Information Required for Probable Categorical Exclusion

C Line Bus Improvements

Metropolitan Council

October 2016

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Date **September 1, 2016**

Grant Applicant **Metropolitan Council**

INFORMATION REQUIRED FOR PROBABLE CATEGORICAL EXCLUSION
(23 CFR Part 771.118)

A. DETAILED PROJECT DESCRIPTION

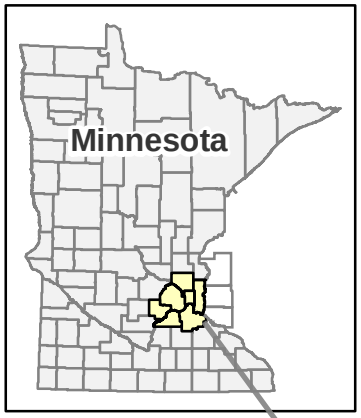
Describe the project including the type (such as bus storage, maintenance, and/or administration facilities). Indicate the size of the proposed facility, number of vehicles and staff it will house. Describe any construction, demolition, and soil excavation activities. Include a brief discussion summarizing the purpose and need for the project (e.g., congestion, state of good repair). Explain in common language how implementation of the project will address the project need, and its proposed use. Include a complete description of the project components such as length of the project in feet or miles, property size, history, ownership information (land management authority), acreage, and document previously conducted studies if applicable. Provide graphics that describe the proposed project.

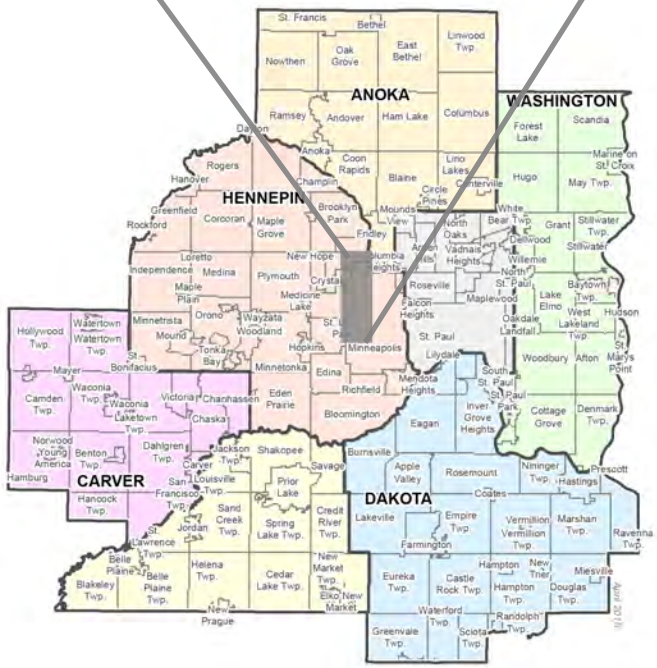
The C Line is an 8.4-mile corridor bus improvement project in Brooklyn Center, north Minneapolis, and downtown Minneapolis. The C Line will travel primarily on Osseo Road/Brooklyn Boulevard, Penn Avenue, Olson Memorial Highway (Trunk Highway 55), and 7th & 8th Streets in downtown Minneapolis. Buses will travel using existing lanes in a mixed traffic operation, making limited stops at 23 stations roughly every quarter- to half-mile. The Project will not construct any dedicated busways. A map of the Project location is provided in Exhibit 1.

The purpose of the C Line project is to provide faster, more reliable, and more attractive transit service in the corridor without expanding the roadway's footprint. The need for the Project is summarized by two key challenges: slow transit speeds and inadequate passenger facilities that keep transit from competing with single-occupant vehicles (SOVs) for most of the traveling public.

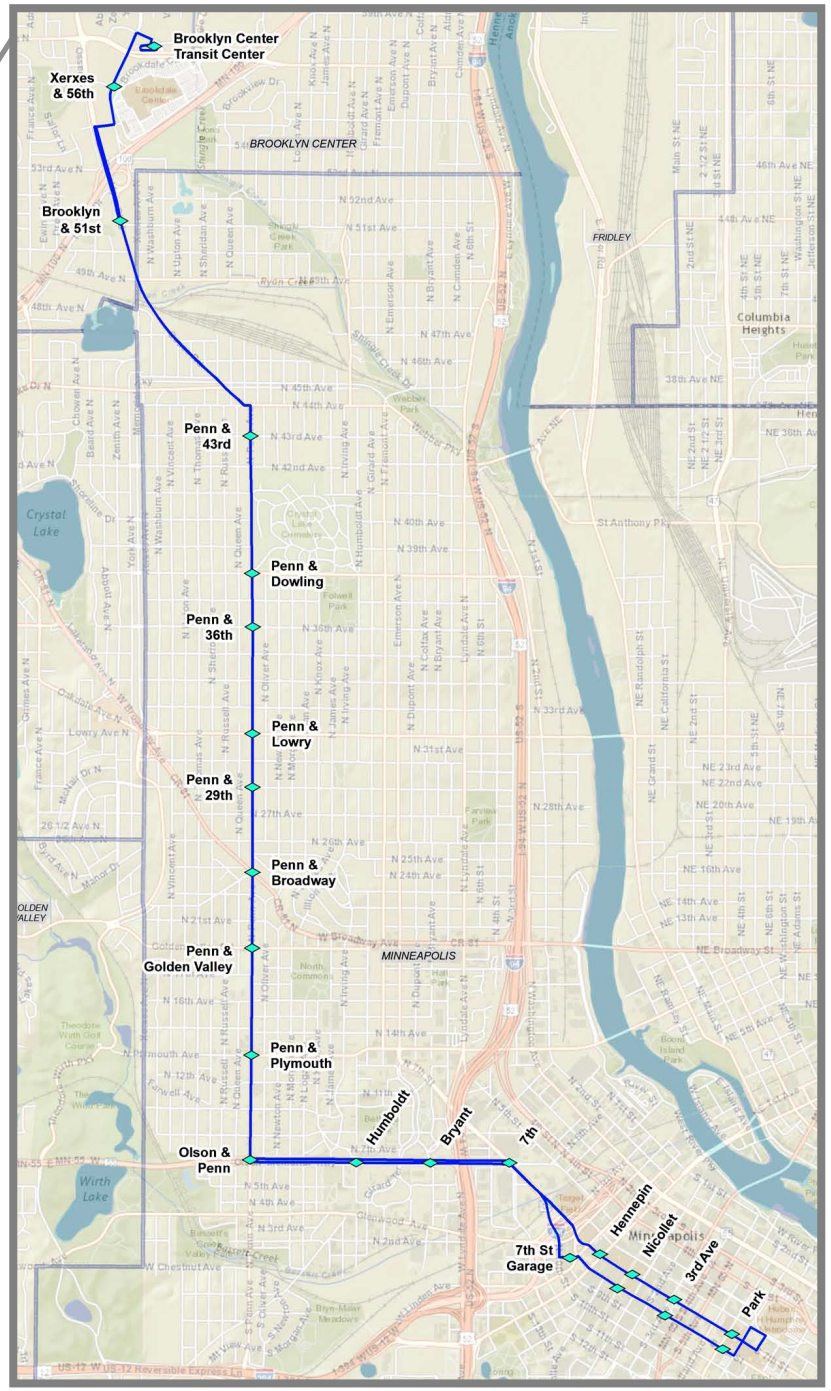
The C Line will substantially replace the existing high-frequency Route 19, which provides local bus service along the length of the corridor today. Slow travel speeds result from buses being stopped for much of their trip through the corridor. Route 19 currently stops every 1/8 mile. The C Line will stop only at designated stations, spaced approximately every quarter- to half-mile.

Exhibit 1
Project Location





C Line



Seven-county metro area municipal and county boundaries current to April 2015.
Adjacent Minnesota county and municipal boundaries current to May 2014.
Wisconsin county and municipal boundaries current to 1992.

Passenger waiting facilities are also inadequate at the majority of these stops. Most stops are marked only with a simple pole-mounted bus stop sign; only a few of these locations have shelters. Existing narrow sidewalks, specifically along Penn Avenue, provide an uncomfortable pedestrian experience and severely limit the placement of passenger waiting shelters without blocking pedestrian through-ways. The existing stops also lack heating, transit information, adequate lighting, and cameras for safety. The limited passenger facilities also belie the high-frequency local bus service in the corridor today. Route 19 operates approximately every 10 minutes for much of the day on weekdays, every 15 minutes on Saturdays, and every 20 minutes on Sundays.

To address these challenges, the Project will construct and deploy four elements: permanent stations, enhanced shelters and amenities, specialized vehicles, and traffic signal priority. These elements are described below, along with a description of improved service frequency and a summary of construction phase activities. These services and facility improvements are projected to increase corridor ridership from approximately 7,000 daily rides today to 9,300 rides per day in 2030.[1]

Stations

The C Line project includes 23 stations spaced approximately every quarter- to half-mile along the corridor. There will be a total of 37 platforms at these stations. Nine of the stations (Ramp A/7th Street Transit Center, Brooklyn Center Transit Center, and stations on one-way 7th Street and 8th Street in downtown Minneapolis) will have single platforms that either serve a terminus (Brooklyn Center Transit Center) or one-way streets (downtown Minneapolis area). The remaining stations will have two platforms, one for northbound and one for southbound operations.

Three of the stations (four platforms) have been constructed as part of separate transit projects in 2015 and 2016. This documented Categorical Exclusion document includes environmental considerations resulting from incremental BRT improvements (signage and equipment) at these three stations (four platforms). However, Section V (Impacts Caused by Construction) does not apply since construction was completed at these locations through previous transit improvements. Construction of 15 of the stations (27 platforms) will be coordinated with other infrastructure projects by partner agencies (e.g., City of Brooklyn Center, Hennepin County, City of Minneapolis). Short-term temporary improvements are likely at some of these stations to facilitate construction coordination and reduce construction impacts (e.g., 8th Street stations, Olson Memorial Highway stations). The remaining five stations (six platforms) will be constructed independently of any partnering infrastructure project. The existing conditions and needed improvements at each station vary greatly, with proposed improvements ranging from signage and equipment installation to the construction of a new shelter and curb extension. The types of proposed improvements are summarized in Exhibit 2. Details on the types of station platforms planned and the

[1] Ridership projections are based upon a travel demand model rooted in existing corridor ridership. Model inputs include travel time, service frequency, and anticipated residential and employment changes throughout the corridor. Projections were then annualized based upon existing ratios of weekday and weekend ridership for the existing primary route and other comparable high-frequency corridors.

improvements needed at each location are provided in Attachment 1 and mapped in Exhibit 3.

Exhibit 2: Type of C Line Station Improvement

Number of Platforms	Type of Improvement
4	Signage and equipment installation
5	Pylon station marker, signage, and equipment installation
9	Replace existing shelter in same area, pylon station marker, signage and equipment installation
1	Replace existing shelter in same area, construct curb bumpout, pylon station marker, signage and equipment installation
5	New shelter, pylon station marker, signage and equipment installation
13	New shelter, construct curb bumpout, pylon station marker, signage and equipment installation

Station Platforms

All station platforms will be constructed within the existing transportation right-of-way. Platforms are defined as 60 feet in length and 10-12 feet in width and may include raised 9-inch curbs. At 14 of the 37 platform locations, curb bumpouts are planned. Curb bumpouts are conceptually defined as 60 to 80 feet in length, and approximately 11 to 15 feet in width. No property impacts are anticipated for this type of platform, as bumpouts will allow for all improvements to be constructed within existing right-of-way. Exhibit 4 shows photos and renderings of proposed bumpout platforms and stations. Platforms are planned within existing curb lines at the remaining 23 directional stops. Platform sizes will be adjusted in order to fit within existing transportation rights-of-way and avoid permanent acquisitions.

The predominant platform material is concrete, including curbs. Platforms will feature alternating light and dark concrete mixes to distinguish the platform and associated waiting area from adjacent sidewalk facilities. A two-foot wide textured curbside warning strip will keep passengers safely away from the curb while buses approach. This warning strip will be made of cast-iron. Grass or other earthen landscaping features may be incorporated into platform designs. Existing landscaping features like trees will be preserved to the extent possible.

Enhanced Shelters and Amenities

Within the limits of the platforms, the Project will also construct substantial passenger stations with premium, rail-like amenities. Shelters will be sized in a range of modular configurations to accommodate customer demand and fit within site constraints without requiring right-of-way acquisition (see Exhibit 4). Key station features at each location may include the following:

- Passenger waiting shelters for weather protection, sized in a range of modular configurations to accommodate customer demand and fit within site constraints. Shelter sizes include:
    - Small (approximately 5’ [depth] x 12’ [width] x 10’4” [height])
    - Medium (approximately 5’ x 24’ x 10’4”)
    - Large (approximately 5’ x 36’ x 10’4” or 12’5”)

- Electronic ticket vending machines to facilitate proof-of-payment fare collection;
- Real-time next bus arrival electronic signage and static wayfinding information, including clear connections to intersecting service and nearby destinations; and
- Other amenities including radiant heat lamps, lighting, emergency call boxes, security cameras, waste receptacles, and bicycle racks

Final station designs are dependent upon site-specific conditions evaluated during the Project's engineering phase.

