avenue and 4th Street</i>	<ul style="list-style-type: none"> Northern long-eared bat Rusty patched bumble bee 	Blanding’s turtle	1.8	0.9	2.7
Alignment D3	<ul style="list-style-type: none"> Northern long-eared bat Rusty patched bumble bee 	None	3.6	3.8	7.4
Build Alternative 1 (A1-BC-D3)			8.8	5	13.8
Build Alternative 2 (A2-BC-D3)			8.8	5	13.8

^a Includes impacts to wooded and forested areas.

The northern long-eared bat and the Blanding’s turtle are state-listed species; however, the Council, with concurrence from the USFWS and DNR (see correspondence in **Appendix C**), does not anticipate Project-related impacts to these species.

The conversion of wildlife habitat or undeveloped space to a transportation facility would not have long-term ramifications for the continued persistence of wildlife in a given area. Wildlife that is living in an urban environment will typically find another location like that which is being disturbed. Terrestrial habitat is noted as unmanicured upland grassland with sparse tree/shrub cover and may include trails. These areas provide suitable wildlife habitat for many urban species and may also contain suitable habitat for the rusty patched bumble bee depending upon the maintenance of those areas including mowing and the use of pesticides.

The Build Alternatives would impact 12 percent of all available habitat in the resource study area, resulting in an overall negligible Project-related impact to terrestrial and aquatic wildlife. **Table F.13-4** summarizes these impacts.



TABLE F.13-4: LONG-TERM IMPACTS TO WILDLIFE HABITAT BY ALTERNATIVE

Alternative	Total Impact (Acres)	Regionally Significant Ecological Areas Potentially Impacted ^{a, b}	Sites of Biodiversity Significance Potentially Impacted
Build Alternative 1 (A1-BC-D3)	41.5	1	1
<i>Hazel Street Station Option</i>	0	1	1
<i>Dedicated Guideway Option at Hadley Avenue and 4th Street</i>	0	1	1
Build Alternative 2 (A2-BC-D3)	41.5	1	1
<i>Hazel Street Station Option</i>	0	1	1
<i>Dedicated Guideway Option at Hadley Avenue and 4th Street</i>	0	1	1

^a The limits of disturbance includes one Regionally Significant Ecological Area/Site of Biodiversity Significance, Tamarack Nature Preserve; however, as the Project’s limits of disturbance is within the existing right-of-way, wildlife habitat impacts are not anticipated.

^b Battle Creek Lake located near the eastern end of Alignment C, and a fallow site at Hadley Avenue and 4th Street, and fallow areas between I-494 and Bielenberg Drive both on Alignment D3 were mapped using the 2003 or 2008 data as a Regionally Significant Ecological Area; however, were not noted on the 2011 Regionally Significant Ecological Areas and therefore are not included as a long-term impacts.

The Project Build Alternatives would produce short-term impacts to wildlife habitat due to construction activities including use of heavy equipment and silt fence/construction barriers. These impacts may cause temporary disruptions to wildlife; however, the impacts would be temporary and limited to active construction areas. Additionally, the Project would stabilize areas disturbed by construction with interim and final erosion- and sediment-control measures that include seeding plans that would inhibit the spread of invasive species or noxious weeds. The number of active construction areas would be the minimum number needed to construct the Project as required by construction permits, and the Council would stabilize inactive disturbed areas with seeding and other forms of erosion-control BMPs.

d) Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to fish, wildlife, plant communities, and sensitive ecological resources.

To minimize impacts to the rusty patched bumble bee, the Project would replant disturbed land with native, flowering vegetation where possible. The Project would incorporate the use of appropriate lighting, seasonal tree clearing restrictions and implementation of other appropriate mitigation measures to avoid long-term impacts to the northern long-eared bat. During or prior to construction, the Project would utilize measures to avoid or minimize impacts to the northern long-eared bat. These measures include the following activities:⁴²

⁴² U.S. Fish and Wildlife Service Consistency letter for the METRO Gold Line Bus Rapid Transit Project (TAILS 03E19000-2018-R-1423) under the revised Feb. 5, 2018, Federal Highway Administration, Federal Railroad Administration, Federal Transit Administration. Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat. March 19, 2019.



- If assuming the presence of bats, or if bridge assessment or presence or probable absence survey suggests presence of bats, maintain suitable roosting habitat. Design of a new bridge could incorporate suitable roosting sites
- Ensure all operators, employees and contractors working in areas of known or presumed bat habitat are aware of all federal transportation agencies' environmental commitments, including all applicable avoidance and minimization measures
- Direct temporary lighting away from suitable habitat during the active season
- When installing new or replacing existing permanent lights, use downward-facing, full cut-off lens lights (with same intensity or less for replacement lighting), or, for transportation agencies using the Backlight, Uplight and Glare – or BUG – system of the Illuminating Engineering Society,⁴³ be as close to 0 for all three ratings, with a priority “Uplight” of 0 and “Backlight” as low as practicable
- Modify all phases/aspects of the Project to avoid tree removal
- Apply time-of-year restrictions for tree removal when bats are not likely to be present, or limit tree removal to 10 or fewer trees per project at any time of year within 100 feet of existing road/rail surface and outside of documented roosting/foraging habitat or travel corridors; conduct visual emergence survey that observes no bats
- Limit tree removal to Project-specified plans and inform contractors about clearing limits and their field markings (e.g., install bright-colored flagging/fencing before clearing any trees so that contractors stay within clearing limits)
- Do not remove documented, still-suitable roosts; trees within ¼-mile of roosts; or documented foraging habitat any time of year
- Complete inspection of all bridges no less than two years before construction to document the use of the structure by bats and other wildlife. For bridges that would require reconstruction or removal, the Council would complete a field survey to identify use of the area by migratory birds before construction begins.

BMPs and permanent stormwater controls would reduce sedimentation to a level that is acceptable for a National Pollutant Discharge Elimination System permit and, therefore, would have no adverse impact on aquatic habitat and associated aquatic wildlife. Although the Council does not anticipate impacts to the Blanding's turtle, the DNR has established standard construction BMPs that the Project would implement as needed. These BMPs include using overlapping silt fence that allows turtles to bypass the fencing while still capturing the sediment; providing identification information to the contractor to avoid turtles if they are observed in the construction zone; and removing the silt fence after site stabilization to eliminate barriers to turtle movements.

The Project would avoid or minimize to the extent possible impacts to regionally significant ecological areas and sites of biodiversity significance as the Council advances the design. The Project would utilize construction and post-construction BMPs to lessen impacts to terrestrial and aquatic habitats. Before construction, the Project would implement measures (such as cleaning equipment before bringing it onsite or leaving the site) that limit the spread of noxious weed species and seeds within the potential limits of

⁴³ Illuminating Engineering Society. “Addendum A for Illuminating Engineering Society TM-15-11: “Backlight, Uplight, and Glare (BUG) Ratings”. Available at: <http://www.ies.org/pdf/education/ies-foi-addenda-1-%20bug-ratings.pdf> and International Dark-Sky Association. “The BUG System – A New Way to Control Stray Light from Outdoor Luminaires”. *Specifier Bulletin for Dark Sky Applications. Issue 1, Vol. 2.* 2009. Available at: http://shop.innovativelight.com/media/cms/BUG_ratings_3044A7612FA89.pdf. Accessed November 2018.



disturbance. The Council anticipates it would mitigate impacts to wetlands through the purchase of wetland credits from a state-managed wetland bank

Areas mapped as regionally significant wildlife habitat should be field verified and to the extent practical these areas should be enhanced as part of the Project. Installation of stormwater BMPs at these locations could be an opportunity to promote habitat restoration and natural resource conservation in accordance with *Thrive 2040*.

To minimize impacts to the wildlife habitat and to be consistent with Council *Thrive 2040*, the Project would incorporate the use of appropriate lighting, seasonal tree clearing restrictions and implementation of other appropriate mitigation measures identified to avoid impacts to threatened and endangered species and the following additional measures:

- Maintain an up-to-date regional Natural Resources Inventory and Assessment through field verification of resources
- Conduct tree inventory prior to Project implementation
- Field verify Regionally Significant Ecological Areas and areas to minimize impacts to mature trees and natural habitat loss
- Promote the implementation of BMPs for habitat restoration and natural resource conservation.
- Implement design considerations for locations of stormwater BMPs within or near Regionally Significant Ecological Areas which include, but are not limited to, limiting impacts to native trees and area, limiting impacts to habitat and wildlife movement, and placing BMPs as close to the built facility as possible to limit impacts

F.14. Historic Properties

a) Describe any historic structures, archeological sites, and/or traditional cultural properties on or in close proximity to the site. Include:

i) Historic designations

MnDOT CRU, as designated by FTA and in consultation with Minnesota SHPO, defined and documented two areas of potential effect (APEs): one for architecture/history properties and one for archaeological properties.

Architecture/History Area of Potential Effect

The APE for architecture/history properties accounts for physical, auditory, atmospheric, visual, and change-in-use effects on historic properties. The architecture/history APE includes buffers ranging from 50 feet to 0.25 miles around Project elements to account for the varying nature and potential of different Project elements to effect historic properties.

The 29 architecture/history properties identified to date within the Project's architecture/history APE include four historic districts, 19 properties that are individually eligible for or listed in the National Register of Historic Places (NRHP), and six properties that are both individually listed or eligible for the NRHP and listed or eligible as a contributing element to a historic district. **Table F.14-1** provides information about these properties, referencing their numbered locations on **Figure F1-33** shows the APE for Alignments A1, A2 and B. **Figure F1-34** shows the APE for Alignments C and D3. These figures also identify individual historic properties and historic districts within the architecture/history APE.



TABLE F.14-1: HISTORIC PROPERTIES IDENTIFIED TO DATE IN THE PROJECT AREA OF POTENTIAL EFFECT

Historic Name	Number on Figures F1-33 and F1-34	Address	<ul style="list-style-type: none"> • Build Alternative(s) • Project Alignment • Nearest Station(s) 	NRHP Status	Eligibility Criteria and Area(s) of Significance
New Palace Theater/ St. Francis Hotel	22	1-33 7th Place W. and 435-437 North Wabasha St., Saint Paul	<ul style="list-style-type: none"> • Build Alternative 1 • Alignment A1 • Hamm Plaza Station 	Eligible	<ul style="list-style-type: none"> • Criterion: A • Areas of Significance: <ul style="list-style-type: none"> ▸ Commerce ▸ Entertainment/ Recreation
Hamm Building	8	408 Saint Peter St., Saint Paul	<ul style="list-style-type: none"> • Build Alternative 1 • Alignment A1 • Hamm Plaza Station 	Listed	<ul style="list-style-type: none"> • Criterion: C • Area of Significance: <ul style="list-style-type: none"> ▸ Architecture
Saint Paul Public Library/James J. Hill Reference Library	2	80-90 4th St. W., Saint Paul	<ul style="list-style-type: none"> • Build Alternative 1 • Alignment A1 • Rice Park Station 	Listed; contributing to Rice Park Historic District	<ul style="list-style-type: none"> • Criteria: A and C • Areas of Significance: <ul style="list-style-type: none"> ▸ Architecture ▸ Education
U.S. Post Office, Courthouse, and Customs House (Landmark Center)	10	109 W. 5th St., Saint Paul	<ul style="list-style-type: none"> • Build Alternative 1 • Alignment A1 • Rice Park Station • Hamm Plaza Station 	Listed; contributing to Rice Park Historic District	<ul style="list-style-type: none"> • Criterion: C • Area of Significance: <ul style="list-style-type: none"> ▸ Architecture
Saint Paul Hotel	21	350 Market St., Saint Paul	<ul style="list-style-type: none"> • Build Alternative 1 • Alignment A1 • Rice Park Station 	Eligible; contributing to Rice Park Historic District	<ul style="list-style-type: none"> • Criteria: A and C (Individual) • Areas of Significance: <ul style="list-style-type: none"> ▸ Architecture ▸ Commerce



Historic Name	Number on Figures F1-33 and F1-34	Address	<ul style="list-style-type: none"> • Build Alternative(s) • Project Alignment • Nearest Station(s) 	NRHP Status	Eligibility Criteria and Area(s) of Significance
Rice Park Historic District	N/A – see district outline	Area roughly bounded by Kellogg Boulevard West, Market, Washington and Saint Peter streets, and 4th, 5th and 6th streets west, Saint Paul	<ul style="list-style-type: none"> • Build Alternative 1 • Alignment A1 • Rice Park Station • Hamm Plaza Station 	Eligible	<ul style="list-style-type: none"> • Criterion: A • Areas of Significance: <ul style="list-style-type: none"> ▸ Not clearly stated in documentation other than that the district had “a significant role in the history of Saint Paul through contributions on area of social, cultural, political, and economic development.”
Germania Bank	3	6 5th St. W., Saint Paul	<ul style="list-style-type: none"> • Build Alternative 1 • Alignment A1 • 5th Street/Cedar Street Station 	Listed	<ul style="list-style-type: none"> • Criterion: C • Area of Significance: <ul style="list-style-type: none"> ▸ Architecture
Saint Paul Athletic Club	19	340 Cedar St., Saint Paul	<ul style="list-style-type: none"> • Build Alternative 1 • Alignment A1 • 5th Street/Minnesota Street Station 	Eligible	<ul style="list-style-type: none"> • Criteria: A and C (Individual) • Areas of Significance: <ul style="list-style-type: none"> ▸ Architecture ▸ Social History
First Farmers and Merchants Bank/First National Bank	20	332 Minnesota St. and 339 Robert St. N., Saint Paul	<ul style="list-style-type: none"> • Build Alternative 1 • Alignment A1 • 5th Street/Minnesota Street Station 	Eligible	<ul style="list-style-type: none"> • Criterion: A (Individual) • Area of Significance: <ul style="list-style-type: none"> ▸ Commerce



Historic Name	Number on Figures F1-33 and F1-34	Address	<ul style="list-style-type: none"> • Build Alternative(s) • Project Alignment • Nearest Station(s) 	NRHP Status	Eligibility Criteria and Area(s) of Significance
Osborn Building	23	390 Wabasha St. N., Saint Paul	<ul style="list-style-type: none"> • Build Alternative 1 • Alignment A1 • Hamm Plaza Station 	Eligible; contributing to Urban Renewal Historic District	<ul style="list-style-type: none"> • Criterion: C (Individual) • Area of Significance: <ul style="list-style-type: none"> ▸ Architecture
Mutual Life Insurance Company Building	24	345 Cedar St., Saint Paul	<ul style="list-style-type: none"> • Build Alternative 1 • Alignment A1 • 5th Street/Cedar Street Station 	Listed; contributing to Urban Renewal Historic District	<ul style="list-style-type: none"> • Criteria: A and C (Individual) • Areas of Significance: <ul style="list-style-type: none"> ▸ Architecture ▸ Commerce
Saint Paul Urban Renewal Historic District	N/A – see district outline	Area roughly bounded by Kellogg Boulevard and Jackson, 6th and Wabasha streets, Saint Paul	<ul style="list-style-type: none"> • Build Alternative 1 • Alignment A1 • Nearest stations: <ul style="list-style-type: none"> ○ 6th Street/Robert Street (adjacent to Historic District) ○ 6th Street/Minnesota Street (adjacent to Historic District) ○ 5th Street/Cedar Street (within Historic District) ○ 5th Street/Robert Street stations (adjacent to Historic District) 	Eligible	<ul style="list-style-type: none"> • Criterion: A • Areas of Significance: <ul style="list-style-type: none"> ▸ Community Planning and Development ▸ Social History
Manhattan Building	7	360 Robert St. N., Saint Paul	<ul style="list-style-type: none"> • Build Alternative 1 • Alignment A1 • 5th Street/Robert Street Station 	Listed	<ul style="list-style-type: none"> • Criteria: A, B and C • Areas of Significance: <ul style="list-style-type: none"> ▸ Architecture ▸ Commerce



Historic Name	Number on Figures F1-33 and F1-34	Address	<ul style="list-style-type: none"> • Build Alternative(s) • Project Alignment • Nearest Station(s) 	NRHP Status	Eligibility Criteria and Area(s) of Significance
Pioneer Press and Endicott Buildings	6	332 Robert St. N. and 142 5th St. E., Saint Paul	<ul style="list-style-type: none"> • Build Alternative 1 • Alignment A1 • 5th Street/Robert Street Station 	Listed	<ul style="list-style-type: none"> • Criteria: A and C • Areas of Significance: <ul style="list-style-type: none"> ▸ Architecture ▸ Commerce ▸ Communications (Pioneer only)
Merchants National Bank Building	4	366–368 Jackson St., Saint Paul	<ul style="list-style-type: none"> • Build Alternative 1 • Alignment A1 • 5th Street/Robert Street Station 	Listed	<ul style="list-style-type: none"> • Criteria: A and C • Areas of Significance: <ul style="list-style-type: none"> ▸ Architecture ▸ Commerce ▸ Politics/Government
U.S. Post Office and Custom House	9	180 Kellogg Blvd. E., Saint Paul	<ul style="list-style-type: none"> • Build Alternative 1 • Alignment A1 • Union Depot and • Build Alternative 2 • Alignment A2 • Union Depot 	Listed	<ul style="list-style-type: none"> • Criterion: A • Area of Significance: <ul style="list-style-type: none"> ▸ Politics/Government



Historic Name	Number on Figures F1-33 and F1-34	Address	<ul style="list-style-type: none"> • Build Alternative(s) • Project Alignment • Nearest Station(s) 	NRHP Status	Eligibility Criteria and Area(s) of Significance
Saint Paul Union Depot	1	214 4th St. E., Saint Paul	<ul style="list-style-type: none"> • Build Alternative 1 • Alignment A1 • Union Depot/Wacouta Street and Union Depot/Sibley Street stations and <ul style="list-style-type: none"> • Build Alternative 2 • Alignment A2 • Union Depot 	Listed	<ul style="list-style-type: none"> • Criteria: A and C (Individual) • Areas of Significance: <ul style="list-style-type: none"> ▸ Architecture ▸ Engineering ▸ Transportation
Finch, VanSlyck and McConville Dry Goods	18	366 Wacouta St., Saint Paul	<ul style="list-style-type: none"> • Build Alternative 1 • Alignment A1 • Union Depot/Wacouta Street Station 	Listed; contributing to Lowertown Historic District	<ul style="list-style-type: none"> • Criteria: A and C (Individual) • Areas of Significance: <ul style="list-style-type: none"> ▸ Commerce ▸ Engineering
Lowertown Historic District	N/A – see district outline	Area roughly bounded by Shepard Road, Kellogg Boulevard and 7th, Sibley and Broadway streets, Saint Paul	<ul style="list-style-type: none"> • Build Alternative 1 • Alignment A1 • Union Depot/Wacouta Street and Union Depot/Sibley Street stations and <ul style="list-style-type: none"> • Build Alternative 2 • Alignment A2 	Listed	<ul style="list-style-type: none"> • Criteria: A and C • Areas of Significance: <ul style="list-style-type: none"> ▸ Architecture, Commerce ▸ Community Planning and Development ▸ Industry



Historic Name	Number on Figures F1-33 and F1-34	Address	<ul style="list-style-type: none"> • Build Alternative(s) • Project Alignment • Nearest Station(s) 	NRHP Status	Eligibility Criteria and Area(s) of Significance
Tandy Row	13	668-674 4th St. E., Saint Paul	<ul style="list-style-type: none"> • Build Alternatives 1 and 2 • Alignment B • Mounds Boulevard Station 	Eligible	<ul style="list-style-type: none"> • Criterion: C • Area of Significance: <ul style="list-style-type: none"> ▸ Architecture
Peter Bott House and Garage	26	326 Maria Ave., Saint Paul	<ul style="list-style-type: none"> • Build Alternatives 1 and 2 • Alignment B • Mounds Boulevard Station 	Eligible ^a	<ul style="list-style-type: none"> • Criterion: C • Area of Significance: <ul style="list-style-type: none"> ▸ Architecture
Frederick Reinecker House #2	16	700 3rd St. E., Saint Paul	<ul style="list-style-type: none"> • Build Alternatives 1 and 2 • Alignment B • Mounds Boulevard Station 	Eligible ^a	<ul style="list-style-type: none"> • Criterion: C • Area of Significance: <ul style="list-style-type: none"> ▸ Architecture
Frederick Reinecker House #1	15	702 3rd St. E., Saint Paul	<ul style="list-style-type: none"> • Build Alternatives 1 and 2 • Alignment B • Mounds Boulevard Station 	Eligible ^a	<ul style="list-style-type: none"> • Criterion: C • Area of Significance: <ul style="list-style-type: none"> ▸ Architecture
Bell-Weber House	12	661 3rd St. E., Saint Paul	<ul style="list-style-type: none"> • Build Alternatives 1 and 2 • Alignment B • Mounds Boulevard Station 	Eligible	<ul style="list-style-type: none"> • Criterion: C • Area of Significance: <ul style="list-style-type: none"> ▸ Architecture
Texas Company Service Station	11	847 Hudson Road, Saint Paul	<ul style="list-style-type: none"> • Build Alternatives 1 and 2 • Alignment B • Mounds Boulevard Station 	Eligible	<ul style="list-style-type: none"> • Criteria: A and C • Areas of Significance: <ul style="list-style-type: none"> ▸ Architecture ▸ Commerce ▸ Transportation
Giesen-Hauser House/Peter & Mary Giesen House	5	827 Mound St., Saint Paul	<ul style="list-style-type: none"> • Build Alternatives 1 and 2 • Alignment B 	Listed	<ul style="list-style-type: none"> • Criteria: A and C • Areas of Significance: <ul style="list-style-type: none"> ▸ Architecture ▸ Commerce



Historic Name	Number on Figures F1-33 and F1-34	Address	<ul style="list-style-type: none"> • Build Alternative(s) • Project Alignment • Nearest Station(s) 	NRHP Status	Eligibility Criteria and Area(s) of Significance
Johnson Parkway	27	Johnson Parkway, Saint Paul	<ul style="list-style-type: none"> • Build Alternatives 1 and 2 • Alignment B • Earl Street Station 	Eligible ^b	<ul style="list-style-type: none"> • Criteria: A and C • Areas of Significance: <ul style="list-style-type: none"> ▸ Community Planning and Development ▸ Entertainment/ Recreation ▸ Landscape Architecture
Grace Lutheran Church	14	1730 Old Hudson Road, Saint Paul	<ul style="list-style-type: none"> • Build Alternatives 1 and 2 • Alignment B • Van Dyke Street or Hazel Street Station 	Eligible	<ul style="list-style-type: none"> • Criterion: A • Area of Significance: <ul style="list-style-type: none"> ▸ Architecture
3M Center	N/A – see district outline	2301 McKnight Road, Maplewood	<ul style="list-style-type: none"> • Build Alternatives 1 and 2 • Alignment C • Maplewood Station 	Eligible	<ul style="list-style-type: none"> • Criterion: A • Areas of Significance: <ul style="list-style-type: none"> ▸ Commerce ▸ Innovation

^a In accordance with the “level of effort” provisions of 36 CFR Sec. 800.4(b)(1), which require agencies to take into account as part of their efforts to identify historic properties the “the magnitude and nature of the undertaking and the degree of Federal involvement, the nature and extent of potential effects on historic properties, and the likely nature and location of historic properties within the area of potential effects”, FTA determined, and MnSHPO concurred, that a Phase II evaluation of this property was not required, but that for the purpose of consultation under Section 106 for the Project, FTA will treat this property as eligible for inclusion in the NRHP under the Criterion and Area identified in the “Eligibility and Area of Significance” column.

^b On Feb. 22, 2018, FTA found that Johnson Parkway possessed significance under the NRHP Criteria and Areas identified in the “Eligibility and Area of Significance” column, but that it no longer retained sufficient historic integrity to convey its significance under either Criterion A or C. In a response dated April 3, 2018, MnSHPO stated it did not concur with FTA’s determination, noting that although some segments of the parkway have been altered, the overall integrity of the entire parkway is still sufficiently high enough that the property is considered eligible for listing in the NRHP under both Criterion A in the areas of Entertainment/Recreation and Community Planning and Development as well as Criterion C in the area of Design. Therefore, for the purpose of consultation under Section 106 for the Project, FTA will treat this property as eligible for inclusion in the NRHP under the Criteria and Areas identified in the “Eligibility and Area of Significance” column.



Archaeological Area of Potential Effect

The APE for archaeology includes the following areas:

- All areas within 25 feet of the perimeter of the limits of disturbance for the Project as identified for completion of the *Supplemental Phase 1 Archaeological Survey*⁴⁴
- Extensions beyond 25 feet in several areas to include the entirety of a parcel or right-of-way

The APE for archaeology does not include the following areas:

- Under Alignment A1, the portion of the alignment that extends through the existing Smith Avenue Transit Center because the transit center is an existing structure where buses may lay over between operations, and the Project does not anticipate ground disturbance at this facility
- Under Alignment A2, the portion of the Union Depot bus loop alignment and corresponding bus stop improvements proposed at the deck of the former elevated rail yard because the Project would end at the bus deck surface and does not anticipate ground disturbance at this facility

Figure F1-35 shows the archaeological APE for Alignments A1, A2 and B, and **Figure F1-36** shows the archaeological APE for Alignments C and D3. Known artifact areas

To date, no artifacts have been identified within the APEs for the Project. Per the terms of the executed PA, the Project will continue to survey areas added to the archaeological APE to identify potential archaeological sites that the Project may affect.

ii) Architectural features

See **Table F.14-1**.

iii) Attach letter received from the State Historic Preservation Office (SHPO).

See **Appendix C** of the EA for correspondence with the SHPO.

iv) Discuss any anticipated effects to historic properties during project construction and operation. Identify measures that will be taken to avoid, minimize, or mitigate adverse effect to historic properties.

The FTA, Council, MnDOT CRU and MnSHPO prepared a draft PA that outlines the measures they will take to complete the Section 106 process including identifying historic properties that the Project could affect, assessing the effects of the Project on those properties, and resolving adverse effects, if any. The Council will implement per the terms of the executed PA avoidance, minimization and/or mitigation measures identified through the Section 106 process.

Long-term and short-term direct and indirect effects on historic properties from the Build Alternatives will be evaluated per the terms of the executed PA during the Project Development and Engineering phases.

To date, the FTA has not identified cultural resources significant to tribes within the Project's APEs. If such resources are identified in the future, consultation would proceed in accordance with Section 106 requirements and per the terms of the executed PA. Consultation and outreach will continue throughout the Section 106 process.

⁴⁴ Two Pines Resource Group LLC, Ramsey and Washington Counties, Minnesota. *Supplemental Phase I Archaeological Survey*. April 3, 2019.



FTA, with assistance from MnDOT CRU, will consult with MnSHPO and other Section 106 consulting parties per the terms of the Project's executed PA and Title 36, CFR, Part 800, to assess effects of the Project on these historic properties. If FTA determines the Project would have an adverse effect on a historic property, FTA will consult with MnSHPO and other consulting parties per the terms of the executed PA to consider avoidance, minimization and/or mitigation measures to resolve the adverse effect. Before FTA assesses effects of the Project on historic properties, the Council will make efforts to design Project elements within and close to historic properties in accordance with *The Secretary of the Interior's Standards for the Treatment of Historic Properties*^{45,46} to minimize potential effect to these properties to the extent feasible while still meeting the Project's purpose and need.

F.15. Visual Resources

- a) Describe any scenic views or vistas on or near the project site. Describe any project related visual effects such as vapor plumes or glare from intense lights. Discuss the potential visual effects from the project. Identify any measures to avoid, minimize, or mitigate visual effects.

The study area includes developed urban and suburban communities extending from downtown Saint Paul through the eastern Twin Cities Metropolitan Area. Travelling from west to east, the study area includes a downtown urban context (Saint Paul) transitioning to a service drive parallel to I-94 (Hudson Road, Hudson Boulevard), jogging north and then east through lower density land uses, and finally turning south including a new bridge connection over I-94 to terminate in a suburban context (Woodbury). Visual resources along the route include views to downtown Saint Paul and the Mississippi River (see **Figure F1-37**), Historic Johnson Parkway, 3M campus, Tanners Lake, and Battle Creek Lake (see **Figures F1-38** and **-39**). Project elements introduced into this environment include new stations, shared and dedicated guideways, bridges with associated ancillary structures, and park-and-ride lots.

A rating system consistent with FHWA guidance (high, moderate, or minimal) was used to qualitatively assess the level of visual contrast that the Project elements would have on visual resources. Visual contrast is defined as the degree of perceived change that occurs in the landscape due to alterations necessary for a project. The following definitions summarize each classification:

- **High:** Introduction of new elements that would result in a major visual contrast where elements may obstruct views or substantially alter character
- **Moderate:** Introduction of new elements that would have a noticeable visual contrast where elements may obstruct or alter views or character
- **Minimal/Low:** Introduction of new elements that would have minor visual contrast where elements are similar to existing features

Table F.15-1 summarizes the visual impacts related to visual quality and aesthetics.

⁴⁵ Technical Preservation Services, National Park Service. *The Secretary of the Interior's Standards for the Treatment of Historic Properties*. U.S. Department of the Interior. 2017. Available at: <https://www.nps.gov/tps/standards/treatment-guidelines-2017.pdf>. Accessed December 2018.

⁴⁶ "The Secretary of the Interior's Standards for the Treatment of Historic Properties", Title 36, CFR, Part 68. 1995. Available at: <https://www.ecfr.gov/cgi-bin/text-idx?SID=dbf88891a6be7286c183e538ded6846a&mc=true&node=pt36.1.68&rgn=div5>. Accessed March 2019.



TABLE F.15-1: LONG-TERM VISUAL AND AESTHETIC IMPACTS

Alternative	Resource/Impacted	Visual Contrast
Build Alternative 1	Rice Park Historic District	Low
	Rice Park	Low
	Hamm Plaza	Moderate
	Saint Paul Urban Renewal Historic District	Low-Moderate
	Union Depot	Low-Moderate
Build Alternative 2	Union Depot	Low
Build Alternative 1 and Build Alternative 2	Lowertown Historic District	Low-Moderate
	Saint Paul skyline and Mississippi River	Low
	Dayton’s Bluff Heritage Preservation District and residences adjoining Mounds Boulevard Stations	Moderate
	Residences on Hudson Road from Maria Avenue to Johnson Parkway	Moderate
	Johnson Parkway	Moderate
	Residences on Hudson Road from Johnson Parkway to Etna Street	Moderate
	Residences on Hudson Road from Etna Street to Grace Lutheran Church	Moderate
	Apartments north of proposed Van Dyke Stations and Heritage Estates	Low-Moderate
	3M campus	Moderate
	Tanners Lake	Low-Moderate
	Residences near Greenway Avenue Station	Low-Moderate
	Battle Creek Lake	Low
	Future residences adjoining proposed Helmo Avenue Station and Park-and-Ride	Low
	Residences along Bielenberg Drive and Guider Drive	Low-Moderate
	Apartment Buildings on Guider Drive facing Woodbury 494 Park-and-Ride Station	Low-Moderate
	<i>Hazel Street Station Option</i>	Apartment Building on Hudson Road
<i>Dedicated Guideway Option at Hadley Avenue and 4th Street</i>	Apostolic Bible Institute and residences adjoining Hadley Avenue	Low



Anticipated effects on visual resources during construction would be similar to those of typical roadway projects, including the presence of heavy equipment and traffic control measures. Users in buildings or on streets and trails that are in visual proximity to the guideway would encounter views of the construction. Where the guideway passes adjacent to residential neighborhoods, construction activities would likely be perceived as visually disruptive in these typically more peaceful residential settings.

The Council does not anticipate the Build Alternatives would produce major changes to the visual character of the Project corridor. The design process would address potential low to moderate visual contrast.

As the Project moves into the Engineering Phase, design to mitigate impact to the Significant Views of Downtown Saint Paul and the Mississippi River at the Mounds Boulevard Stations and the Dayton's Bluff Heritage Preservation District will be coordinated with the City of Saint Paul to comply with the Significant Public Views goal in the Saint Paul comprehensive plan (Strategy 3.17) "preserve significant public views through standards that regulate such impacts as height, bulk, scale, and view corridor."

The design of the new BRT-exclusive bridges over Johnson Parkway and near the 3M campus would use visually compatible details and materials to further minimize impacts and match the new bridge with the existing I-94 bridge. Appropriate design and landscaping techniques would minimize the impact from vegetation removal and introduction of built features. Landforms to accommodate the new bridges will be designed to restore slope and landform to be consistent with the existing setting. Vegetation would be retained and restored, as appropriate to be consistent with existing massing and species. Landscape plans for areas adjacent to elevated structures, retaining walls, and noise barriers would be developed. The Section 106 PA will inform design modifications to avoid, minimize and mitigate visual impacts to historic properties. Resolution of adverse effects will be completed under the terms of the PA as the Project advances through the Project Development and Engineering phases (see **Appendix C** for the Section 106 PA).

Visual-quality related mitigation to all affected residential properties will be addressed in the Engineering phase of this Project. Stations would be designed to be aesthetically attractive and to complement their surroundings. Station design and aesthetics will be addressed during continued design advancement during the Project Development and Engineering phases and through ongoing outreach efforts conducted in the surrounding neighborhoods.

The impacts to visual resources during construction will be further minimized by staging construction activity to minimize the duration to the extent possible, restoring areas disturbed during construction and regularly utilize BMPs to remove debris and equipment from residential areas.

F.16. Air

- a) *Stationary source emissions – Describe the type, sources, quantities and compositions of any emissions from stationary sources such as boilers or exhaust stacks. Include any hazardous air pollutants, criteria pollutants, and any greenhouse gases. Discuss effects to air quality including any sensitive receptors, human health or applicable regulatory criteria. Include a discussion of any methods used assess the project's effect on air quality and the results of that assessment. Identify pollution control equipment and other measures that will be taken to avoid, minimize, or mitigate adverse effects from stationary source emissions.*

No stationary source air emissions would be created by the Project.



- b) Vehicle emissions** – Describe the effect of the project's traffic generation on air emissions. Discuss the project's vehicle-related emissions effect on air quality. Identify measures (e.g. traffic operational improvements, diesel idling minimization plan) that will be taken to minimize or mitigate vehicle-related emissions.

The Project is located within the Minneapolis-St. Paul Intrastate Air Quality Control Region #131. The Project area is in attainment for ozone, particulate matter (PM_{2.5}), nitrogen dioxide, lead, and sulfur dioxide. It is in a maintenance area for particulate matter (PM₁₀) and carbon monoxide (CO). In 2010, based on continued compliance with EPA's CO criteria, EPA approved a limited maintenance plan request for the Twin Cities Metropolitan Area. Maintenance areas must demonstrate continuing compliance with CO standards. Changes in air quality would result from changes in traffic patterns and congestion levels on roadways in the Project area.

Air Quality Conformity

The 1990 Clean Air Act Amendments require that state implementation plans (SIPs) demonstrate how states with nonattainment and maintenance areas will meet federal air quality standards. The EPA issued final rules on conformity that require transportation projects to be part of a conforming long-range transportation policy plan (LRTP) and a four-year transportation improvement program (TIP).

The Council's 2040 TPP (2018 Update) identifies the Project (in which it is named the METRO Gold Line), and the Council anticipates the Project would begin operating around 2024. In July 2014, the MPCA found the draft 2040 TPP conforms with EPA requirements (see **Attachment A-1-4** for documentation of conformity). The Project is not included in MnDOT's *2019-2022 State Transportation Improvement Program*,⁴⁷ but the Council includes it in its *2016-2019 Transportation Improvement Program for the Twin Cities Metropolitan Area*.⁴⁸

A limited maintenance designation does not require a regional emission modeling analysis; however, federally funded and state-funded projects do require a hot-spot analysis. The limited maintenance plan adopted in 2010 already establishes that the CO emission level and resulting ambient concentrations will continue to attain National Ambient Air Quality Standards. In accordance with this plan, the Council did not model regional emissions for the Project; it did, however, complete a hot-spot analysis.

The CO hot-spot analysis indicates the Project would not cause CO concentrations to exceed state or federal standards. The *Air Quality Approach Memorandum* presents a qualitative assessment indicating that the Project also would not cause exceedances of other criteria pollutants.