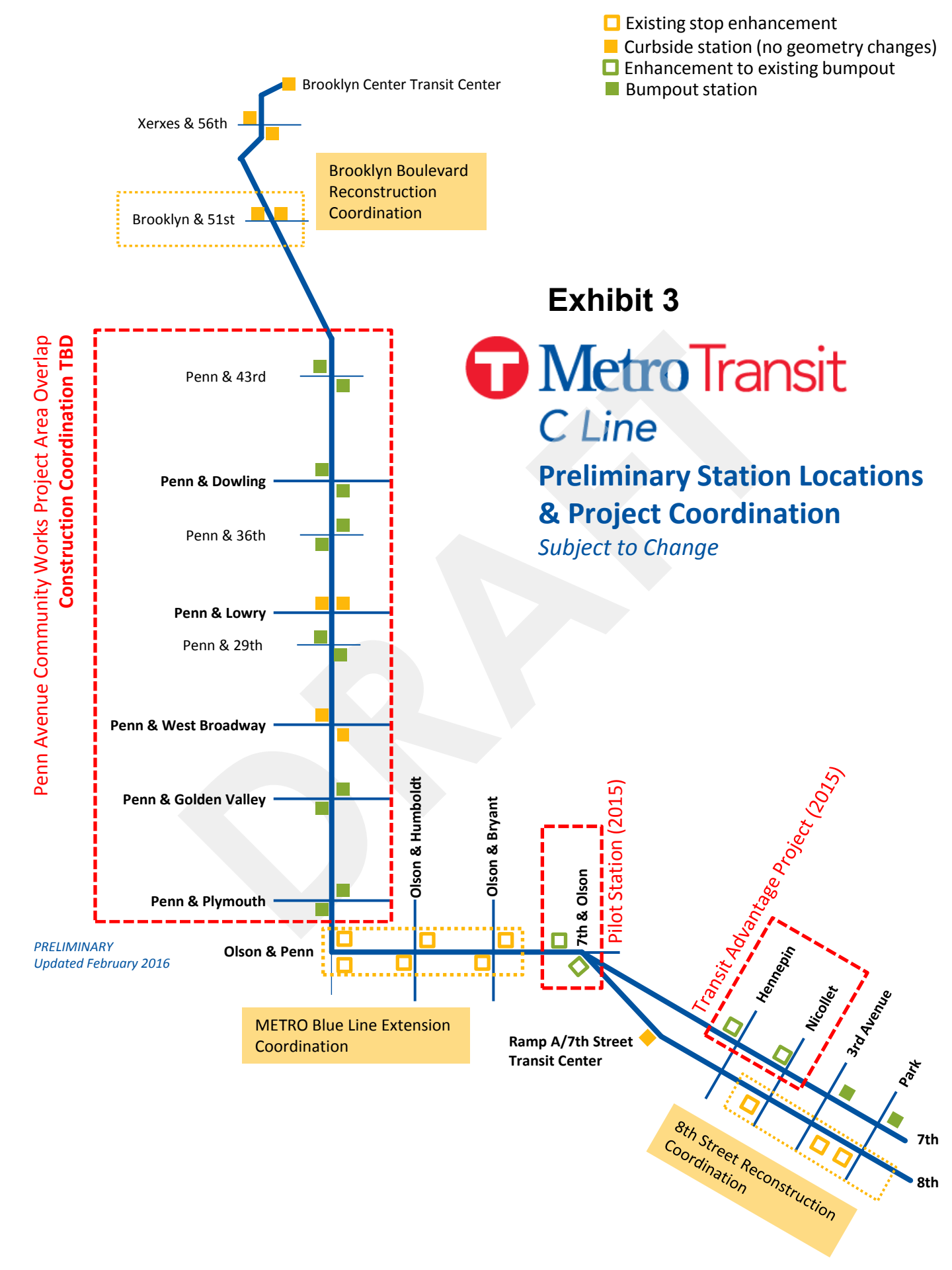

Existing stop enhancement
Curbside station (no geometry changes)
Enhancement to existing bumpout
Bumpout station
Brooklyn Center Transit Center
Xerxes & 56th
Brooklyn & 51st
Brooklyn Boulevard Reconstruction Coordination
Exhibit 3
Metro Transit
C Line
Preliminary Station Locations & Project Coordination
Subject to Change
Penn Avenue Community Works Project Area Overlap
Construction Coordination TBD
Penn & 43rd
Penn & Dowling
Penn & 36th
Penn & Lowry
Penn & 29th
Penn & West Broadway
Penn & Golden Valley
Penn & Plymouth
Olson & Penn
Olson & Humboldt
Olson & Bryant
7th & Olson
Pilot Station (2015)
Transit Advantage Project (2015)
Hennepin
Nicollet
3rd Avenue
Park
7th
8th
Ramp A/7th Street Transit Center
METRO Blue Line Extension Coordination
8th Street Reconstruction Coordination
PRELIMINARY
Updated February 2016
DRAFT

Exhibit 4
Conceptual Station Renderings

Rendering of Large Shelter (Draft concept, undergoing refinement)



Approximate size: 5’ deep x 36’ long x 12'5" tall (middle section), 10’4” tall elsewhere

Rendering of Medium Shelter (Draft concept, undergoing refinement)



Approximate size: 5’ deep x 24’ long x 10’4” tall

Rendering of Small Shelter (Draft concept, undergoing refinement)



Approximate size: 5’ deep x 12’ long x 10’4” tall

Existing conditions at Penn Avenue North and Plymouth Avenue



Conceptually designed curb extension with conceptual C Line Bus Improvements



Specialized Vehicles
The Project includes purchase of 12 specialized buses for the service, with a fleet requirement of nine buses plus three spare vehicles. Nine of these vehicles will replace current local bus fleet needs in the corridor. C Line specifications include low-floor, 60-foot articulated buses with specialized body work, three wide doors, and other functional and aesthetic enhancements over the standard bus fleet. The net effect of the C Line project during most hours will be an addition of up to two buses an hour in the corridor. These larger articulated vehicles will add passenger capacity above the current Route 19 40-foot buses.

Transit Signal Priority (TSP)
Analysis and stakeholder discussions will be conducted to determine which of the 40 traffic signals along the C Line corridor will be modified for TSP. Signals identified for TSP will be modified to provide the necessary TSP detector, firmware, equipment and signal controller. No new traffic signals will be installed as part of this project. In some cases, existing signal controllers at intersections may already be compatible with new TSP equipment and may not require installation of a new signal controller.

More Frequent Service
The C Line project will increase the frequency of transit service in the corridor. The C Line will run every 10 minutes during most periods of the day, substantially replacing Route 19 as the primary service in the corridor. The C Line will stop only at designated stations, spaced approximately every quarter- to one-half mile. These stations are planned to serve concentrations of existing riders and major destinations. Route 19 will continue to run at a reduced frequency (every 30 minutes) in order to serve riders between stations and off-corridor branched services. The net effect of the C Line project during most hours will be an addition of up to two buses an hour in the corridor. Larger, 60-foot articulated vehicles on the C Line will add passenger capacity above the current Route 19 40-foot buses.

B. LOCATION (INCLUDING ADDRESS)

Attach a project location map or diagram, such as a USGS topographic map that identifies the project location. Clearly delineate the project and include streets and features specifically called out in the "detailed project description." If the project work occurs at more than one location, include those locations and adjoining parcels on the map. This information is partly used to determine the probability of impact on the human and natural environment.

As described in Section A (Project Description) and shown in Exhibit 3, the proposed project includes 23 stations, which are spaced approximately every quarter- to one-half mile along the 7th Street and 8th Street one-way pair, Olson Memorial Highway, Penn Avenue within the City of Minneapolis and Brooklyn Boulevard in the City of Brooklyn Center. The Project will include 14 platforms with bumpouts and 23 platforms at existing curbsides. Details for each platform's proposed package of improvements are provided in Attachment 1.

Exhibit 3 shows the location of the 37 platforms that make up the C Line project. The table in Attachment 1 shows the address of the adjacent property at each of the 37 platforms and

describes the proposed improvements at each site (i.e., shelter improvements, platform improvements, and other enhancements).

Coordination with the METRO Blue Line Extension light rail project along Olson Memorial Highway could result in changes to platform locations within station intersections. These station locations are at Olson Memorial Highway and Penn Avenue, Humboldt Avenue, and Bryant Avenue. Any adjustment in platform location will occur within the existing intersection (i.e., changes in intersection quadrant) and within the existing area of potential effect (APE) (see Section H).

Final station designs and locations are dependent upon site-specific conditions evaluated during the Project's engineering phase.

C. METROPOLITAN PLANNING AND AIR QUALITY CONFORMITY

Is the proposed project included in the current adopted MPO plan, either exclusively or in a grouping of projects or activities? What is the conformity status of that plan? Is the proposed project, or appropriate phases of the project, included in the TIP? What is the conformity status of the TIP? Is the project located in an air quality non-attainment area? Is the project exempt from a conformity review per Table 2 of 40 CFR 93.126? Refer to the non-attainment/maintenance area maps at: http://epa.gov/airquality/greenbk /index.html to determine if the project is located in an area that meets all National Ambient Air Quality Standards.

The Project is consistent with the following:

- Metropolitan Council 2016-2019 Transportation Improvement Plan (TIP, adopted September 23, 2015)[2]
- Metropolitan Council 2040 Transportation Policy Plan (TPP, adopted January 14, 2015)[3]

The C Line project is included in the 2016-2019 TIP with Section 5307 and CMAQ funding under project numbers TRF-TCMT-16AH, TRF-TCMT-16AQ, TRS-TCMT-17C and TRS-TCMT-18B. The 2016-2019 TIP and the TPP both conform to the relevant sections of the Federal Conformity Rule and to the applicable sections of Minnesota State Implementation Plan for air quality. The Project is included as "Arterial BRT along Penn Avenue in Brooklyn Center and Minneapolis" and a regionally significant project in Appendix E: Additional Air Quality Information of the Transportation Policy Plan. The Project's Air Quality (AQ) code within the Metropolitan Council Transportation Improvement Plan indicates it is a project of regional significance to occur between 2015 and 2020 and that it is not exempt from the air quality conformity test. The Project was included within the air quality conformity analysis prepared

[2] Available at: http://www.metrocouncil.org/Transportation/Publications-And-Resources/Transportation-Planning/Transportation-Improvement-Program-(TIP)/2016-2019-TIP.aspx

[3] Available at: http://www.metrocouncil.org/Transportation/Planning-2/Key-Transportation-Planning-Documents/Transportation-Policy-Plan/The-Adopted-2040-TPP-(1)/Final-2040-Transportation-Policy-Plan/2040-TPP-Chapter-6-Transit-Investment-Direction-an.aspx

for the Transportation Policy Plan, which was found to be in compliance. See Attachment 2 for USDOT approval of the air quality conformity determination for the Metropolitan Council's TIP pursuant to 40 CFR Part 93. Attachment 2 also includes USDOT's finding that the TPP meets all conformity determination requirements under the Clean Air Act Amendments of 1990. Related documentation from the Minnesota Pollution Control Agency (MPCA) is also provided within Attachment 2.

The C Line project is located entirely within Hennepin County, which is not a non-attainment area for any air quality standard and is a maintenance area for carbon monoxide (CO).

D. LAND USE AND ZONING

Describe property zoning and consistency with proposed use. Attach a zoning map of the project area and surrounding area. Attach a land use map that identifies land and water uses in the project area. This information is partly used to determine the probability of impact on the human and natural environment. Land use plans, and zoning maps can be obtained from the tax assessor, city, county, or metropolitan planning organizations.

All station platforms will be constructed within existing transportation rights-of-way or at existing transit center locations. Properties adjacent to planned stations are generally zoned residential, business, office, commercial, or industrial (see zoning map in Exhibit 5 and see Attachment 3 for a table of zoning at properties adjacent to station platform sites). The planned land uses for the cities of Minneapolis and Brooklyn Center are provided in Attachment 4. There are no adjacent water uses in the Project area. The proposed Project is consistent with existing zoning and planned land uses, as transit service supports these uses (i.e., residential, business, office, commercial, and industrial land use). The planned stations are of a size and nature that are compatible with the existing and planned use of adjacent property.

E. TRAFFIC IMPACTS

Describe potential traffic impacts; including short-term impacts during construction or demolition, and whether the existing roadways have adequate capacity for increased bus and other vehicular traffic as part of the proposed project. Examples of construction-related impacts include lane closures, detours, or dust abatement requirements. Briefly describe traffic control measures required to minimize impacts of construction.

The proposed C Line project does not include any dedicated busways or temporary lane restrictions and both long-term and short-term (i.e., construction) traffic impacts related to the Project are expected to be minimal. The Project has three project elements that have the potential to create traffic impacts, as described below. These elements and their potential traffic impacts are discussed in the following sections.

- More frequent transit service
- Transit signal priority
- Platform bumpouts

METRO TRANSIT **C LINE**

Minneapolis and Brooklyn Center
Hennepin County, Minnesota

EXHIBIT 5: Zoning Map

Full Key to Zoning symbols included on next page

- C Line Stations
- C Line Alignment
- Metro Green/Blue Line

Downtown
- Neighborhood
- Business
- Commercial
- Service

- Commercial
- Service/ Office
- Industrial

Residential
- Single Family
- Multi Family

N

Basemap Scale
0 0.25 0.5 Miles

Inset Map Scale (except Downtown)
0 250 500 1000 Feet

Downtown Inset Scale
0 250 500 1000 Feet

Xerxes & 56th
Brooklyn Center Transit Center
Brooklyn & 51st
Penn & 43rd
Penn & 36th
Penn & Dowling
Penn & 29th
Penn & Lowry
Penn & Golden Valley
Penn & West Broadway
Penn & Broadway
Penn & Plymouth
Olson & Penn
Olson & Humboldt
7th St Garage
Olson & Bryant
Olson & 7th
7th & Hennepin
7th & Nicollet
7th & 3rd
7th & Park
8th & Nicollet
8th & 3rd
8th & Park

More Frequent Transit Service

As described in Section A (Project Description) and illustrated in Exhibit 3, the proposed C Line BRT service will use several existing roadways including:

- 7th and 8th Streets, a one-way pair of city streets, each with three lanes of traffic and parking/loading on each side of the street;
- 7th and 10th Streets, a one-way pair of streets, each with two lanes of traffic and bike lanes, which transitions to 7th Street, a four-lane divided roadway with bike lanes;
- Olson Memorial Highway, a six-lane divided state trunk highway, with turn lanes at signalized intersections;
- Penn Avenue, a two-lane county roadway with parking on both sides of the street and some turn lanes at signalized intersections;
- Osseo Road, a three-lane roadway with a continuous center turn lane and bike lanes
- Brooklyn Boulevard, a four-lane undivided roadway, with some turn lanes at signalized intersections; and
- Xerxes Avenue, a four-lane undivided roadway, with some turn lanes at intersections.

Existing transit service in the C Line corridor is provided primarily via Metro Transit Route 19.[5] Route 19 operates approximately every 10 minutes on weekdays, every 15 minutes on Saturdays, and every 20 minutes on Sundays. It stops frequently, with stops spaced approximately every 1/8 mile. Current service is provided by six 40-foot buses/hour. Service operates entirely within mixed traffic lanes with buses pulling out of the traffic lane to the curb at most stops.

The proposed C Line project will increase transit service in the project corridor. Future transit service in the C Line corridor will include both the Route 19 and the new C Line arterial BRT service.

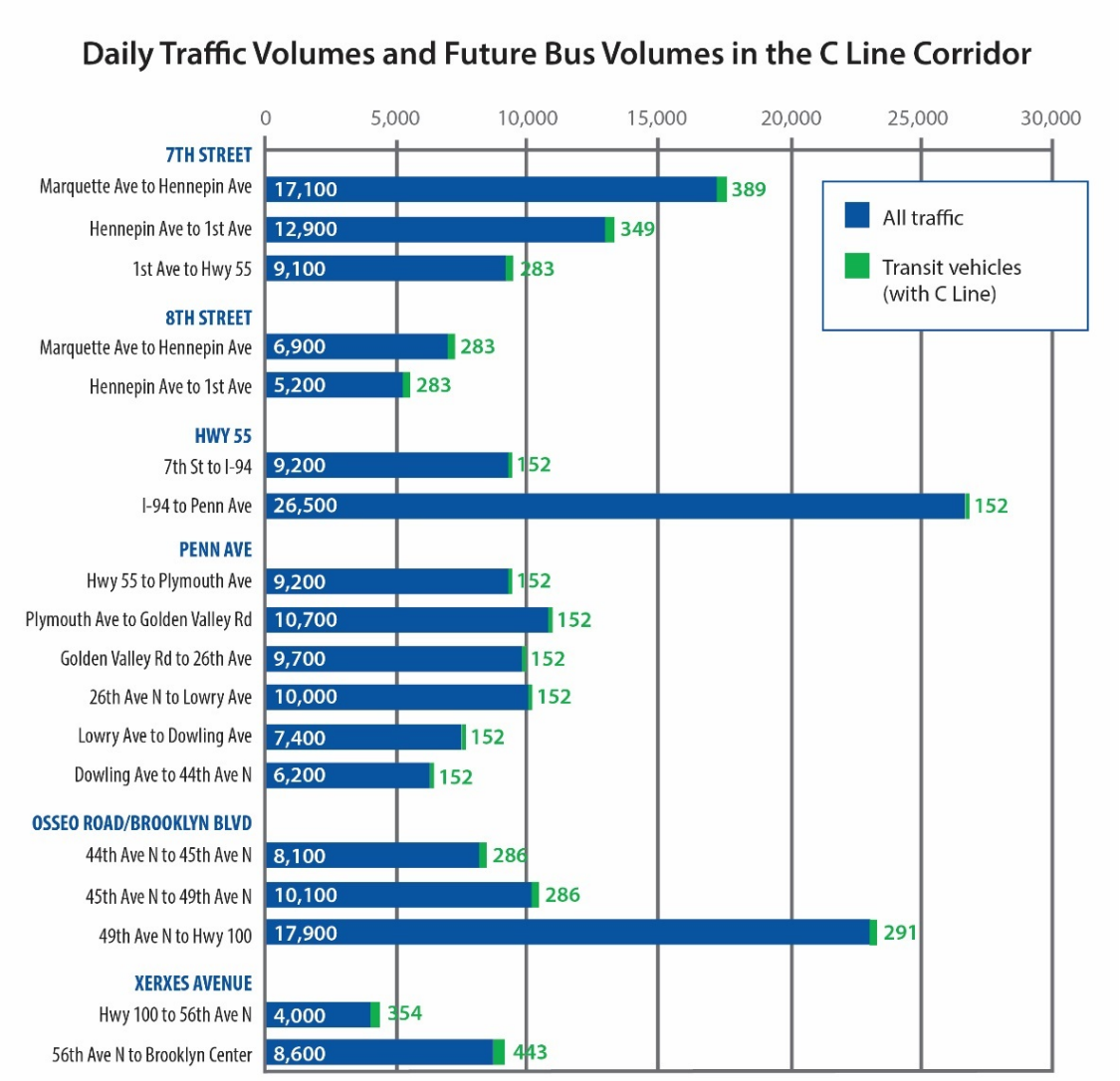
- Route 19 will operate every 30 minutes on weekdays, utilizing two 40-foot buses/hour
- C Line will operate every 10 minutes on weekdays, utilizing six 60-foot articulated buses/hour
- Routes 5 and 22 will continue to operate on 7th and 8th Streets in downtown Minneapolis

The total number of buses will increase from six to eight buses per peak transit hour in each direction. Both the C Line and Route 19 will operate entirely within mixed traffic lanes. Buses will stop in the traffic lane at the C Line stops with bumpouts. Buses will pull out of the traffic lane, as they do today, at those stops where the station is curbside. Overall passenger capacity will be increased by the use of 60-foot articulated buses for the new C Line service.

[5] Routes 5 and 22 also operate on 7th and 8th Streets in downtown Minneapolis and several routes (i.e., 5, 7, 19, 22, 721, 722, 723, 724, 761, 762, and 801) operate on Brooklyn Boulevard and Xerxes Avenue in Brooklyn Center, to access the Brooklyn Center Transit Center, which is the northern terminus of the proposed Project.

Average daily traffic (ADT) in the C Line corridor is shown in Exhibit 6. Transit vehicles account for 2 – 5 percent of traffic on 7th Street and 8th Street in Downtown Minneapolis, 0.5 – 1.5 percent of traffic on Olson Memorial Highway, 1 – 2.5 percent of traffic on Penn Avenue, 1.5 – 3.5 percent of traffic on Brooklyn Boulevard, and 5 – 9 percent of traffic on Xerxes Avenue near the proposed northern terminus of the Project at the Brooklyn Center Transit Station.[6] With the implementation of the proposed Project, transit vehicles will continue to make up a very small percent of vehicular traffic on these roadways; however, the number and percentage share of people carried by transit in the corridor is expected to increase over time.

Exhibit 6: Average Daily Traffic Volumes (2010-2015) and Future Bus Volumes in the C Line Corridor



Source: MnDOT and City of Minneapolis traffic counts

[6] Transit vehicles account for a higher percentage of overall traffic on Xerxes Avenue relative to other affected roadways because this roadway has comparatively low vehicle traffic volumes and because this roadway serves the existing Brooklyn Center Transit Station.

More frequent transit service in the corridor is not anticipated to result in traffic impacts for the following reasons:

- Transit vehicles account for a very small percentage of ADT (see Exhibit 6).
- Most buses will stop less frequently than under existing conditions.
- The dwell times at transit stations will be less than existing due to near-level, multi-door boarding and electronic ticket vending at stations.
- The use of transit signal priority (TSP) will maintain or improve overall traffic operations in the corridor (i.e., the Project will not cause excessive intersection vehicle delays or vehicle queuing).

Transit Signal Priority (TSP)

There are 40 existing traffic signals along the C Line Corridor, and no new traffic signals will be installed as part of the proposed Project. It is anticipated that some of the existing traffic signals will be modified to include TSP. Analysis and stakeholder discussions will be conducted within the detailed design and engineering phase to determine which of the 40 traffic signals along the C Line corridor will be modified for TSP. Signals identified for TSP will be modified to provide the necessary TSP detector, firmware, equipment, and signal controller. In some cases, existing signal controllers at intersections may already be compatible with new TSP equipment and may not require installation of a new signal controller.

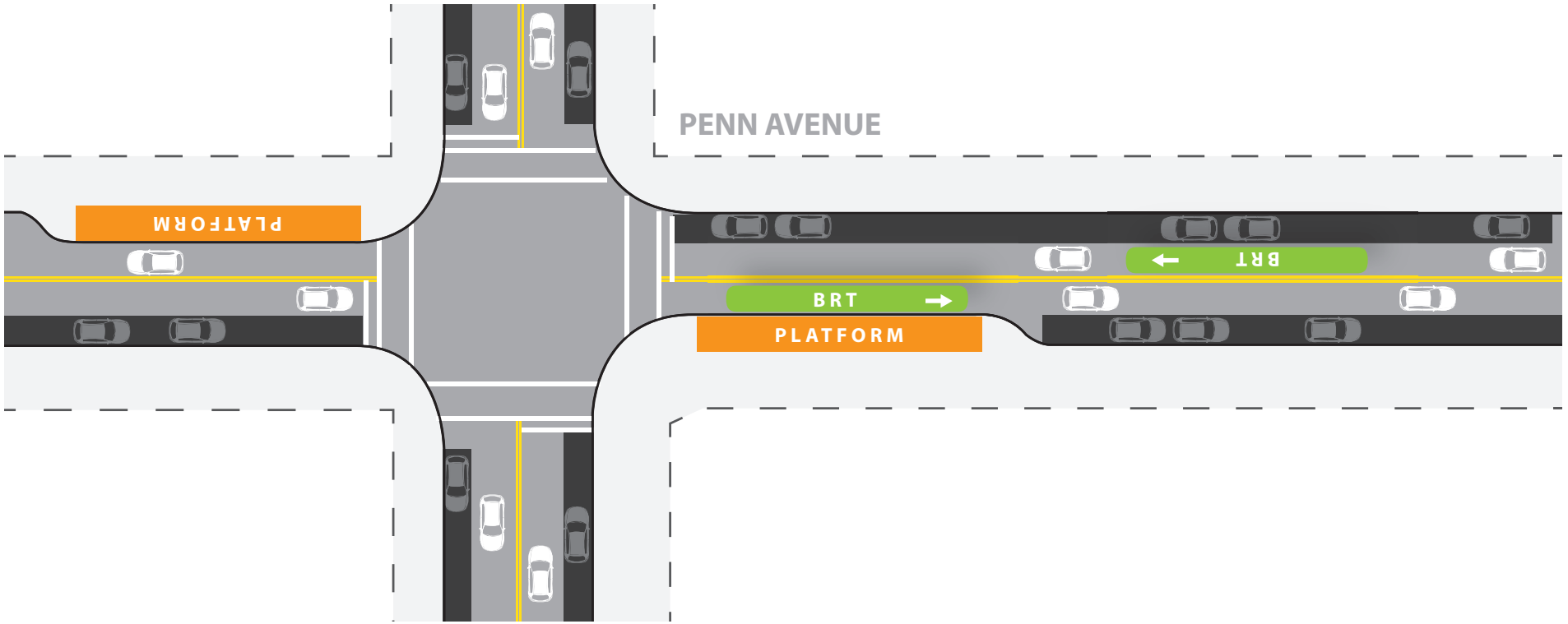
TSP has the potential to increase person-throughput at intersections and decrease person-delay by moving more people (on transit) through an intersection faster. However, this may also cause an increase in delay for vehicles using the cross-streets. This increase in cross-street delay is generally not expected to cause/increase congestion (i.e., excessive delay and queuing). At TSP locations where cross-street delay is a concern, traffic signal systems will be "optimized" to balance delays to transit passengers and to people using the cross-streets. Such an optimized system could, for example, only place a TSP request when the bus is behind schedule by a certain amount of time, or when the passenger load exceeds a certain threshold. These factors will be carefully balanced and designed in order to minimize delays and optimize travel speeds for users of all modes.

Transit signal priority implementation as part of the C Line project is not anticipated to result in traffic impacts (i.e., excessive intersection delay and/or queuing).