Qualitative Mobile Source Air Toxics Analysis

The amount of MSATs generated by the Build Alternatives would be proportional to the average daily traffic (ADT) if other variables such as the mix of vehicles are the same for both alternatives. Current air quality levels are considered acceptable, and the levels are expected to remain at acceptable levels under the Build Alternatives. The Build Alternatives are expected to serve approximately 8,000 transit trips by year 2040.

The Council does not anticipate that the Project would significantly impact vehicular traffic. Due to new transit riders' shift from cars to BRT, the Council anticipates a small decrease in annual vehicle miles traveled (VMT) is expected on arterial roadways parallel to the Project corridor; however, additional park-and-ride lots may result in moderate localized VMT increases. The Build Alternatives' projected estimated ADT do not differ from

⁴⁷ Minnesota Department of Transportation. *State of Minnesota 2019-2022 State Transportation Improvement Program (STIP)*. September 2018. Available at: http://www.dot.state.mn.us/planning/program/pdf/stip/2019_22%20Final%20STIP.pdf. Accessed October 2018.

⁴⁸ Metropolitan Council. *2019-2022 Transportation Improvement Program for the Twin Cities Metropolitan Area*. 2018. Available at: [http://www.metrocouncil.org/Transportation/Planning-2/Key-Transportation-Planning-Documents/Transportation-Improvement-Plan-\(TIP\).aspx](http://www.metrocouncil.org/Transportation/Planning-2/Key-Transportation-Planning-Documents/Transportation-Improvement-Plan-(TIP).aspx). Accessed October 2018.



that for the No-Build Alternative; therefore, the Council does not anticipate that the Build Alternatives would produce impacts to MSAT emissions.

The Build Alternatives could include realigning travel lanes, which would effectively move some traffic closer to nearby homes, schools and businesses; therefore, the Build Alternatives could produce in localized areas higher ambient concentrations of MSATs than the No-Build Alternative. The Council cannot reliably quantify the magnitude nor duration of these potential increases compared with the No-Build Alternative because information about Project-specific MSAT-related health impacts is incomplete or unavailable.

Emissions would likely be lower in the Build Alternatives' design year than current levels due to the EPA's national emissions-control programs, which EPA anticipates could reduce annual MSAT emissions by 90 percent between 2010 and 2050. The magnitude of 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.

The analysis presented in this document demonstrates there would be no anticipated exceedances of air pollutant concentrations during the operating phase of the Project; therefore, no mitigation measures are necessary. The State of Minnesota does not require permits related to air quality for projects of this type.

This analysis also demonstrates that the Council does not anticipate exceedances during Project construction; however, where applicable and prudent, the Project would implement EPA-recommended measures to reduce short-term construction impacts to air quality, and a series of BMPs would be implemented during construction to control dust. Avoidance and minimization measures apply to both Build Alternative 1 and Build Alternative 2, including:

- Minimization of land disturbance during site preparation
- Use of watering trucks to minimize dust
- Covering of trucks while hauling soil/debris off-site or transferring materials
- Stabilization of dirt piles that are not removed immediately
- Use of dust suppressants on unpaved areas
- Minimization of unnecessary vehicle and machinery idling
- Re-vegetation of any disturbed land after construction

The Council would develop traffic mitigation measures before construction begins to establish detour routes and maintain traffic flow.

*c) Dust and odors – Describe sources, characteristics, duration, quantities, and intensity of dust and odors generated during project construction and operation. (Fugitive dust may be discussed under **Item F.16.a**). Discuss the effect of dust and odors in the vicinity of the project including nearby sensitive receptors and quality of life. Identify measures that will be taken to minimize or mitigate the effects of dust and odors.*

The Project will create some temporary odors and dust during construction activities. Dust, odors, or other nuisances from nearby construction activities could also negatively impact businesses that have features such as outdoor dining or outdoor storage for products or materials. Construction impacts such as increased levels of dust and odor may temporarily affect neighborhood character. People could perceive the presence of large construction equipment as visually disruptive, temporarily affecting community character, particularly in residential settings.

See **Item F.16.b** for measures that will be taken to minimize or mitigate effects of dust and odors.



F.17. Noise

a) Describe sources, characteristics, duration, quantities, and intensity of noise generated during project construction and operation. Discuss the effect of noise in the vicinity of the project including:

i) Existing noise levels/sources in the area

The Council measured existing noise levels at nine representative sites near the Project alignment during November 2013, November 2014 and October 2016. Measurement sites represent a range of existing noise conditions throughout the corridor.

The analysis used long-term noise measurements to characterize existing noise at residential locations, and it used the short-term measurements to characterize existing noise at non-residential locations and to estimate the noise at additional residential locations. Where the Council was unable to take measurements at specific noise-sensitive properties due to access constraints, it instead gathered measurements at nearby public sites that are the same distance from the Project corridor as the noise-sensitive property. **Table F.17-1** summarizes the results of the existing noise measurements.



TABLE F.17-1: SUMMARY OF EXISTING NOISE MEASUREMENTS

Site ^b	Alignment	Location	Date	Time	Duration (Hours)	Noise Level (dBA) Ldn ^a	Noise Level (dBA) Leq ^a	Dominant Source	Ambient Conditions Represented
1	A	Rice Park	11/4/14	13:01	1	59	61	Traffic on city streets	Western downtown Saint Paul
2	A	Mears Park	11/4/14	14:45	1	64	66	Traffic on city streets	Western downtown Saint Paul
4	B	935 Hudson Rd	11/21/13	14:00	1	62	64	I-94 traffic	Western Alignment B, with noise barriers
5	B	366 E Wakefield Ave	11/5/14	14:58	1	64	66	I-94 traffic	Middle of Alignment B, with noise barriers
6	B	Grace Lutheran Church	11/21/13	11:00	3 ^c	64	65	I-94 traffic	Eastern Alignment B, without noise barriers
8	C	Peaceful Lodge	11/20/13	12:00	24	77	75	I-94 traffic	Eastern Alignment C, without noise barriers
9	C, D3	409 Hickory Lane N	11/3/14	15:00	24	66	66	Traffic on I-94 and 4th Street	Western Alignment C and northern Alignment D3, away from I-94
17	D3	7547 Nature Ct	10/26/16	15:00	24	65	64	Traffic on Bielenberg Drive	Southern Alignment D3, away from I-94

^a The Federal Transit Administration uses the day-night sound level (Ldn) descriptor for Category 2 (residential) land uses, and the “equivalent” sound level (Leq) descriptor for Category 3 (institutional) land uses.

^b Sites 7, 10, 11, 12, 13, 14, 15 and 16 were in areas that Project advisory bodies previously considered for alignments but have since eliminated from further evaluation. Site 3 was on Maria Avenue, which did not have a noise barrier at the time of measurement; however, MnDOT has since constructed a barrier in this area, so the site no longer represents the existing noise environment.

^c The noise monitor stopped recording after several hours, so the Council estimated the day-night sound level (Ldn) from the measurement using methodology from the Federal Transit Administration for estimating an Ldn from partial noise measurements.



ii) Nearby sensitive receptors

The noise-sensitive land uses along Alignment A1 include Rice Park, Mears Park, Landmark Plaza, Hamm Plaza, Ecolab Plaza, Fourth and Sibley Park, Catholic Charities, Ordway Center for the Performing Arts, Roy Wilkins Auditorium, Bruce Vento Nature Park, several hotels, and apartment and condominium buildings. The dominant existing noise source is traffic on local streets.

The noise-sensitive land uses along Alignment A2 include Bruce Vento Nature Park and an apartment building. The dominant existing noise source is traffic on local streets.

The noise-sensitive land uses along Alignment B include single-family and multifamily residences, Mounds Theater, and Grace Lutheran Church. The dominant existing noise source is traffic on I-94.

The noise-sensitive land uses along Alignment C include single-family and multifamily residences, Sun Ray Library, Conway Recreation Center, Apostolic Bible Institute and an assisted-living facility called Peaceful Lodge. The dominant existing noise source is traffic on I-94.

The noise-sensitive land uses along Alignment D3 include single-family and multifamily residences, along with Tamarack Nature Preserve. The dominant existing noise source is traffic along I-94 and local streets.

iii) Conformance to state noise standards

The Council also analyzed the sites in **Table F.17-2** according to the MPCA’s standards, calculating the existing worst-case L10 and L50 at each location using the noise measurement data gathered. **Table F.17-2** shows the results, which indicate that at most locations along the Project corridor existing noise sources exceed the L10 and L50 standards. The exceedances are primarily due to roadway noise, although the roadways are not in violation of the standards because traffic noise from most roads is exempt from the MPCA’s standards.⁴⁹ The analysis measured the higher existing L10 and L50 noise levels closer to I-94 along the Project corridor; L10 and L50 noise levels are lower farther away from the Interstate. The NAC column provides the residential, commercial and industrial land use at the measure site based on the MPCA standards.

TABLE F.17-2: SUMMARY OF EXISTING L10 AND L50 NOISE LEVELS

Site No.	Alignment	NAC	Measurement Location	L10 (dBA) ^a	L50 (dBA) ^a
1	A	2	Rice Park	63	60
2	A	2	Mears Park	68	63
4	B	1	935 Hudson Rd	66 ^b	63 ^b
5	B	1	366 E Wakefield Ave	67 ^b	66 ^b
6	B	1	Grace Lutheran Church	68 ^b	65 ^b
8	C	1	Peaceful Lodge	78 ^b	76 ^b
9	C, D3	1	409 Hickory Ln N	71 ^b	67 ^b
17	D3	1	7547 Nature Court	68 ^b	57

^a The L10 represents noise levels exceeded 10 percent (six minutes) of an hour (60 minutes). The L50 represents noise levels exceeded 50 percent (30 minutes) of an hour (60 minutes).

^b Measured levels that exceed the standards.

⁴⁹ "Powers and Duties," Chap. 116, Minnesota Statutes, Sec. 116.07, Subd 2a, 2018. Available at: <https://www.revisor.mn.gov/statutes/cite/116.07>. Accessed November 2018.



iv) Quality of life.

Table F.17-3⁵⁰ summarizes the assessment, which determined that the Project would not produce long-term impacts to noise. See **Attachment A-1-5** to *Appendix A* for the noise impact contour figures for the sections included in **Table F.17-3**.

⁵⁰ The Council conducted the noise assessment for Category 2 (residential) land uses, which use the day-night sound level (Ldn) descriptor, for the entire corridor. Category 3 (institutional) land uses are less sensitive than Category 2, and the analysis includes them within the distances shown.



TABLE F.17-3: NOISE IMPACT ASSESSMENT SUMMARY

Alignment	Section Start	Section End	Speed ^a (mph)	Site No.	Existing dBA	Project ^b dBA at 50 Feet	Moderate Impact Criteria (dBA)	Severe Impact Criteria (dBA)	Distance to Moderate Impact ^c (Feet)	Distance to Nearest Receptor (Feet)	Impact?
Alignment A1	Smith Ave	Union Depot	10	1	59	48	57	63	15	20	No
	Union Depot	Mounds Blvd	15	2	64	50	60	65	15	120	No
Alignment A2 ^d	Union Depot	Mounds Blvd	15	2	64	50	60	65	15	120	No
Alignment B	Mounds Blvd	Wilson Ave	25	4	62	54	59	64	25	25	No ^e
	Wilson Ave	Earl St	35	4	62	56	59	64	35	75	No
	Earl St	Johnson Pky	30	4	62	55	59	64	25	40	No
	Johnson Pky	Kennard St	30	5	64	55	60	65	30	35	No
	Kennard St	Hazel St	35	6	64	56	60	66	30	55	No
Alignment C	Hazel St	McKnight Rd	30	6	64	55	60	66	25	400	No
	<i>Hazel Street Station Option</i>		30	6	64	55	60	66	25	400	No
	McKnight Rd	Hadley Ave	30	8	77	55	65	74	15	70	No
	Hadley Ave	I-694	30	9	66	55	61	67	20	220	No



Alignment	Section Start	Section End	Speed ^a (mph)	Site No.	Existing dBA	Project ^b dBA at 50 Feet	Moderate Impact Criteria (dBA)	Severe Impact Criteria (dBA)	Distance to Moderate Impact ^c (Feet)	Distance to Nearest Receptor (Feet)	Impact?
<i>Dedicated Guideway Option at Hadley Avenue and 4th Street</i>			30	9	66	55	61	67	20	220	No
Alignment D3 ^f	I-694	I-94	20	9	66	52	61	67	20	120	No
	I-94	Guider Dr	25	17	65	54	61	66	25	105	No
	Guider Dr	Woodlane Dr	20	17	65	52	61	66	20	120	No

^a The analysis assumed average bus operating speeds for each section and rounded up to the nearest 5 mph for the noise analysis.

^b The Federal Transit Administration defines “project noise” as noise due exclusively to new transit sources. The administration’s guidance recommends measuring project noise levels at a setback distance of 50 feet.

^c The distance to the moderate noise impact contour, the boundary within which moderate noise impact is projected to occur, has been rounded up to the nearest 5-foot interval to ensure sensitive receptors with the potential for noise impact fall within the contour boundary.

^d Alignment A2 is part of Build Alternative 2, however it is shown in this table because it would produce the same impacts as Alignment A1.

^e The distance to the moderate noise impact contour has been rounded up to the nearest 5-foot interval. The nearest receptor in this section is not within the moderate noise impact contour and the Project would not produce impacts to it.

^f The impact assessment for Alignment D3 takes into account traffic increases resulting from the new bridge over I-94, which would also accommodate general vehicle traffic as well as BRT. There are noise-sensitive receptors along Alignment D3, so the analysis assessed impacts of additional traffic. Based on the change in traffic volumes due to the Project, noise would increase an additional 1 dBA. This pushes the noise impact contours along Alignment D3 from 15 to 20 feet and 20 to 25 feet. The nearest receptor is still not within this distance; therefore, incorporating the impacts of general vehicle traffic does not result in a noise impact.



v) Identify measures that will be taken to minimize or mitigate the effects of noise.

The Council does not anticipate that the Project would exceed the MPCA noise standards, so the Council used the more protective FTA criteria to determine locations for mitigating Project-related impacts to noise. The Build Alternatives would not produce long-term noise impacts; therefore, the Council does not propose avoidance, minimization or mitigation measures for either Build Alternative 1 or Build Alternative 2.

Avoidance, minimization and mitigation measures for short-term impacts apply to both Build Alternative 1 and Build Alternative 2. The primary means of mitigating short-term noise and vibration due to Project-related construction activities is a detailed noise and vibration control plan, which the Council will require.

F.18. Transportation

a) Describe traffic-related aspects of project construction and operation. Include:

i) Existing and proposed additional parking spaces

Table F.18-1 summarizes the Project’s total anticipated impacts to parking for both Build Alternatives. Build Alternative 1 would eliminate 603 parking spaces and add 450 – a net loss of 153 parking spaces and Build Alternative 2 would eliminate 576 parking spaces and add 450 – a net loss of 126 parking spaces.

TABLE F.18-1: BUILD ALTERNATIVES LONG-TERM PARKING IMPACTS BY ALIGNMENT

Alternative	Existing Spaces	Spaces Eliminated	Spaces Added	Net Parking Impact	Percent Change
Build Alternative 1 (A1-BC-D3)					
Alignment A1	206	27	0	-27	-13%
Alignment B	425	145	0	-145	-34%
Alignment C ^a	1,342	218	150	-68	-5%
<i>With Hazel Street Station Option</i>	1,342	218	150	-68	-5%
<i>With Dedicated Guideway Option at Hadley Avenue and 4th Street</i>	1,342	218	150	-68	-5%
Alignment D3 ^b	1,036	213	300	+87	+8%
Build Alternative 1 Total Parking Impact	3,009	603	450	-153	-5%
Build Alternative 2 (A2-BC-D3)					
Alignment A2	12	0	0	0	0%
Alignment B	425	145	0	-145	-34%
Alignment C ^a	1,342	218	150	-68	-5%



Alternative	Existing Spaces	Spaces Eliminated	Spaces Added	Net Parking Impact	Percent Change
With Hazel Street Station Option	1,342	218	150	-68	-5%
With Dedicated Guideway Option at Hadley Avenue and 4th Street	1,342	218	150	-68	-5%
Alignment D3 ^b	1,036	213	300	+87	+8%
Build Alternative 2 Total Parking Impact	2,815	576	450	-126	-4.4%

^a Project would fully acquire and relocate the commercial property that includes 27 of the 218 spaces eliminated.

^b Project would fully acquire and relocate the commercial properties that include 156 of the 213 spaces eliminated.

Table F.18-1 includes four proposed park-and-ride facilities: The Project would newly construct three, and one would use the existing Woodbury Theatre facility, where most of the existing spaces would be available for Project users.

Table F.18-2 lists the Project’s proposed park-and-ride sites.

TABLE F.18-2: PROJECT PARK-AND-RIDE SITES

Park-and-Ride Site	Number of Spaces	Type of Structure
Sun Ray Station	150	New Surface Lot
Helmo Avenue Station	100	New Surface Lot
Woodbury Theatre Station	150	Existing Surface Lot
Woodbury 494 Park-and-Ride Station	200	New Surface Lot

ii) Estimated total average daily traffic generated

The Project would impact the region’s VMT by decreasing the amount of VMT by 16,350-18,700 miles per day. Each new transit trip the Project generates would decrease daily VMT by 5.8 miles.

iii) Estimated maximum peak hour traffic generated and time of occurrence

Not applicable.

iv) Indicate source of trip generation rates used in the estimates

Not applicable.

v) Availability of transit and/or other alternative transportation modes

The area currently includes local, limited-stop and express bus service, which is oriented toward downtown Saint Paul and downtown Minneapolis during peak travel times. The study area has limited bicycle facilities. On-street bicycle lanes intersect at Johnson Parkway and Ruth Street in Saint Paul. Multiuse trails run adjacent to Helmo Avenue and 4th Street in Oakdale and along Hudson Road (between I-494 and slightly east of Woodbury Drive) in Woodbury. The study area has a fairly complete pedestrian network in



Saint Paul, Maplewood, Landfall, and Oakdale. Sidewalks in the developing area of Woodbury are less complete. Neither of the Build Alternative alignments or their corresponding design options would permanently close any pedestrian and bicycle facilities.

b) Discuss the effect on traffic congestion on affected roads and describe any traffic improvements necessary. The analysis must discuss the project’s impact on the regional transportation system.

If the peak hour traffic generated exceeds 250 vehicles or the total daily trips exceeds 2,500, a traffic impact study must be prepared as part of the EAW. Use the format and procedures described in the Minnesota Department of Transportation’s Access Management Manual, Chapter 5 (available at: <http://www.dot.state.mn.us/accessmanagement/resources.html>) or a similar local guidance.

Existing-Conditions Analysis

The Council based its existing-conditions analysis on traffic volumes, roadway geometrics and signal operations as they existed in 2017-2018, when the Project team completed its data collection. The analysis found that all evaluated intersections operate at level of service (LOS) D or better during the existing-conditions AM and PM peak hours.

Attachment A-1-9 in Appendix A includes tables showing the existing peak-hour traffic volumes. **Attachment A-1-7 in Appendix A** includes intersection layout tables showing existing-condition geometrics and intersection control. **Attachment A-1-8 in Appendix A** includes the complete results of the existing-conditions analysis of delay and LOS.

Alignment A1 (Smith Avenue to Mounds Boulevard) Existing Conditions

For Alignment A1, the Council used Vissim to model Intersections 1-5, where BRT buses would stop in the traffic lane at stations; it used Synchro/SimTraffic to model Intersection 6, where BRT buses would operate in mixed traffic. The existing-conditions analysis showed that all the intersections operate at LOS D or better, and it did not identify queuing issues. **Table F.18-3** lists the existing-conditions analysis results for the resource study area intersections for Alignment A1.

TABLE F.18-3: ALIGNMENT A1 EXISTING AM AND PM PEAK-HOUR INTERSECTION OPERATIONS

Intersection	Weekday AM Peak Hour Avg. Vehicle Delay ^a	Weekday AM Peak Hour Intersection LOS	Weekday PM Peak Hour Avg. Vehicle Delay ^a	Weekday PM Peak Hour Intersection LOS
1. Sibley St/Kellogg Blvd	23.8	C	17.4	B
2. Sibley St/4th St	10.6	B	10.7	B
3. Sibley St/5th St	7.7	A	8.7	A
4. 5th St/Market St	17.9	B	25.5	C
5. 5th St/St. Peter St	8.7	A	9.4	A
6. Kellogg Blvd/Wacouta St ^b	1.3	A	2.9	A

^a Delay measured in seconds per vehicle.

^b Intersection modeled in Synchro/SimTraffic (all other intersections modeled in Vissim).



Alignment B (Mounds Boulevard to White Bear Avenue) Existing Conditions

For Alignment B, the Council used Vissim to model Intersections 8-11 due to the dedicated guideway, complex traffic signal phasing, or the need to model vehicle interactions in detail at these locations. The Council used Synchro/SimTraffic to model Intersections 12-15 because they are typical and would not have operational interactions with the dedicated guideway under the two Build Alternative conditions. The existing-conditions analysis showed that all intersections operate at LOS D or better, and it found the following queuing issue:

- **White Bear Avenue/Old Hudson Road:** For the northbound left-turn movement in the PM peak, the left-turn lane is only 50 feet long due to its proximity to the White Bear Avenue/I-94 westbound ramps intersection

Table F.18-4 lists the existing-conditions analysis results for the resource study area intersections for Alignment B.

TABLE F.18-4: ALIGNMENT B EXISTING AM AND PM PEAK-HOUR INTERSECTION OPERATIONS

Intersection	Weekday AM Peak Hour Avg. Vehicle Delay ^a	Weekday AM Peak Hour Intersection LOS	Weekday PM Peak Hour Avg. Vehicle Delay ^a	Weekday PM Peak Hour Intersection LOS
8. Kellogg Blvd/Mounds Blvd	24.5	C	20.8	C
9. Mounds Blvd/I-94 WB off-ramp	1.9	A	1.5	A
10. Mounds Blvd/I-94 EB on-ramp	4.7	A	8.3	A
11. Earl St/Hudson Rd	6.5	A	7.5	A
12. White Bear Ave/Old Hudson Rd ^b	13.2	B	19.7	B
13. White Bear Ave/I-94 WB ramps ^b	9.7	A	13.8	B
14. White Bear Ave/I-94 EB ramps ^b	16.2	B	21.5	C
15. White Bear Ave/Suburban Ave ^b	14.4	B	15.5	B

^a Delay measured in seconds per vehicle.

^b Intersection modeled in Synchro/SimTraffic (all other intersections modeled in Vissim).

Alignment C (White Bear Avenue to I-694) Existing Conditions

For Alignment C, the Council used Vissim to model Intersections 24-26 and 30-31 due to the dedicated guideway, and complex geometrics and traffic signal phasing. The Council used Synchro/SimTraffic to model Intersections 16-23 and 27-29 because they are typical and would not interact operationally with the dedicated guideway under the two Build Alternative conditions. The existing-conditions analysis showed that all the intersections operate at LOS D or better, and it found the following queuing issues:

- **Century Avenue/Hudson Service Road (SR)/I-94 westbound off-ramp:** Northbound left-turn movement queues through the I-94 eastbound ramps intersection in the AM peak due to heavy traffic accessing I-94 westbound
- **Century Avenue/I-94 eastbound ramps:** Eastbound left-turn movement exceeds the storage length in the AM peak due to signal timing that favors Century Avenue's heavier northbound movements; however, the queue does not reach the mainline freeway



Table F.18-5 lists the existing-conditions analysis results for the resource study area intersections for Alignment C.

TABLE F.18-5: ALIGNMENT C EXISTING AM AND PM PEAK-HOUR INTERSECTION OPERATIONS

Intersection	Weekday AM Peak Hour Avg. Vehicle Delay ^a	Weekday AM Peak Hour Intersection LOS	Weekday PM Peak Hour Avg. Vehicle Delay ^a	Weekday PM Peak Hour Intersection LOS
16. Ruth St/Old Hudson Rd ^b	12.8	B	22.8	C
17. Ruth St/I-94 WB on-ramp ^b	2.8	A	10.2	B
18. Ruth St/I-94 EB off-ramp ^b	7.3	A	10.7	B
19. Pedersen St/Old Hudson Rd ^b	1.0	A	1.8	A
20. McKnight Rd/1st St ^b	2.4	A	3.8	A
21. McKnight Rd/Hudson SR ^b	1.6	A	10.9	B
22. McKnight Rd/Hudson Rd/I-94 WB on-ramp ^b	7.7	A	20.7	C
23. McKnight Rd/Burns Ave ^b	9.0	A	15.1	B
24. Hudson Rd/4th St	0.3	A	1.4	A
25. Hudson Rd/8th St	0.9	A	0.4	A
26. Hudson Rd/19th St	0.8	A	0.1	A
27. Century Ave/Hudson Rd/Hudson Blvd ^b	2.8	A	8.4	A
28. Century Ave/Hudson SR/I-94 WB off-ramp ^b	27.7	C	13.6	B
29. Century Ave/I-94 EB ramps ^b	21.6	C	36.8	D
30. 4th St/Hadley Ave	4.8	A	6.6	A
31. 4th St/Hale Ave	0.6	A	1.2	A

^a Delay measured in seconds per vehicle.

^b Intersection modeled in Synchro/SimTraffic (all other intersections modeled in Vissim).

Alignment D3 (I-694 to Woodbury 494 Park-and-Ride) Existing Conditions

For Alignment D3, the Council used Vissim to model Intersections 32-36 based on the proposed guideway alignment crossings, and complex geometrics and traffic signal phasing. The Council used Synchro/SimTraffic to model Intersections 37-44 because the proposed BRT guideway under the two Build Alternative conditions would operate in the median, parallel to through traffic. The existing-conditions analysis showed that all the intersections operate at LOS D or better, and it found the following queuing issue:

- **Bielenberg Drive/Tamarack Road:** Southbound through and right-turn movement queues exceed the storage length in the PM peak due to the heavy traffic on Tamarack Road

Table F.18-6 lists the existing-conditions analysis results for the resource study area intersections for Alignment D3.



TABLE F.18-6: ALIGNMENT D3 EXISTING AM AND PM PEAK-HOUR INTERSECTION OPERATIONS

Intersection	Weekday AM Peak Hour Avg. Vehicle Delay ^a	Weekday AM Peak Hour Intersection LOS	Weekday PM Peak Hour Avg. Vehicle Delay ^a	Weekday PM Peak Hour Intersection LOS
32. 4th St/Hudson Blvd/Hayward Ave	2.1	A	3.0	A
33. EB 4th St/BRT Guideway ^c	N/A	N/A	N/A	N/A
34. 4th St/Helmo Ave	13.4	B	22.1	C
35. 3rd St/Helmo Ave	0.6	A	2.0	A
36. Helmo Ave/Hudson Blvd/2nd St ^c	N/A	N/A	N/A	N/A
37. Bielenberg Dr/Hudson Rd ^{b, c}	N/A	N/A	N/A	N/A
38. Bielenberg Dr/Hartford North Driveway ^b	0.6	A	1.1	A
39. Bielenberg Dr/Hartford South Driveway ^b	2.5	A	2.5	A
40. Bielenberg Dr/Tamarack Hills North ^b	2.1	A	7.9	A
41. Bielenberg Dr/Tamarack Hills ^b	4.8	A	27.4	C
42. Bielenberg Dr/Tamarack Rd ^b	26.1	C	51.4	D
43. Bielenberg Dr/Nature Path ^b	1.1	A	2.0	A
44. Bielenberg Dr/Guider Dr ^b	2.5	A	8.9	A

^a Delay measured in seconds per vehicle.

^b Intersection modeled in Synchro/SimTraffic (all other intersections modeled in Vissim).

^c No existing intersection at this location.

Alignment A2 (Union Depot to Mounds Boulevard)

For Alignment A2, the Council used Synchro/SimTraffic to model Intersection 7, where Project buses would operate in mixed traffic. The existing-conditions analysis showed that this intersection operates at LOS D or better, and it did not identify queuing issues. Table F.18-7 lists existing analysis results for the resource study area intersections for Alignment A2.

TABLE F.18-7: ALIGNMENT A2 EXISTING AM AND PM PEAK-HOUR INTERSECTION OPERATIONS

Intersection	Weekday AM Peak Hour Avg. Vehicle Delay ^a	Weekday AM Peak Hour Intersection LOS	Weekday PM Peak Hour Avg. Vehicle Delay ^a	Weekday PM Peak Hour Intersection LOS
7. Kellogg Blvd/Broadway St ^b	11.6	B	11.0	B

^a Delay measured in seconds per vehicle.

^b Intersection modeled in Synchro/SimTraffic.

The 15% Concept Plans in **Appendix B** show all traffic signal modifications/reconstructions, grade crossings, one-way streets, and other infrastructure changes that are part of the Project.



Operating Phase (Long-Term) Impacts

Alignment A1 (Smith Avenue to Mounds Boulevard) for 2040 Build Alternative 1

For Alignment A1, the Council used Synchro/SimTraffic to model Intersection 6 and Vissim to model Intersections 1-5, consistent with the existing-conditions and 2040 No-Build Alternative analyses. The analysis anticipates that all the intersections would operate at LOS D or better, and it did not identify queuing issues.

Table F.18-8 lists the 2040 Build Alternative 1 analysis results for the resource study area intersections for Alignment A1.

TABLE F.18-8: ALIGNMENT A1 2040 AM AND PM PEAK-HOUR INTERSECTION OPERATIONS

Intersection	Weekday AM Peak Hour Avg. Vehicle Delay ^a	Weekday AM Peak Hour Intersection LOS	Weekday PM Peak Hour Avg. Vehicle Delay ^a	Weekday PM Peak Hour Intersection LOS
1. Sibley St/Kellogg Blvd	24.0	C	17.7	B
2. Sibley St/4th St	12.3	B	12.7	B
3. Sibley St/5th St	12.1	B	12.9	B
4. 5th St/Market St	18.9	B	27.5	C
5. 5th St/St. Peter St	8.7	A	9.4	A
6. Kellogg Blvd/Wacouta St ^b	5.1	A	6.8	A

^a Delay measured in seconds per vehicle.

^b Intersection modeled in Synchro/SimTraffic (all other intersections modeled in Vissim).

Alignment B (Mounds Boulevard to White Bear Avenue) for 2040 Build Alternative 1

For Alignment B, the Council used Vissim to model Intersections 8-11 and Synchro/SimTraffic to model Intersections 12-15, consistent with the existing-conditions and 2040 No-Build Alternative analyses. The analysis anticipates that all the intersections would operate at LOS D or better, and it found the following queuing issue:

- **White Bear Avenue/Old Hudson Road:** For the northbound left-turn movement in the PM peak, the existing left-turn lane is only 50 feet long due to the proximity to the White Bear Avenue/I-94 westbound ramps intersection. This issue also occurs in the existing and 2040 No-Build Alternative conditions.

Table F.18-9 lists the 2040 Build Alternative 1 analysis results for the resource study area intersections for Alignment B.

TABLE F.18-9: ALIGNMENT B 2040 AM AND PM PEAK-HOUR INTERSECTION OPERATIONS

Intersection	Weekday AM Peak Hour Avg. Vehicle Delay ^a	Weekday AM Peak Hour Intersection LOS	Weekday PM Peak Hour Avg. Vehicle Delay ^a	Weekday PM Peak Hour Intersection LOS
8. Kellogg Blvd/Mounds Blvd	30.1	C	29.9	C
9. Mounds Blvd/I-94 WB off-ramp	24.3	C	16.5	B



Intersection	Weekday AM Peak Hour Avg. Vehicle Delay ^a	Weekday AM Peak Hour Intersection LOS	Weekday PM Peak Hour Avg. Vehicle Delay ^a	Weekday PM Peak Hour Intersection LOS
10. Mounds Blvd/I-94 EB on-ramp	5.1	A	7.5	A
11. Earl St/Hudson Rd	13.3	B	11.9	B
12. White Bear Ave/Old Hudson Rd ^b	13.5	B	20.1	C
13. White Bear Ave/I-94 WB Ramps ^b	10.5	B	15.2	B
14. White Bear Ave/I-94 EB Ramps ^b	16.7	B	24.0	C
15. White Bear Ave/Suburban Ave ^b	14.6	B	15.9	B

^a Delay measured in seconds per vehicle.

^b Intersection modeled in Synchro/SimTraffic (all other intersections modeled in Vissim).

Alignment C (White Bear Avenue to I-694) for 2040 Build Alternative 1

The Council used Vissim to model Intersections 24-26 and 30-31, and Synchro/SimTraffic to model Intersections 16-23 and 27-29, consistent with the existing-conditions and 2040 No-Build Alternative analyses. The analysis anticipates that all the intersections would operate at LOS D or better, and it found the following queuing issues:

- **Century Avenue/Hudson SR/I-94 westbound off-ramp:** Northbound left-turn movement queues through the I-94 eastbound ramps intersection in the AM peak due to heavy traffic volumes accessing I-94 westbound; this issue also occurs in the existing and 2040 No-Build Alternative conditions
- **Century Avenue/I-94 eastbound ramps:** Eastbound left-turn movement exceeds the lane storage length in the PM peak due to signal timing that favors the heavier southbound movements on Century Avenue; however, the queue does not reach the mainline freeway; the same issue occurs in the 2040 No-Build Alternative conditions

Table F.18-10 lists the 2040 Build Alternative 1 analysis results for the resource study area intersections for Alignment C.

The station location for the Hazel Street Station Option would not affect traffic operations at any of the intersections; therefore, the Council did not model this option

TABLE F.18-10: ALIGNMENT C 2040 AM AND PM PEAK-HOUR INTERSECTION OPERATIONS

Intersection	Weekday AM Peak Hour Avg. Vehicle Delay ^a	Weekday AM Peak Hour Intersection LOS	Weekday PM Peak Hour Avg. Vehicle Delay ^a	Weekday PM Peak Hour Intersection LOS
16. Ruth St/Old Hudson Rd ^b	13.0	B	25.2	C
17. Ruth St/I-94 WB on-ramp ^b	2.5	A	11.2	B
18. Ruth St/I-94 EB off-ramp ^b	7.5	A	11.0	B
19. Pedersen St/Old Hudson Rd ^b	5.8	A	9.2	A



Intersection	Weekday AM Peak Hour Avg. Vehicle Delay ^a	Weekday AM Peak Hour Intersection LOS	Weekday PM Peak Hour Avg. Vehicle Delay ^a	Weekday PM Peak Hour Intersection LOS
20. McKnight Rd/1st St ^b	2.9	A	3.6	A
21. McKnight Rd/Hudson SR ^b	2.3	A	20.6	C
22. McKnight Rd/Hudson Rd/I-94 WB on-ramp ^b	12.7	B	21.2	C
23. McKnight Rd/Burns Ave ^b	10.4	B	17.1	B
24. Hudson Rd/4th St	0.7	A	0.1	A
25. Hudson Rd/8th St	4.6	A	1.7	A
26. Hudson Rd/19th St	3.4	A	3.5	A
27. Century Ave/Hudson Rd/Hudson Blvd ^b	3.7	A	7.3	A
28. Century Ave/Hudson SR/I-94 WB off-ramp ^b	26.4	C	15.0	B
29. Century Ave/I-94 EB Ramps ^b	22.6	C	52.2	D
30. 4th St/Hadley Ave	17.5	B	38.04	D
31. 4th St/Hale Ave	3.6	A	7.7	A

^a Delay measured in seconds per vehicle.

^b Intersection modeled in Synchro/SimTraffic (all other intersections modeled in Vissim).

Dedicated Guideway Option at Hadley Avenue and 4th Street for 2040 Build Alternative 1

This option would replace the 4th Street Bridge over I-694, and the Project would operate in a dedicated lane instead of in mixed traffic. The Council used Vissim to model these intersections. The analysis anticipates that all the intersections would operate at LOS D or better, and it did not identify queuing issues. **Table F.18-11** lists the 2040 Build Alternative 1 analysis results for the resource study area intersections 30 through 36 that are within the Dedicated Guideway Option at Hadley Avenue and 4th Street.

TABLE F.18-11: DEDICATED GUIDEWAY OPTION AT HADLEY AVENUE AND 4TH STREET 2040 AM AND PM PEAK-HOUR INTERSECTION OPERATIONS

Intersection	Weekday AM Peak Hour Avg. Vehicle Delay ^a	Weekday AM Peak Hour Intersection LOS	Weekday PM Peak Hour Avg. Vehicle Delay ^a	Weekday PM Peak Hour Intersection LOS
30. 4th St/Hadley Ave	17.5	B	25.2	C
31. 4th St/Hale Ave	12.2	B	12.7	B
32. 4th St/Hudson Blvd/Hayward Ave	13.1	B	13.3	B
33. Eastbound 4th St/BRT Guideway	2.5	A	16.5	B
34. 4th St/Helmo Ave	25.5	C	30.2	C



Intersection	Weekday AM Peak Hour Avg. Vehicle Delay ^a	Weekday AM Peak Hour Intersection LOS	Weekday PM Peak Hour Avg. Vehicle Delay ^a	Weekday PM Peak Hour Intersection LOS
35. 3rd St/Helmo Ave	3.2	A	4.2	A
36. Helmo Ave/Hudson Blvd/2nd St	15.7	B	16.6	B

^a Delay measured in seconds per vehicle.

Alignment D3 (I-694 to Woodbury 494 Park-and-Ride) for 2040 Build Alternative 1

The Council used Vissim to model Intersections 32-36 and Synchro/SimTraffic to model Intersections 37-44, consistent with the existing-conditions and No-Build Alternative analyses. The analysis showed that all intersections would operate at overall LOS D or better with the following exception:

- **Bielenberg Drive/Tamarack Road** would operate at LOS F in the PM peak due to heavy eastbound traffic. These failing traffic operations also occur in the 2040 No-Build Alternative conditions; the Project would not cause them.

The analysis identified the following queuing issues in the 2040 Build Alternative 1 conditions:

- **Bielenberg Drive/Tamarack Hills:** The westbound, left-turn-movement 95th-percentile queue exceeds the lane storage length due to the congestion and spill-back from the Bielenberg Drive/Tamarack Road intersection. The same issue occurs in the 2040 No-Build Alternative conditions
- **Bielenberg Drive/Tamarack Road:** All eastbound movements, westbound left-turn and through, all northbound movements, and southbound through and right-turn movements exceed the lane storage length and operate at LOS E/F in the PM peak due to very heavy volumes at the intersection. The eastbound, left-turn-movement 95th percentile queue also exceeds the available lane storage. The same issues occur in the 2040 No-Build Alternative conditions

Table F.18-12 lists the 2040 Build Alternative 1 analysis results for the resource study area intersections for Alignment D3.

TABLE F.18-12: ALIGNMENT D3 2040 AM AND PM PEAK-HOUR INTERSECTION OPERATIONS

Intersection	Weekday AM Peak Hour Avg. Vehicle Delay ^a	Weekday AM Peak Hour Intersection LOS	Weekday PM Peak Hour Avg. Vehicle Delay ^a	Weekday PM Peak Hour Intersection LOS
32. 4th St/Hudson Blvd/Hayward Ave	12.1	B	16.2	B
33. EB 4th St/BRT Guideway	2.6	A	19.4	B
34. 4th St/Helmo Ave	24.8	C	28.7	C
35. 3rd St/Helmo Ave	3.8	A	3.9	A
36. Helmo Ave/Hudson Blvd/2nd St	16.2	B	16.2	B
37. Bielenberg Dr/Hudson Rd ^b	16.7	B	14.4	B
38. Bielenberg Dr/Hartford North Driveway ^b	3.1	A	4.6	A



Intersection	Weekday AM Peak Hour Avg. Vehicle Delay ^a	Weekday AM Peak Hour Intersection LOS	Weekday PM Peak Hour Avg. Vehicle Delay ^a	Weekday PM Peak Hour Intersection LOS
39. Bielenberg Dr/Hartford South Driveway ^b	12.7	B	7.1	A
40. Bielenberg Dr/Tamarack Hills North ^b	14.5	B	21.1	C
41. Bielenberg Dr/Tamarack Hills ^b	16.7	B	33.8	C
42. Bielenberg Dr/Tamarack Rd ^b	37.5	D	100+	F
43. Bielenberg Dr/Nature Path ^b	7.4	A	17.4	B
44. Bielenberg Dr/Guider Dr ^b	11.5	B	11.5	B

^a Delay measured in seconds per vehicle.

^b Intersection modeled in Synchro/SimTraffic (all other intersections modeled in Vissim). **Attachment A-1-8** includes a complete table of 2040 Build Alternatives delay and LOS analysis results.

Like the 2040 No-Build Alternative conditions, the poor operations at the Bielenberg Drive/Tamarack Road intersection in the 2040 Build Alternative 1 conditions are due to very high traffic volumes; they are not a result of the Project. The Project would improve operations at the Bielenberg Drive/Tamarack Hills and Bielenberg Drive/Guider Drive intersections, which would operate at LOS E or LOS F in the 2040 No-Build Alternative analysis. The improvement in operations at the Bielenberg Drive/Tamarack Hills intersection is due to the second left-turn lane constructed on Tamarack Road, which would allow retiming of the signal and reduce queues on Bielenberg Drive. The improvement in operations at the Bielenberg Drive/Guider Drive intersection is due to the construction of a new traffic signal.

Alignment A2 (Union Depot to Mounds Boulevard) for 2040 Build Alternative 2 Build Alternative 2 includes an alternative alignment (Alignment A2) in downtown Saint Paul that would terminate at Union Depot instead of at the Smith Avenue Transit Center.

As with the 2040 Build Alternative 1 analysis, the Council incorporated into its 2040 Build Alternative 2 traffic model several improvements that would control BRT bus movements at intersections safely and efficiently, and to provide adequate roadway infrastructure to accommodate buses, pedestrians and park-and-ride traffic near stations.

Attachment A-1-7 includes tables that show the geometrics and intersection control for the 2040 Build Alternative 2 conditions.

For Alignment A2, the Council used Synchro/SimTraffic to model this intersection, consistent with the existing-conditions and 2040 No-Build Alternative analyses. The analysis anticipates that this intersection would operate at LOS D or better, and it did not identify queuing issues. **Table F.18-13** lists the 2040 Build Alternative 2 analysis results for the resource study area intersections for Alignment A2.

TABLE F.18-13: ALIGNMENT A2 2040 AM AND PM PEAK-HOUR INTERSECTION OPERATIONS

Intersection	Weekday AM Peak Hour Avg. Vehicle Delay ^a	Weekday AM Peak Hour Intersection LOS	Weekday PM Peak Hour Avg. Vehicle Delay ^a	Weekday PM Peak Hour Intersection LOS
7. Kellogg Blvd/Broadway St ^b	12.0	B	11.5	B



^a Delay measured in seconds per vehicle.

^b Intersection modeled in Synchro/SimTraffic.

Construction Phase (Short-Term) Impacts

The Build Alternatives would produce short-term impacts to traffic operations including lane, intersection and roadway closures, and detours that would cause localized increases in congestion. Similar construction-related impacts would occur for the Hazel Street Station Option and the Dedicated Guideway Option at Hadley Avenue and 4th Street.

c) Identify measures that will be taken to minimize or mitigate project related transportation effects.

For Build Alternative 1 Alignments A1, B, C, D3 and the Dedicated Guideway Option at Hadley Avenue and 4th Street, the Council would incorporate several improvements that would provide adequate infrastructure to accommodate buses, pedestrians and park-and-ride traffic near stations; provide LOS D or better traffic operations at all intersections; and safely and efficiently control BRT bus movements at intersections.

At full-access intersections with a dedicated center or side running guideway, the Project would construct new traffic signals to safely control the movements of vehicles, pedestrians, bicycles and the BRT buses through the intersections. Full-access intersections where BRT buses operate in mixed traffic, or where the guideway would run curbside to the right of the vehicle lane, generally would not need traffic signals to safely accommodate the BRT traffic.

The analysis identified long-term impacts to parking in Saint Paul, Oakdale and Woodbury. The Council will coordinate with these cities, impacted residents and businesses to further minimize parking impacts as the Project advances through the Project Development and Engineering phases.

In areas where the Project would result in parking impacts, the Council would compensate property owners in accordance with Minnesota Statutes Chapter 117 and as subject to additional parking consistent with the Council's incidental use and existing policy.

The analysis identified long-term impacts to four driveways. The impacted driveway at Apostolic Bible Institute would be relocated approximately 180 feet to the north. Two of the driveways at St. Paul Youth Services and one of the driveways at Leo's Chow Mein will not be relocated, therefore the Council will compensate property owners in accordance with Minnesota Statutes Chapter 117.

Short-term mitigation strategies could include providing signage that directs business patrons to streets where parking is available and implementing an ongoing outreach program that informs business owners and residents about construction activities in the neighborhood. Additionally, the Council would implement staged construction activities to minimize short-term impacts to the greatest extent possible. The construction contractor would implement the staging plan and would reduce the loss of parking spaces during construction to the extent possible. The construction staging plan will address these areas to minimize the duration and frequency of these impacts. The construction staging would be developed as the design of the Project advances during the Engineering phase and prior to the start of construction.

The Council would develop maintenance of traffic (MOT) plans during the Engineering Phase and prior to construction and submit for approval to the roadway authorities. The MOT plans would address construction phasing, maintenance of traffic, traffic signal operations, access through the work zone, any road closures, and any traffic detours.

The Council does not anticipate long-term impacts to transit; therefore, they do not propose avoidance, minimization or mitigation measures.



To minimize the short-term impacts to bus operations during construction, before temporary stop closures and detours go into effect, the Council and its Metro Transit division would inform riders about the temporary service changes by posting information at bus stops and publishing details on its website and in its onboard “Connect” brochure.

Based on measures incorporated as part of the Project design, the Council does not anticipate long-term impacts to traffic; therefore, they do not propose additional avoidance, minimization or mitigation measures. As part of its design, the Project would incorporate improvements to roadways and intersections to provide LOS D or better traffic operations at all intersections in the Project corridor, and to provide safe and efficient traffic and BRT operations. Both Build Alternatives would achieve an acceptable LOS D or better with these improvements in place.⁵¹

To address short-term impacts, the Council will develop a detailed construction staging plan for the Project. It will also develop MOT plans during the Engineering Phase to address construction phasing, traffic signal operations, and access through the work zone, road closures and traffic detours.

F.19. Cumulative Potential Effects

Preparers can leave this item blank if cumulative potential effects are addressed under the applicable EAW Items.

a) Describe the geographic scales and timeframes of the project related environmental effects that could combine with other environmental effects resulting in cumulative potential effects.

Table F.19-1 lists state, local and private projects currently anticipated, planned and funded roadway project and other infrastructure projects generally within the Project study area. The Council identified these actions through coordination with local agency partners serving on the Project’s Technical Advisory Committee, which included members from the following municipalities, agencies and governmental bodies:

- Cities of Saint Paul, Maplewood, Landfall, Oakdale, and Woodbury
- Ramsey and Washington counties
- Minnesota Department of Transportation (MnDOT)
- Council
- Metro Transit

The Council also used web-based research, and local and regional transportation, land use and development plans to develop **Table F.19-1**. The analysis identifies reasonably foreseeable future actions through the year 2040, the planning horizon for the Project.

⁵¹ The Bielenberg Drive/Tamarack Road intersection would operate at LOS F in the PM peak due to heavy eastbound traffic. These failing traffic operations also occur in the 2040 No-Build Alternative conditions and are not caused by the Project



b) Describe any reasonably foreseeable future projects (for which a basis of expectation has been laid) that may interact with environmental effects of the proposed project within the geographic scales and timeframes identified above.

None of these future actions are the direct result of the Project, and their implementation is not dependent on whether the Council implements the Project. These actions are reasonably foreseeable because they are likely to be funded, approved or part of an officially adopted planning document.

Future station-area planning and other initiatives may identify other actions that the identified reasonably foreseeable future actions do not include at this time.



TABLE F.19-1: REASONABLY FORESEEABLE FUTURE ACTIONS IN THE CORRIDOR

Action	Project Type	Estimated Construction	Description	Nearest Project Alignment	Potential Impacts	Location
Seven Corners Gateway	Mixed-use	TBD	Master planned mixed use development of the City-owned site north of Xcel Energy Center, bounded by Smith Avenue, Kellogg Boulevard, 7th Street West and 5th Street West	A1	Transportation, land use, business, visual	Saint Paul
Saint Paul Opportunity Center and Dorothy Day Residence (Phase 2)	Residential	2019	Construction of 193 single-room occupancy rental units at 183 Old 6th Street West	A1	Visual, community facility	Saint Paul
Robert Piram Regional Trail	Pedestrian and bicycle	2019-2020	The new trail segment will connect the Harriet Island Regional Park and its trail system to Kaposia Landing Park in South Saint Paul	A1	Transportation, land use, right-of-way, community facility	Saint Paul
Addition of MnPASS lanes on Interstate 94 (I-94) between downtown Minneapolis and downtown Saint Paul	Roadway	2022	Design under study between MN 55 and MN 61	A1	Transportation, air quality, land use, right-of-way, stormwater, noise, business	Saint Paul
Pedro Park	Park	TBD	Planned and funded park at the southwest corner of 10th Street E and Robert Street in downtown Saint Paul	A1	Community facility	Saint Paul
10th Street City Center Bikeway	Bicycle	2022-2023	Component of the Capital City Bikeway.	A1	Transportation, community facility	Saint Paul



Action	Project Type	Estimated Construction	Description	Nearest Project Alignment	Potential Impacts	Location
West Side Flats Future Phase	Residential	2019	A master planned project consisting of multiple multifamily buildings. One building is built, while a future phase will be constructed in 2019	A1	Land use, stormwater, transportation, visual	Saint Paul
Fillmore West	Residential	2022	Five-building apartment project	A1	Land use, stormwater, transportation, business, visual	Saint Paul
Printer's Row II	Residential	2019	Construction of 37 market rate condominium units at Temperance Street and 9th Street	A1	Land use, visual	Saint Paul
Ramsey County Riverfront Properties	Residential and commercial	TBD	Redevelopment of the vacant four-acre riverfront site at Kellogg/Wabasha that was formerly the Adult Detention Center and West buildings	A1	Transportation, land use, community facility, visual, floodplain, surface waters, stormwater	Saint Paul
Robert Street mill and overlay from 12th Street to E Annapolis Street	Roadway	2022	Mill and overlay of street improvements for compliance with the Americans with Disabilities Act (ADA), drainage improvements	A1	Transportation, land use, right-of-way, stormwater, noise, business, visual	Saint Paul
Seal surface of Robert Street bridge over Mississippi River	Roadway	2022	Seal bridge surface and repair railings with drainage improvements	A1	Transportation, land use, right-of-way, stormwater, noise, business, visual	Saint Paul



Action	Project Type	Estimated Construction	Description	Nearest Project Alignment	Potential Impacts	Location
Replace sidewalks along I-94 corridor from TH 280 to Western Avenue	Pedestrian	2020	Replace sidewalks and make ADA improvements	A1	Transportation, land use, right-of-way, business, visual	Saint Paul
Kellogg Boulevard – Capital City Bikeway Phase I	Bicycle	TBD	Narrow the roadway to create space for the bikeway on the north side of Kellogg Boulevard	A1/A2	Transportation, community facility	Saint Paul
Rush Line BRT	Transit	2026	14-mile transit route between Union Depot and downtown White Bear Lake	A1/A2	Transportation, land use, business, environmental justice, stormwater, visual	Saint Paul, Maplewood
Kelly's Bar Redevelopment	Mixed-use	2019	7-story apartment complex with ground-floor retail	A1/A2	Land use, stormwater, business, visual	Saint Paul
Kellogg Boulevard/3rd Street Bridge reconstruction	Roadway	2022+	Bridge reconstruction	A1/A2	Transportation, right-of-way, visual, business, floodplain, stormwater	Saint Paul
Union Pacific/BNSF Grade Separation	Rail	2021-2022	Grade separation of Union Pacific Railroad and BNSF Railway traffic between Westminster and 7th Street	A1/A2	Transportation, right-of-way, visual, noise	Saint Paul



Action	Project Type	Estimated Construction	Description	Nearest Project Alignment	Potential Impacts	Location
TH 5 over BNSF Railroad east of Downtown Saint Paul	Roadway	2021	Rehab bridge with ADA improvements	A2	Transportation, land use, right-of-way, stormwater, noise, business, visual	Saint Paul
TH 52 mill and overlay from Mississippi River to I-494	Roadway	2021	Mill and overlay of street with ADA improvements, drainage improvements	A2	Transportation, land use, right-of-way, stormwater, noise, business, visual	Saint Paul
Indian Mounds Regional Park Trail	Pedestrian and bicycle	2019	Commercial Street to TH 61 in Saint Paul, construct Indian Mounds Regional Park Trail	A1/A2, B	Transportation, community facility, stormwater	Saint Paul
East Metro Yards Improvement	Rail	2022	Improvements to the East Metro Yards (Union Depot in Saint Paul to I-494) including new mainline segments, switch upgrades, yard shifts and potential flyover or duck under tracks	A1/A2, B	Transportation, noise, visual	Saint Paul
Concrete pavement repair on I-94 from Western Avenue to Mounds Blvd	Roadway	2022	Concrete pavement repairs with drainage improvements	A1/A2, B	Transportation, land use, right-of-way, stormwater, noise, business, visual	Saint Paul
TH 5 mill and overlay from Munster Avenue to Mounds Boulevard	Roadway	2024	Mill and overlay of street with ADA improvements, drainage improvements	A1/A2, B	Transportation, land use, right-of-way, stormwater, noise, business, visual	Saint Paul



Action	Project Type	Estimated Construction	Description	Nearest Project Alignment	Potential Impacts	Location
TH 61 mill and overlay from TH 5 to Roselawn Avenue	Roadway	2023	Mill and overlay of street with ADA improvements, drainage improvements	A2, B	Transportation, land use, right-of-way, stormwater, noise, business, visual	Saint Paul
Bruce Vento Pedestrian and Bicycle Bridge	Pedestrian and bicycle	TBD	Connect Bruce Vento Trail and Sam Morgan Trail	B	Transportation, community facility, visual	Saint Paul
Fish Hatchery Trail Reconstruction	Pedestrian and bicycle	TBD	Stabilize the embankment and reconstruct the full 1.4-mile length of the trail	B	Transportation, community facility	Saint Paul
Better Bus Stop Program	Transit	Ongoing	Bus stop and shelter improvements at several locations in Saint Paul's east side neighborhoods, replacing aged shelters, and enhancing priority downtown bus stops	B	Transportation, right-of-way, visual	Saint Paul
Margaret Street Bicycle Boulevard and McKnight Road Trail	Bicycle	2019	Construction of a bicycle boulevard on Margaret Street between McKnight Road and Forest Avenue and on McKnight Road between Minnehaha and Burns Avenues	B	Transportation, community facility	Saint Paul
Johnson Parkway Regional Trail	Bicycle	2020	An off-street walking and biking trail along the eastern boulevard of Johnson Parkway between Burns Avenue and Phalen Boulevard. Part of the St. Paul Grand Round	B	Transportation, stormwater, community facility	Saint Paul



Action	Project Type	Estimated Construction	Description	Nearest Project Alignment	Potential Impacts	Location
TH 61 mill and overlay from I-94 to Carver Avenue	Roadway	2026	Mill and overlay of street with ADA improvements, drainage improvements	B	Transportation, land use, right-of-way, storm water, noise, business, visual	Saint Paul
TH 120 mill and overlay from north of I-94 to TH 244	Roadway	2023	Mill and overlay of street with ADA improvements, drainage improvements	C	Transportation, land use, right-of-way, stormwater, noise, business, visual	Saint Paul, Maplewood
Farrell/Ferndale Area Street Improvements	Roadway	2018-2019	Full street reconstruction of Margaret Avenue, 5th Avenue, Fremont Avenue, Farrell Street, Ferndale Street, Conway Service Drive; will also construct new drainage, trails and sidewalks	C	Transportation, right-of-way, stormwater, visual	Maplewood
Dennis/ McClelland Area Street Improvements	Roadway	2020	Full street reconstruction of Sterling Street, James Drive, McClelland Street, Ferndale Street, Dennis Lane, O'Day Street, Mayer Lane, Farrell Street and Mayhill Road; will also construct new drainage, trails and sidewalks	C	Transportation, right-of-way, stormwater, visual	Maplewood
TH 5 mill and overlay from TH 61 to TH 120	Roadway	2021	Mill and overlay of street with ADA improvements, drainage improvements	C	Transportation, land use, right-of-way, stormwater, noise, business, visual	Landfall, Maplewood
Strip Mall Redevelopment	Commercial	TBD	Redevelopment of property at 10th Street and MN120	C	Business, land use, visual	Oakdale



Action	Project Type	Estimated Construction	Description	Nearest Project Alignment	Potential Impacts	Location
Tanners Lake Redevelopment	Residential and mixed-use	TBD	3-acre site west of Tanners Lake	C	Transportation, land use, visual, business, floodplain, surface waters, stormwater, visual	Oakdale
I-694 concrete pavement repair from TH 61 to CSAH 10	Roadway	2025	Mill and overlay of street with ADA improvements, drainage improvements	C	Transportation, land use, right-of-way, storm water, noise, business, visual	Oakdale
I-94 Unbonded Concrete Overlay from TH 120 to Wisconsin border	Roadway	2023	Mill and overlay of street with ADA improvements, drainage improvements	C, D3	Transportation, land use, right-of-way, stormwater, noise, business, visual	Maplewood, Landfall, Oakdale, and Woodbury
4th Street Bridge Widening	Roadway	2020-2025	Widening of the 4th Street bridge over I-694 to add pedestrian amenities; paved trail between Hadley and Helmo Avenues along 4th Street	C, D3	Transportation, right-of-way, business, visual	Oakdale
St. Paul STEM School (former Crosswinds Middle School)	School	2019	Transitioning from administrative office to middle school	C, D3	Land use, community facility	Woodbury
4th Street Reconstruction	Roadway	2022	Reconstruction of 4th Street between Hadley and Inwood avenues	D3	Transportation, right-of-way, visual, business impacts, stormwater	Oakdale



Action	Project Type	Estimated Construction	Description	Nearest Project Alignment	Potential Impacts	Location
Helmo Station Area Plan	Mixed-use	2020	Mixed use residential and commercial-retail, industrial office, park	D3	Transportation, land use, right-of-way, visual, floodplain, surface waters, stormwater	Oakdale
CSAH 13 (Inwood Avenue/Radio Drive) expansion and bicycle/pedestrian bridge over I-94	Pedestrian and bicycle	2019	Construction of a new bicycle/pedestrian bridge over I-94 and conversion of existing sidewalk to general travel lane	D3	Transportation, right-of-way, community facility, visual, business, stormwater	Oakdale, Woodbury
I-94/I-494/I-694 interchange in Oakdale/Woodbury	Roadway	2020	Interchange Reconstruction	D3	Transportation, right-of-way, stormwater, visual business, noise	Oakdale, Woodbury
Launch Properties (Parcel D) SW Corner of Tamarack/Bielenberg Development	Commercial, roadway	TBD	65,000 SF, multiple buildings and a 120-room hotel, new two-lane roadway between Bielenberg Drive and Tamarack Road	D3	Transportation, land use, right-of-way, visual	Woodbury
Woodspring Suites at Weir Drive	Commercial	2018	Hotel development	D3	Biological environment, land use, stormwater, visual	Woodbury
The Glen at Valley Creek	Residential	2018-2019	42-unit senior living facility	D3	Biological environment, land use, stormwater, visual	Woodbury



Action	Project Type	Estimated Construction	Description	Nearest Project Alignment	Potential Impacts	Location
Artis Senior Living	Residential	2018-2019	72-unit senior living facility	D3	Biological environment, land use, stormwater, visual	Woodbury
Tamarack Road Extension	Roadway	TBD	New facility (two lanes) between Upper Afton Road and Weir Drive	D3	Transportation, right-of-way, stormwater, land use, business, visual	Woodbury
Tamarack Hills 2nd Addition Building E1	Commercial	2019	New 25,000-square-foot multi-tenant office	D3	Land use, business, visual	Woodbury
Leadership Academy Charter School (former Globe University site)	School	TBD	Potential expansion to school, play areas, etc.	D3	Land use, community facility, business, visual	Woodbury
MN Eye Outlot	Commercial	2019	40,000-square-foot medical office building	D3	Land use, business, visual	Woodbury
Upper Afton Road Century Ave to Weir Dr.	Roadway	2019	Utility and roadway rehabilitation	D3	Transportation, stormwater	Woodbury
I-94 at Radio Drive interchange turn lane and trail improvements	Roadway, pedestrian and bicycle	2022	Construct turn lane, trail and pedestrian improvements	D3	Transportation, land use, community facility, right-of-way, stormwater, noise, business, visual	Woodbury
Park-and-ride construction	Parking	2019	Construction of a 550-space surface parking lot at Manning Avenue and Hudson Boulevard	D3	Transportation, land use, right-of-way, visual	Lake Elmo



Action	Project Type	Estimated Construction	Description	Nearest Project Alignment	Potential Impacts	Location
Metro Transit electric bus fleet plan	Transit	2022	Purchase up to 125 electric buses	All	Transportation, air quality	Regional



- c) Discuss the nature of the cumulative potential effects and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to these cumulative effects.

Anticipated new development near stations makes up most of the Project's indirect effects. Local communities generally would perceive positively Project-induced development that occurs in accordance with local plans because it would help meet long-range land use and transportation goals for the station areas. However, if not responsibly managed, new development that changes the transportation system, land use and the natural environment can indirectly impact resources. Potential indirect effects from Project-induced development include: changes in community character; displacement of residents and businesses from rising property values; impacts to visual and historic resources; increases in traffic congestion; increased demand for parking and public services; floodplain encroachment; and increases in stormwater runoff.

Local, state and federal regulations and policies intended to manage growth and protect resources can minimize indirect effects to resources. Local governments along the corridor have the authority to regulate the use and development of land and already administer a range of growth management tools to promote orderly development of their communities including: comprehensive plans; zoning, subdivision and floodplain ordinances; capital improvement plans, access management plans, historic preservation commissions; affordable housing policies; and surface water and stormwater management plans. State and federal regulations are also in place to further minimize impacts to resources from development including the Clean Water Act that regulates water quality through Section 404⁵² and Section 401⁵³ Water Quality Certification permitting processes; the National Pollutant Discharge Elimination System (NPDES)/ State Disposal System (SDS) permits that regulate stormwater runoff from construction sites; and the federal Endangered Species Act that regulates the taking, transport, possession, processing or selling of protected species.

The Project's direct and indirect effects, when considered with the potential resource impacts of other past, present and reasonably foreseeable actions in the study area, may contribute to cumulative effects on the transportation system, land use and the natural environment. However, based on the cumulative impacts assessment, it is unlikely that the extent that the combined impacts to resources would reach a level of concern that would warrant special avoidance, minimization and mitigation measures for the Project other than those described herein. The Project's direct impacts would be mitigated in accordance with applicable local, state and federal regulations including Section 106 of the NHPA,⁵⁴ Sections 404 and 401 of the Clean Water Act, the NPDES/SDS permitting process for stormwater runoff at construction sites, the federal Endangered Species Act,⁵⁵ and the Uniform Relocation Act⁵⁶ and Minnesota Statutes Chapter 117. Environmental effects resulting from this Project are described in EAW **Item F.7** through EAW **Item F.18**.

The same local, state and federal regulations and policies that would manage the Project's indirect effects would also apply to resource impacts from other past, present and reasonably foreseeable projects.

⁵² "Clean Water Act: Permitting Discharges of Dredge or Fill Material", 33 U.S. Code 1344, Section 404, as amended. Available at: <https://www.epa.gov/cwa-404/clean-water-act-section-404> . Accessed November 2018.

⁵³ "Clean Water Act: State Certification of Water Quality", 33 U.S. Code 1341, Section 401, as amended. Available at: <https://www.epa.gov/cwa-404/clean-water-act-section-401-certification> . Accessed November 2018.

⁵⁴ "Protection of Historic Properties", National Historic Preservation Act of 1966, as amended, 36 CFR Part 800, 16 U.S. Code 470 et seq., Section 106. Available at: https://www.ecfr.gov/cgi-bin/text-id.x?SID=4908d84d9d15501f57c7d9bbb46147f1&mc=true&node=se36.3.800_116&rgn=div8.. Accessed November 2018.

⁵⁵ "Interagency Cooperation – Endangered Species Act of 1973," Title 50, CFR, Part 401, as amended. October 2001. <https://www.gpo.gov/fdsys/pkg/CFR-2017-title50-vol11/xml/CFR-2017-title50-vol11-part402.xml>. Accessed November 2018.

⁵⁶ "Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally Assisted Programs," Title 49, CFR, Part 24. January 2005. <https://www.gpo.gov/fdsys/pkg/CFR-2017-title49-vol1/xml/CFR-2017-title49-vol1-part24.xml>. Accessed November 2018.



F.20. Other Potential Environmental Effects

a) If the project may cause any additional environmental effects not addressed by **Items F.1 to F.19**, describe the effects here, discuss how the environment will be affected, and identify measures that will be taken to minimize and mitigate these effects.

Acquisitions

The Council anticipates that the Build Alternatives would fully acquire two parcels that have a combined area of 11.1 acres. The 15% Concept Plans in **Appendix B** illustrate the locations of the Project’s proposed partial and full acquisitions. **Table F.20-1** lists Project-related partial and full parcel acquisitions by Build Alternative.

TABLE F.20-1: ACQUISITIONS BY BUILD ALTERNATIVE

Alternative	Partial (Parcels)	Partial (Acres)	Full (Parcels)	Full (Acres)
Build Alternative 1 (A1-BC-D3)	35	27.9	2	11.1
<i>With Hazel Street Station Option^a</i>	34	27.8	2	11.1
<i>With Dedicated Guideway Option at Hadley Avenue and 4th Street</i>	35	28.5	2	11.1
Build Alternative 2 (A2-BC-D3)	33	27.8	2	11.1
<i>With Hazel Street Station Option^b</i>	32	27.7	2	11.1
<i>With Dedicated Guideway Option at Hadley Avenue and 4th Street</i>	33	28.4	2	11.1

^a No permanent acquisition will be required for the Hazel Street Station Option. The partial acquisition of 0.09 acres at Summit Senior Living is eliminated with this option. Partial acquisition for Alignment B drops to 34 parcels at 27.8 acres.

^b No permanent acquisition will be required for the Hazel Street Station Option. The partial acquisition of 0.09 acres at Summit Senior Living is eliminated with this option. Partial acquisition for Alignment B would drop to 32 parcels at 27.7 acres.

Displacements and Relocations

The Council anticipates that the Project would fully acquire two commercial parcels, which could displace multiple businesses, depending on the number of businesses operating on the parcel. Displacements include commercial and industrial businesses; Build Alternative 1 would not displace residential or institutional entities.

The Council evaluates relocation potential for displaced businesses based on the availability of similar commercial properties within the same or a nearby community. Only as an exercise to assess current real estate market conditions, the Council searched the Multiple Listing Service (MLS) to locate replacement properties for residents and businesses whose properties the Project may need to acquire, and it compared the number of potentially displaced properties with the number of available comparable properties (assuming they would be available when Project construction begins). The Council also used the MLS search results to locate potential commercial properties based on type of use in or near the community where Project-related displacements could occur; however, this methodology cannot predict future availability of suitable properties.



Should the Project proceed to construction, displaced businesses would receive relocation assistance in accordance with federal and state laws and regulations, their individual needs, and current market availability.

The Council will continue its efforts to avoid property acquisitions as the Project advances through the Project Development and Engineering phases. The Council would provide fair market compensation and relocation assistance, where applicable, to mitigate private property impacts that result in compensable losses, as federal and state regulations require. The Council would invite all property owners directly affected by potential Project-related right-of-way acquisitions to Project public meetings and engagement events.

When acquiring property, the Council would provide property owners payment of fair market compensation and relocation assistance in accordance with the requirements of the Uniform Relocation Act, the FTA⁵⁷ and Minnesota Statutes Chapter 117.

For nonresidential displacements, the Council would provide the following services:

- Relocation advisement
- A minimum of 90 days' written notice to vacate
- Reimbursement for moving and reestablishment expenses

Although the law requires a minimum of 90 days' written notice to vacate for nonresidential displacements, a right-of-way agent and an appraiser would contact displaced owners before they receive written notice. Relocation advisory services ensure that the Council coordinates relocation activities with the property owners. Several other reimbursable incidental expenses related to relocation might also be provided to businesses if they are determined to be actual, reasonable and necessary.

Utilities

The Council anticipates several long-term impacts from the Build Alternatives to existing underground and overhead utilities throughout the limits of disturbance. As the Project design advances, the Council will evaluate utilities on a case-by-case basis to determine potential impacts due to Project construction and operations. If elements of the Project conflict with existing utilities, owners may need to modify, relocate or reconstruct the utilities. The Council will coordinate with each utility owner regarding impacts to existing facilities as the Project advances through Project Development and into the Engineering Phase.

The Project could require relocating the buried fiber optic cables and associated system infrastructure from White Bear Avenue to McKnight Road in Saint Paul; and between Century Avenue and Hadley Avenue in Oakdale due to guideway and other Project infrastructure.

Construction of the guideway could impact MnDOT's traffic-management system along the I-94 corridor requiring the Council to relocate or modify the changeable message sign and associated equipment between Frank Street and Johnson Parkway in Saint Paul to accommodate the guideway between I-94 and Hudson Road.

The Project will avoid and/or minimize potential maintenance impacts to buried oil pipelines through advancement of design near the proposed Helmo Avenue Station and along Bielenberg Drive. The Council will coordinate with pipeline owners to advance design that will minimize impacts to pipeline maintenance activities. Project improvements in these areas include a new station, guideway, roadway widening, bridge abutments, and other Project-related infrastructure. Where impacts cannot be avoided, the Council will work with the utility owner to mitigate these impacts. The Council recognizes routine maintenance or extraordinary

⁵⁷ Federal Transit Administration. "Grant Management Requirements". Circular 5010.1D. November 1, 2018. Available at: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/C_5010_1D_Finalpub.pdf. Accessed November 2018.



repairs may be necessary for these pipelines. The design advancement will coordinate the placement of the guideway, structures, and traffic systems to limit the future disruption of BRT operations and allow construction access to the pipelines. Advancement of design will evaluate where 1) the footprint of disturbance on the pipeline can be reduced through perpendicular crossings of the guideway, 2) offsetting the guideway to allow pipeline maintenance access when parallel to the pipeline, 3) adjusting proposed grading where feasible to limit additional fill on top of the pipeline, and 4) placement of permanent structures (i.e., stations and bridges) and stormwater facilities would minimize impacts to pipeline maintenance activities.

The Project will not impact Metropolitan Council Environmental Services interceptor sewer lines for Alignment A, C, and D3. Within Alignment B a valve box for the MCES interceptor sewer line is located near the guideway. The Project will avoid and/or minimize any potential impacts through design advancement during the Project Development and Engineering phases.

In most areas utility vaults would not result in a conflict with the station platform. However, the Project could impact the accessibility of utility vaults located in downtown Saint Paul within Alignment A1 due to bump outs at the station areas. The 5th Street/Robert Street Station, Union Depot/Sibley Street Station and Union Depot/Wacouta Street Station will have bump-outs to accommodate combined pull-out and in-lane stopping. The Council will continue to evaluate the extent of impacts from station construction and will coordinate with utility owners as the Project design advances through the Project Development and Engineering phases.

Proposed station platforms would require connections to electrical power and a communication network to provide lighting, real-time messaging systems, security cameras and fare collection.

The Build Alternatives would produce short-term impacts to utilities during construction activities such as excavation and grading, placing structural foundations and using large-scale equipment. Utility relocations would result in service disruptions during limited durations throughout construction. The Council anticipates these disruptions would be minimal, and providers would establish temporary connections for customers before permanently relocating utilities facilities. The Council will coordinate with utility owners to schedule disruptions to service.