Platform Bumpouts

The C Line project will construct bumpouts at 14 of the 37 platform locations (see Exhibit 3 and Attachment 1 for the locations of these improvements). Currently, buses pull out of the travel lanes to stop at these locations. With the implementation of this Project, buses will stop in the curbside travel lanes without weaving, as illustrated in Exhibit 7. A traffic study was completed using the VISSIM model to assess traffic impacts with changes in transit service and proposed bumpouts with buses stopping in the traffic lane. The results of this analysis indicated that the proposed bumpouts on Penn Avenue are not anticipated to result in traffic impacts.

Exhibit 7
Bumpout Concept for C Line Station



The proposed bumpouts will also result in the elimination of four-to-five on-street parking spaces at each of the proposed bumpout locations, particularly along the Penn Avenue segment of the corridor, to accommodate a 60' platform plus tapers (a total of approximately 100'). On-street parking is currently permitted along both sides of Penn Avenue. Based on a parking analysis conducted in 2014 (see Attachment 5), there is an adequate supply of parking in the area.

A detailed traffic study was conducted in the Penn Avenue section of the corridor in 2014 to determine the potential for traffic impacts with the proposed C Line service changes, including proposed bumpouts. The technical memorandum for this study is included in Attachment 5. The study utilized VISSIM to prepare 2035 traffic forecasts.[7] Based on this analysis, all intersections along Penn Avenue are expected to operate at Level of Service D or better with the proposed C Line service changes and bumpouts (see Exhibit 8). As a result, proposed bumpouts on Penn Avenue are not anticipated to result in traffic impacts.

Exhibit 8: 2035 Traffic Level of Service along Penn Avenue with C Line Service and Bump-Outs

	P.M. Peak Hour	
Penn Avenue[1] Intersections	**Level of Service**	**Average Vehicle Delay**
Penn/44th Avenue	C	29 sec.
Penn/Dowling Avenue	C	21 sec.
Penn/Lowry Avenue	C	25 sec.
Penn/West Broadway Avenue	D	43 sec.
Penn/Golden Valley Road	B	19 sec.
Penn/Plymouth Avenue	C	24 sec.

[1]Source: SRF Consulting Group, Inc., Transportation System Conditions Technical Memorandum for the Penn Avenue Community Works Project, 2014 (Attachment 5).

Along 7th Street and 8th Street in downtown Minneapolis, C Line stations will utilize existing bus stop locations with enhancements (see Exhibit 2 and Attachment 1). Final station design is subject to further coordination with partner agencies. Bumpouts will be constructed at Nicollet Mall and Hennepin Avenue as components of a general transit improvement project (see 7th Street Transit Advantage correspondence in Attachment 6) prior to C Line operations. No traffic impacts are anticipated in the downtown area.

Along Olson Memorial Highway, the proposed C Line stops are curbside platforms and are not anticipated to restrict roadway capacity. No traffic impacts are anticipated in this area. Along Brooklyn Boulevard in Brooklyn Center, the proposed C Line station is anticipated to use curbside platforms and will not restrict roadway capacity. As a result, no traffic impacts are anticipated in this area.[8]

[7] VISSIM is a specialized traffic analysis software used to measure changes in vehicle- and person-delay resulting from a number of in-road factors, including transit operations.

[8] Regional solicitation request located at: http://www.metrocouncil.org/Transportation/Planning-2/Transportation-Funding/Regional-Solicitation/Submitted-Applications/TRANSIT-EXPANSION/2139MetroTransit.aspx

F. CO HOT SPOTS

If there are serious traffic impacts at any affected intersection and if the area is in an air quality non-attainment area for CO, demonstrate that CO hot spots will not be created as a result of the project.

The Twin Cities Metro area including Hennepin County is considered a CO maintenance area according to the U.S. Environmental Protection Agency (EPA).[9] As documented in Part E, this Project is not anticipated to result in substantial traffic impacts.

G. PM2.5 AND PM10 HOT SPOTS

If there are serious traffic impacts at any affected intersection, and if the area is a nonattainment or maintenance area for any particulate matter (PM2.5 or PM10), then demonstrate that PM2.5 or PM10 "hot spots" will not result. In nonattainment areas, interagency concurrence and documentation must be attached. If the proposed project is not in a non-attainment or maintenance area for PM2.5 and PM10, then state this in the discussion. Refer to the non-attainment/maintenance area maps at:
http://epa.gov/airquality/greenbk/index.html **to determine if the project is located in an area that meets all National Ambient Air Quality Standards.**

Per the EPA Green Book, the C Line project is not in a non-attainment or maintenance area for PM-2.5[10] or PM-10[11]. As documented in Part E, this Project will not result in any significant traffic impacts.

H. HISTORIC RESOURCES

Describe any cultural, historic, or archaeological resources located in the immediate vicinity of the proposed project and the impact of the project on the resources. Show these resources on a map. FTA initiates all consultations per Section 106 of the National Historic Preservation Act (NHPA). FTA also makes a determination of "No Effect/No Historic Properties" or "No Historic Properties Affected," if no historic resources or potential to affect resources exists. FTA requests concurrence for this determination from the appropriate State Historic Preservation Office (SHPO) or Tribal Historic Preservation Office (THPO). SHPO/THPO concurrence must be included as an attachment before NEPA approval. If an "Adverse Effect" determination is made as a result of the proposed project, rather than a "No Effect/No Historic Properties" or "No Historic Properties Affected" determination, then FTA may request a higher NEPA class of action to evaluate alternatives or

[9] Listed CO designated sites available at: https://www3.epa.gov/airquality/greenbook/cbtc.html
[10] Listed PM2.5 (2012) designated sites available at: https://www3.epa.gov/airquality/greenbook/kbtc.html
[11] Listed PM10 (1987) designated sites available at: https://www3.epa.gov/airquality/greenbook/pbtc.html

mitigation measures to deter these adverse effects. For more about Section 106 consultations: http://www.achp.gov/106summary.html. If the project has potential effects to NRHP-eligible or listed projects, the Section 106 process must be followed: http://www.achp.gov/regsflow/html. Projects involving modifications to historic buildings or structures should comply with the *Secretary of the Interior Standards for the Rehabilitation of Historic Structures*, which is available from the SHPO/THPO and http://www.nps.gov/hps/TPS/tax/rhb/stand.htm.

On October 16, 2014, FTA initiated the Section 106 process with the Minnesota Historic Preservation Office (MnHPO) for the Project, under implementing regulations for Section 106 of the National Historic Preservation Act (NHPA, 16 USC 470) at 36 CFR Part 800. On July 30, 2015, FTA sent invitations to potential Section 106 consulting parties, including the Minneapolis Heritage Preservation Commission (HPC), the City of Brooklyn Center, and tribal organizations. The Minneapolis HPC accepted in August 2015 and the Minneapolis Park and Recreation Board (MPRB) was added as a consulting party in December 2015.
A summary of the Section 106 process is included below; all documentation of the consultation process is included in Attachment 7.

Area of Potential Effect
In correspondence dated July 9, 2015, FTA provided the MnHPO with a Section 106 Compliance Plan and the area of potential effects (APE) for the Project. The APE is noncontiguous, generally including the properties adjacent to and visible from each of the 37 proposed station platforms. The number and extent of properties included in the APE varies by location based on whether a C Line station shelter will replace an existing shelter, relocate an existing shelter, or introduce a new shelter. Detailed maps of the APE are included in Attachment 7. The MnHPO concurred with the APE in a letter dated August 13, 2015.

Eligibility and Effects Determination
Phases I and II architectural history studies for properties within the APE were completed in 2015. The full Phases I and II report is included in Attachment 7. The Phase I architectural history survey recorded all elements of the built environment older than 45 years within the APE with digital photographs and architectural descriptions. In total, 118 properties were inventoried. Of those Phase I properties, two are currently listed in the National Register of Historic Places (NRHP), and 15 properties were found to be potentially eligible for listing in the NRHP and were further evaluated. Findings regarding those 17 properties are summarized in Exhibit 9.

Exhibit 9: Summary of Historic Property Eligibility and Effects Findings

	Eligibility Finding	**Effects Finding**
Crystal Lake Cemetery and Chapel	**Not Eligible.** This property was evaluated for NRHP eligibility. FTA finds that the property is not eligible for listing in the NRHP.	N/A
Victory Memorial Parkway	**Eligible historic district.** This property was previously determined to be eligible for NRHP listing in 2005 as a historic district. FTA finds that the proposed	This property was originally within the APE for a station planned at Osseo

	historic district remains eligible under Criteria A, B and C.	Rd. and 46th Ave. N. The station is no longer being considered and, therefore, the Project would have No Effect on the historic property.
Olson Memorial Highway	**Not Eligible.** This property was previously determined to be not eligible for listing in the NRHP in 2012. The property was re-evaluated, and FTA finds that this property is not eligible for listing in the NRHP.	N/A
Floyd B. Olson Memorial Statue	**Eligible.** This property was previously determined to be eligible for NRHP listing in 1998 and 2012. The historic integrity of the property was reviewed and a boundary was established. FTA finds that the property remains eligible under Criterion C.	No Adverse Effect
Girard Terrace West	**Not eligible.** The three buildings of this property were evaluated for NRHP eligibility. FTA finds that the property is not eligible for listing in the NRHP.	N/A
The State Theatre	**Eligible.** This property was previously considered by SHPO to be eligible for listing in the NRHP. FTA finds that the property remains eligible under Criteria A and C.	This property was originally within the APE for a station planned at 8th St. and Hennepin Ave. The station is no longer being considered and, therefore, would have No Effect on the historic property.
Midwest Plaza	**Not eligible.** This property was recently evaluated for eligibility as part of the Nicollet-Central Streetcar Section 106 process. To ensure consistency, the eligibility finding was coordinated between these two projects. MnDOT's Cultural Resources Unit has made a finding that the property is not eligible for listing in the NRHP.	N/A
IDS Center	**Eligible.** This property was previously	No Adverse Effect

	determined to be eligible for listing in the NRHP in 1995. The historic integrity of the property was re-assessed, and FTA finds that the property remains eligible under Criteria A and C and Criteria Consideration G.	
Dayton's Department Store	**Eligible.** This property was previously determined to be eligible for NRHP listing in 2012. The historic integrity of the property was re-assessed, and FTA finds that the property remains eligible under Criterion A.	No Adverse Effect
Norwest Center Tower	**Eligible.** This property was evaluated for NRHP eligibility. FTA finds that the property is eligible for listing in the NRHP under Criteria A and C and Criteria Consideration G.	No Adverse Effect
The Minneapolis Club	**Eligible.** This property was previously determined to be eligible for NRHP listing in 1995. The period of significance and the historic integrity of the property were re-assessed. FTA finds that the property remains eligible under Criterion A.	No Adverse Effect
St. Olaf Catholic Church	**Eligible.** This property was evaluated for NRHP eligibility. FTA finds that the property is eligible for listing in the NRHP under Criterion C and Criteria Consideration A.	No Adverse Effect
Hennepin County Government Center	**Not Eligible.** This property was evaluated for NRHP eligibility. Although its role in local government and community planning and development may meet Criterion A, and its design and association with architect John Carl Warnecke may meet Criterion C, it does not meet Criteria Consideration G. FTA finds that the property is not eligible for listing in the NRHP.	N/A
Hennepin County Medical Center	**Not Eligible.** This property was evaluated for NRHP eligibility. Although its role in local health care may meet Criterion A, and its architectural design may meet Criterion C, it does not meet Criteria Consideration G. FTA finds that the property is not eligible for listing in the NRHP.	N/A
Lincoln Bank Building	**Listed in NRHP**	This property was

		originally within the APE for a station planned at 8th St. and Hennepin Ave. The station is no longer being considered and, therefore, the Project would have No Effect on the historic property.
Pence Automobile Company Building	**Listed in NRHP**	This property was originally within the APE for a station planned at 8th St. and Hennepin Ave. The station is no longer being considered and, therefore, would have No Effect on the historic property.
1237-1239 Penn Avenue N.	**Eligible.** This property was evaluated for NRHP eligibility. FTA finds that the property is eligible for listing in the NRHP under Criterion A as a contributing property to the Homewood Historic District.	No Adverse Effect

Effects Finding

FTA's final Section 106 eligibility and effects determination for the Project, dated August 2, 2016, found that there are eleven properties listed in or eligible for listing in the NRHP within the APE as depicted in Exhibit 9, and that the Project will have No Adverse Effects on these historic properties. In correspondence dated September 2, 2016, MnHPO concurred with the FTA findings. Documentation of the FTA determination, MnHPO concurrence and associated correspondence is included in Attachment 7.

The construction activities will occur entirely within existing transportation right-of-way, disturbed previously during construction of existing infrastructure, including roadways, utilities, sidewalks, etc. As a result, the potential for effects to archaeological resources is low and no additional studies were undertaken for the archaeological purposes of Section 106. To ensure that proper care is taken in the case of unanticipated or inadvertent finds of archaeological resources, Metro Transit will incorporate best management practices (BMPs), and implement an unanticipated discoveries plan (UDP) as part of the construction contract documents. The UDP was developed in coordination with the Section 106 consulting parties as part of the Section 106 process and is included in Attachment 7.