Avoidance, minimization and mitigation measures apply to both Build Alternative 1 and Build Alternative 2. The Council would continue to confirm and map the locations of existing utilities in the Project area during the Project Development and Engineering phases so that it can refine designs to best avoid the utilities, where practicable. Where conflict is unavoidable, the Council will coordinate with utility owners to identify Project-related impacts and potential mitigation measures such as relocations, replacements or other actions. If a legal agreement exists stating that a utility owner would pay to move the utility to accommodate a roadway improvement project, the Council will coordinate with that owner per the conditions of the agreement. Existing utility land rights will also be evaluated to determine their impact on relocation costs.

The Council will continue to coordinate with Minnesota Pipeline LLC and Flint Hills Resources to advance the design on the BRT guideway and other Project infrastructure in compliance with standards separating the Project from the oil pipelines. The Council will analyze any adjustments to the Project resulting from ongoing coordination and the Project will maintain a specified distance from the oil pipelines as determined through this coordination. The Council will continue to evaluate any potential impact as the Project design advances through the Project Development and Engineering phases.

The Council will coordinate during construction with utility owners and operators to determine potential disruptions in service. If Project construction requires temporary service disruptions, the utility owners would notify affected property owners. Potential disruptions would be temporary, and owners would restore utility services to preconstruction levels in a timely manner. If construction activities reveal previously unidentified utilities, the Council would notify the owner of the utility and determine appropriate mitigation measures. The Council will coordinate closely with owners of water supply lines critical for the cooling systems of the data



centers within Alignment D3. In the case of a disruption to the water supply, a temporary connection would be established.

The Council will also implement measures to avoid and mitigate risks associated with utility relocations, including implementing a confined space entry safety plan, remediating contaminated soils prior to utility excavations, and remediating and disposing of hazardous pipe coatings and materials impacted by utility relocations.

The Council will mitigate accessibility impacts at the station platforms by adjusting existing utility vaults to match the new grade, including raising or lowering and resetting existing frames, covers, and lids and adding or replacing riser collars.

Community Facilities, Character and Cohesion

The Council anticipates that over time, continued development of transit and transportation facilities in the Project area, combined with future actions and the direct and indirect effects of the Project, would place increased demands on community services and facilities and could change community character. For locations where comprehensive plans call for growth and mixed-use development, such changes in character would be consistent with planned growth and development. Without attentive management and adequate funding, overuse or degradation of facilities or resources could result. Because cities and park jurisdictions typically forecast and plan for future population growth over time, their development plans would anticipate such potential impacts. The types of indirect and cumulative impacts identified are typically consistent with and governed by applicable land use plans and capital improvement plans to expand public infrastructure and services. Also, the Council and the counties and municipalities in the corridor have plans to expand and enhance parks and open spaces in the area to meet the demand of population growth over time.

Business and Economic Resources

The Council anticipates that the continued development of transit and transportation facilities in the Project area over time, combined with future actions and the direct and indirect effects of the Project, may cumulatively strengthen the business climate by providing improved transportation access to customers and employees. While the Project could negatively affect individual businesses, particularly in the short term due to construction activity, the cumulative result of the Project would be positive. Development that occurs in response to the Project and the reasonably foreseeable future actions would be expected to increase access to businesses in the area and expand the base of potential local consumers. Applicable municipal codes and land use plans regulate all development.

Safety and Security

The continued development of transit and transportation facilities in the Project area over time, combined with future actions, natural population growth, and the direct and indirect effects of the Project, may cumulatively add to the demands on law enforcement and security providers, potentially affecting staffing levels and budgets over the long term. Local municipalities, counties and emergency service providers would plan measures to address safety and security for Project-induced development and future actions. The Council would establish a Safety and Security Management Plan and a Safety and Security Certification Plan to guide safety and security policies for the Project during design and construction. These plans would include requirements for design criteria, hazard analyses, threat and vulnerability analyses, construction safety and security, operational staff training and emergency response measures. These plans would also specify actions and requirements of Metro Transit and its police force to maintain safety and security during BRT operations.



RGU CERTIFICATION. (The Environmental Quality Board will only accept **SIGNED** Environmental Assessment Worksheets for public notice in the EQB Monitor.)

I hereby certify that:

- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minnesota Rules, parts 4410.0200, subparts 9c and 60, respectively.
- Copies of this EAW are being sent to the entire EQB distribution list.

Signature: Chelsa Johnson

Date: Sept 20, 2019

Title: Environmental Lead



Gold Line

BUS RAPID TRANSIT PROJECT ENVIRONMENTAL ASSESSMENT

Appendix F: Environmental Assessment Worksheet

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Environmental Assessment Worksheet Figures**

September 2019



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Figure F1-47: Alignment D3 Floodplain Resources and Impacts..... ATT F1-47

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FIGURE F1-1: COUNTY GENERAL LOCATION MAP