I. VISUAL QUALITY

Describe the existing visual setting, identify any sensitive views/viewers, and describe the visual impact of the proposed project.

The visual character of the corridor is mainly urban, composed of vehicle (bus and automobile) oriented streets with a mix of commercial/retail and industrial buildings, multi-unit residential buildings (old, rehabilitated old, and modern), and single family residential neighborhoods. The C Line will operate through the following settings:

- The section between the 7th Street Garage and 7th/8th Streets and Park Avenue is highly urbanized in downtown Minneapolis and includes the Target Field and Target Center sports facilities, retail areas, and high density office and residential buildings. ADT on 7th Street ranges between 13,000 and 17,500 for the length of the C Line alignment. ADT on 8th Street ranges between 5,000 and 7,000 for the length of the C Line alignment.
- The section along Olson Memorial Highway between Penn Avenue and the Seventh Street Garage includes low to medium density housing with some institutional and low density offices. ADT is approximately 23,400.
- The section along Penn Avenue and Osseo Road between Olson Memorial Highway and Highway 100 is primarily single family residential with some institutional land uses and some neighborhood retail nodes. ADT along Penn Avenue ranges from 5,200 to 10,700 vehicles per day.
- The section along Brooklyn Boulevard and Xerxes Avenue to the Brooklyn Center Transit Center is a mix of low density residential, commercial/retail, and surface parking lots. ADT ranges from 8,100 to 17,300 along Brooklyn Boulevard.

Along the entire corridor, residents and others adjacent to the corridor have views of the streets, sidewalks, bus shelters, adjacent land uses and boulevard plantings.

The C Line project will not substantially alter the overall visual setting within the Project area. No property will be acquired, and streets will not be widened. New transit shelters will be installed as discussed in Section A (Detailed Project Description). Although the new shelters will be larger and more visible, the replacement and/or addition of these shelters will be designed to fit the existing visual setting of the area. A number of shelters will be located on bumpouts, which will somewhat change the appearance of these intersections, but will not change the overall urban visual setting. Stations will be sized to fit the context of each individual intersection and the scale of adjacent buildings.

See Exhibit 4 for renderings of the proposed stations. The addition of specialized vehicles and the increase in bus service frequency will not create substantial visual changes, as buses will still only make up 1-5 percent of the traffic on the corridor.

J. NOISE

Compare distance between the center of the proposed project and the nearest noise receptor to the screening distance for this type of project in FTA's noise and

vibration guidelines (Section 4.2 in FTA guidelines). If the screening distance is not achieved, attach a "General Noise Assessment" with conclusions. FTA guidelines can be found at:
www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf**.**

Potential noise impacts from the proposed C Line project have been evaluated using the general noise assessment methodology contained in Chapter 5 of the Federal Transit Administration (FTA) noise and vibration guidance manual (Report FTA-VA-90-1003-06, May 2006). Noise sensitive land uses were identified, project noise levels were predicted based on operational information, and noise impacts from project noise sources were assessed by comparing project noise levels with estimated existing noise. Existing ambient noise in the corridor was estimated based on: ambient noise measurements conducted for other transit projects in the study area, typical daily traffic volumes ranging from 6,000 to 23,000 vehicles per day, and FTA guidance for ambient noise conditions due to population density and distance from major noise sources (interstate highways I-94 and I-394, and freight rail lines). The proposed C Line would replace 12 existing Metro Transit Route 19 buses per peak transit hour (six buses per peak hour in each direction) with 16 buses per peak transit hour (8 buses per peak hour in each direction) for a total change in operations of four additional buses per peak hour.

Typically, the project noise as defined by FTA is only the change in operations or service due to the Project (four additional buses per peak hour). However, in order to ensure that the noise assessment was conservative and that there would be no noise impacts due to the Project, all proposed C Line bus operations (16 buses per peak hour) were assessed as the source of project noise. The FTA general noise assessment yielded a project noise level of 56 dBA (peak-hour Leq), and the existing ambient noise level was conservatively estimated to be greater than 60 dBA (peak-hour Leq) in a densely-populated urban environment such as the C Line corridor. With these levels, no noise impact is predicted as a result of the C Line project according to FTA noise impact criteria. Refer to the noise assessment technical noise memorandum (Attachment 8) for more details.

K. VIBRATION

If the proposed project includes new or relocated steel rails/tracks, compare the distance between the center of the proposed project and the nearest vibration receptor to the screening distance for this type of project in FTA's guidelines (Section 9.2 in FTA guidelines). If the screening distance is not achieved, attach a "General Vibration Assessment" with conclusions. FTA guidelines can be found at:
www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf**.**

Per FTA's *Transit Noise and Impact Assessment* manual, for projects that involve rubber-tire vehicles, such as the C Line project, vibration impact is unlikely except in unusual situations, including vibration sensitive land uses near expansion joints, speed bumps or uneven road

surfaces, or buses operating in or very close to a vibration sensitive building[12]. There are no highly vibration sensitive land uses along the Project corridor, and C Line buses would share existing road lanes (including any current roadway irregularities) with vehicle, bus and truck traffic. Therefore, none of the guidelines for conducting a vibration screening for the C Line are met, and there are no locations with the potential for vibration impact on the Project. No further vibration assessment is required.

L. ACQUISITIONS & RELOCATIONS REQUIRED

Describe land acquisitions and displacements of residences and businesses. Include current use, ownership, and the date and type of property transaction (such as lease or purchase). If FTA funds are used to acquire property or the property is used as local match, then the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (http://www.fhwa.dot.gov/realestate/ua/ualic.htm**) must be followed and documented. No offers or appraisals may occur prior to FTA's approval of a NEPA evaluation.**

The Project will be constructed entirely within existing transportation rights-of-way. No acquisitions or relocations are anticipated.

M. HAZARDOUS MATERIALS

If real property has been acquired, has a Phase I site assessment for contaminated soil and groundwater been performed? If a Phase II site assessment is recommended, has it been completed? What steps will be taken to ensure that human and ecological receptors in the project area are protected from contamination encountered during construction and operation of the project? State the results of consultation with the State agency with jurisdiction over proposed remediation of soil and/or groundwater contamination. Include anticipated effects of the project on asbestos-containing building materials and lead-based paints.

No real property will be acquired for this Project, as the C Line will be constructed entirely within existing transportation rights-of-way. A Phase I assessment was performed for Olson Memorial Highway as part of the Blue Line Extension (Bottineau) LRT environmental review process. A Phase I assessment was also completed for the Penn Avenue Community Works project. This information will be used to identify any properties requiring additional investigation prior to construction.

Metro Transit will perform minor excavation activities in order to complete sidewalk modifications, construct bumpouts, and install lighting, conduit, landscaping, signage and

[12] See Section 9-1 within the *Transit Noise and Vibration Impact Assessment* (FTA document FTA-VA-90-1003-06) for more information about unlikely vibration impacts from rubber-tire vehicles. Document available at: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Noise_and_Vibration_Manual.pdf

other streetscaping improvements. Excavation is expected to be within two feet of the surface through the aggregate / concrete base.

The construction plan will include provisions for the identification of potential hazardous materials and/or contaminated soils uncovered during excavation and site grading. The plan will further include provisions for the temporary cessation of construction for in-place testing of suspect soils and materials, the temporary on-site storage of these soils and/or materials and their proper re-use or disposal from the site. If contaminated soils are encountered during excavation activities, Metro Transit will halt construction activities and contact the Minnesota Pollution Control Agency (MPCA).

N. SOCIAL IMPACTS AND COMMUNITY DISRUPTION

Provide a socio-economic profile of the affected community. Describe the impacts of the proposed project on the community. Identify any community resources that would be affected and the nature and extent of the effect.

This corridor includes a portion of the city of Minneapolis, along with a neighboring suburb, Brooklyn Center. There are approximately 95,000 individuals living within one half mile of the Project (see map in Exhibit 10). Over half (55.5 percent) of residents in the corridor are ethnic minorities. Within this Project area population, 25.5% percent of the people are living below poverty levels. Among those who work, approximately 13 percent use transit as their primary commuting means. Approximately 24 percent of all households do not have a vehicle.[13] For additional demographic detail, refer to Part O, which also provides information regarding Environmental Justice.

Because the Project does not include dedicated runningways and all Project elements will be constructed within existing rights-of-way, the proposed Project will not impact, separate, or isolate any neighborhoods or communities along the corridor.

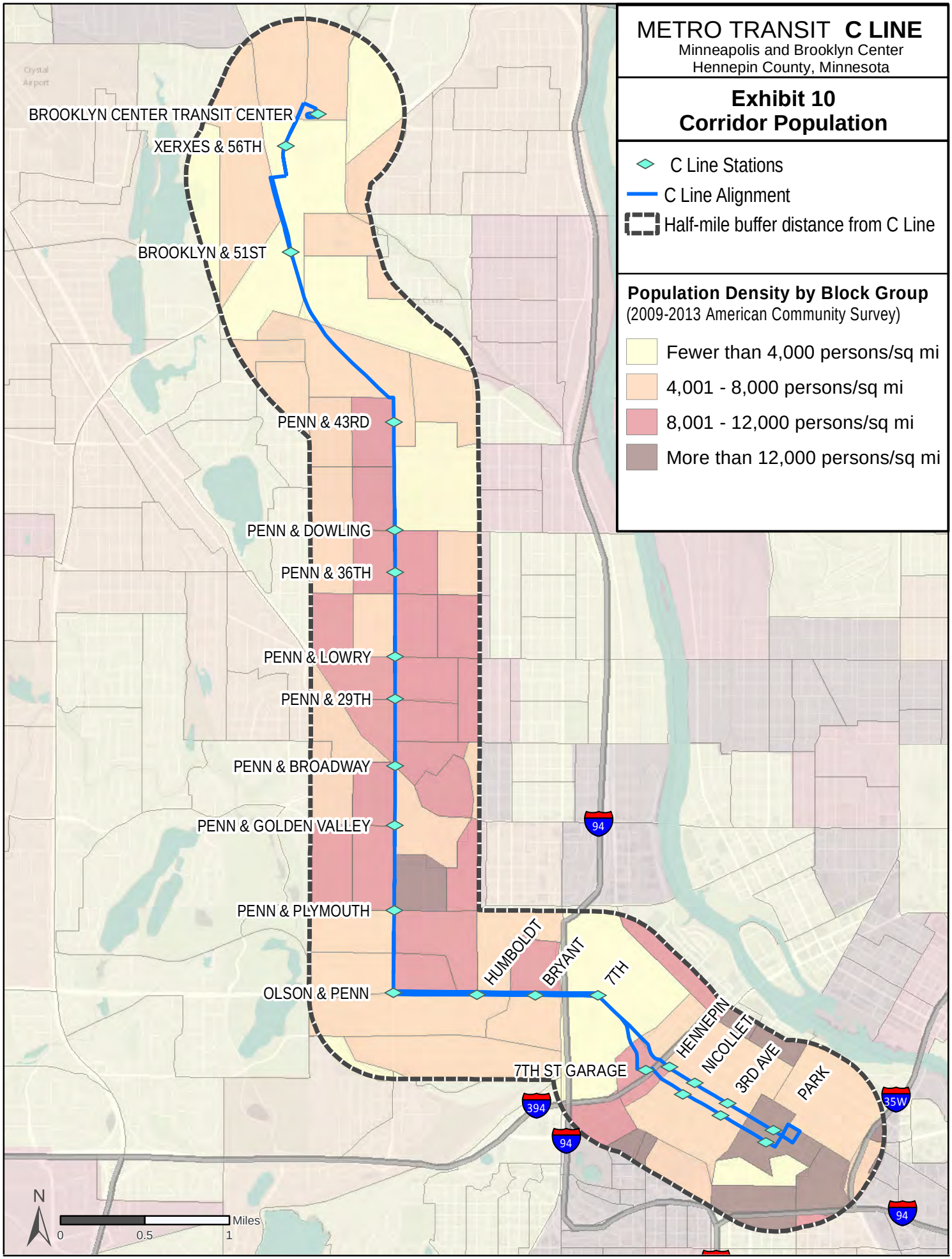
The C Line project area is fully urbanized and contains many community resources (see Exhibit 11). Community resources proximate to the Project include seven colleges, as well as multiple schools, places of worship, job centers, human services, and neighborhood associations. The corridor is also lined with multiple commercial nodes. The Project will not result in permanent impacts to these community resources. Construction impacts, which will be short in duration and minimal in scope, are described in Part V.

The C Line project will positively impact the community's ability to use transit throughout the day while increasing frequency and span of transit service in the corridor, particularly on evenings and weekends. With 10-minute all-day and weekend frequency, the C Line will become the primary transit service in the corridor, serving stations approximately every half mile. Local Route 19 will continue to serve every stop along the corridor (roughly every 1/8 mile), with frequency reduced from 10 minutes to 30 minutes.

[13] 2009-2013 American Community Survey: https://www.census.gov/programs-surveys/acs/

Approximately seven out of 10 existing Route 19 riders are boarding today at locations where C Line stations are planned. Another two out of 10 current riders are within one stop (or roughly 1/8 mile) of a planned C Line station. Only one out of every 10 riders is currently boarding more than one stop away from a planned C Line station. The source of this information is 2013 Quarter 3 automatic passenger counter (APC) data. Electronic APC devices placed on transit vehicles count passengers boarding or alighting vehicles at individual stops.

As a result of this service plan, a small percentage of Route 19 customers who use bus stops between C Line stations will experience a service reduction at their current stops. However, those customers will be able to either transfer from a Route 19 bus to the new service or walk 1-2 blocks to reach a C Line station and the more frequent, premium service and experience it provides.


METRO TRANSIT C LINE
Minneapolis and Brooklyn Center
Hennepin County, Minnesota
Exhibit 10
Corridor Population
C Line Stations
C Line Alignment
Half-mile buffer distance from C Line
Population Density by Block Group
(2009-2013 American Community Survey)
Fewer than 4,000 persons/sq mi
4,001 - 8,000 persons/sq mi
8,001 - 12,000 persons/sq mi
More than 12,000 persons/sq mi
BROOKLYN CENTER TRANSIT CENTER
XERXES & 56TH
BROOKLYN & 51ST
PENN & 43RD
PENN & DOWLING
PENN & 36TH
PENN & LOWRY
PENN & 29TH
PENN & BROADWAY
PENN & GOLDEN VALLEY
PENN & PLYMOUTH
OLSON & PENN
HUMBOLDT
BRYANT
7TH
HENNEPIN
NICOLLET
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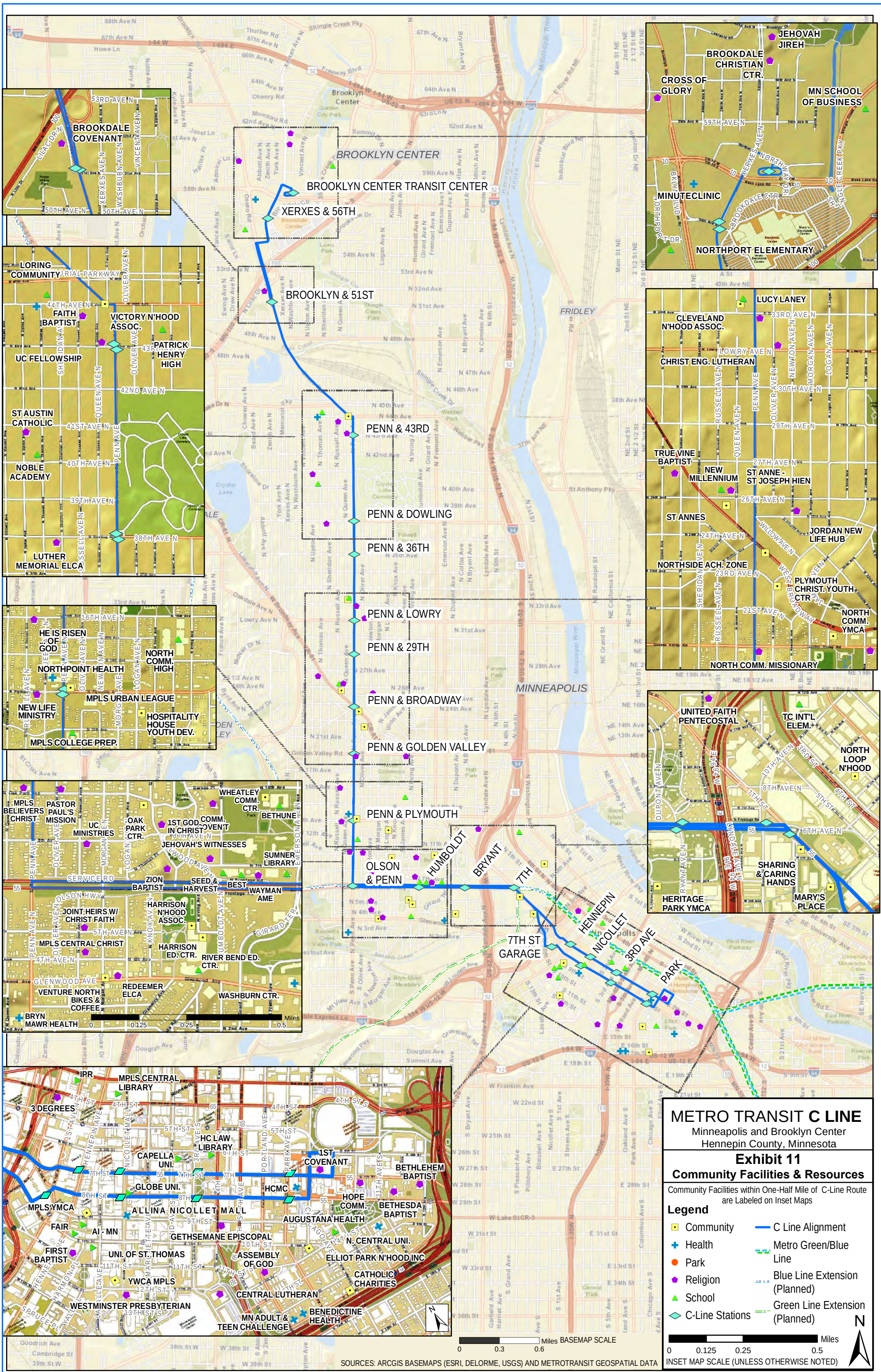


METRO TRANSIT **C LINE**

Minneapolis and Brooklyn Center
Hennepin County, Minnesota

Exhibit 11
Community Facilities & Resources

Community Facilities within One-Half Mile of C-Line Route are Labeled on Inset Maps

Legend

- Community
- Health
- Park
- Religion
- School
- C-Line Stations
- C Line Alignment
- Metro Green/Blue Line
- Blue Line Extension (Planned)
- Green Line Extension (Planned)

N

0 0.125 0.25 0.5 Miles
INSET MAP SCALE (UNLESS OTHERWISE NOTED)

SOURCES: ARCGIS BASEMAPS (ESRI, DELORME, USGS) AND METROTRANSIT GEOSPATIAL DATA

Analysis and community outreach has informed the selection of C Line station locations to best provide access where the majority of customers are currently boarding and alighting. Boarding data indicates that approximately 66 percent of customers are boarding today at future C Line stations and thus, will experience no access impact as a result of the C Line. The Project will minimally impact 28 percent of customers by reducing Route 19 frequency and necessitating a transfer or increasing walk distance by 1/8 mile to reach a station. Only six percent of customers (472 people of nearly 8,000 daily riders) will need to either walk approximately 1/4 mile to get to a station or transfer from local bus service on Route 19 at their current stops. Customer ridership by walk distance to station is summarized in Exhibit 12.

Exhibit 12: Ridership at and Adjacent to C Line Stations (4th Quarter 2013 Metro Transit Data)

Where customers board today / Walk distance to station	**Number of Daily Boardings**	**Percent of Total**
At C Line station locations (No access impact)	5,051	66%
Within 1 stop of C Line station locations (Approximately 1/8 mile additional walk to station)	2,170	28%
Within 2 stops of C Line station locations (Approximately 1/4 mile additional walk to station)	472	6%

The additional walk impact of potential time delay for the small number of customers will be offset by the positive impacts of faster, more reliable service and more comfortable station facilities provided by the Project. Transit signal priority, specialized buses, electronic ticketing, and station design will improve schedule reliability for all transit users. The station platforms and shelters will provide a more comfortable experience for bus patrons.

O. ENVIRONMENTAL JUSTICE

Identify the concentrations of minority and low-income populations in the area. Following FTA guidelines on environmental justice (FTA Circular 4703.1), define "minority" and "low-income" populations, and describe whether or not the project would result in disproportionately high and adverse impacts on minority or low-income populations.

Identification of Minority and Low-Income Populations

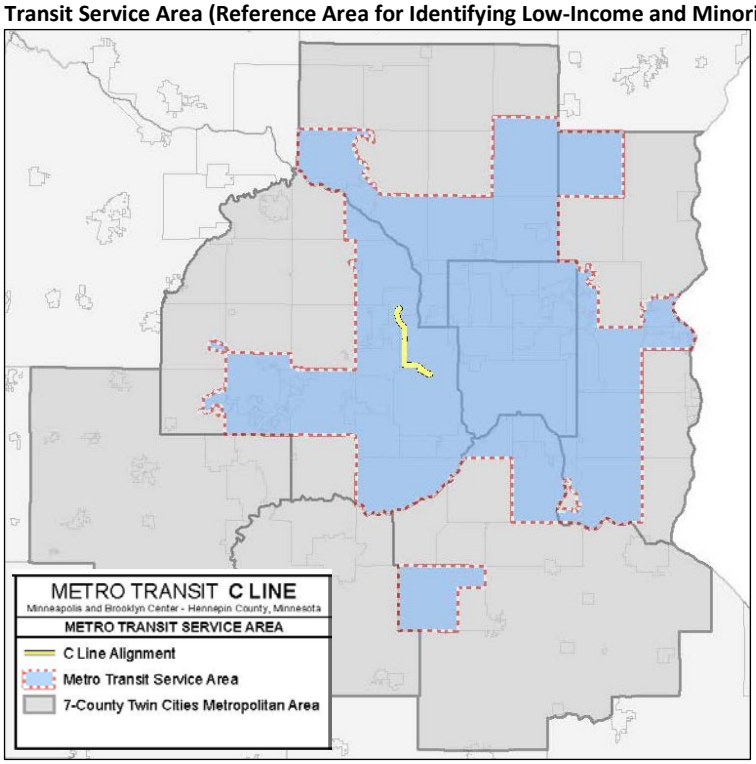
Per FTA guidelines, minority populations are any readily identifiable group or groups of minority persons who live in geographic proximity; similarly, low-income populations are any readily identifiable group or groups of low-income persons who live in geographic proximity[14]. Minority includes persons who are American Indian and Alaska Native, Asian, Black or African American, Hispanic or Latino, and/or Native Hawaiian and other Pacific

[14] See FTA Circular 4703.1 (pages 6 and 7) for additional information about minority and low-income population definitions: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_EJ_Circular_7.14-12_FINAL.pdf

Islander[15]. A low-income person is one whose median household income is at or below the Department of Health and Human Services poverty guidelines[16]. Information from the 2013 American Community Survey data was used to determine these demographic characteristics for the C Line project area.[17]

The population in the C Line project area was compared to the population in the Metro Transit Service Area, which encompasses the core cities of Minneapolis and St. Paul along with 82 suburban communities, to determine if there is disproportionate representation of minority or low income populations in the Project area. The Metro Transit Service Area is outlined in red in Exhibit 13.

Exhibit 13: Metro Transit Service Area (Reference Area for Identifying Low-Income and Minority Populations)



Low-Income Population

Within the Metro Transit Service Area, as shown in Exhibit 14, 10.4 percent of the population is living at or below the poverty guidelines, and is thereby considered "low-income" for purposes of this analysis. Within the C Line project area, 28.6 percent of the population is living at or below the poverty guidelines.

[15] See FTA Circular 4703.1 (page 6) for additional information about the definition of minority populations: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_EJ_Circular_7.14-12_FINAL.pdf

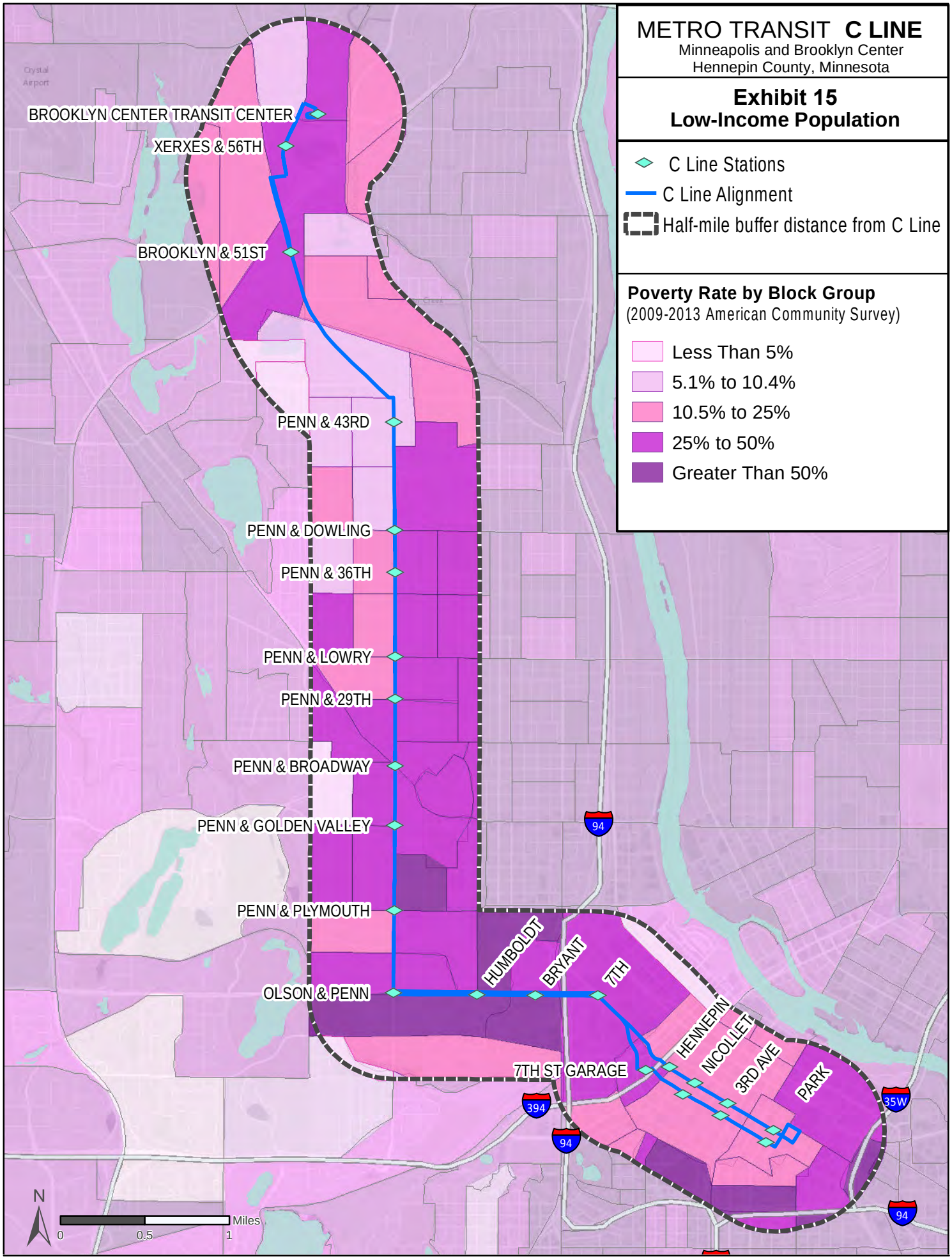
[16] See FTA Circular 4703.1 (page 7) for additional information about the definition of low-income populations: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_EJ_Circular_7.14-12_FINAL.pdf