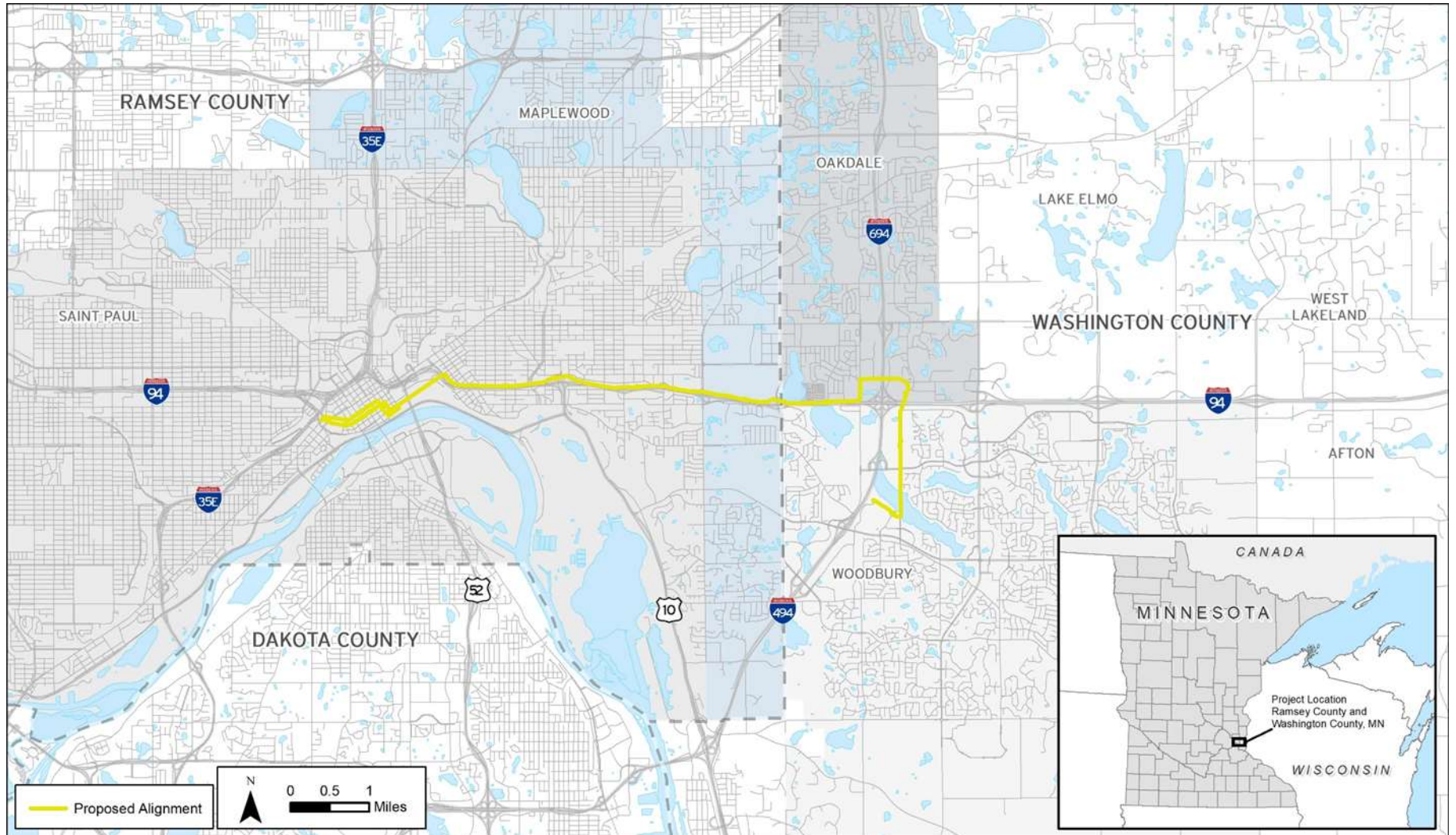




FIGURE F1-2: U.S. GEOLOGICAL SURVEY PROJECT BOUNDARIES MAP – SAINT PAUL

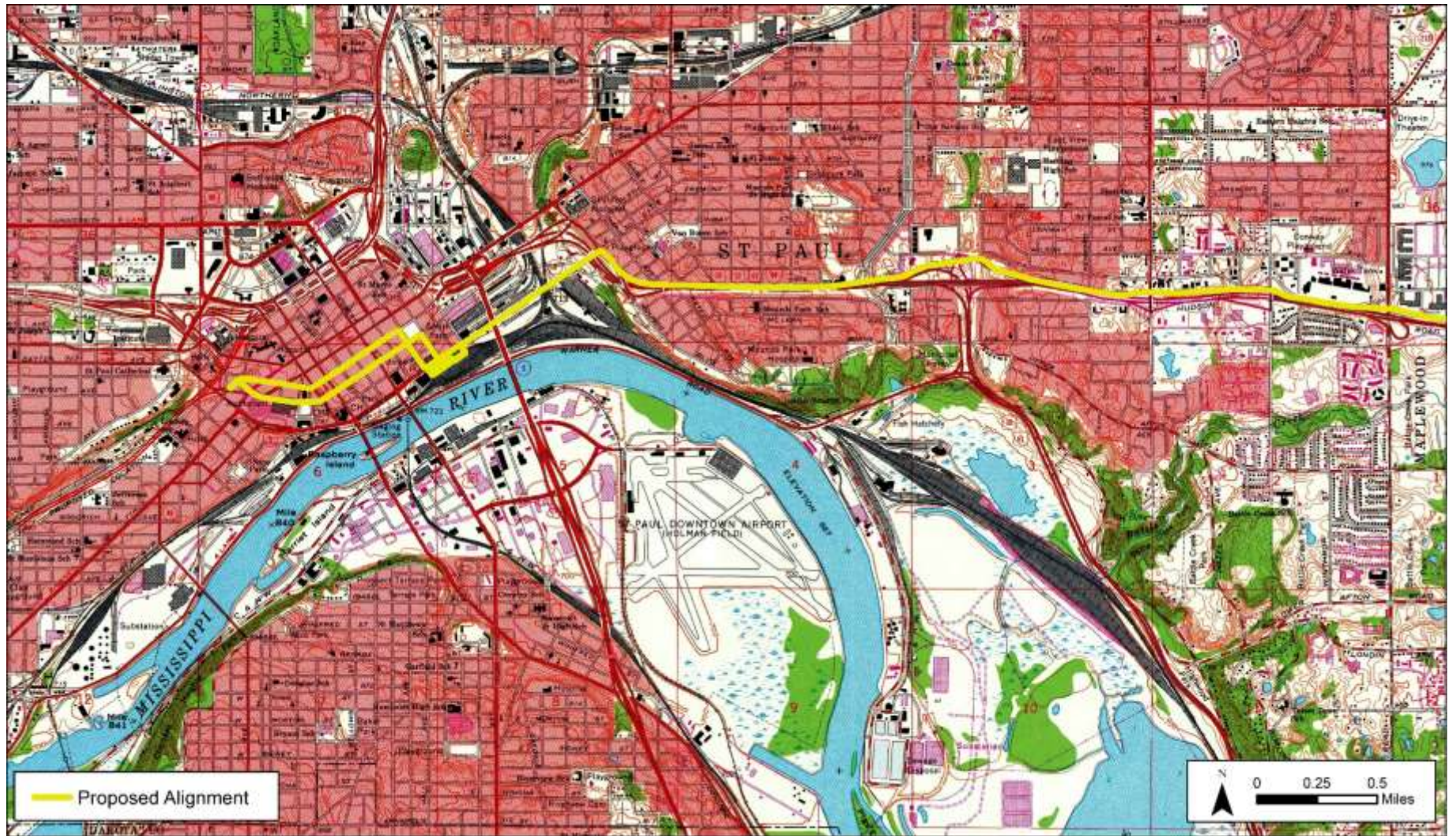




FIGURE F1-3: U.S. GEOLOGICAL SURVEY PROJECT BOUNDARIES MAP – MAPLEWOOD, LANDFALL, OAKDALE AND WOODBURY

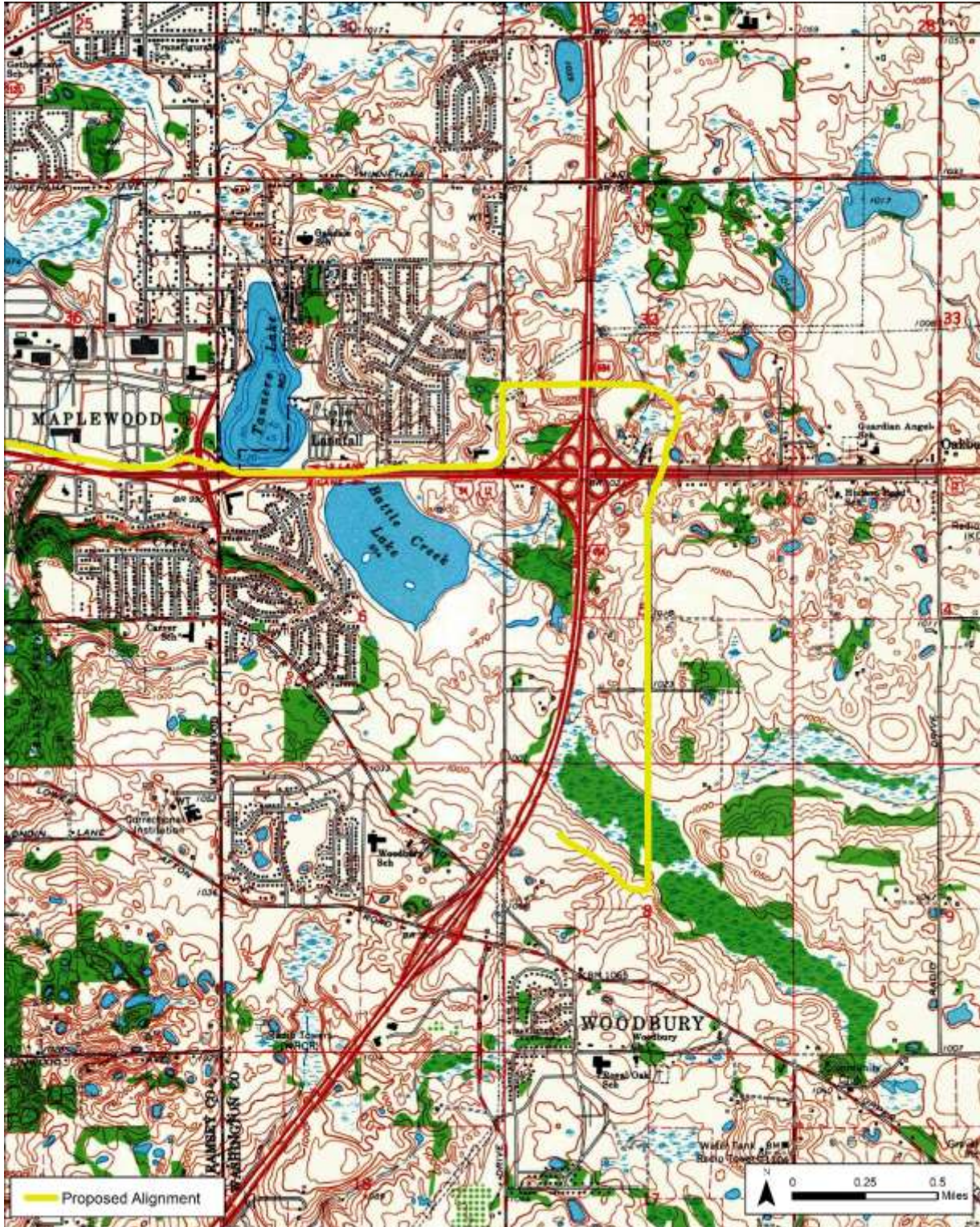




FIGURE F1-4: PROJECT BUILD ALTERNATIVES

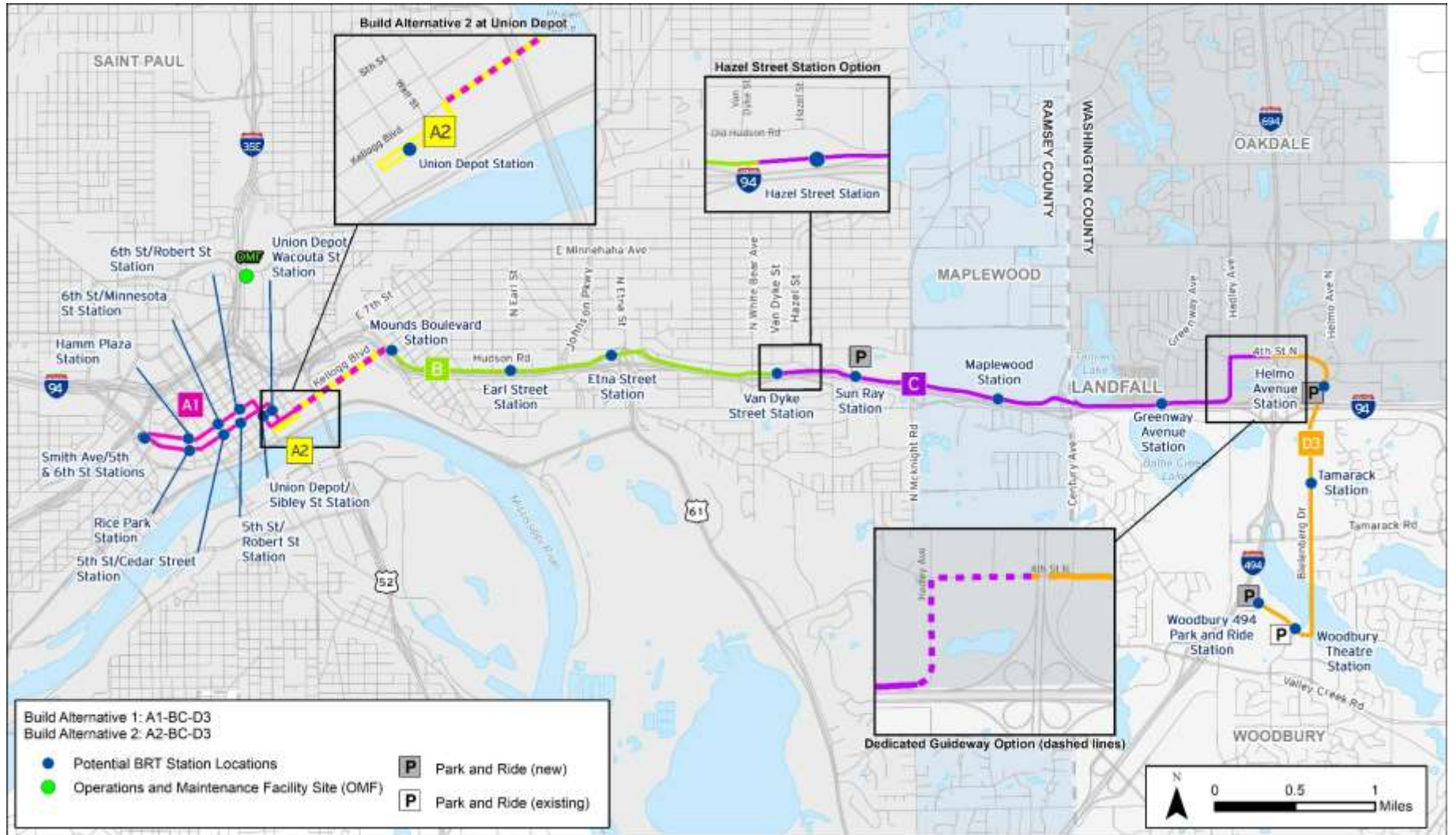




FIGURE F1-5: EXISTING LAND USE ALONG ALIGNMENTS A1, A2 AND B

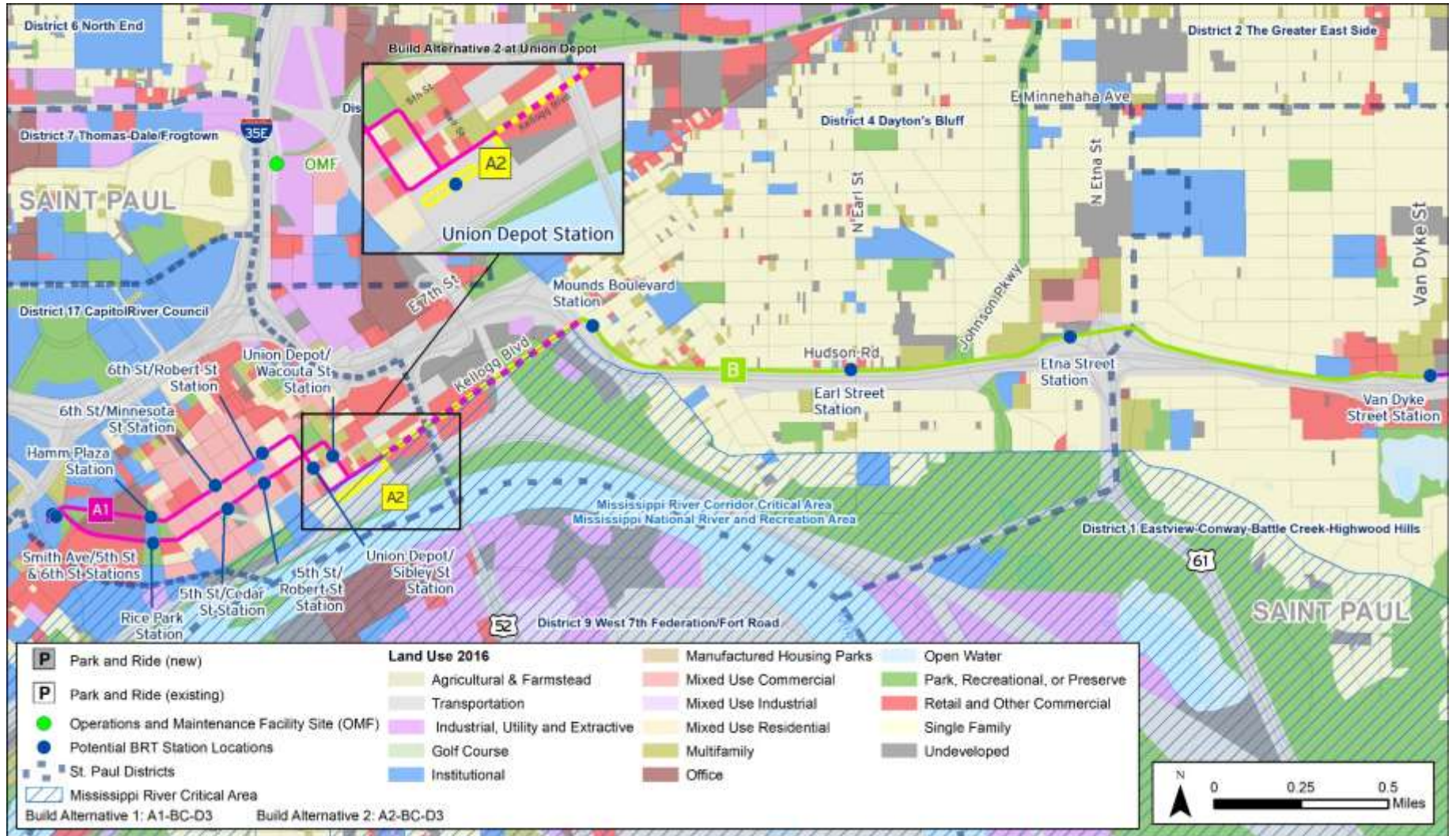




FIGURE F1-6: EXISTING LAND USE ALONG ALIGNMENTS C AND D3

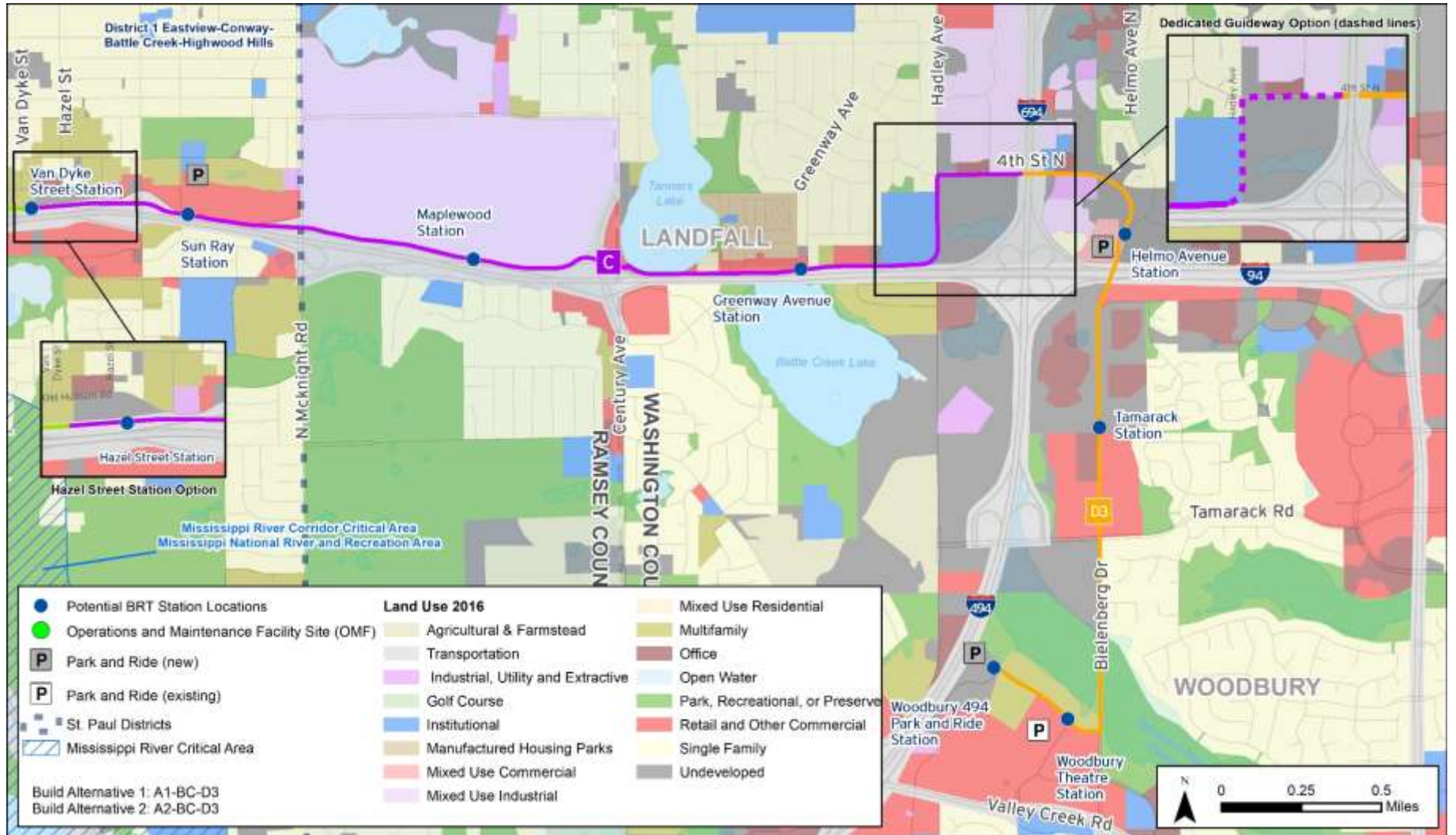




FIGURE F1-7: PLANNED 2040 LAND USE ALONG ALIGNMENTS A1, A2 AND B

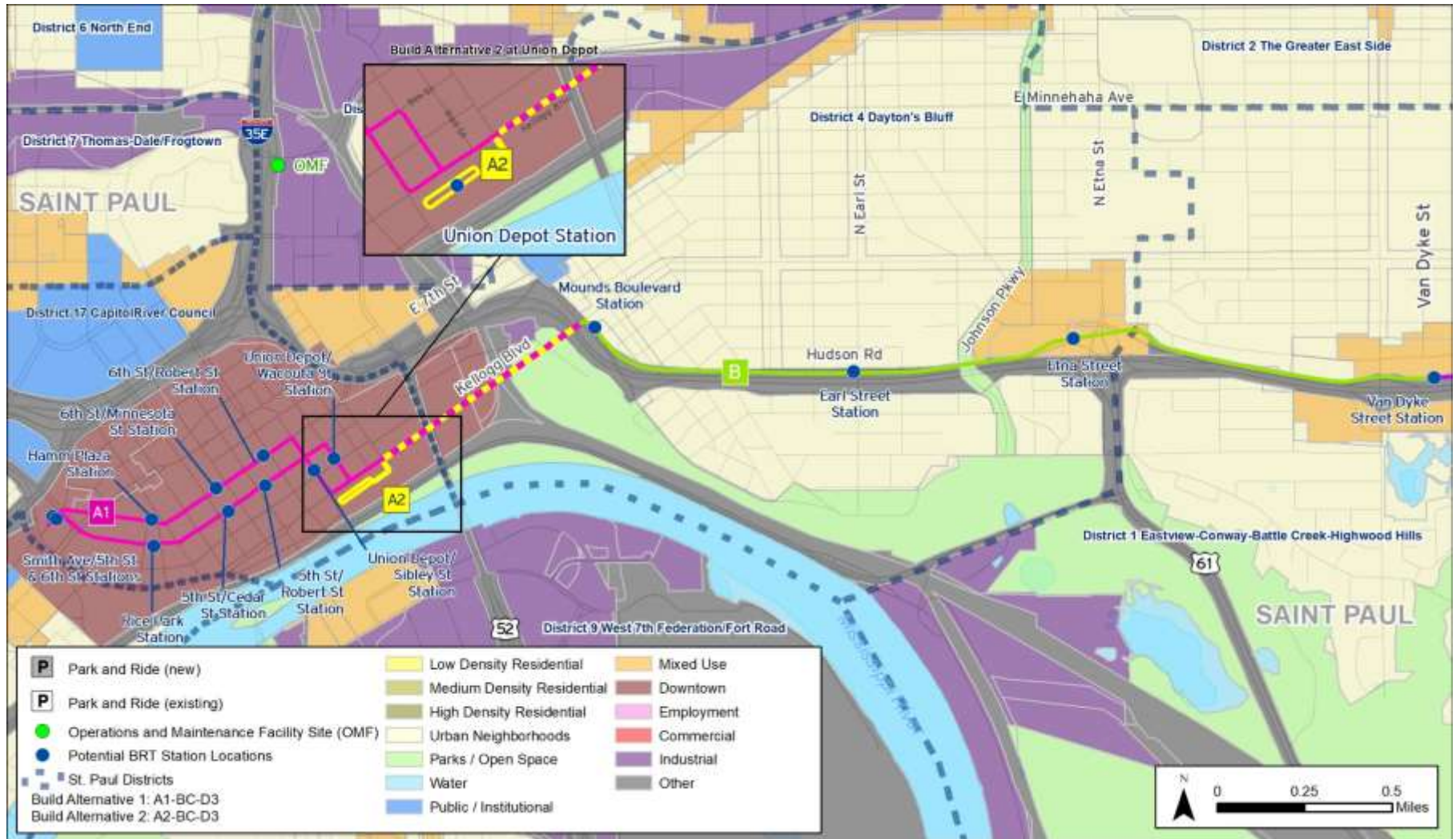




FIGURE F1-8: PLANNED 2040 LAND USE ALONG ALIGNMENTS C AND D3

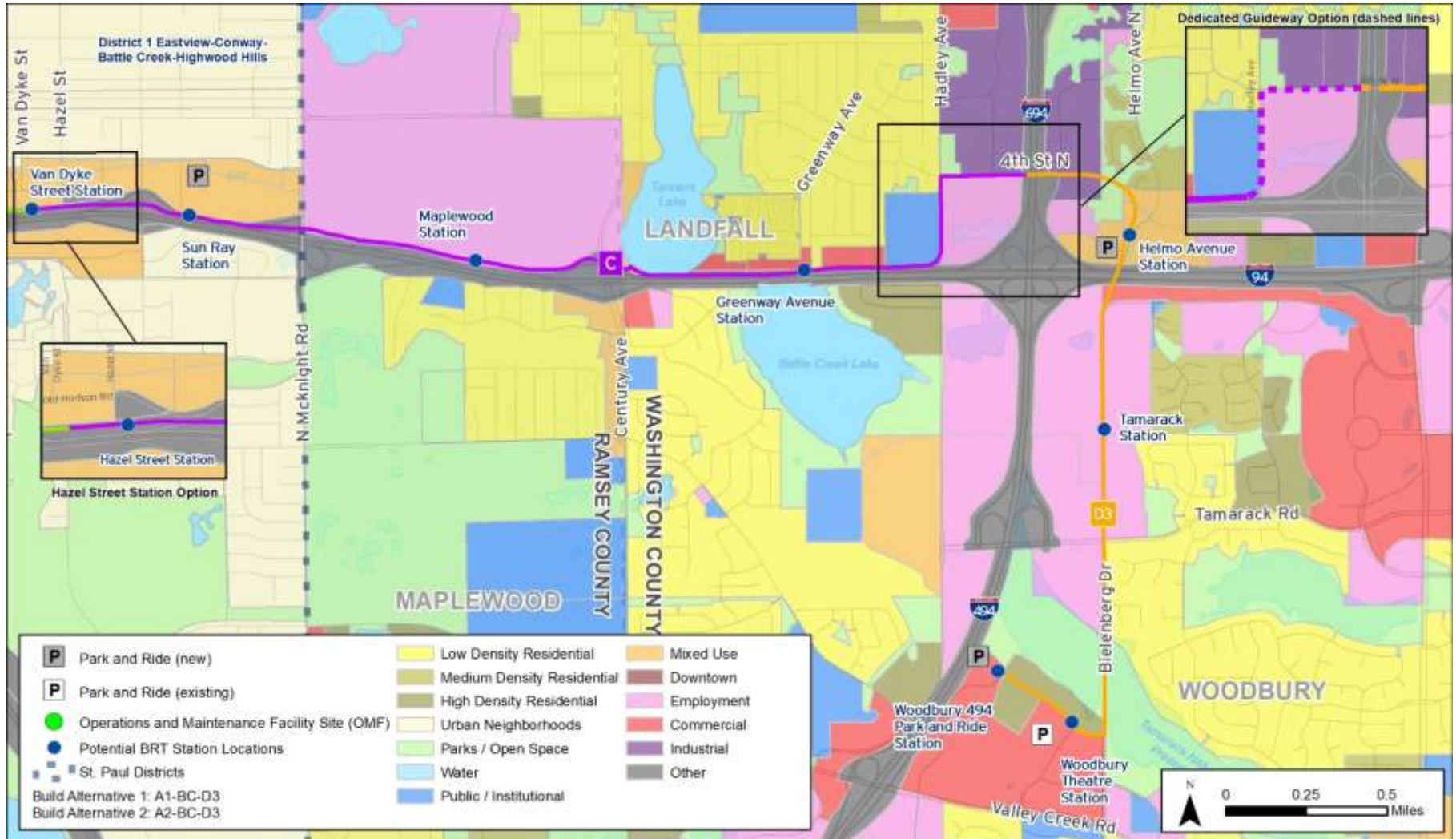


FIGURE F1-9: ERODIBLE SOILS IN THE RESOURCE STUDY AREA

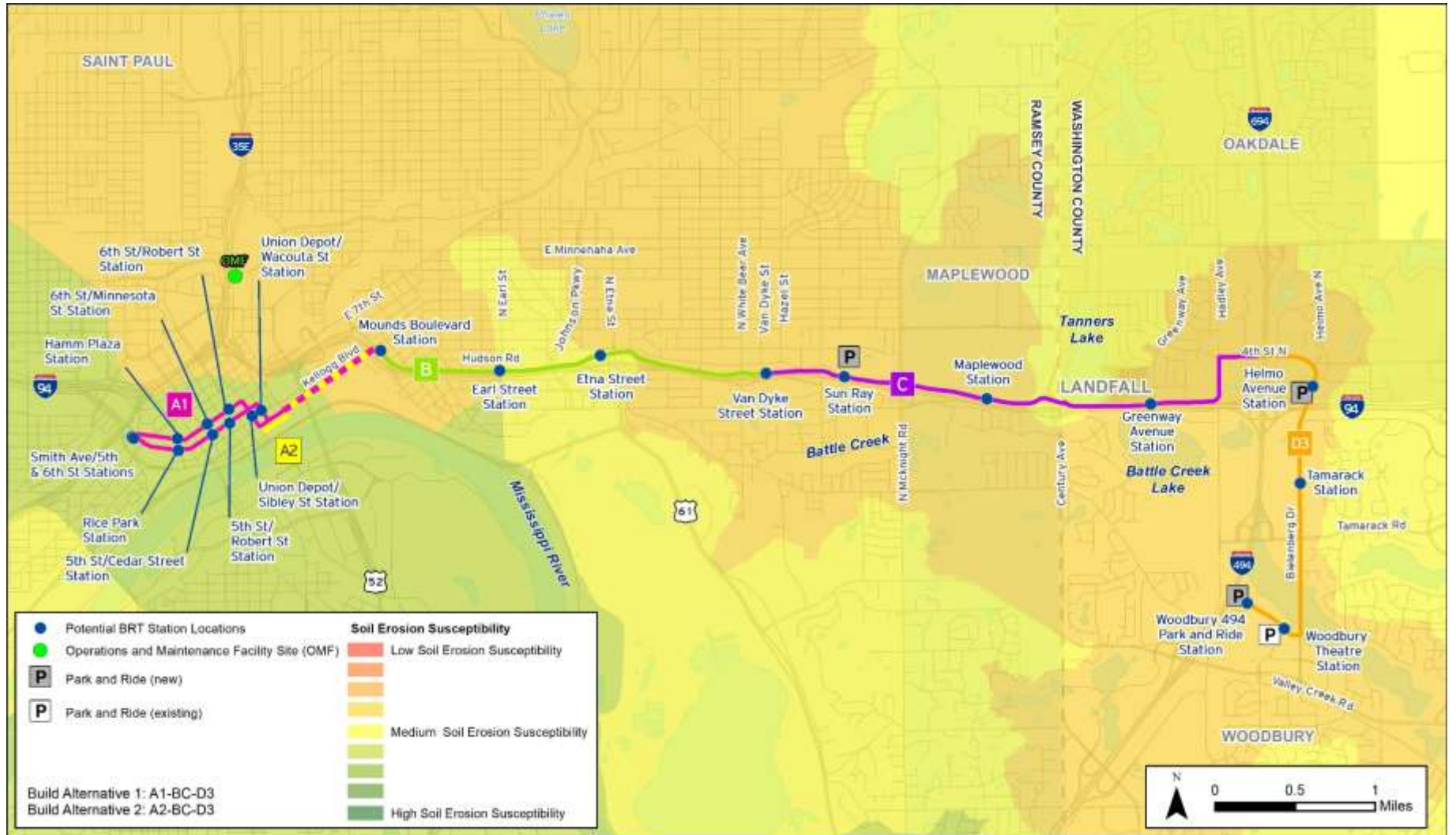


FIGURE F1-10: ALIGNMENT A1 SURFACE WATER RESOURCES AND IMPACTS

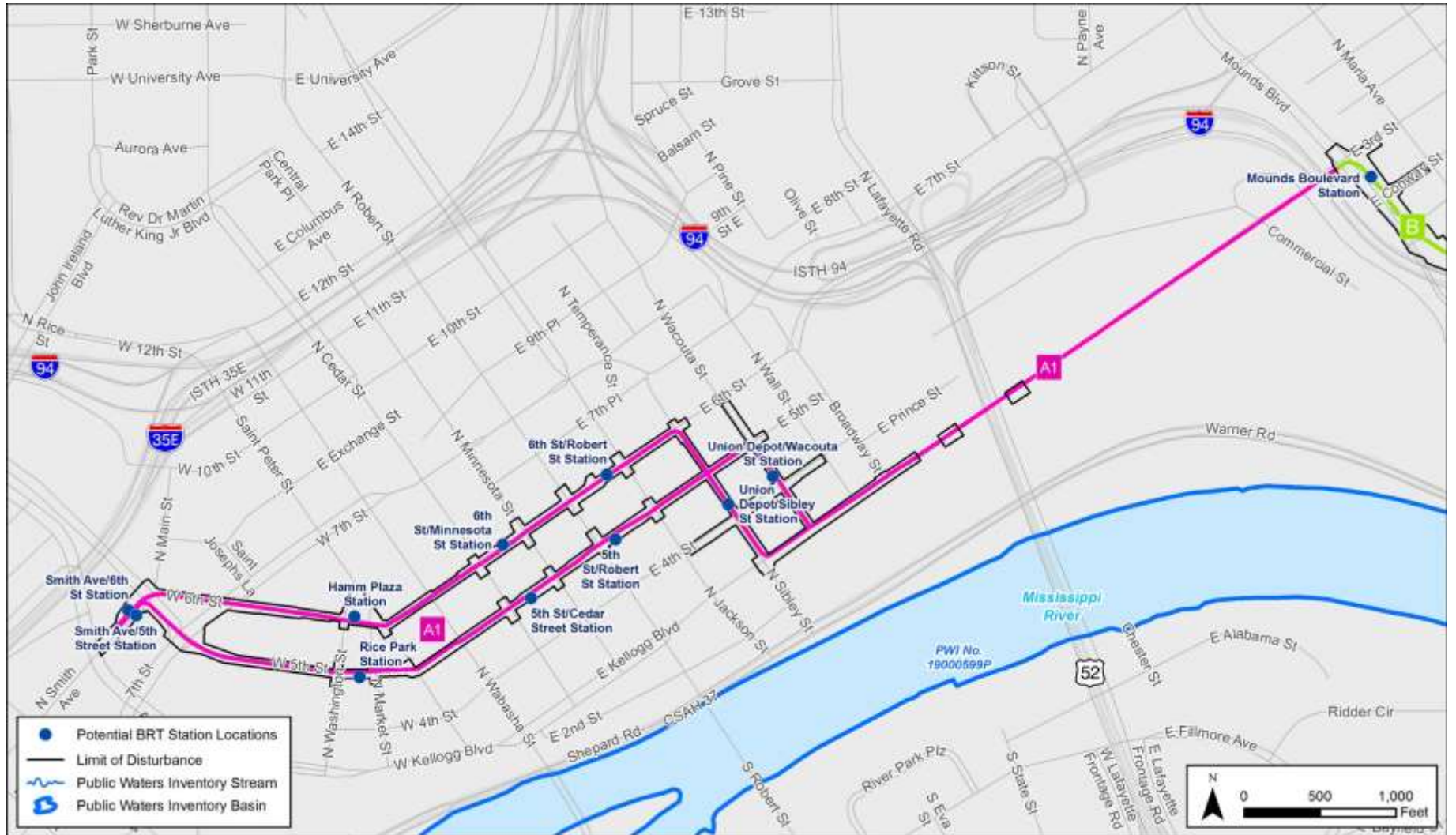


FIGURE F1-11: ALIGNMENT A2 SURFACE WATER RESOURCES AND IMPACTS

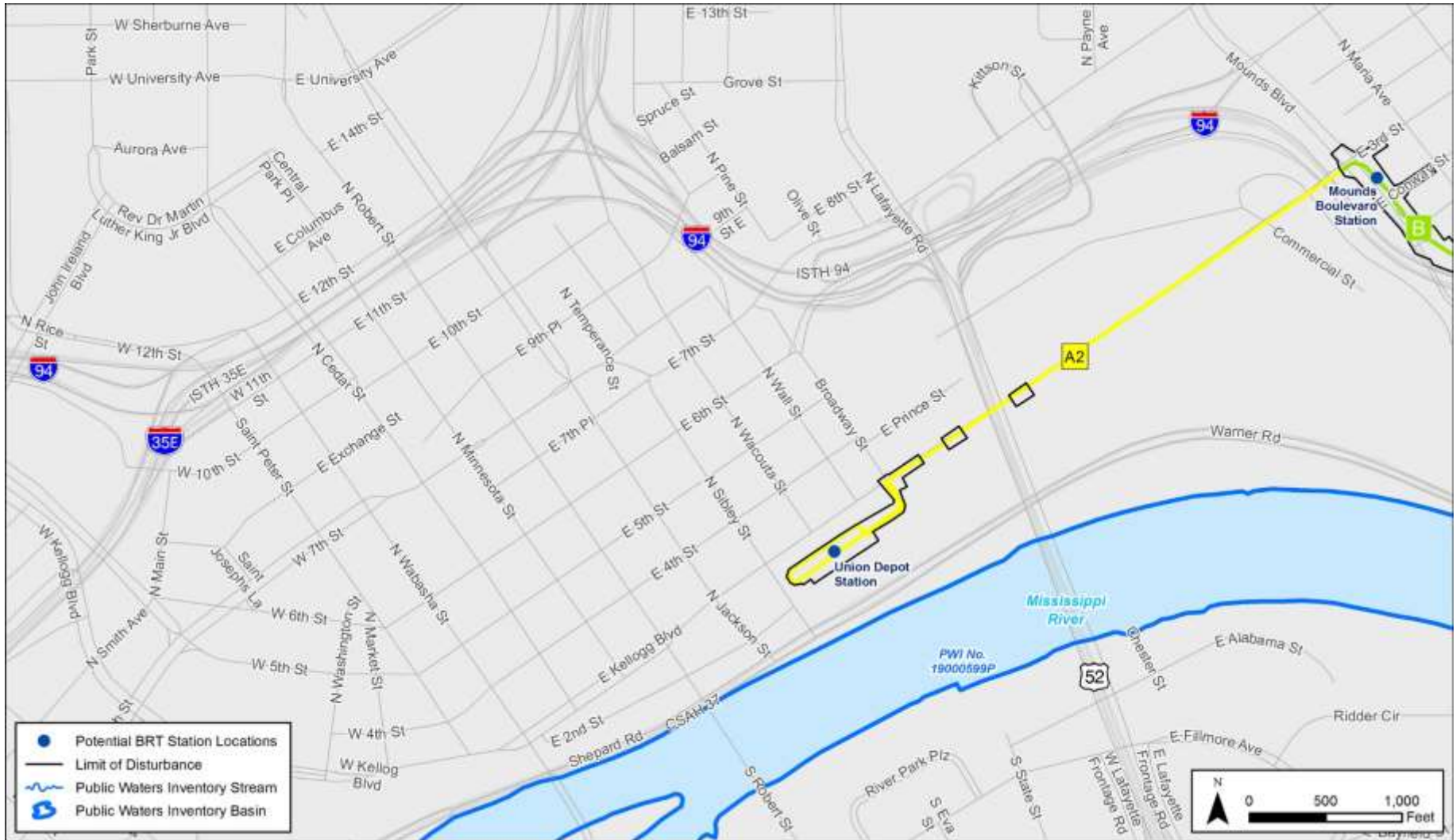




FIGURE F1-12: ALIGNMENT B SURFACE WATER RESOURCES AND IMPACTS

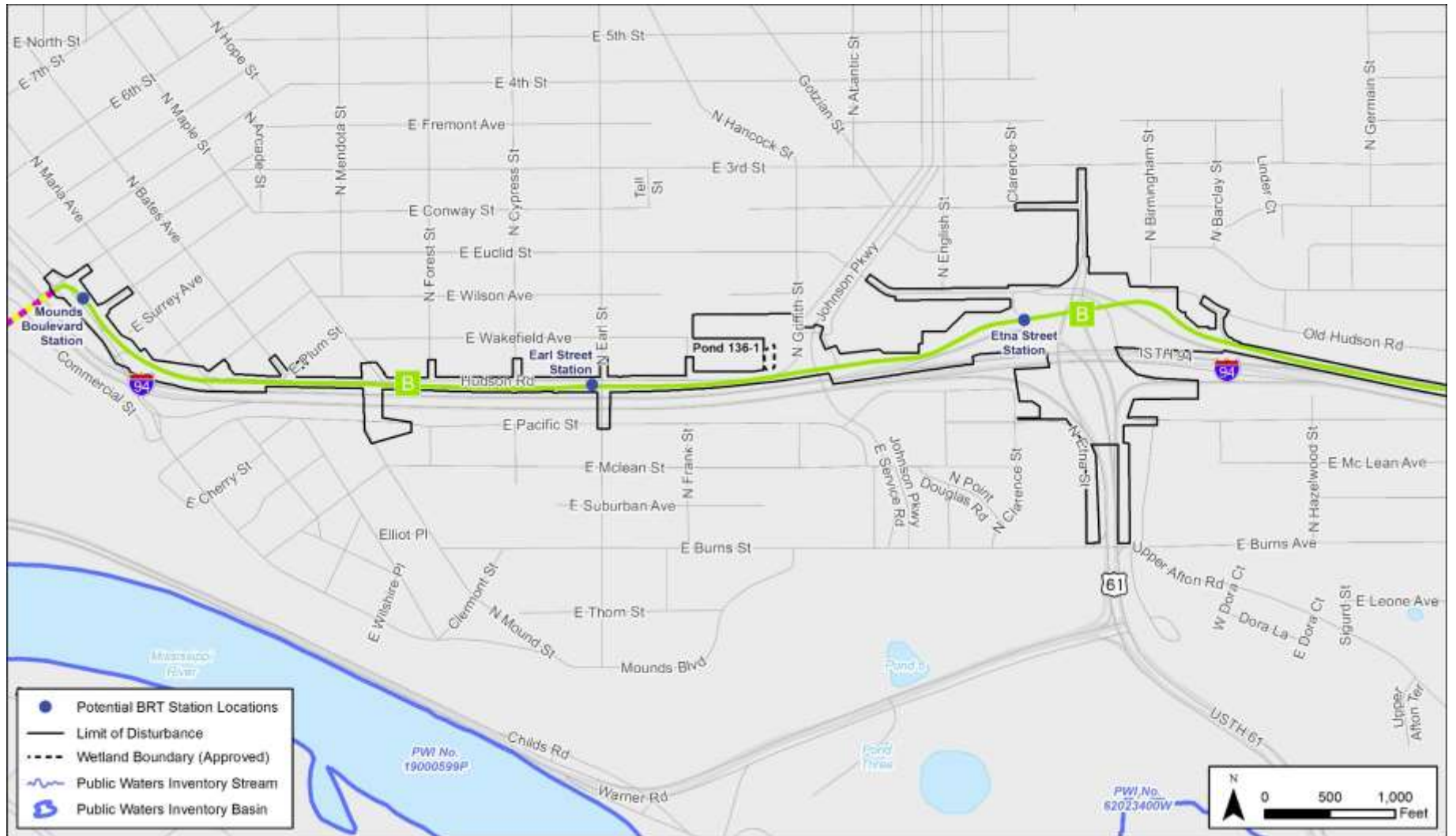




FIGURE F1-13: ALIGNMENTS B AND C SURFACE WATER RESOURCES AND IMPACTS