[17] 2009-2013 American Community Survey: https://www.census.gov/programs-surveys/acs/

Exhibit 14: Low-Income Population (2013 American Community Survey Data)

Geographic Area	Total Population (for whom poverty is calculated)	Number Low-Income	Percent Low-Income
Metro Transit Service Area	2,083,844	216,858	10.4%
Project area	91,807	26,299	28.6%

Exhibit 15 identifies all block groups in the Project area where the poverty rate exceeds the poverty rate in the Metro Transit Service District (over 10.4 percent). These areas have a disproportionately high percent of low income people. A total of 71 of the 86 block groups within 1/2 mile of the C Line exhibit poverty rates greater than 10.4 percent. These block groups are relatively evenly distributed throughout the Project area.


METRO TRANSIT C LINE
Minneapolis and Brooklyn Center
Hennepin County, Minnesota
Exhibit 15
Low-Income Population
C Line Stations
C Line Alignment
Half-mile buffer distance from C Line
Poverty Rate by Block Group
(2009-2013 American Community Survey)
Less Than 5%
5.1% to 10.4%
10.5% to 25%
25% to 50%
Greater Than 50%
BROOKLYN CENTER TRANSIT CENTER
XERXES & 56TH
BROOKLYN & 51ST
PENN & 43RD
PENN & DOWLING
PENN & 36TH
PENN & LOWRY
PENN & 29TH
PENN & BROADWAY
PENN & GOLDEN VALLEY
PENN & PLYMOUTH
OLSON & PENN
HUMBOLDT
BRYANT
7TH
HENNEPIN
NICOLLET
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Minority Population

Within the Metro Transit Service Area, as shown in Exhibit 16, 18.5 percent of the population is of a race other than non-Hispanic white and is thereby considered "minority." Over half (55.5 percent) of the population living in the C Line project area is of a race other than non-Hispanic white, and therefore, a "minority."

Exhibit 16: Minority Population (2013 American Community Survey Data)

Geographic Area	Total Population	Number Minority (Not "White, Non-Hispanic")	Percent Minority
Metro Transit Service Area	2,120,270	361,909	18.5%
Project Area	95,181	52,812	55.5%

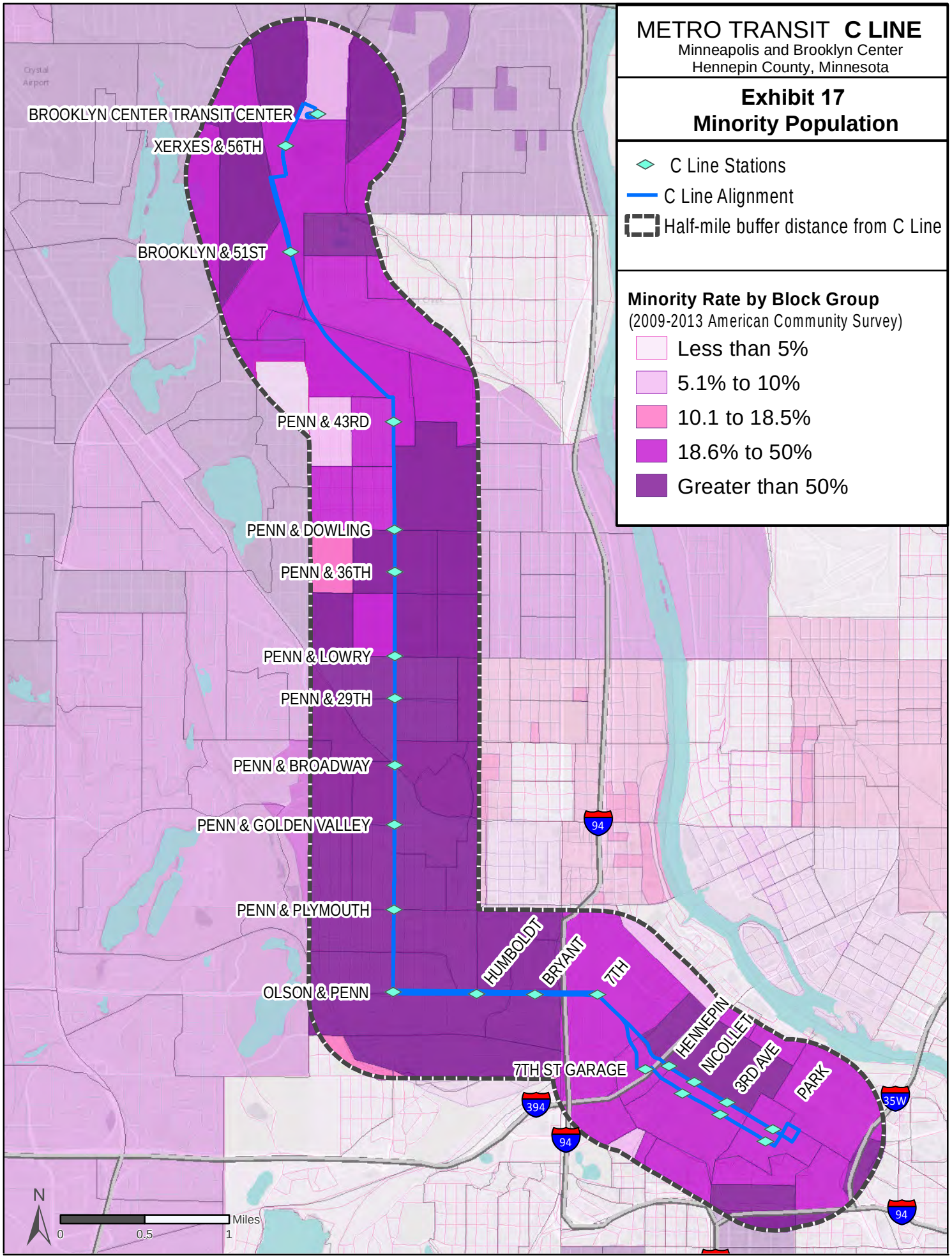
Exhibit 17 shows those block groups in the C Line corridor that have over 18.5 percent minority population. These block groups are considered to have a disproportionate concentration of minority people. Seventy-seven of the 86 block groups in the corridor have a minority population higher than 18.5 percent. Forty-two of the 86 block groups have between 56 and 97 percent minority populations.

Engagement with Environmental Justice Populations

As part of the 2014-16 C Line planning process, Metro Transit conducted outreach to share general information about BRT and receive feedback on proposed station locations.[18] Outreach continued throughout the fall of 2015. The purpose of this community outreach effort was to inform a C Line station plan formally approved by the Metropolitan Council in April of 2016.

Staff engaged neighborhood groups by presenting C Line information at their meetings. Staff also followed up with one-on-one discussions when necessary. Materials were displayed at various open houses, both standalone for the C Line and in conjunction with the Penn Avenue Community Works (PACW) project and the METRO Blue Line Extension (Bottineau LRT/BRT). Staff has also conducted targeted outreach to business and residential stakeholders throughout the corridor. This targeted outreach included direct mailings to businesses and residents within potential station intersections and scheduled open office hours at locations throughout the corridor. A community outreach and engagement coordinator was made available throughout the planning process to establish an ongoing relationship between the Project and community.

[18] C Line Planning Phase Outreach Summary available at: http://www.metrotransit.org/Data/Sites/1/media/abrt/cline/c-line-planning-phase-outreach-summary-spring-2015.pdf


METRO TRANSIT C LINE
Minneapolis and Brooklyn Center
Hennepin County, Minnesota
Exhibit 17
Minority Population
C Line Stations
C Line Alignment
Half-mile buffer distance from C Line
Minority Rate by Block Group
(2009-2013 American Community Survey)
Less than 5%
5.1% to 10%
10.1 to 18.5%
18.6% to 50%
Greater than 50%
BROOKLYN CENTER TRANSIT CENTER
XERXES & 56TH
BROOKLYN & 51ST
PENN & 43RD
PENN & DOWLING
PENN & 36TH
PENN & LOWRY
PENN & 29TH
PENN & BROADWAY
PENN & GOLDEN VALLEY
PENN & PLYMOUTH
OLSON & PENN
HUMBOLDT
BRYANT
7TH
HENNEPIN
NICOLLET
3RD AVE
PARK
7TH ST GARAGE
94
394
35W
N
0
0.5
1
Miles

Burdens and Benefits Identified by Environmental Justice Populations
Concerns identified by environmental justice populations included the following:

- Desire to extend C Line further down Penn Avenue to connect to Southwest LRT: Service planning to determine how bus service and light rail service interact will occur about 18 months prior to the start of light rail service.
- Desire for improved, new shelters on Glenwood, Olson Memorial Highway, and Penn Avenue. The C Line will improve waiting areas at station locations after operations begin. Before then, selected bus stop improvements will continue to be made on the Glenwood, Olson Memorial Highway, and Penn Avenue corridors as part of Metro Transit's Better Bus Stops program[19].
- Desire for Hmong translations at stations to address language and safety barriers to riding transit within the Hmong community. The inclusion of multilingual transit information will be considered on an on-going basis.

Analysis of Impacts to Environmental Justice Populations
As described in previous sections of this document, construction and deployment of the C Line Project's capital elements will not result in substantial impacts to any populations within the Project area. As disclosed in Part N, a small proportion of current transit customers will need to walk further from their current boarding locations to access the C Line stations. This impact is distributed to customers throughout the corridor and is not restricted to any single station location and adjacent demography. The demographic nature of the Project area, with consistent low-income and/or minority populations extended throughout the length of the corridor, means many of these impacted customers will also be low-income and/or minority. However, impacts will not disproportionally impact low-income and/or minority populations relative to the overall Project area. These impacts can be mitigated by either transferring from a Route 19 bus (to continue operating with less frequent service) to a C Line station or walk 1-2 blocks to reach a C Line station with more frequent service.

The Project will not result in disproportionately high or adverse human health and environmental effects, including social and economic effects, on minority and/or low-income populations. It will not remove resources from other projects or negatively impact any other projects in areas with minority or low-income populations. The Project fairly distributes the benefits of improved transit service and facilities among minority and/or low-income and non-minority/non-low-income populations, and does not deny, reduce, or delay the receipt of benefits by minority and low-income populations. C Line fares will utilize the existing fare structure for local transit routes. Any proposed fare changes to the Metro Transit fare structure are subject to a fare equity analysis and must be brought to the Metropolitan Council for decision. In addition, a final C Line service plan will be subject to service change policy review. If services changes meet "major service change" criteria[20] established by the Metropolitan Council, the "four-fifth's rule"[21] will be used to determine if the major service

[19] For more information about the Better Bus Stops program, see the project website at: http://www.metrotransit.org/better-bus-stops
[20] Additional information regarding major service change criteria is available at http://www.metrotransit.org/Data/Sites/1/media/pdfs/titlevi/TitleVIpolicyAfinal.pdf
[21] Additional information regarding the four-fifth's rule is available at http://www.metrotransit.org/Data/Sites/1/media/pdfs/titlevi/TitleVIpolicyBfinal.pdf

change shows evidence of potential for disparate impacts or disproportionate burdens on minority or low-income populations.

P. USE OF PUBLIC PARKLAND AND RECREATION AREAS

Indicate parks, recreational areas, wildlife refuges, and/or trails on a project location map (Section 4(f) resources). Describe how the activities and purposes of these resources will be affected by the project. Based on the definitions of use outlined in 23 CFR § 774, determine if the project will result in an actual (direct), temporary, or constructive (proximity impacts) use of the Section 4(f) resource. Locate Section 4(f) properties on project map. Refer to:
http://www.section4f.com/home.htm**.**

A map of the parks and recreational resources in the vicinity of proposed C Line stations is provided in Exhibit 18. Thirty-five (35) parks and recreation resources are located within 1/2 mile of the Project sites. These resources are listed in Exhibit 19.