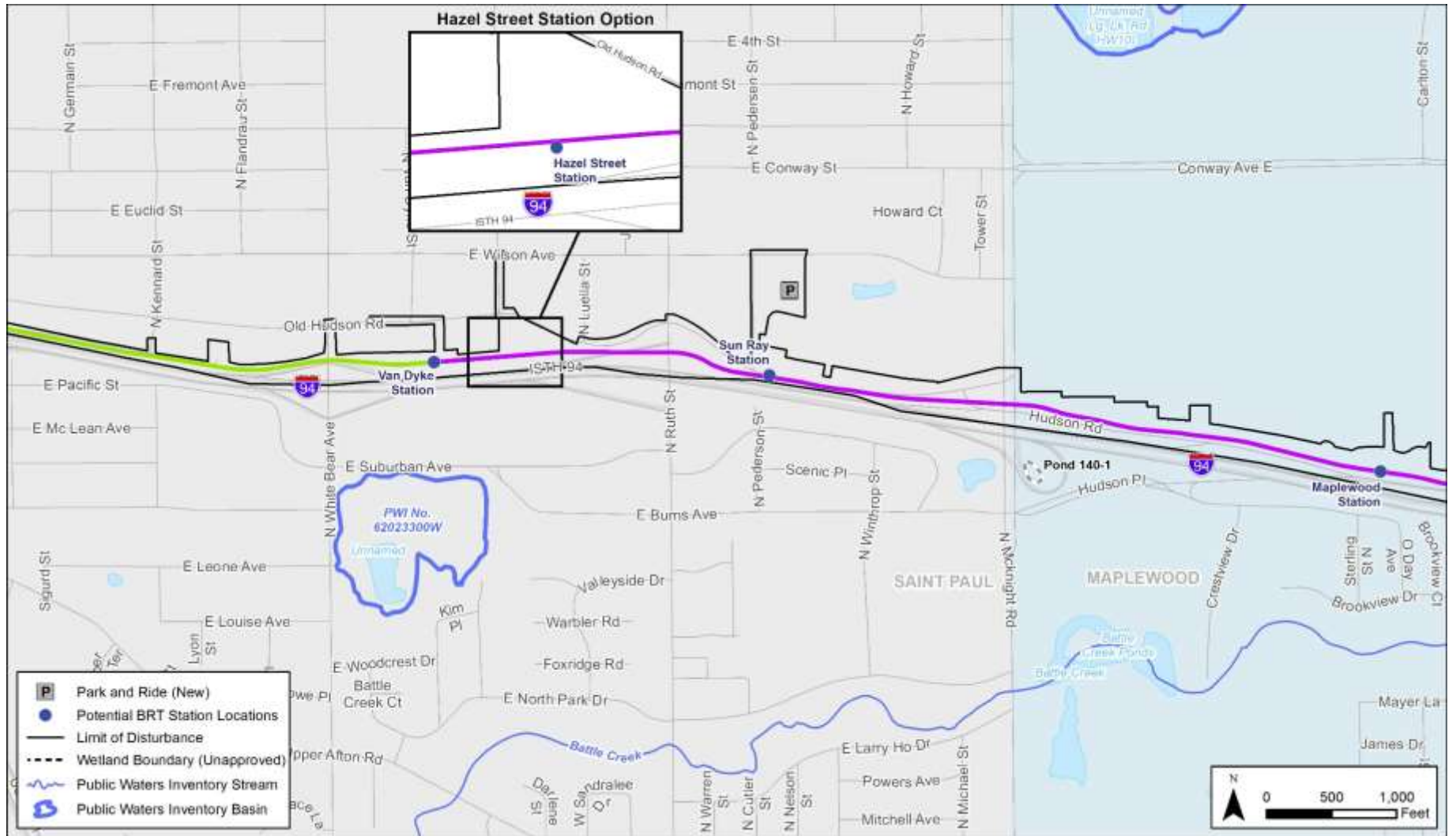




FIGURE F1-14: ALIGNMENT C SURFACE WATER RESOURCES AND IMPACTS

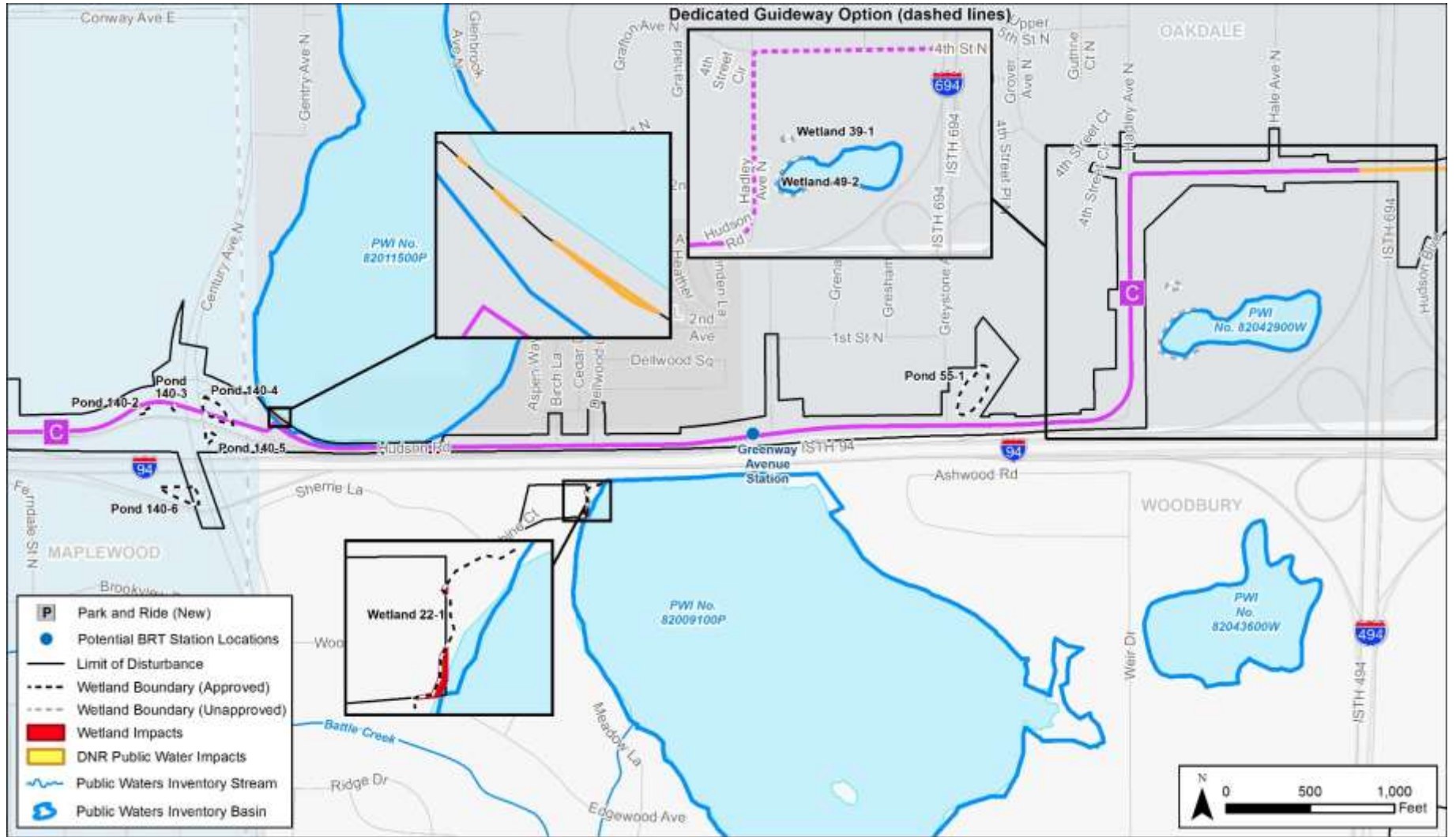




FIGURE F1-15: ALIGNMENT D3 SURFACE WATER RESOURCES AND IMPACTS

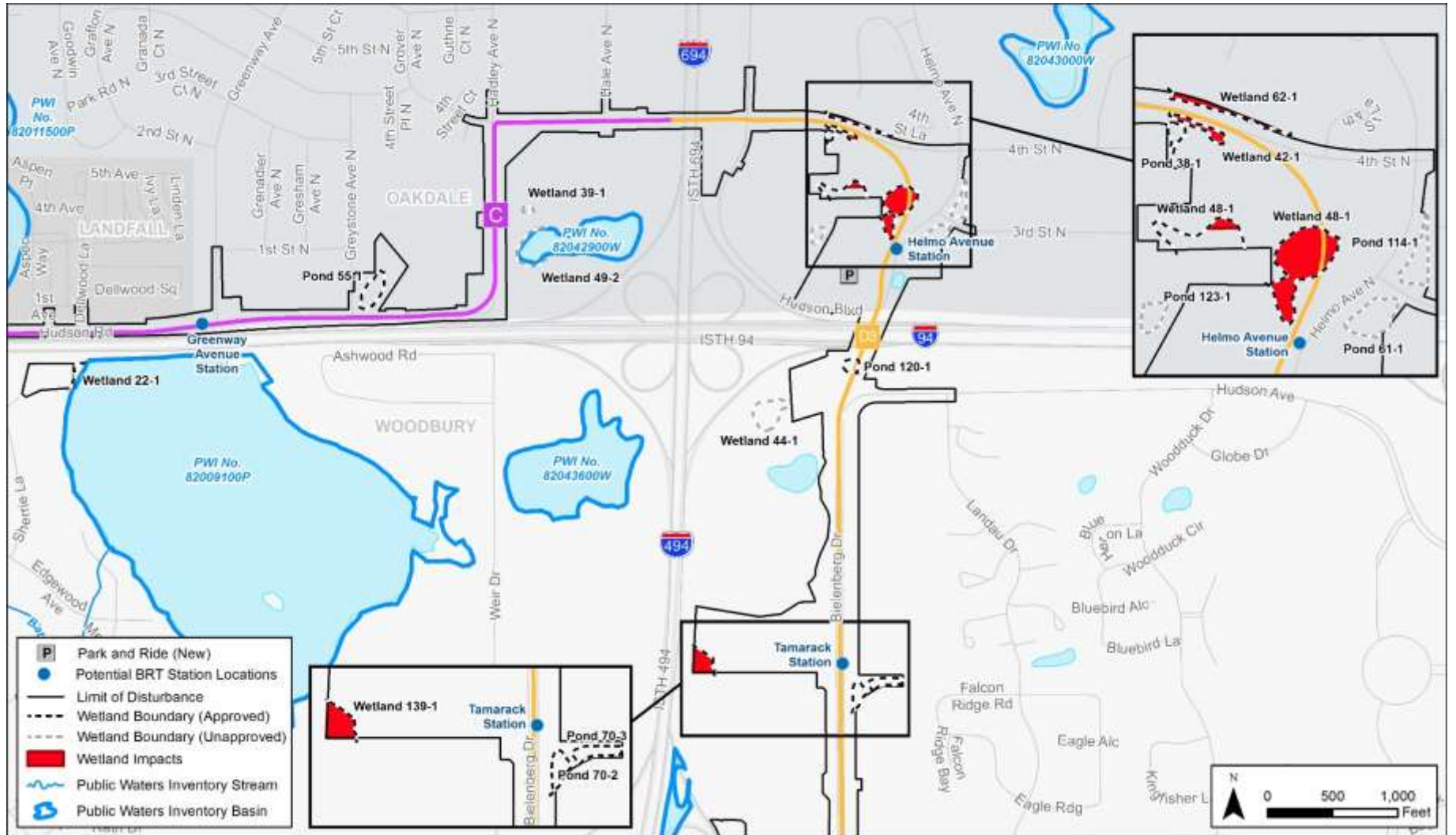




FIGURE F1-16: ALIGNMENT D3 SURFACE WATER RESOURCES AND IMPACTS



FIGURE F1-17: IMPAIRED WATERS IN THE PROJECT AREA

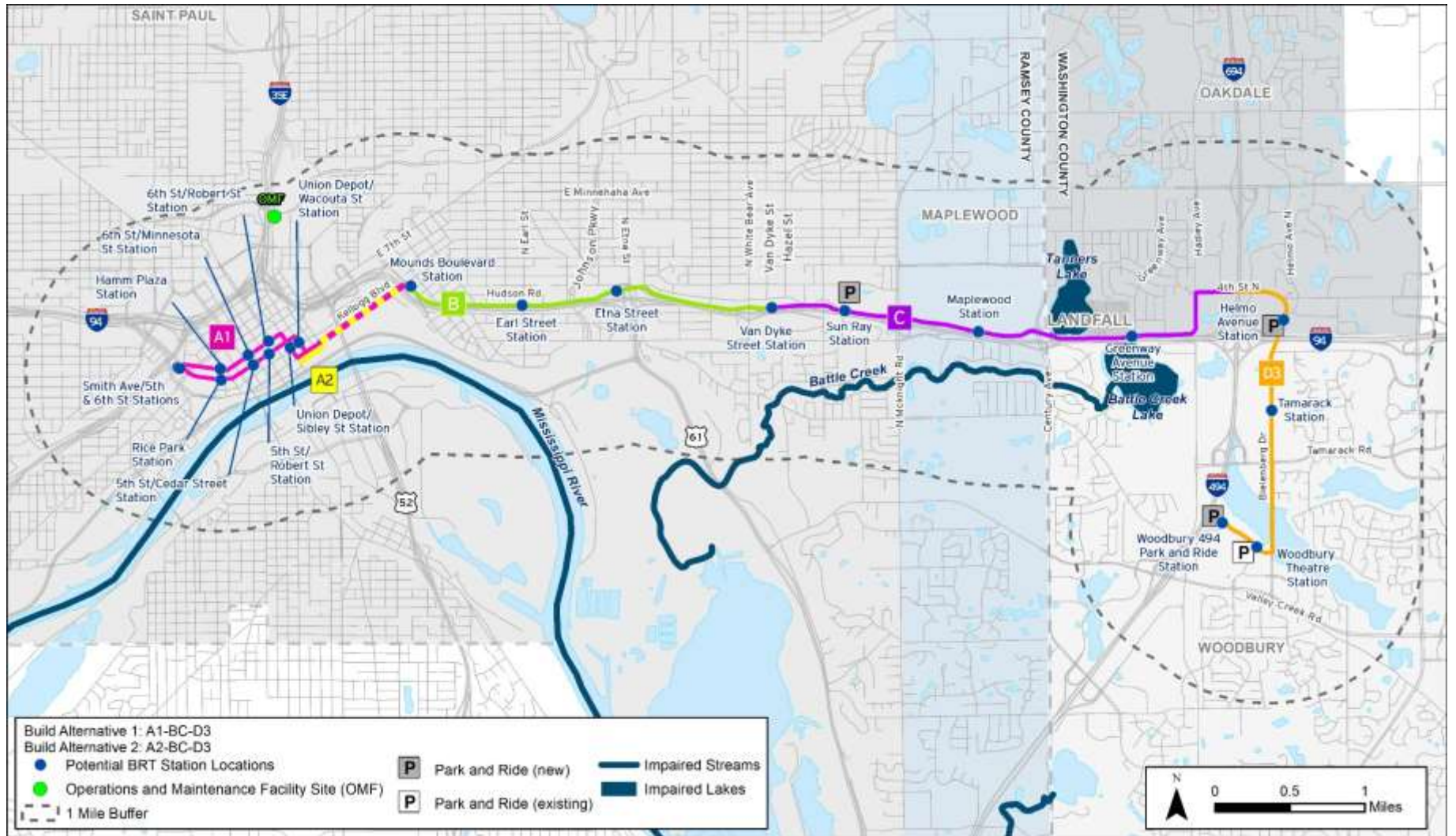




FIGURE F1-18: ALIGNMENT B POTENTIAL STORMWATER BEST MANAGEMENT PRACTICES LOCATIONS

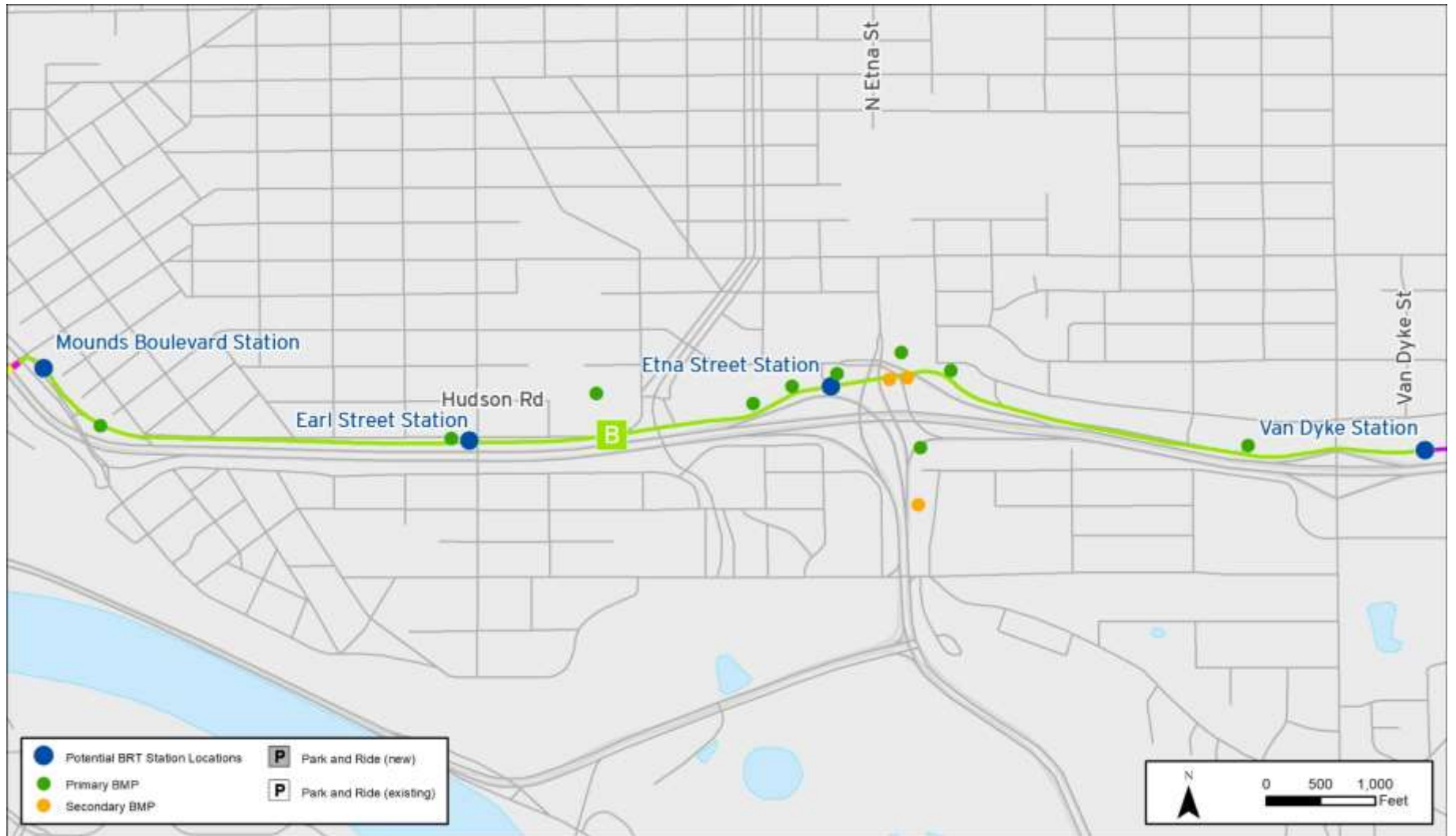




FIGURE F1-19: ALIGNMENT C POTENTIAL STORMWATER BEST MANAGEMENT PRACTICES LOCATIONS

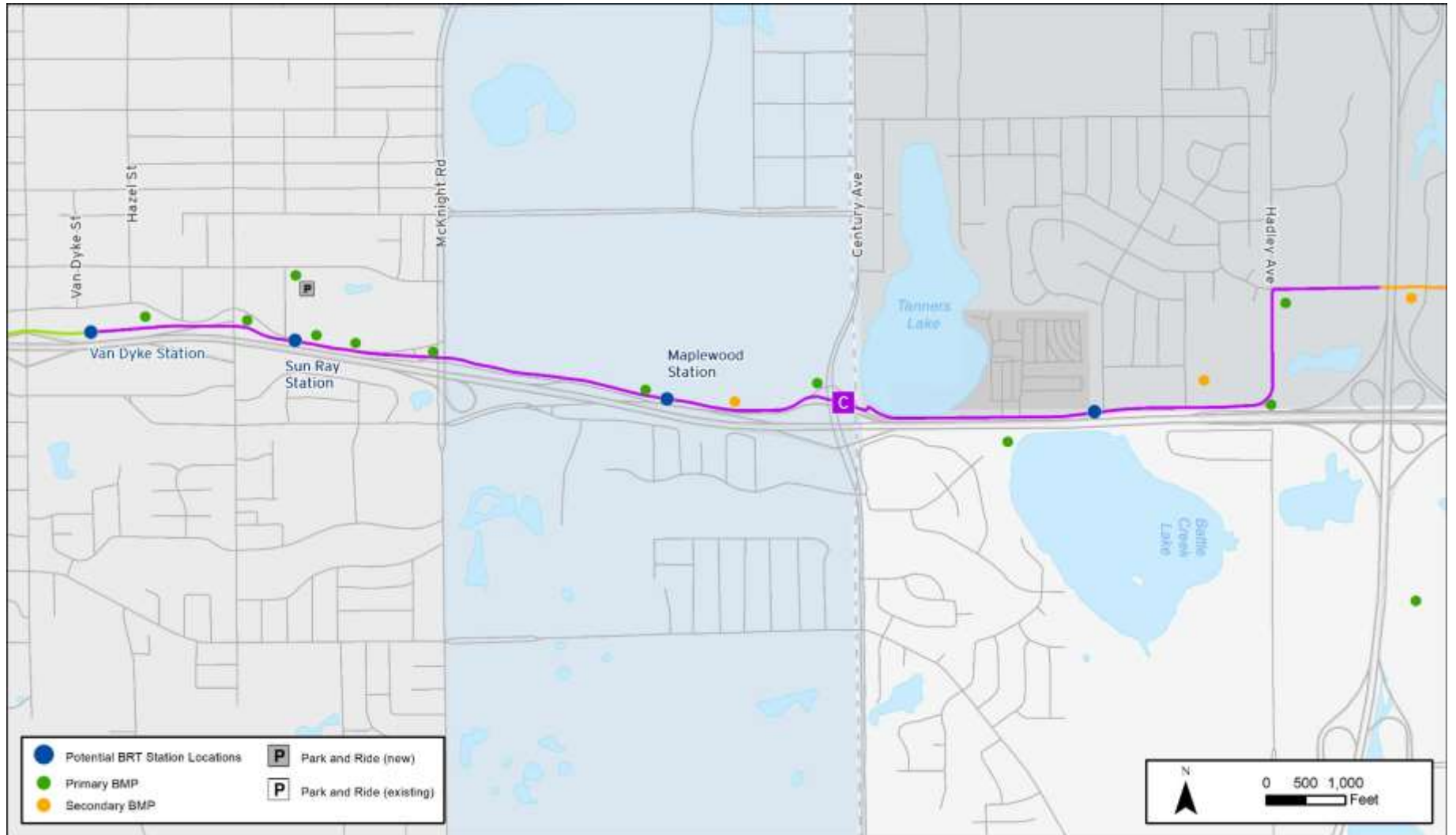




FIGURE F1-20: ALIGNMENT D3 POTENTIAL STORMWATER BEST MANAGEMENT PRACTICES LOCATIONS

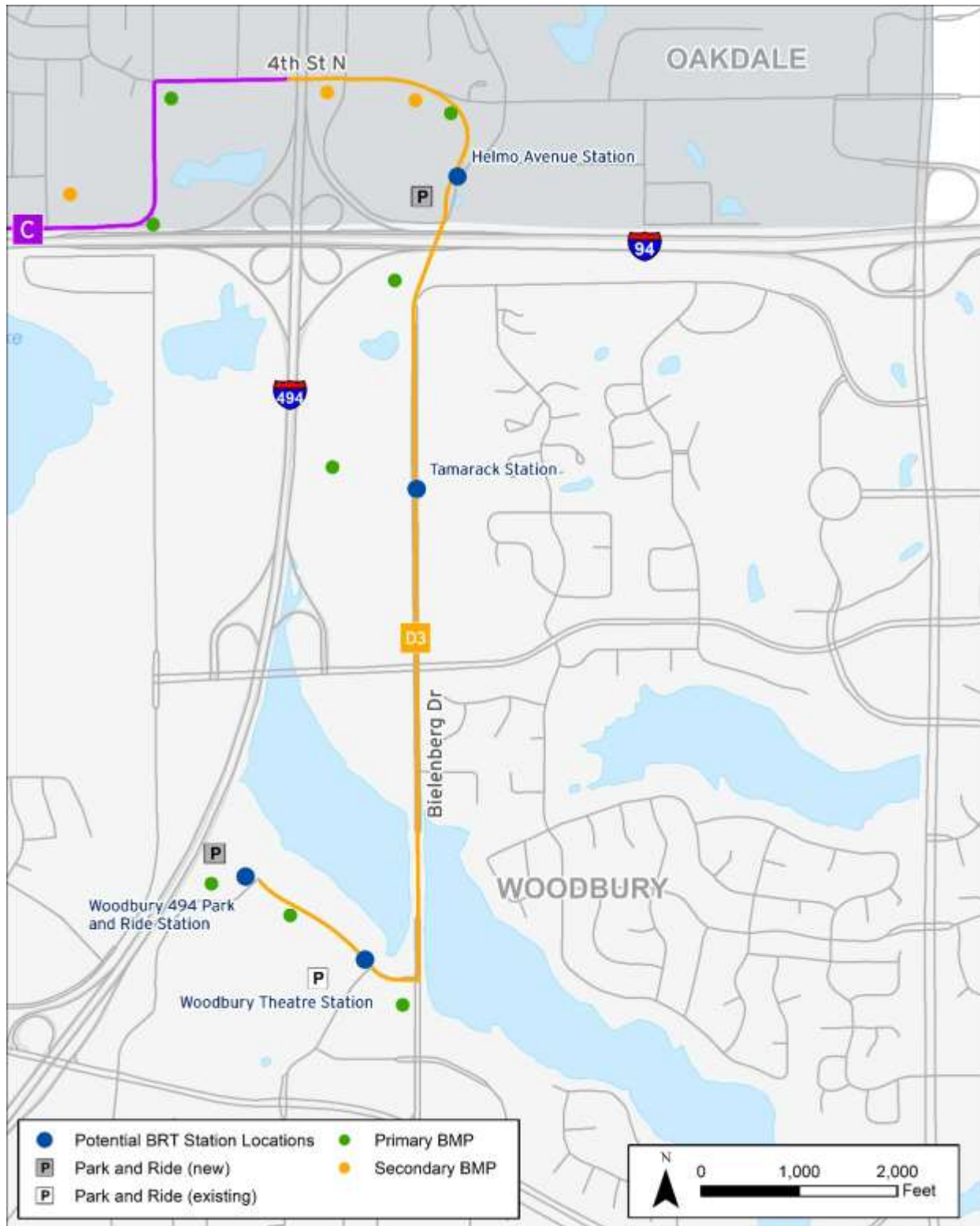


FIGURE F1-21: ALIGNMENT A1 HAZARDOUS AND CONTAMINATED SITES

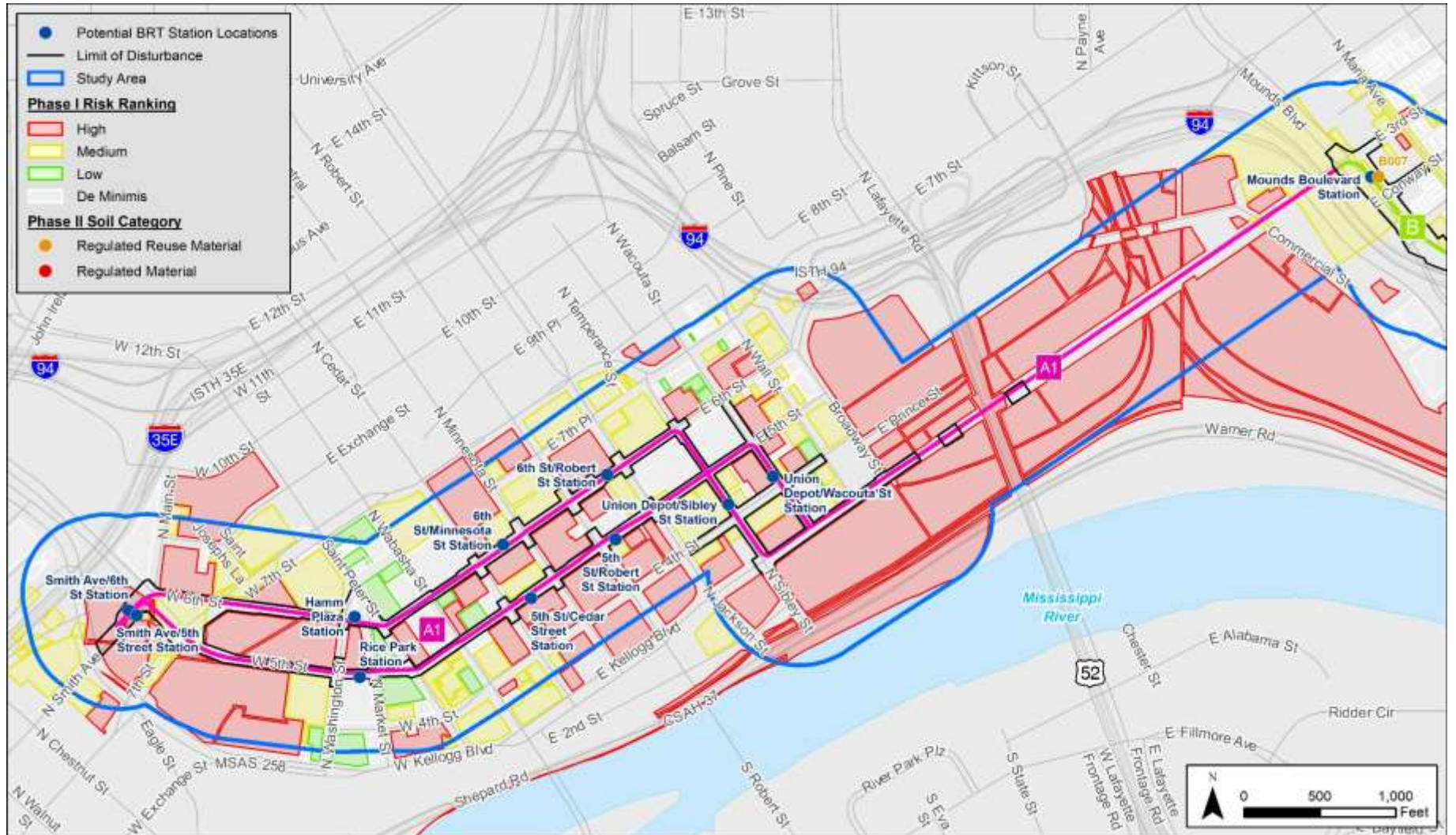




FIGURE F1-22: ALIGNMENT B HAZARDOUS AND CONTAMINATED SITES

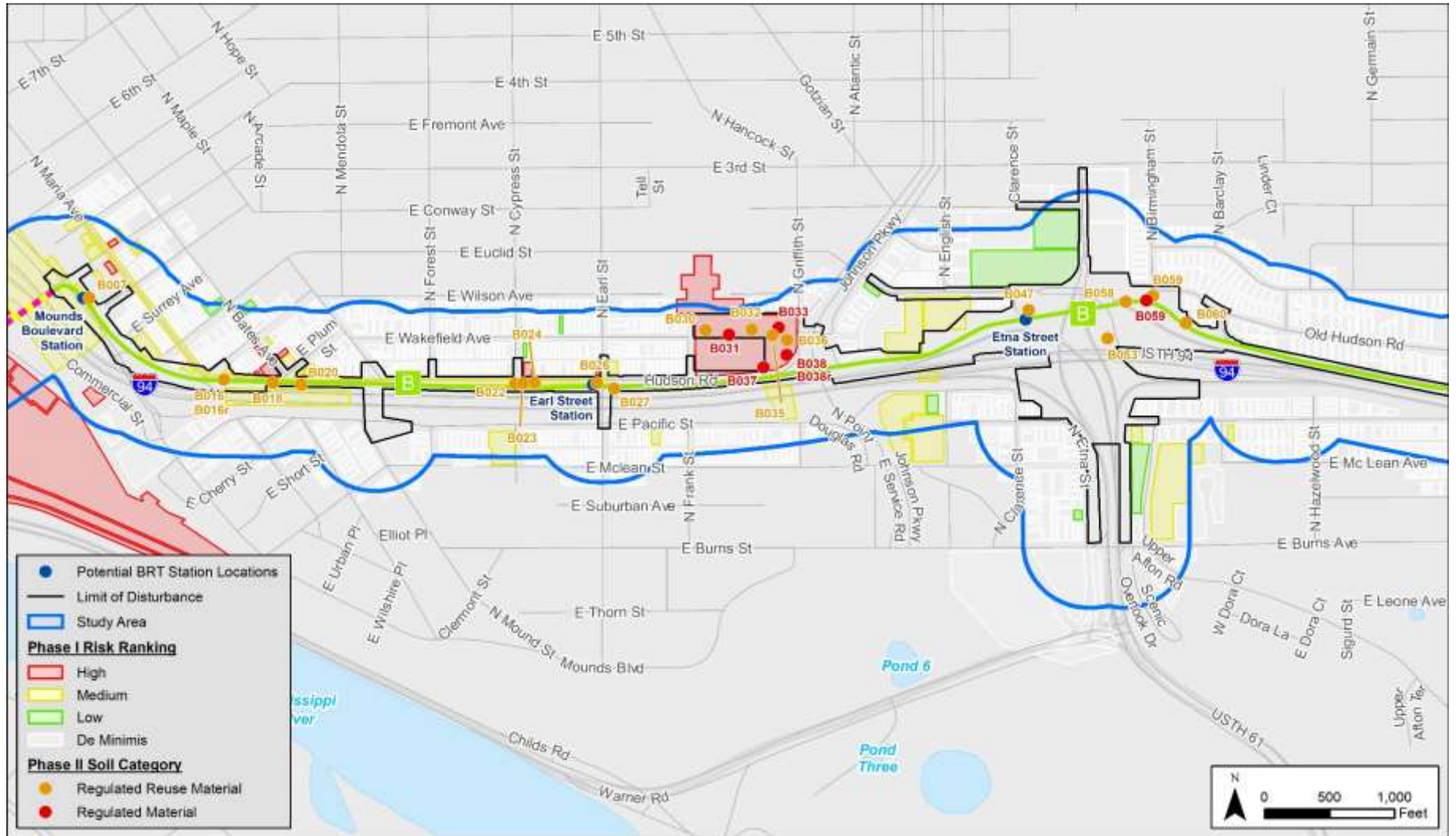




FIGURE F1-23: ALIGNMENTS B AND C HAZARDOUS AND CONTAMINATED SITES

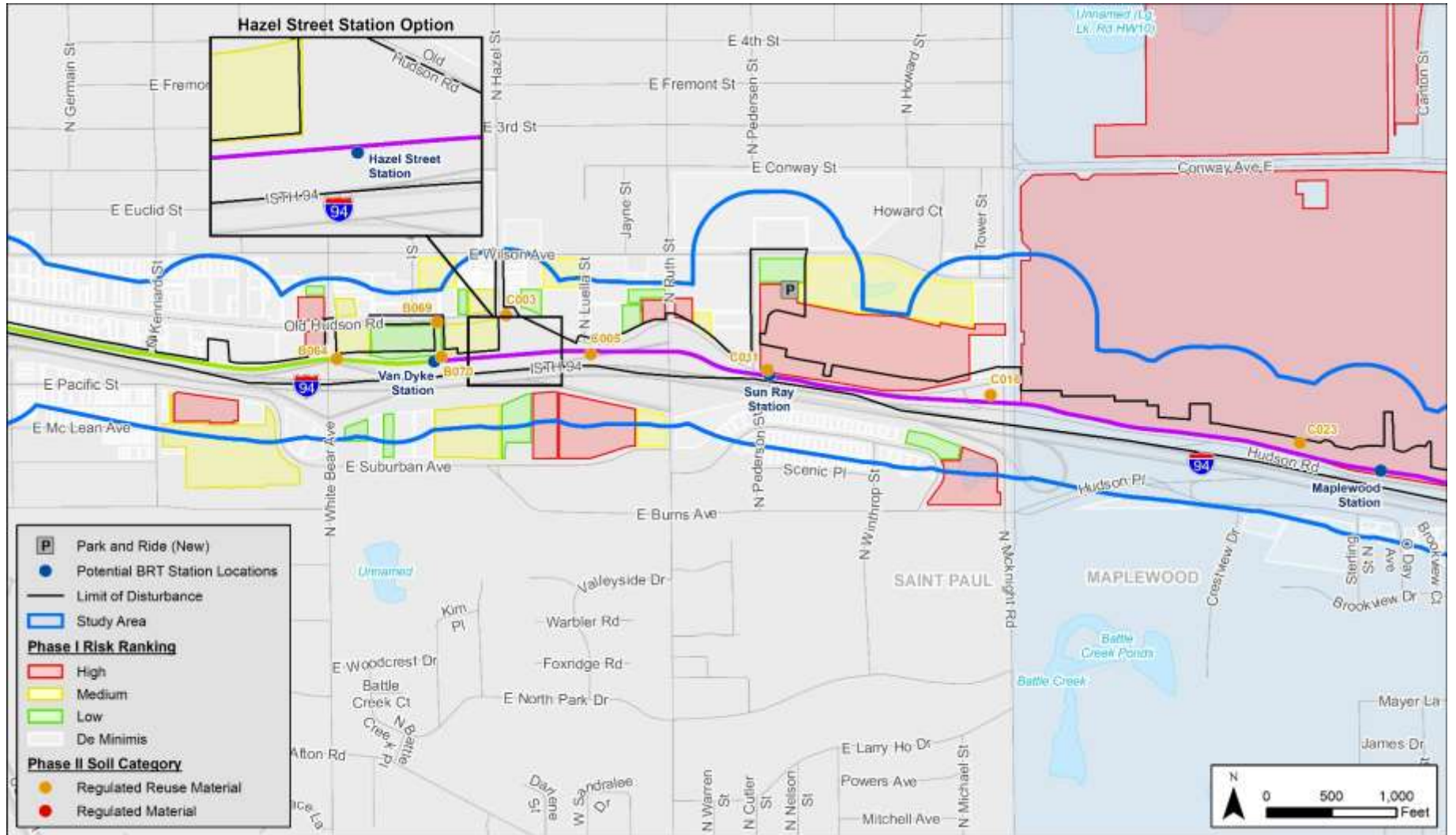




FIGURE F1-24: ALIGNMENT C HAZARDOUS AND CONTAMINATED SITES

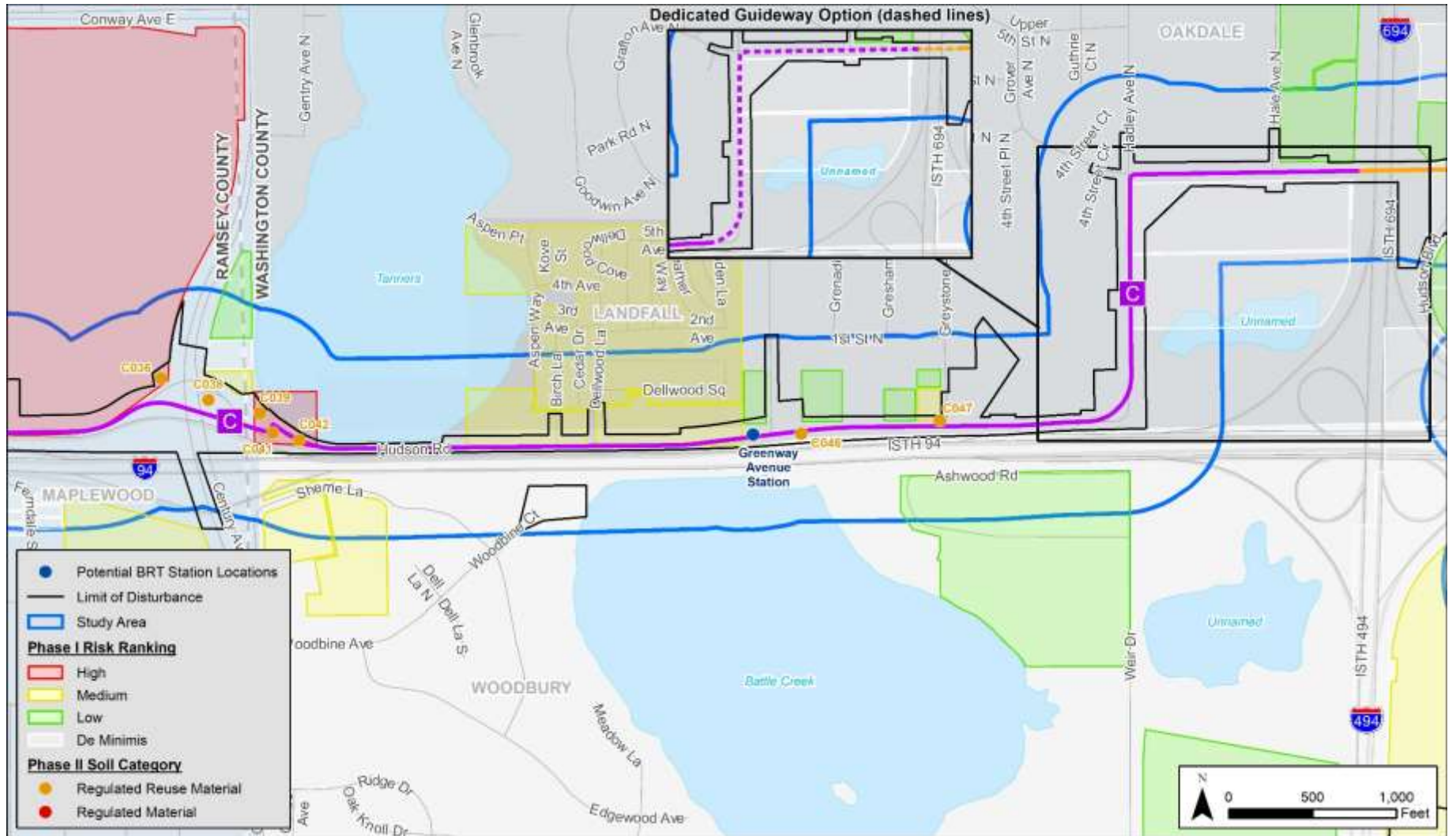




FIGURE F1-25: ALIGNMENT D3 HAZARDOUS AND CONTAMINATED SITES

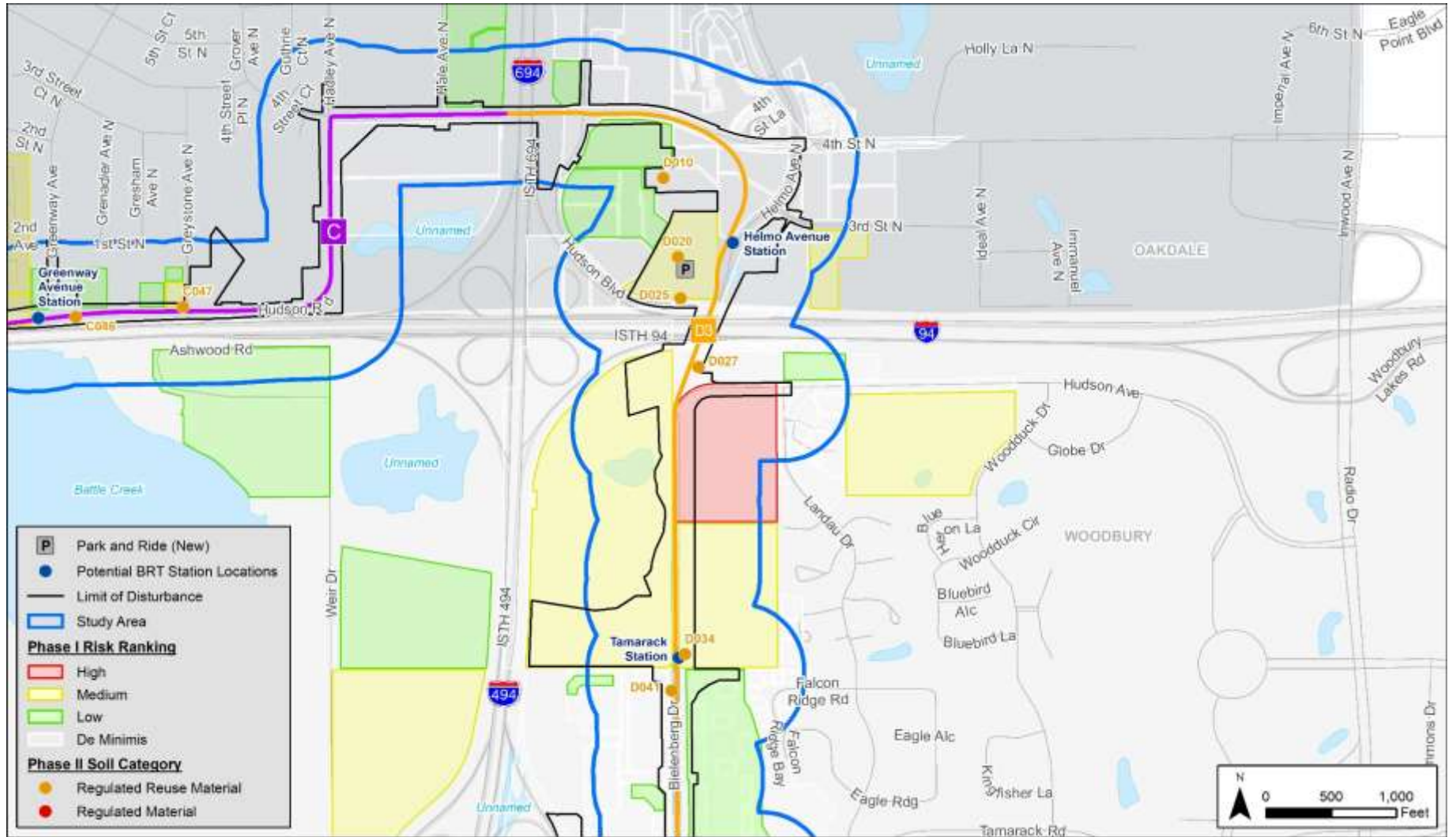




FIGURE F1-26: ALIGNMENT D3 HAZARDOUS AND CONTAMINATED SITES

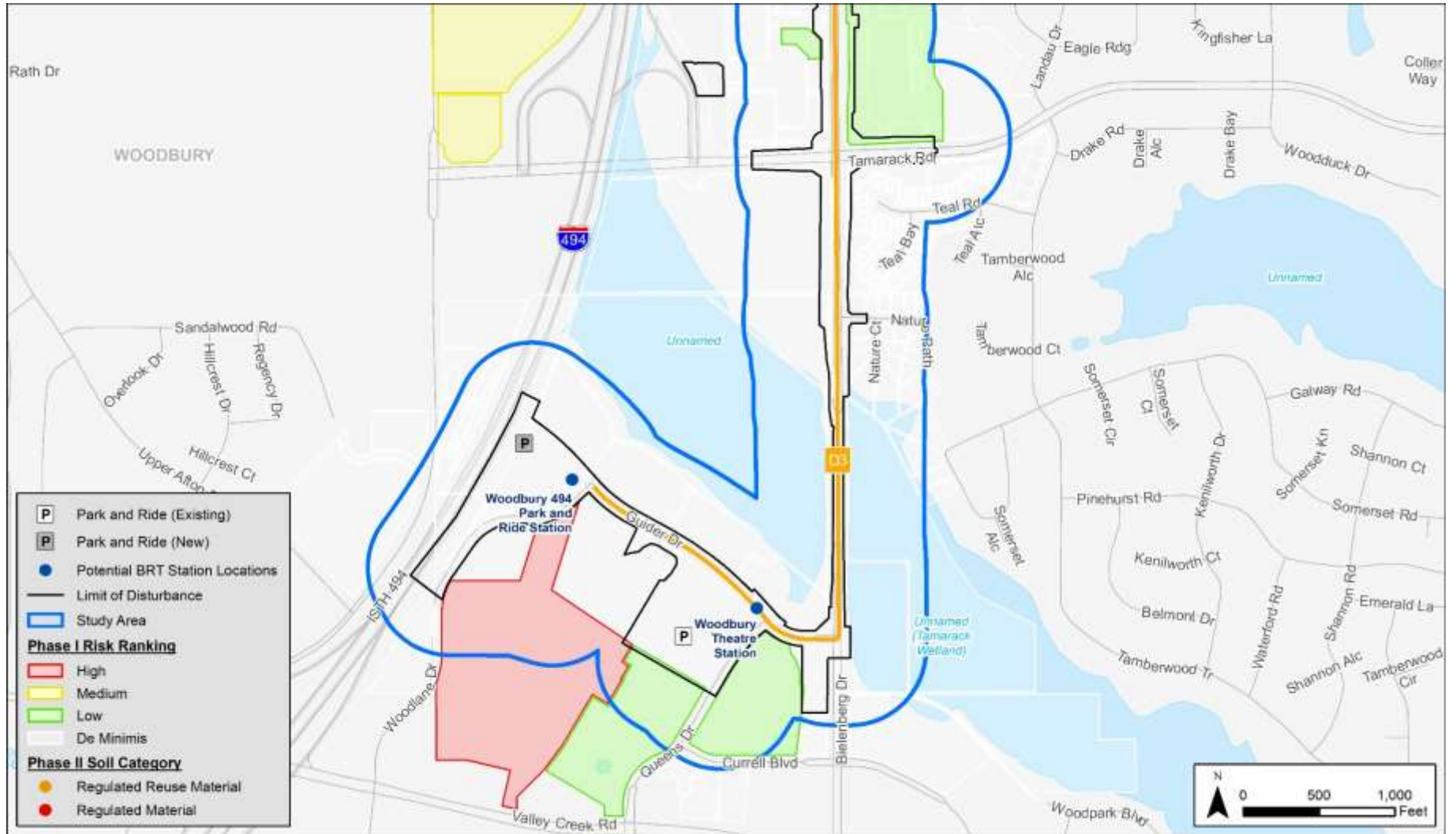


FIGURE F1-27: ALIGNMENT A2 HAZARDOUS AND CONTAMINATED SITES

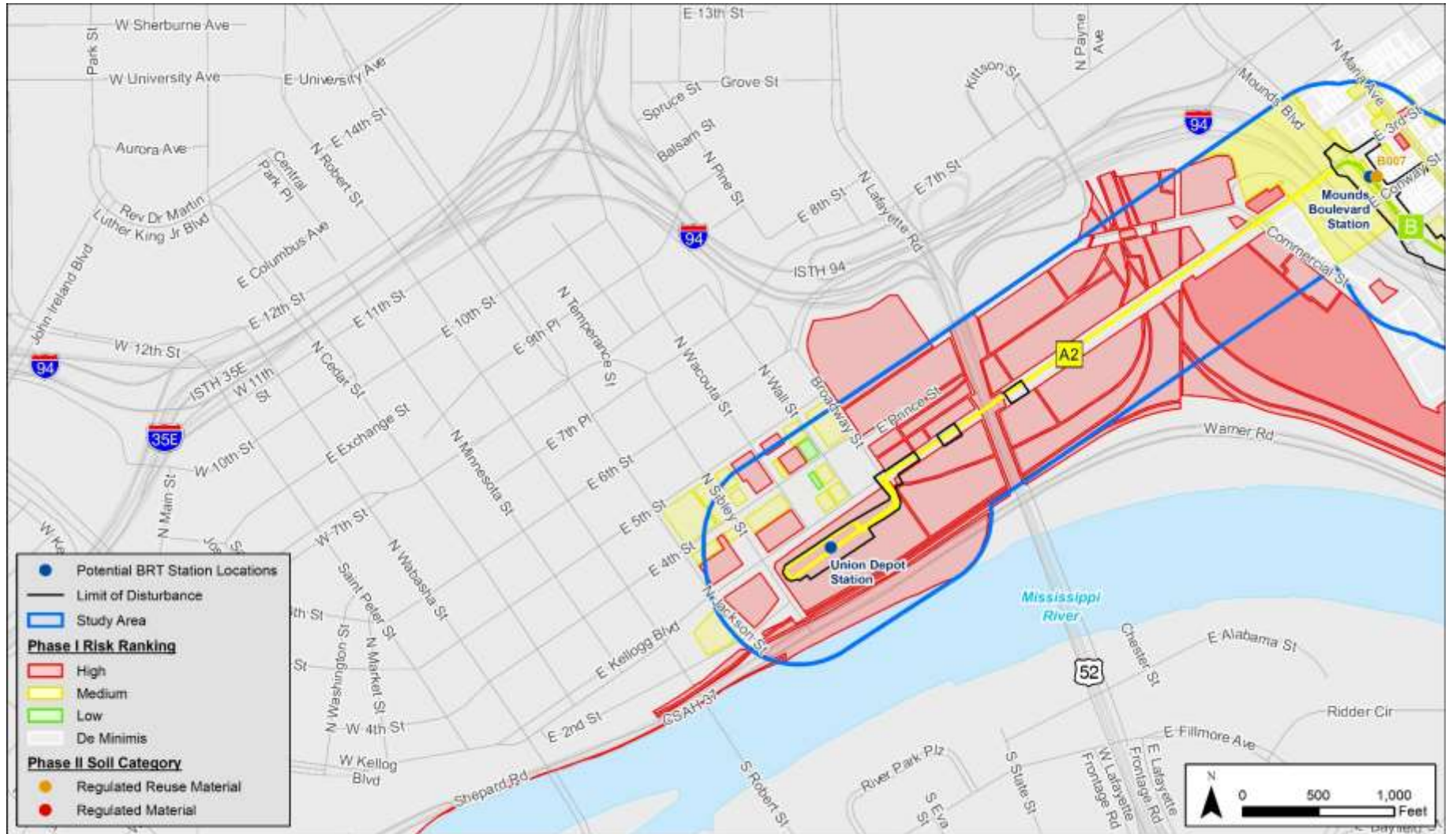




FIGURE F1-28: ALIGNMENT A1 WILDLIFE HABITAT AND IMPACTS

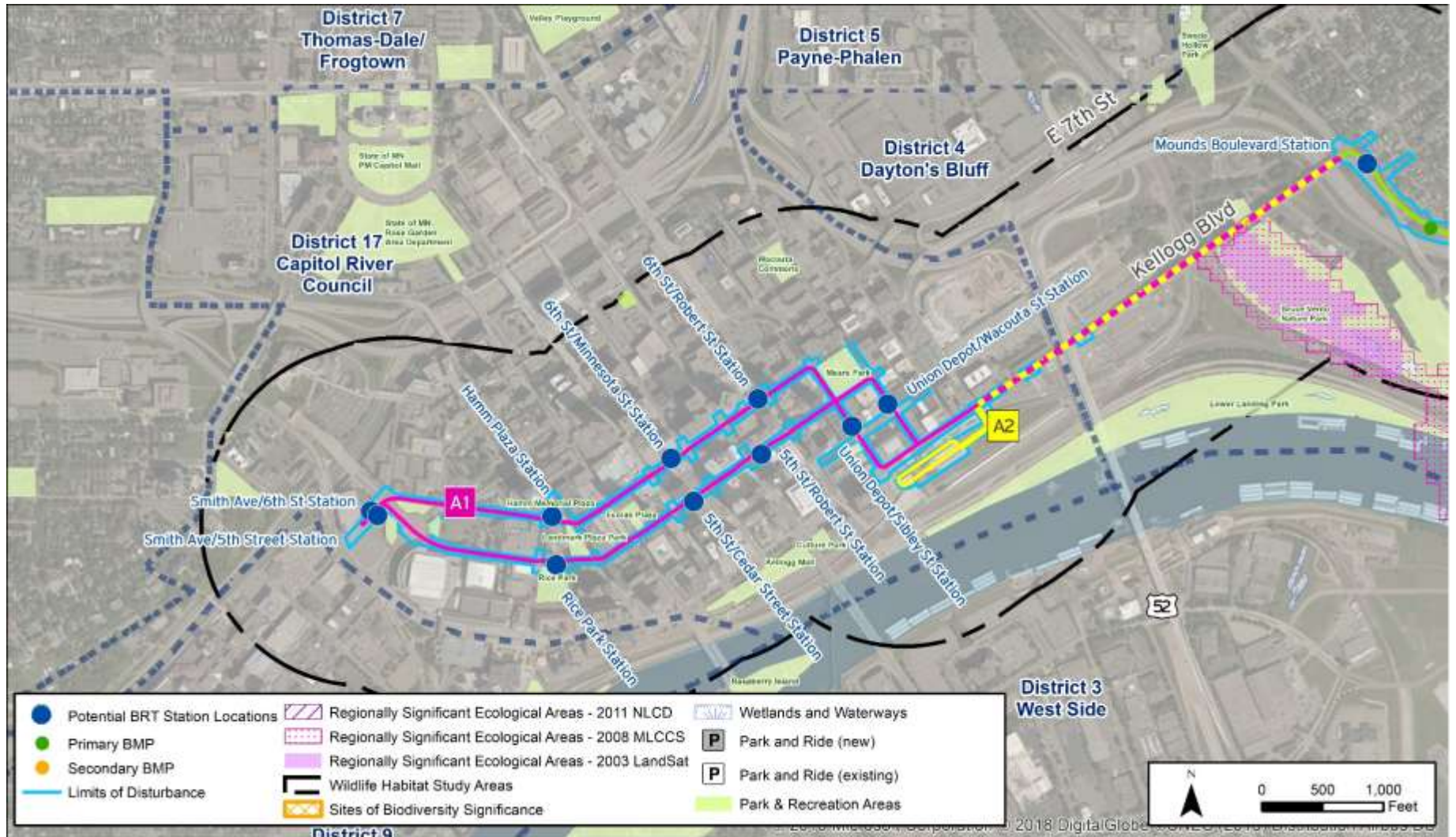




FIGURE F1-29: ALIGNMENT B WILDLIFE HABITAT AND IMPACTS

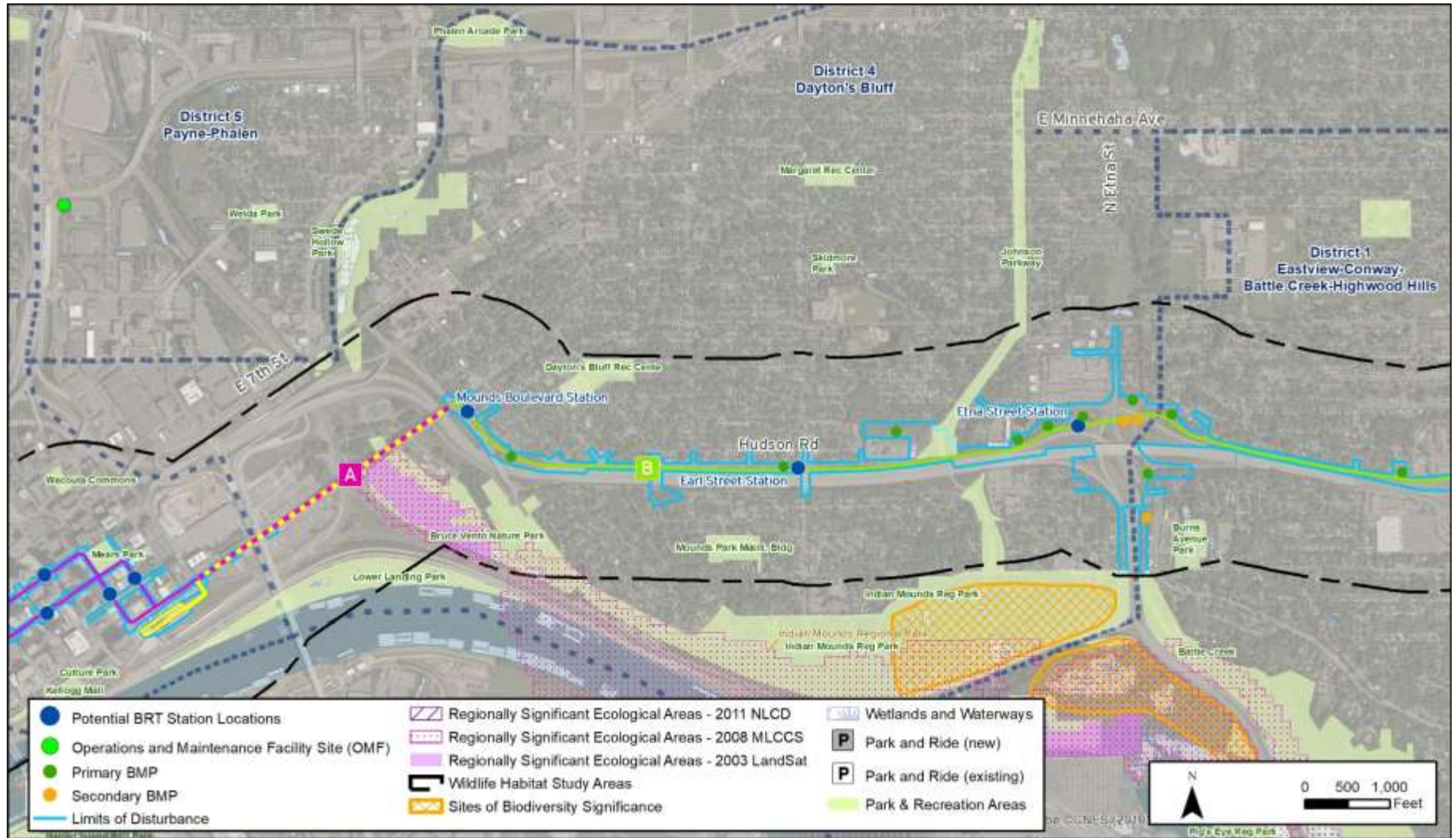




FIGURE F1-30: ALIGNMENTS B AND C WILDLIFE HABITAT AND IMPACTS

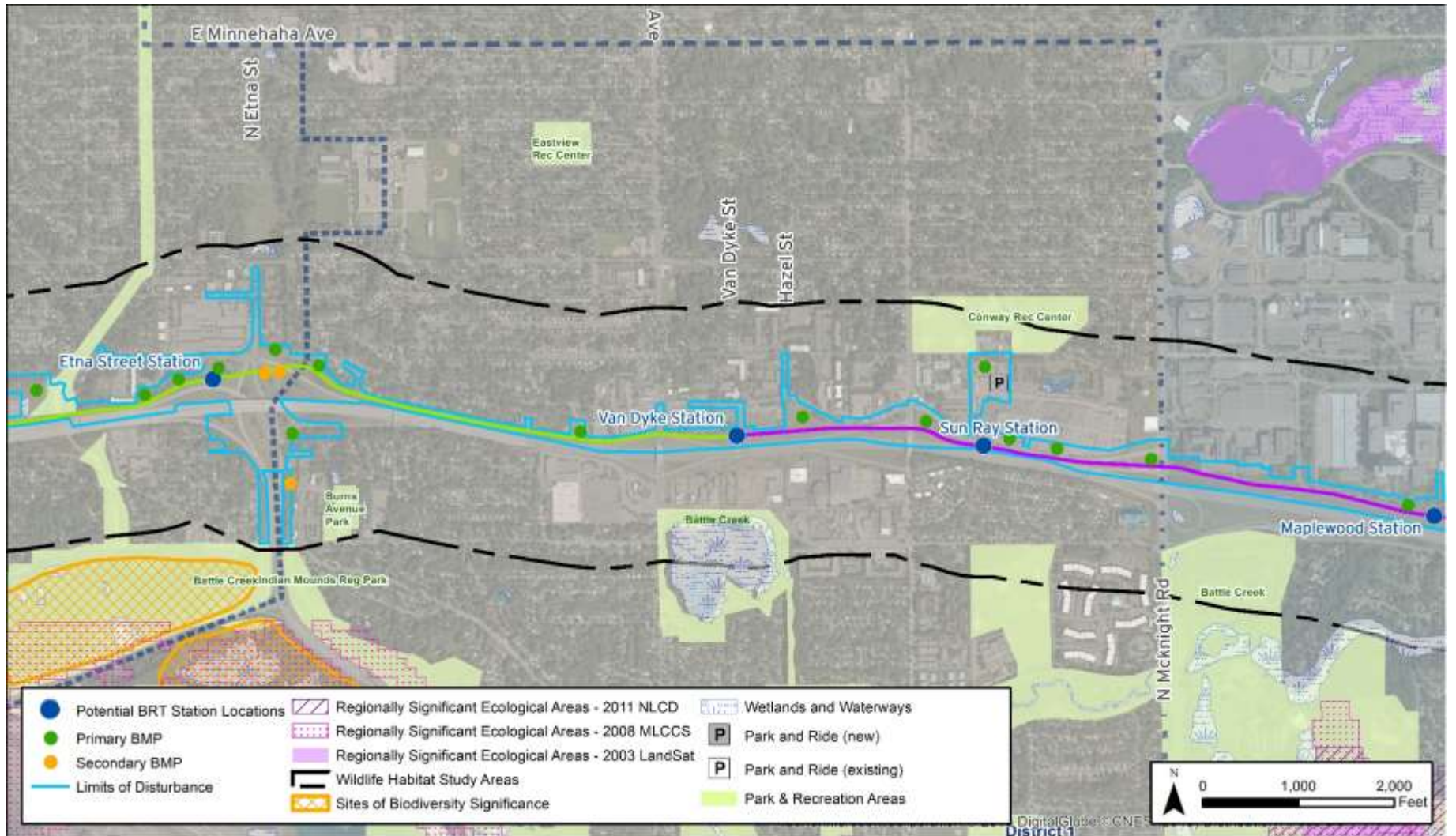




FIGURE F1-31: ALIGNMENT C WILDLIFE HABITAT AND IMPACTS

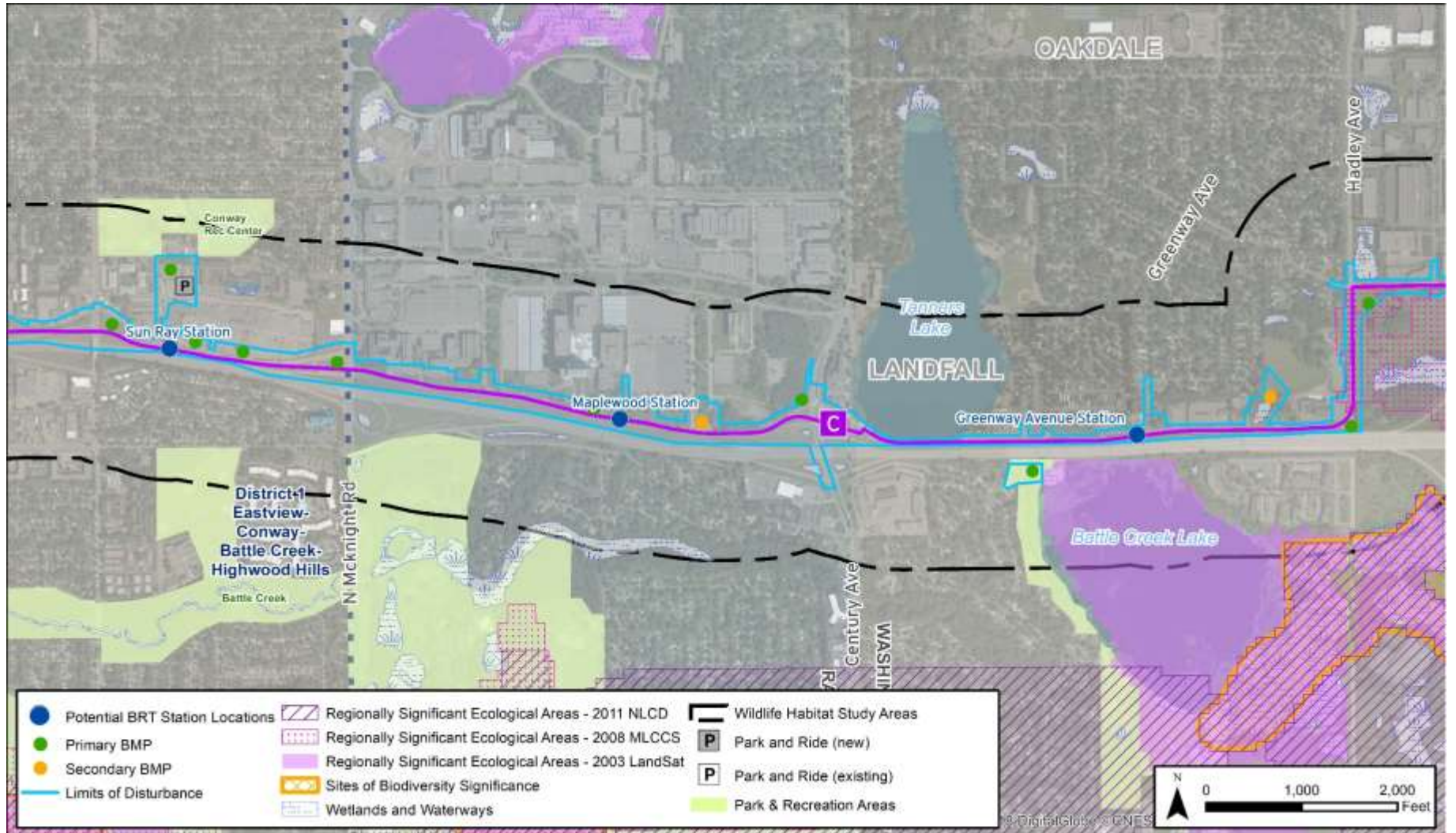




FIGURE F1-32: ALIGNMENTS C AND D3 WILDLIFE HABITAT AND IMPACTS

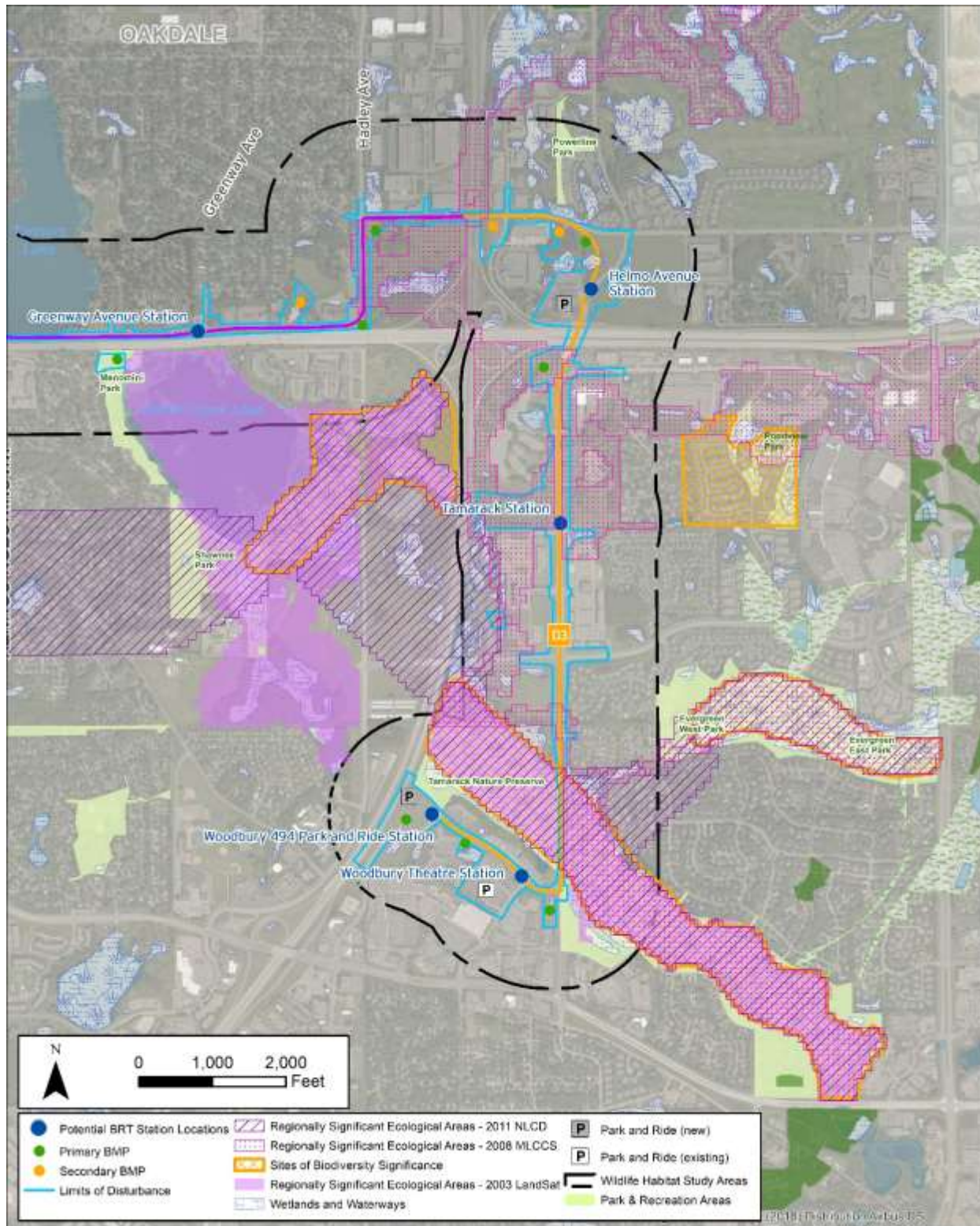




FIGURE F1-33: ALIGNMENTS A1, A2 AND B ARCHITECTURE/HISTORY AREA OF POTENTIAL EFFECT AND HISTORIC PROPERTIES

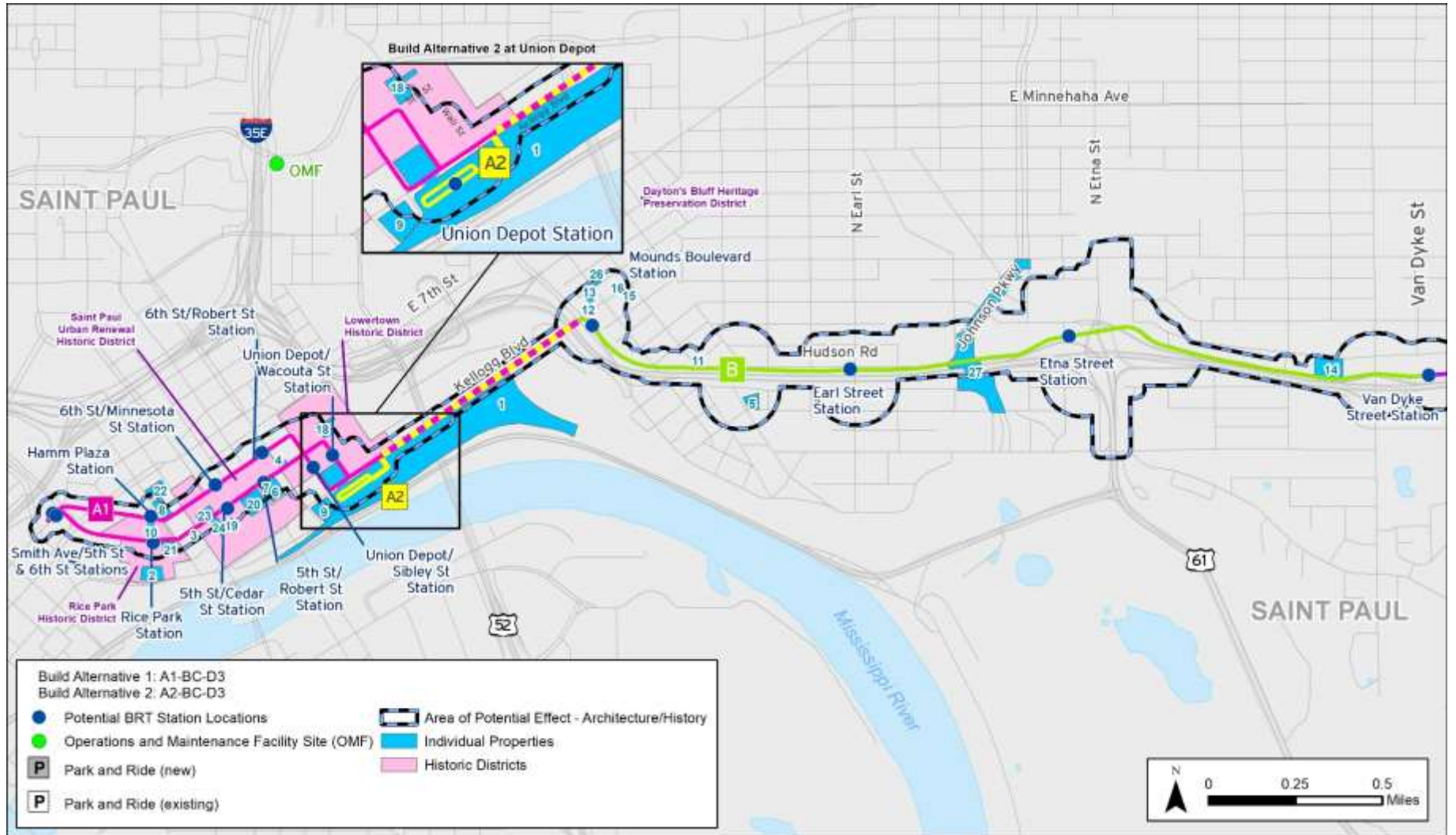




FIGURE F1-34: ALIGNMENTS C AND D3 ARCHITECTURE/HISTORY AREA OF POTENTIAL EFFECT AND HISTORIC PROPERTIES

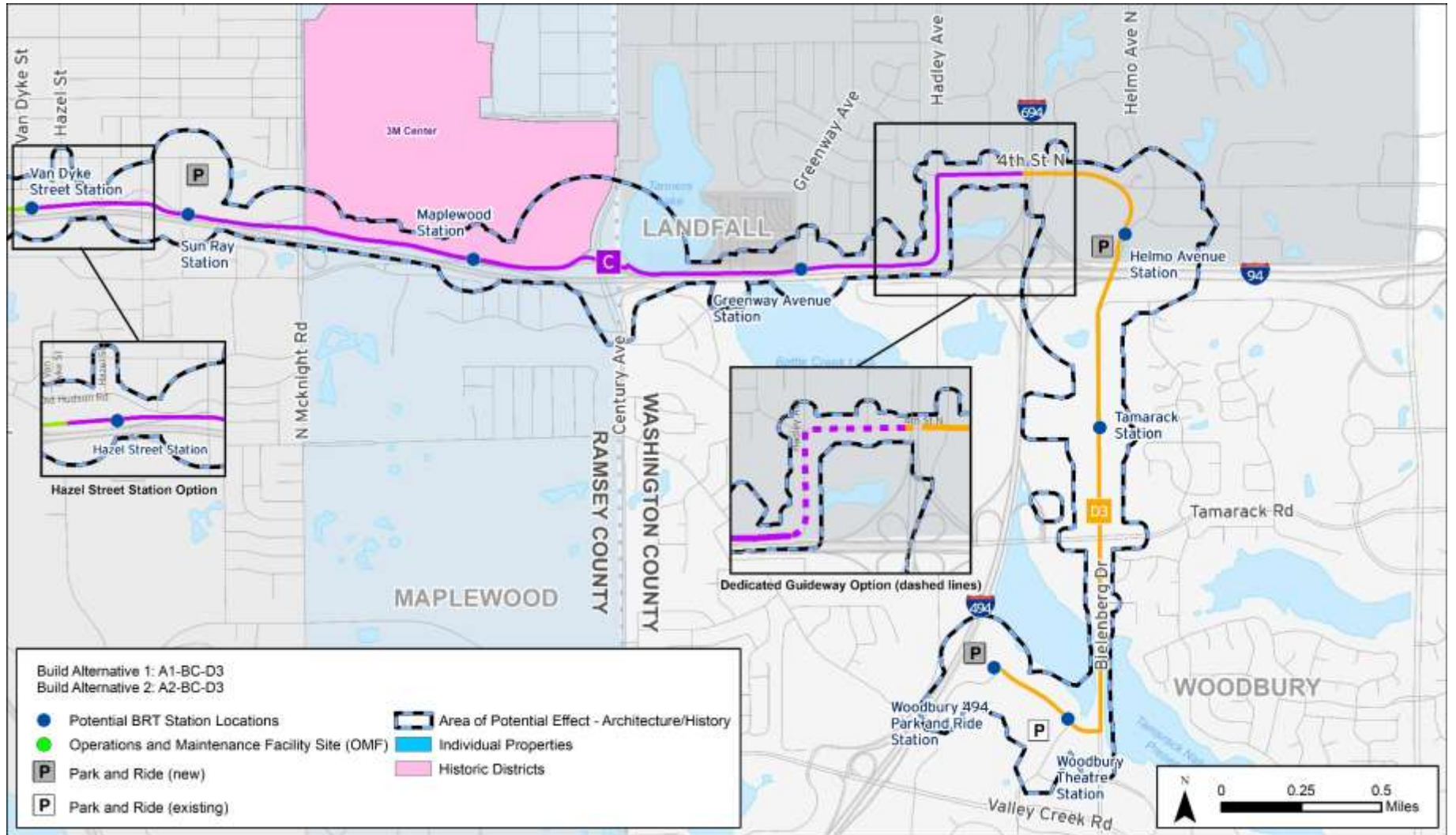




FIGURE F1-35: ALIGNMENTS A1, A2 AND B ARCHAEOLOGICAL AREA OF POTENTIAL EFFECT

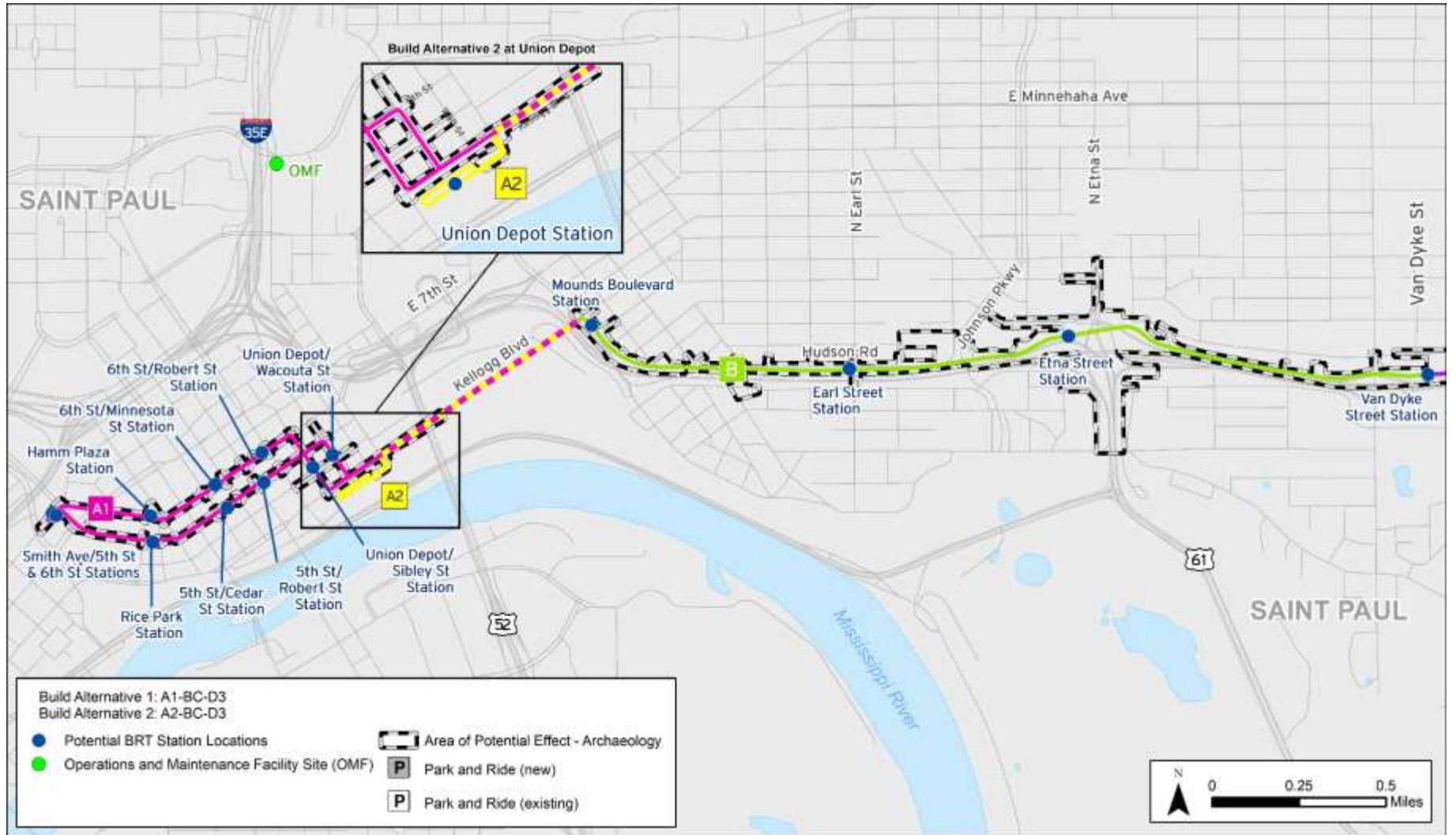
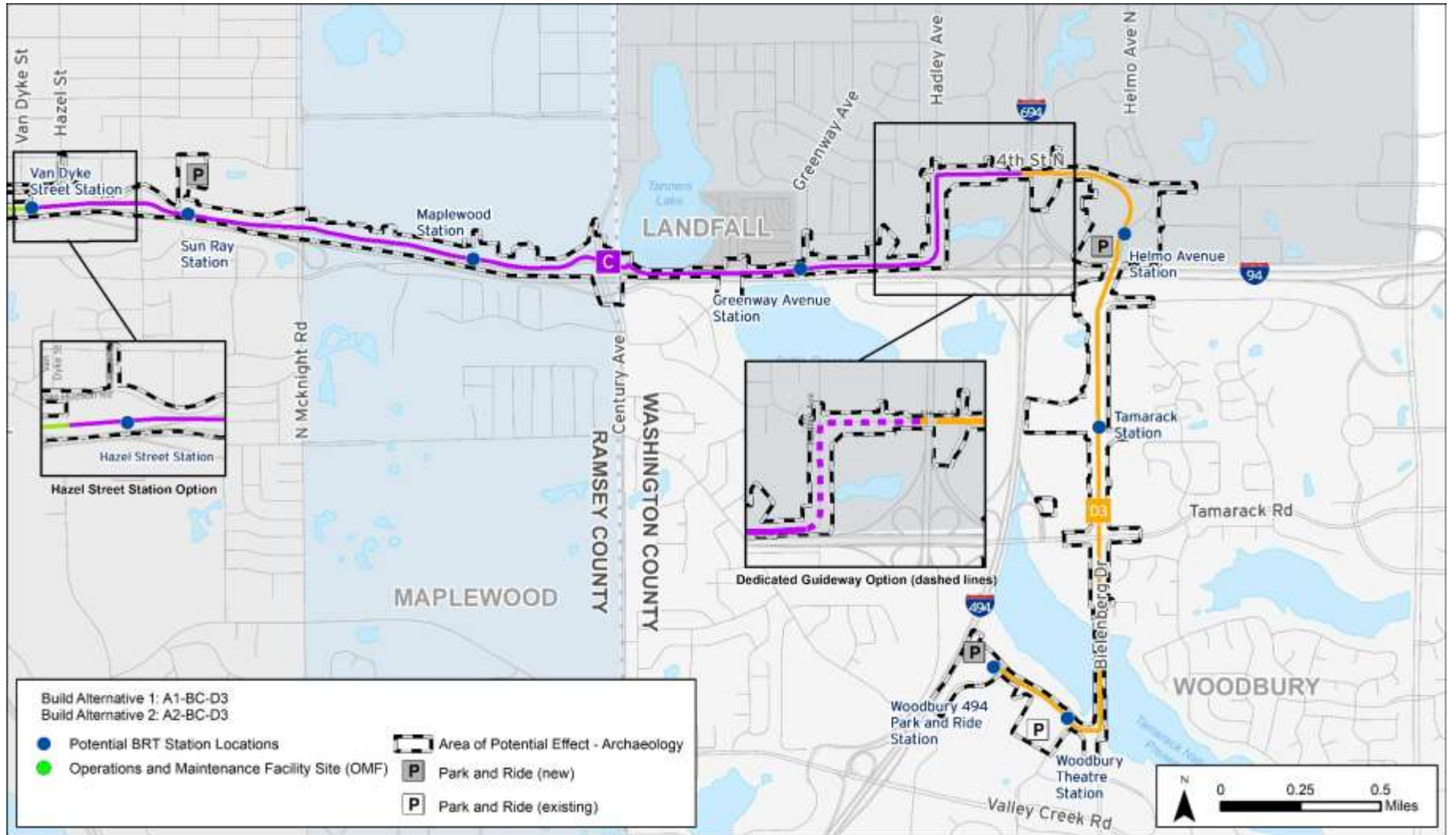




FIGURE F1-36: ALIGNMENTS C AND D3 ARCHAEOLOGICAL AREAS OF POTENTIAL EFFECT





**FIGURE F1-37: VIEW OF DOWNTOWN SAINT PAUL SKYLINE FROM
KELLOGG BOULEVARD/3RD STREET AND MOUNDS BOULEVARD**



Source: SRF Consulting, 2015

FIGURE F1-38: HIGH-VISUAL QUALITY FEATURES AND DISTRICTS WITHIN ALIGNMENTS A1, A2 AND B

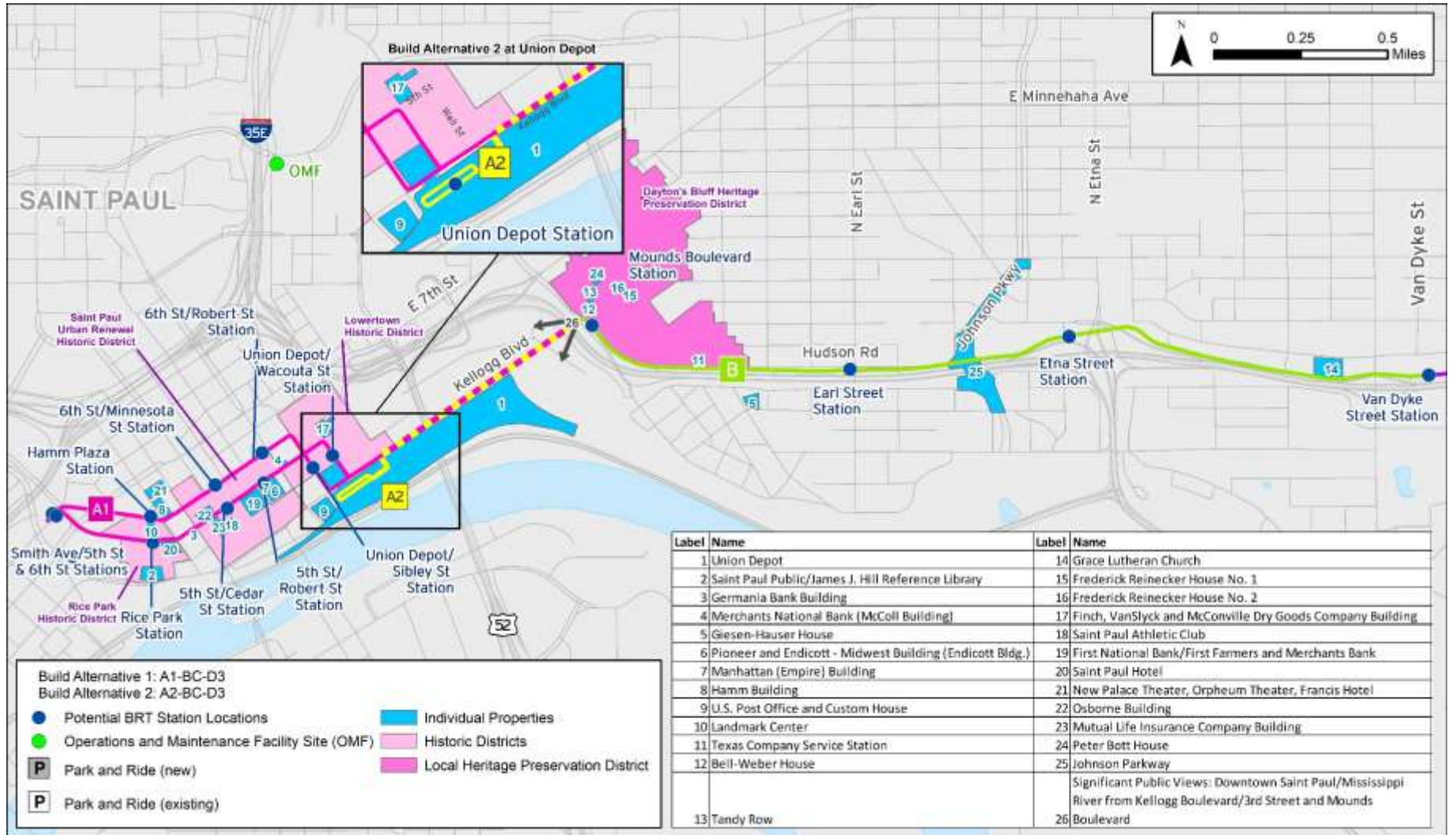


FIGURE F1-39: HIGH-VISUAL QUALITY FEATURES AND DISTRICTS WITHIN ALIGNMENTS C AND D3

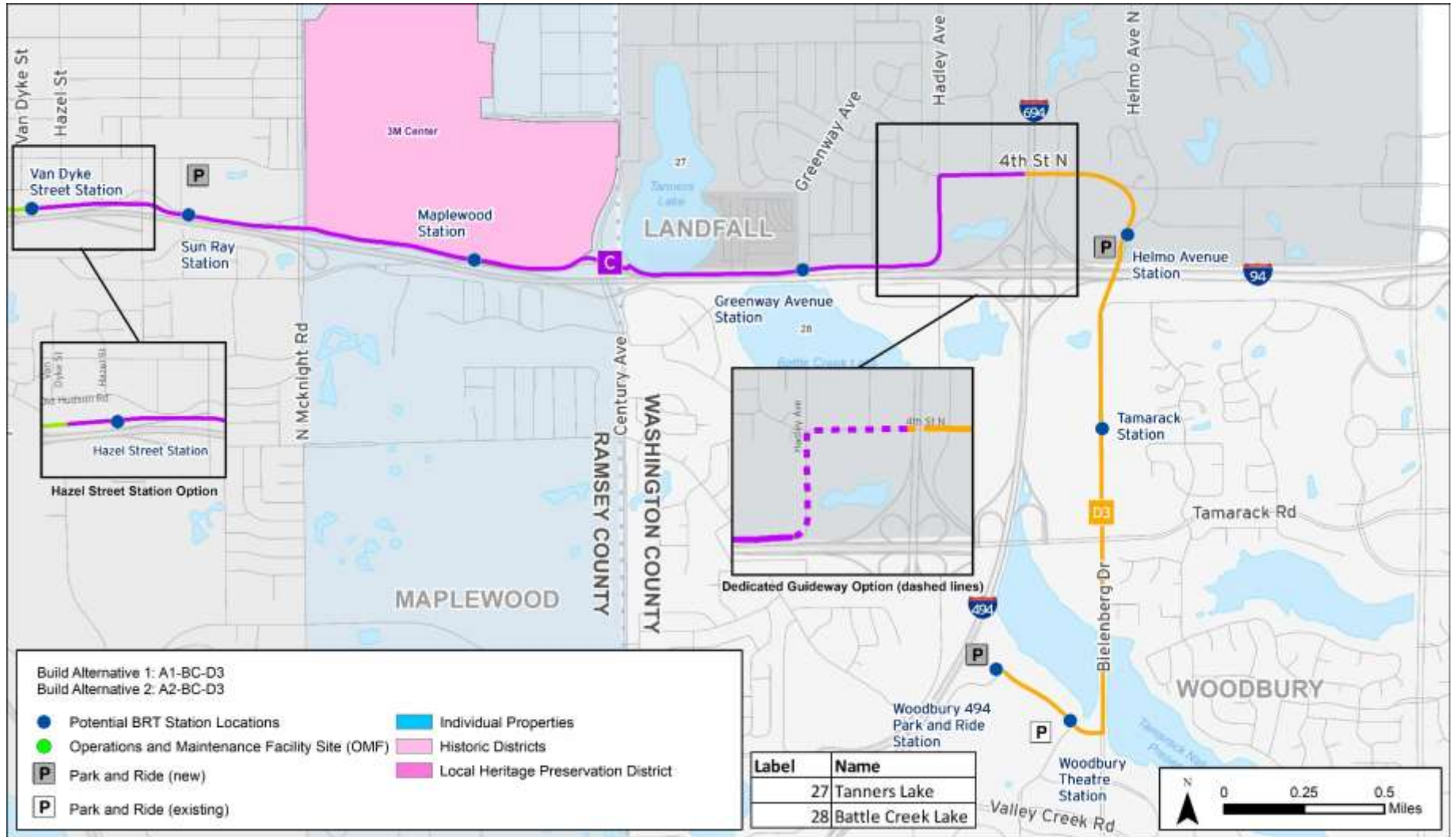




FIGURE F1-40: ALIGNMENTS A1, A2 AND B ANALYSIS INTERSECTIONS

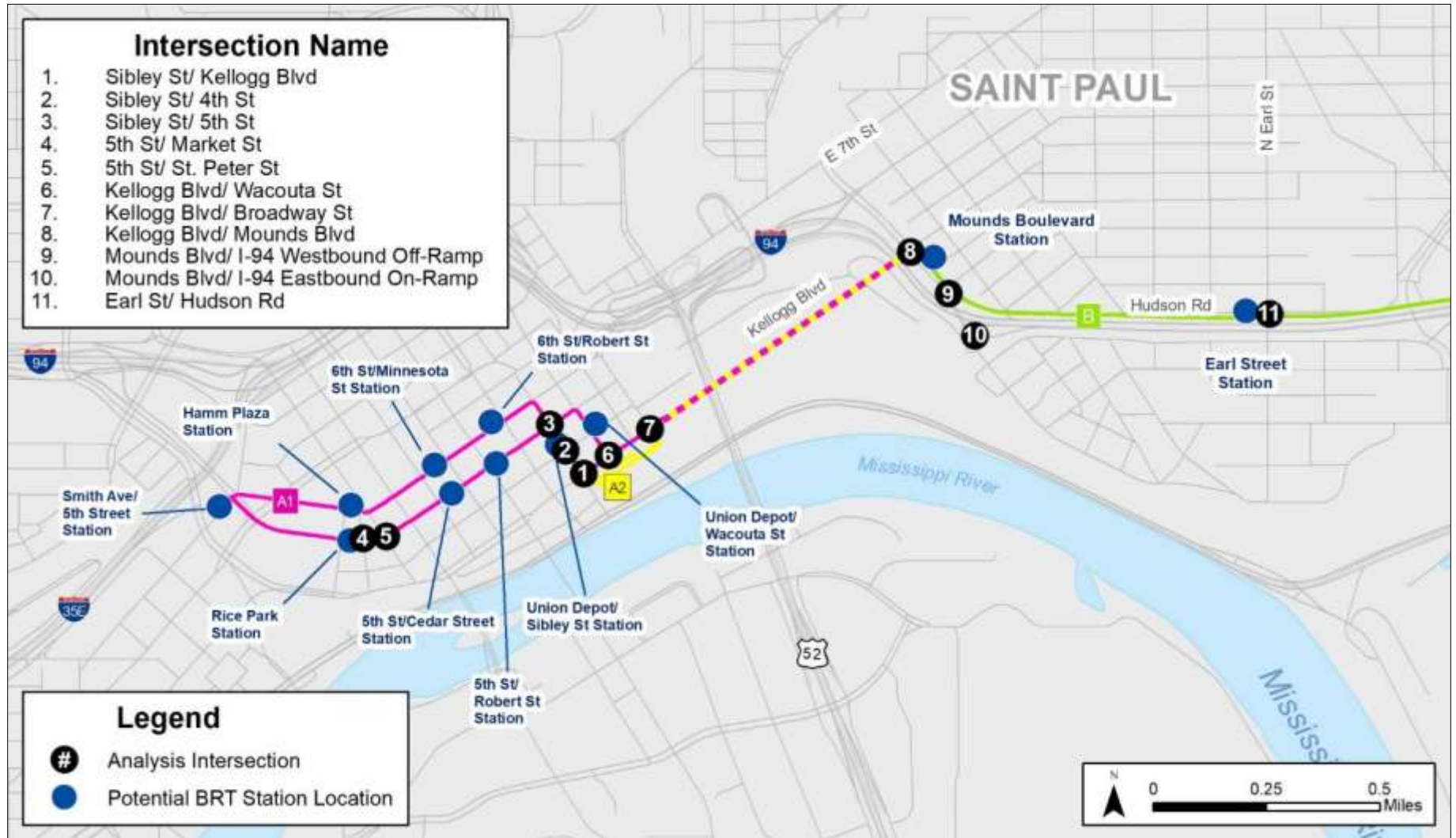




FIGURE F1-41: ALIGNMENTS B AND C ANALYSIS INTERSECTIONS

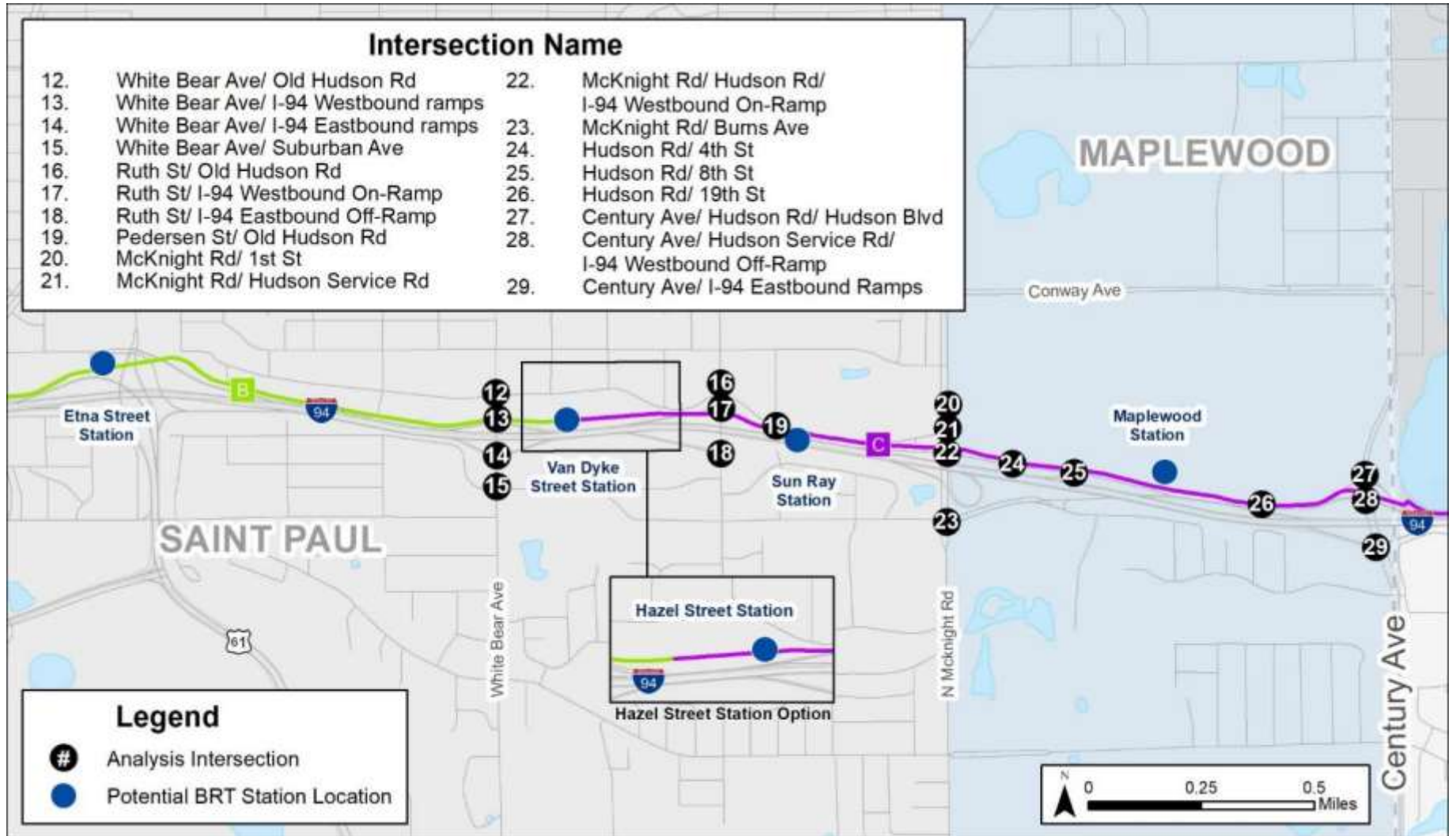




FIGURE F1-42: ALIGNMENTS C AND D3 ANALYSIS INTERSECTIONS

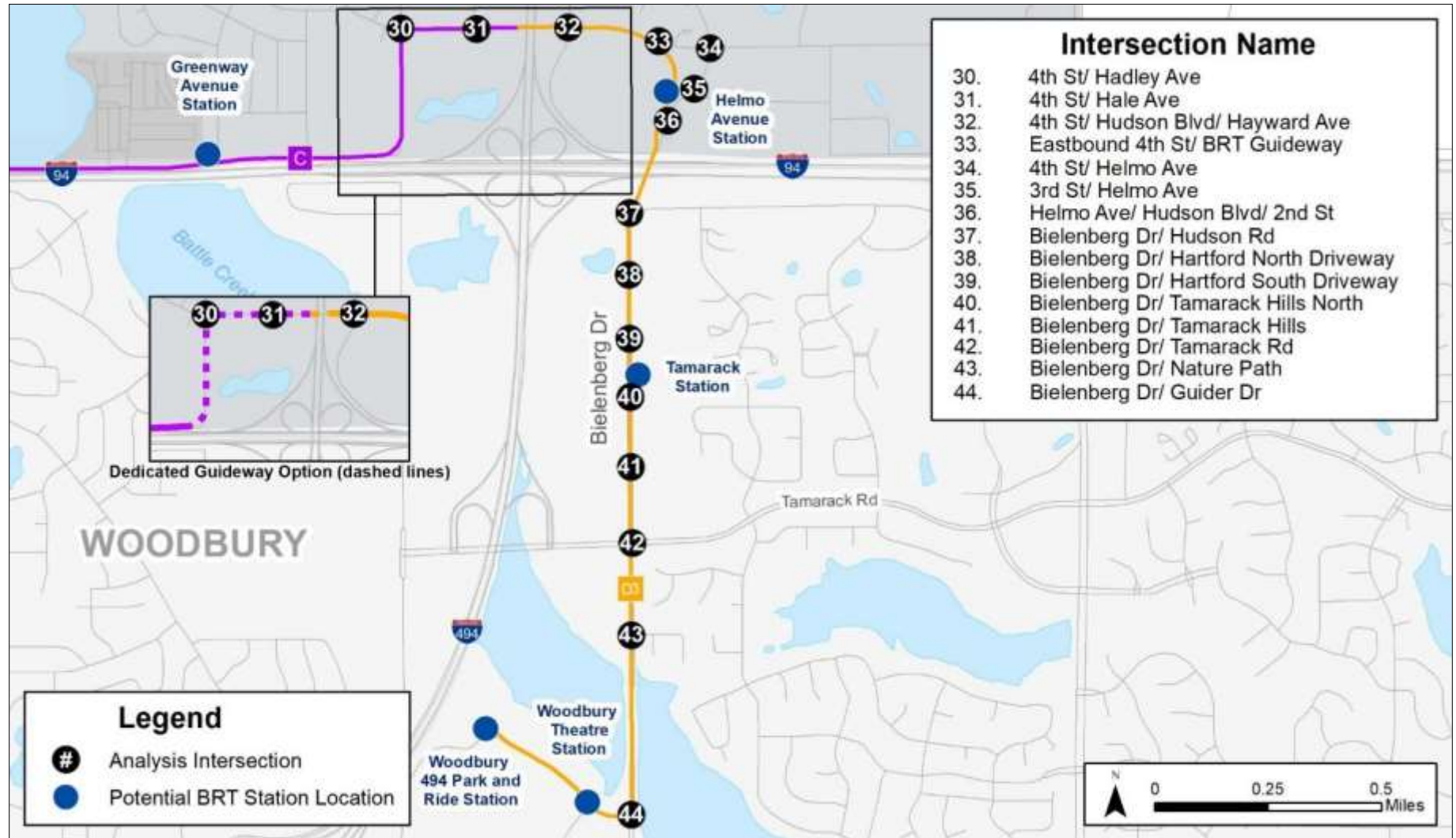




FIGURE F1-43: ALIGNMENT A1 FLOODPLAIN RESOURCES AND IMPACTS

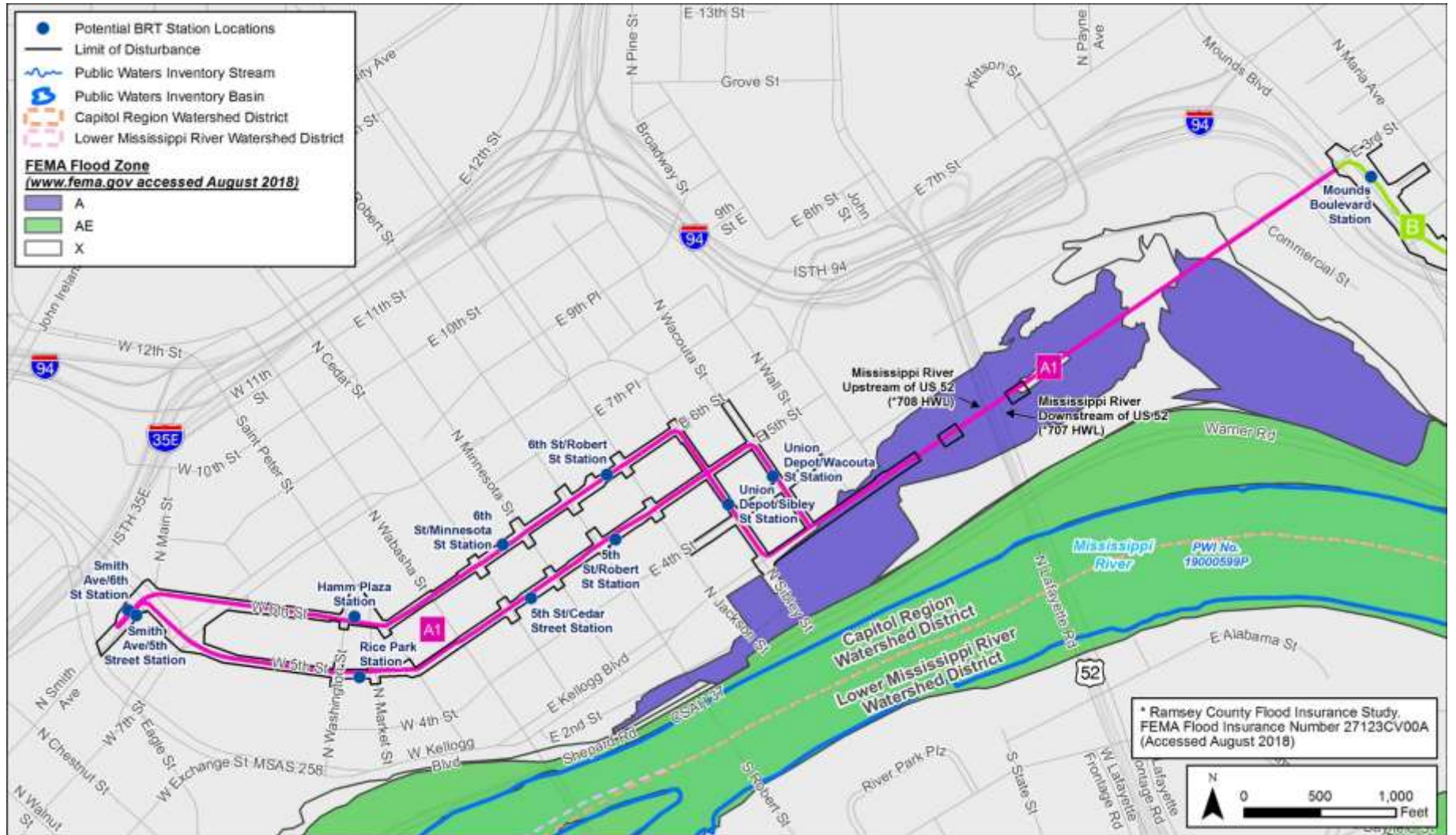


FIGURE F1-44: ALIGNMENT B FLOODPLAIN RESOURCES AND IMPACTS

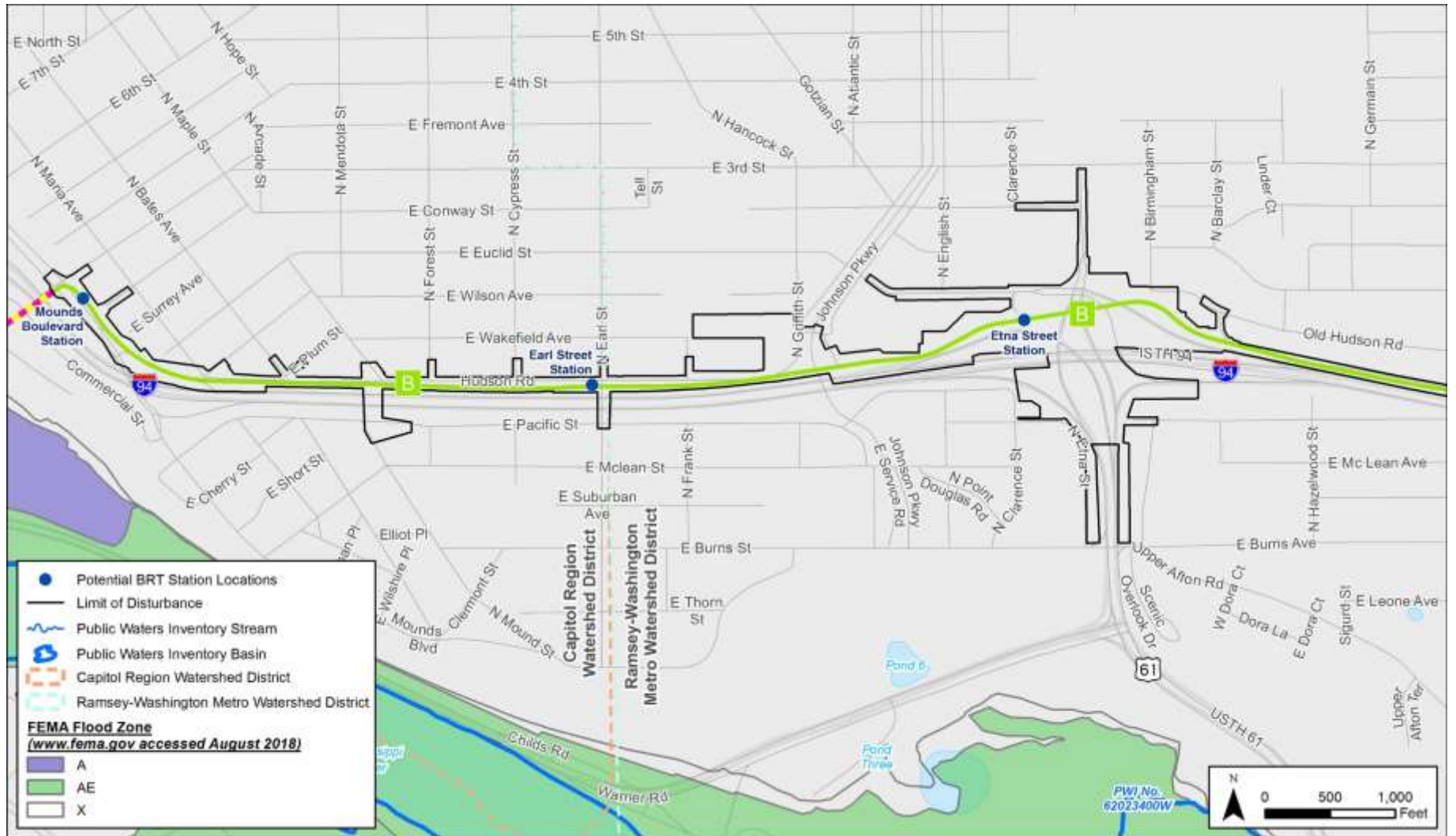


FIGURE F1-45: ALIGNMENTS B AND C FLOODPLAIN RESOURCES AND IMPACTS

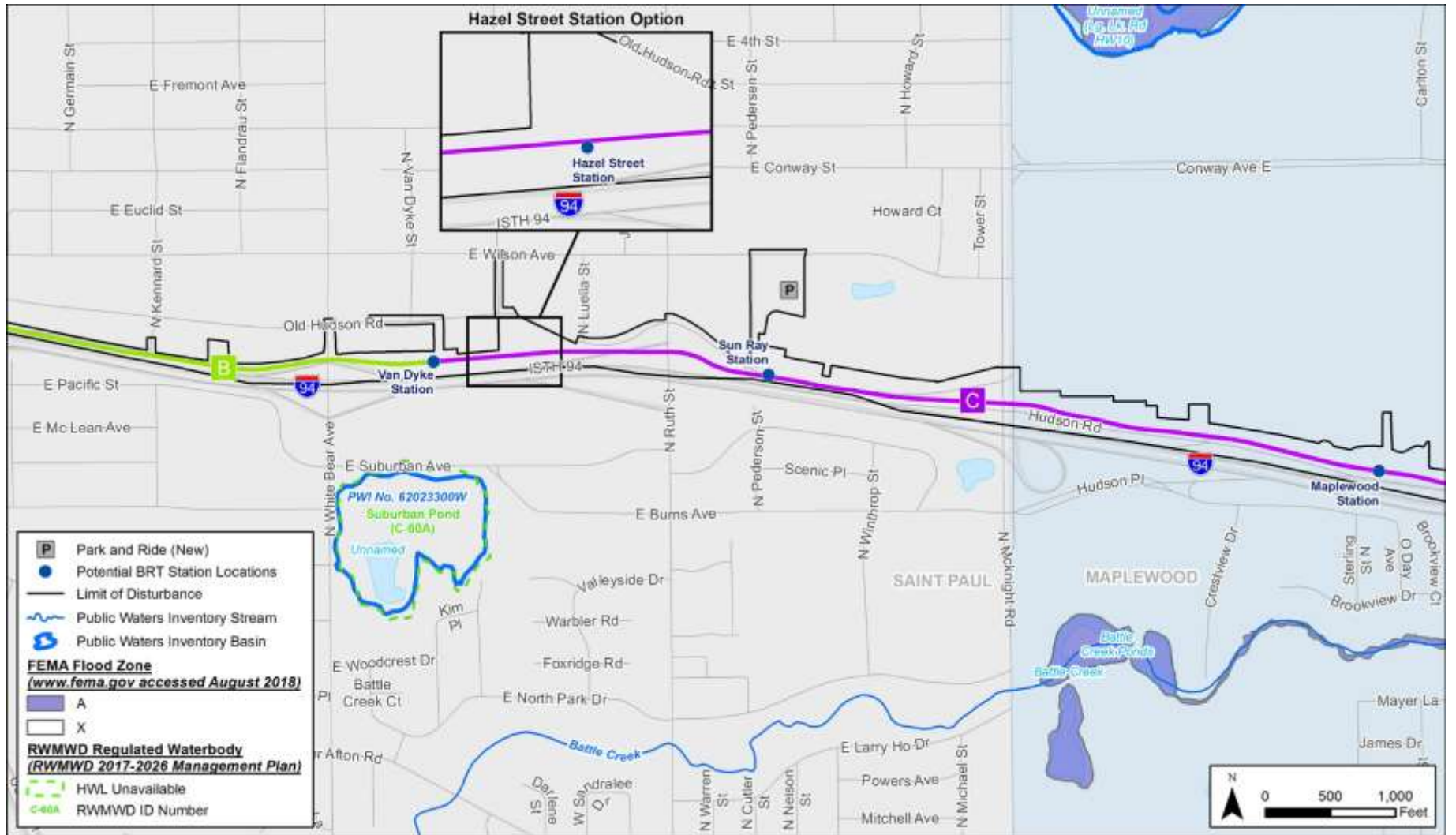




FIGURE F1-46: ALIGNMENT C FLOODPLAIN RESOURCES AND IMPACTS

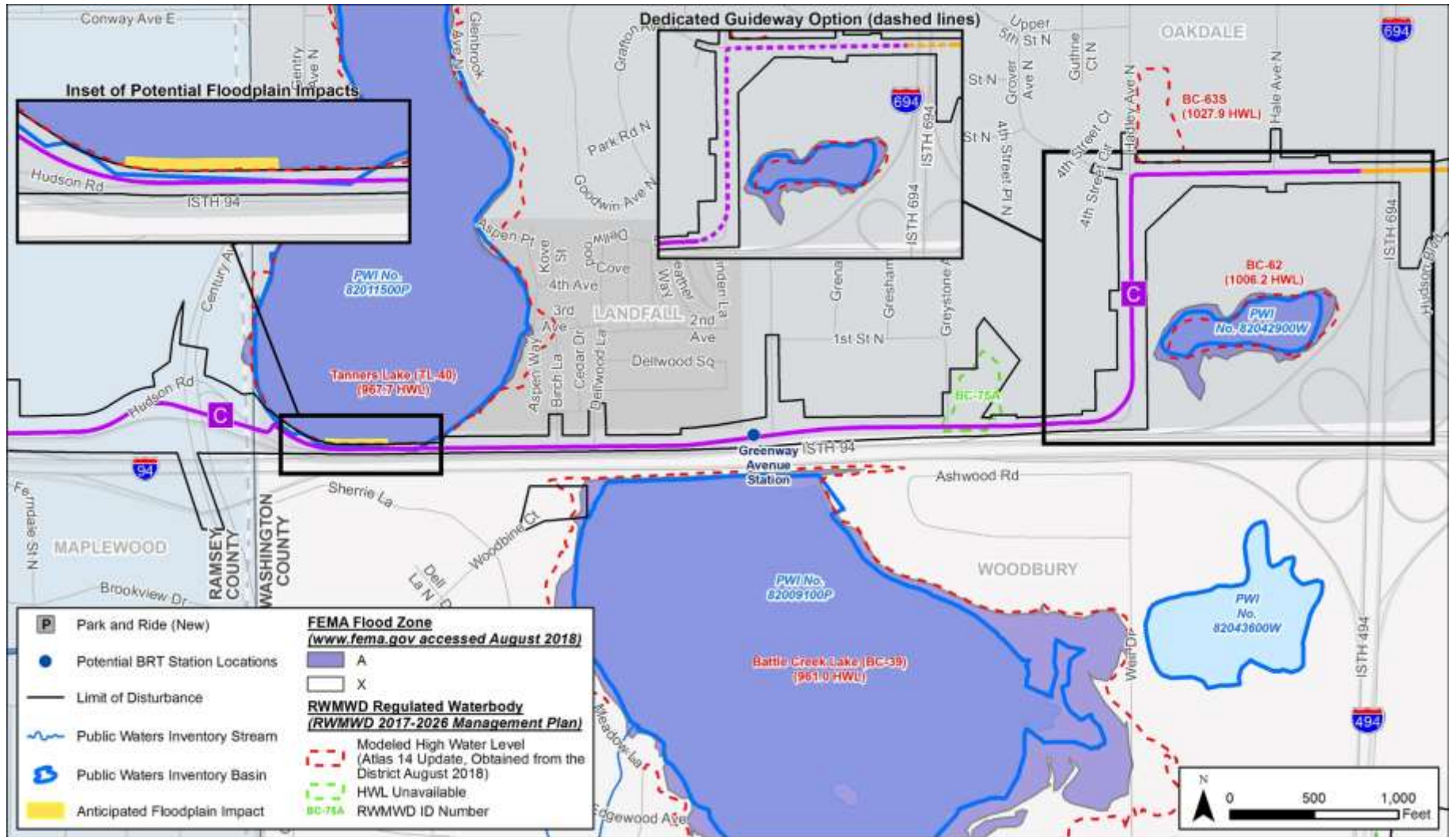




FIGURE F1-47: ALIGNMENT D3 FLOODPLAIN RESOURCES AND IMPACTS

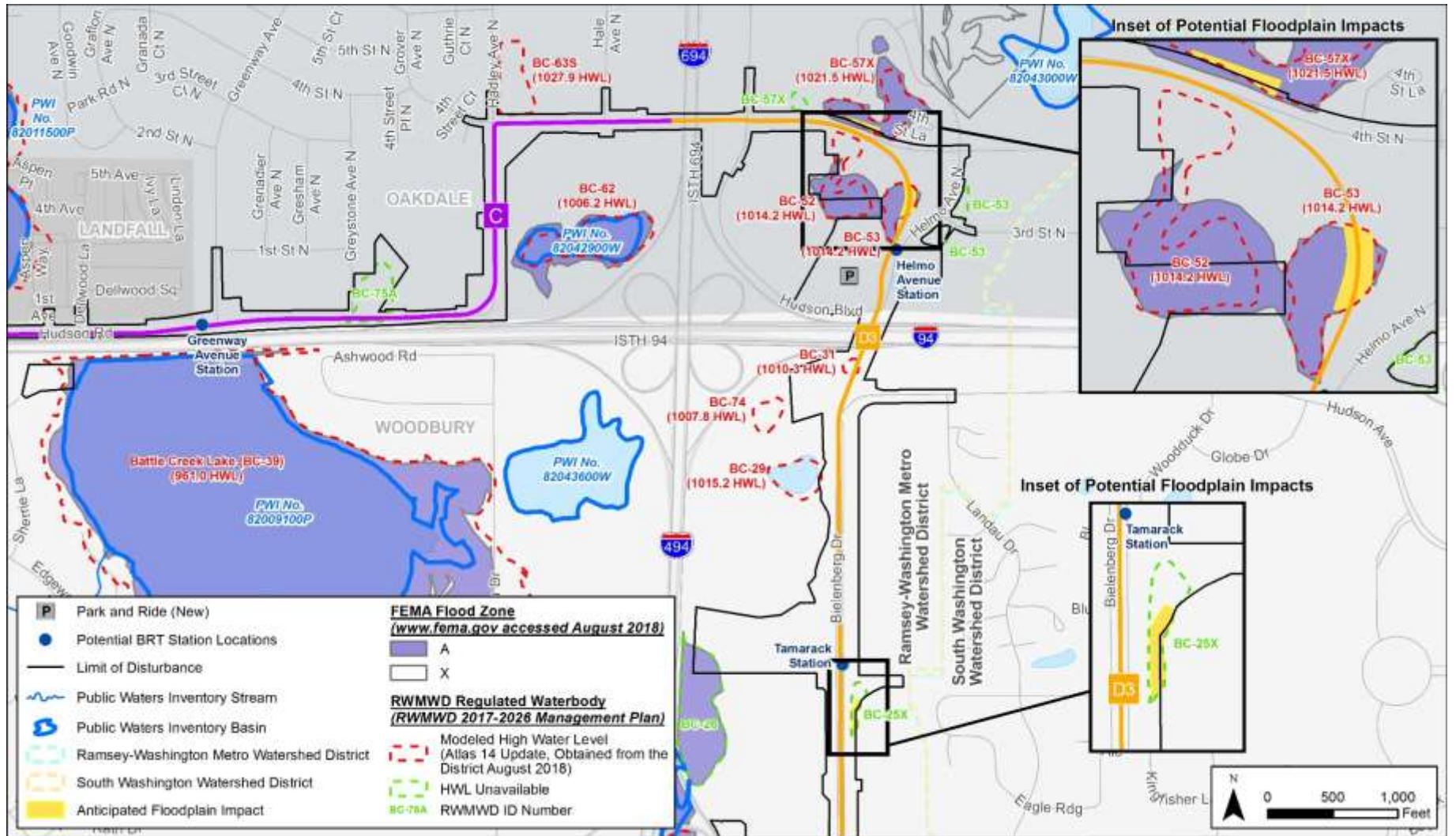


FIGURE F1-48: ALIGNMENT D3 FLOODPLAIN RESOURCES AND IMPACTS