With one exception, the C Line project is not anticipated to result in any direct, temporary or constructive use of parks, recreation areas or historic resources pursuant to 23 CFR § 774, also known as Section 4(f). The exception is the Xerxes & 56th station in the City of Brooklyn Center adjacent to the Twin Lakes Regional Trail maintained by the Three Rivers Park District (see Exhibit 18). Temporary construction activities will occur on the trail to install the BRT platform near this area but will not result in permanent use or damage to the trail. Appropriate mitigating measures will be taken to ensure there are no residual impacts to the site. Trail connections will be maintained during construction, and the trail will be restored to its previous condition. With assistance from FTA, Metro Transit coordinated with the agency having jurisdiction over the 4(f) facility, the City of Brooklyn Center, to facilitate a *de minimis impact* determination. Three Rivers Park District was also included in coordination activities, as the trail exists under a limited use permit between the City and Park District. In April 2016, Metro Transit published notice in a local newspaper (Sun Post) for a 30-day comment period seeking public comment regarding the proposed *de minimis impact* finding. The notice was also posted adjacent to the trail at the intersection of Xerxes Avenue and 56th Avenue for the same period. No public comments were received. Attachment 9 contains Section 4(f) coordination materials: January 19, 2016 correspondence from Metro Transit to City of Brooklyn Center detailing the expected impacts; respective February 8 and February 12, 2016 letters from the City of Brooklyn Center and Three Rivers Park District supporting the proposed *de minimis* impact determination; and documentation of public notices. Metro Transit will continue coordination with the City of Brooklyn Center and Three Rivers Park District as planning and construction proceed.

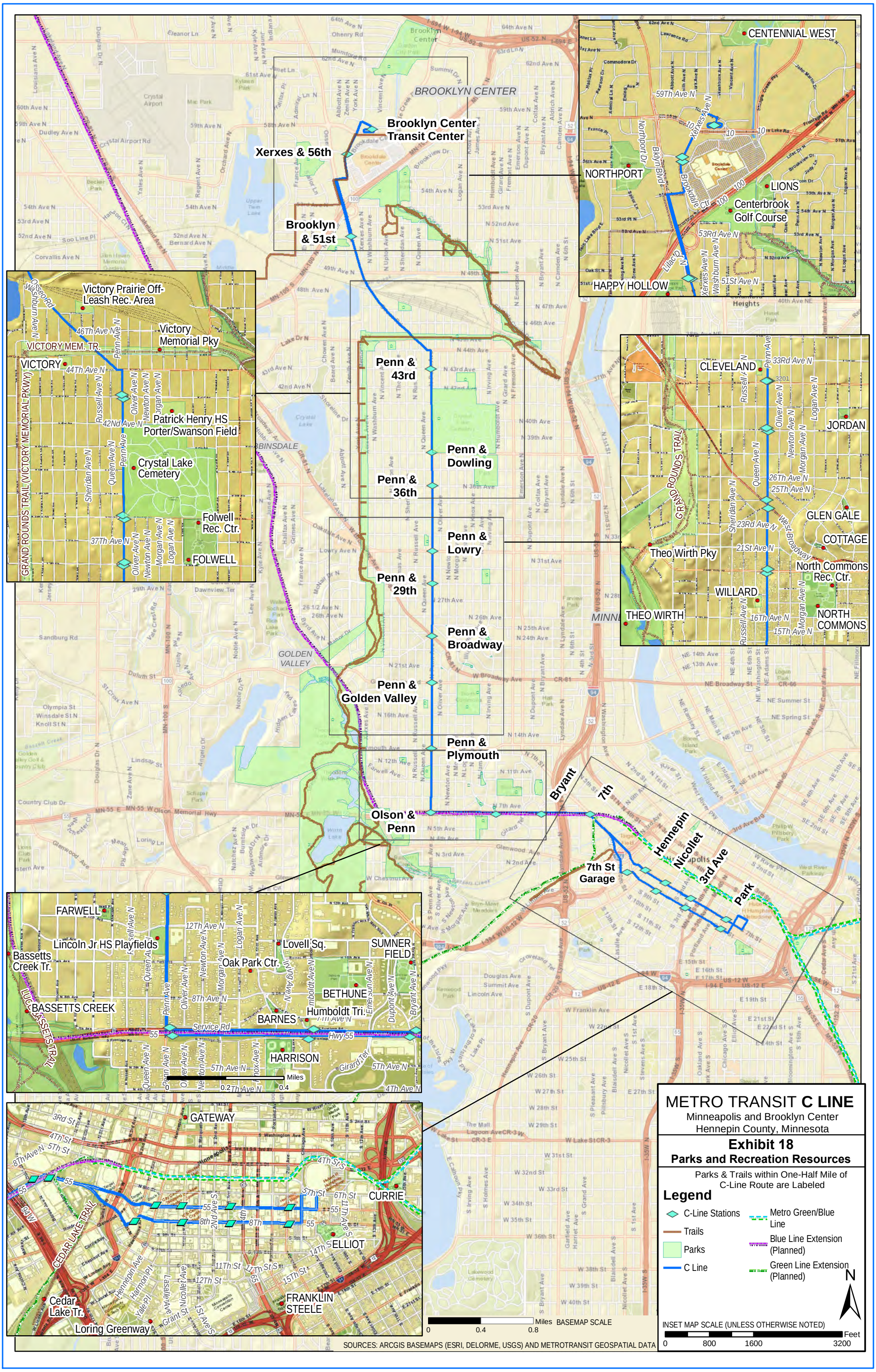

BROOKLYN CENTER
Brooklyn Center Transit Center
Xerxes & 56th
Brooklyn & 51st
Penn & 43rd
Penn & Dowling
Penn & 36th
Penn & Lowry
Penn & 29th
Penn & Broadway
Penn & Golden Valley
Penn & Plymouth
Olson & Penn
CENTENNIAL WEST
NORTHPORT
LIONS
Centerbrook Golf Course
HAPPY HOLLOW
Victory Prairie Off-Leash Rec. Area
Victory Memorial Pky
VICTORY MEM. TR.
VICTORY
Patrick Henry HS Porter/Swanson Field
Crystal Lake Cemetery
Folwell Rec. Ctr.
FOLWELL
CLEVELAND
JORDAN
GLEN GALE
COTTAGE
Theo Wirth Pky
North Commons Rec. Ctr.
WILLARD
THEO WIRTH
NORTH COMMONS
FARWELL
Lincoln Jr HS Playfields
Lovell Sq.
SUMNER FIELD
Bassetts Creek Tr.
Oak Park Ctr.
BETHUNE
BASSETTS CREEK
Humboldt Tri.
BARNES
HARRISON
GATEWAY
CURRIE
ELLIOT
FRANKLIN STEELE
Cedar Lake Tr.
Loring Greenway
Bryant
7th
Hennepin
Nicollet
3rd Ave
7th St Garage
Park
GOLDEN VALLEY
Miles
0
0.2
0.4
0.8
METRO TRANSIT C LINE
Minneapolis and Brooklyn Center
Hennepin County, Minnesota
Exhibit 18
Parks and Recreation Resources
Parks & Trails within One-Half Mile of C-Line Route are Labeled
Legend
C-Line Stations
Trails
Parks
C Line
Metro Green/Blue Line
Blue Line Extension (Planned)
Green Line Extension (Planned)
N
INSET MAP SCALE (UNLESS OTHERWISE NOTED)
Feet
0
800
1600
3200
SOURCES: ARCGIS BASEMAPS (ESRI, DELORME, USGS) AND METROTRANSIT GEOSPATIAL DATA

Exhibit 19: List of Parks & Recreation Resources within 1/2 Mile of Project Sites

Resource Name	Address	Approximate distance from nearest station
Centennial Park West	6254 Brooklyn Drive	0.36 miles N of Location 19 (BCTC)
Twin Lakes Regional Trail	From Twin Lakes boat launch in Robbinsdale, connect to Crystal Lake Regional Trail	Intersects with the Xerxes & 56th Station
Northport Park	5512 Sailor Lane	1,056 feet W of Location 18S (Southbound Xerxes/56th Ave)
Lions Park	5501 Russell Ave N	0.44 miles NE of Location 17N (Northbound Brooklyn Blvd & Hwy 100)
Centerbrook Golf Course	5500 Lilac Drive N	636 feet E of Location 17N (Northbound Brooklyn Blvd & Hwy 100)
Happy Hollow Park	5030 Abbott Ave N	300 feet SW of Location 16S (Southbound Brooklyn Blvd & 51st)
Victory Prairie Off-Leash Recreation Area	4701 Russell Ave N	2,470 feet N of Location 14S (Northbound Penn Avenue & 43rd Avenue)
Victory Memorial Parkway	From Theodore Wirth Parkway to 45th Avenue North then east to Lyndale Avenue North	1,150 feet N of Location 14S (Northbound Penn Avenue & 43rd Avenue)
Victory Memorial Parkway Regional Trail	Trail runs along Theodore Wirth Parkway and Victory Memorial Parkway	1,190 feet N of Location 14S (Northbound Penn Avenue & 43rd Avenue)
Victory Park	Upton Avenue North and 44th Avenue North	1,530 feet NE of Location 14S (Northbound Penn Avenue & 43rd Avenue)
Patrick Henry High School - Porter and Swanson Field	1900 N 42nd Ave	960 feet E of Location 14N (Northbound Penn & 43rd)
Washburn-McReavy Cemetery	East of Penn Avenue between 42nd and Dowling Avenues	40 feet E of Location 13S (Southbound Penn & Dowling)
Folwell Park	Knox Avenue North and 36th Avenue North	0.31 miles E of Location 13N (Northbound Penn & Dowling)
Folwell Park Recreation Center	Knox Avenue North and 36th Avenue North	0.38 miles E of Location 13N (Northbound Penn & Dowling)
Cleveland Park	Queen Avenue and 33rd Avenue North	250 feet NW of Location 11S (Southbound Penn & Dowling)
Jordan Park	Irving Avenue North and 29th Avenue North	0.37 miles E of Location 25N (Northbound Penn & 29th)
Theodore Wirth Parkway	From I-394 north to Lowry Avenue	0.40 miles W of Location 10S (Southbound Penn & W. Broadway)
Glen Gale Park	Irving and 23rd Avenue North	0.40 miles E of Location 10N (Northbound Penn & W. Broadway)
Cottage Park	James and Ilion Avenues	0.27 miles NE of Location 9N (Northbound Penn & Golden Valley Rd)

Resource Name	Address	Approximate distance from nearest station
North Commons Park	James Avenue North and 16th Avenue North	1,022 feet E of Location 9S (Southbound Penn & Golden Valley Rd)
North Commons Recreation Center	James Avenue North and 16th Avenue North	0.34 miles SE of Location 9S (Southbound Penn & Golden Valley Rd)
Willard Park	Queen Avenue North and 17th Avenue North	650 feet SW of Location 9S (Southbound Penn & Golden Valley Rd)
Farwell Park	Sheridan Avenue North and Farwell Place	1,025 feet SW of Location 8S (Southbound Penn & Plymouth Ave)
Lincoln Junior High School Playfields	West of Penn Avenue between 12th and Oak Park Avenues	625 feet S of Location 8S (Southbound Penn & Plymouth Ave)
Lovell Square	Irving and 10th Avenue North	1,180 NW of Location 6N (Northbound Olson Memorial & Humboldt)
Barnes Park	Elwood and 8th Avenue North	650 feet W of Location 6N (Northbound Olson Memorial & Humboldt)
Theodore Wirth Park	Between France Avenue and Xerxes Avenue from I-394 to Golden Valley Road	1,227 feet SW of Location 7S (Southbound Penn & Olson Memorial)
Luce Line Extension Trail	Trail runs east from Theodore Wirth Parkway along the north side of TH 55 then passes under TH 55 and travels through Bassett's Creek Valley Park	0.34 miles W of Location 7S (Southbound Penn & Olson Memorial)
Bassett Creek Park	Valley of Bassett's Creek from Theodore Wirth Park to Morgan Avenue North	0.31 miles S of Location 7S (Southbound Penn & Olson Memorial)
Bassett Creek Regional Trail	Through Theodore Wirth Park and Bassets Creek Park to I-394	0.42 miles W of Location 7S (Southbound Penn & Olson Memorial)
Cedar Lake Regional Trail	Runs along former railroad lines from downtown Minneapolis to Hopkins	1,240 feet NW of Location 20 (7th St Garage)
Sumner Field Park	901 Aldrich Ave N	740 feet W of Location 5N (Northbound Olson Memorial & Bryant)
Loring Greenway	at Nicollet Mall near the intersection of Alice Rainville Place	0.34 miles SW of Location 22 (8th St & Nicollet Mall)
Gateway Play Area	S 4th Ave at S 10th St	930 feet S of Location 23 (8th St & 3rd/4th Ave)
Franklin Steele Park	1600 Portland Ave S	0.37 miles SW of Location 24 (8th St & Park)
Elliot Park	1000 E 14th St	800 feet SE of Location 24 (8th St & Park)

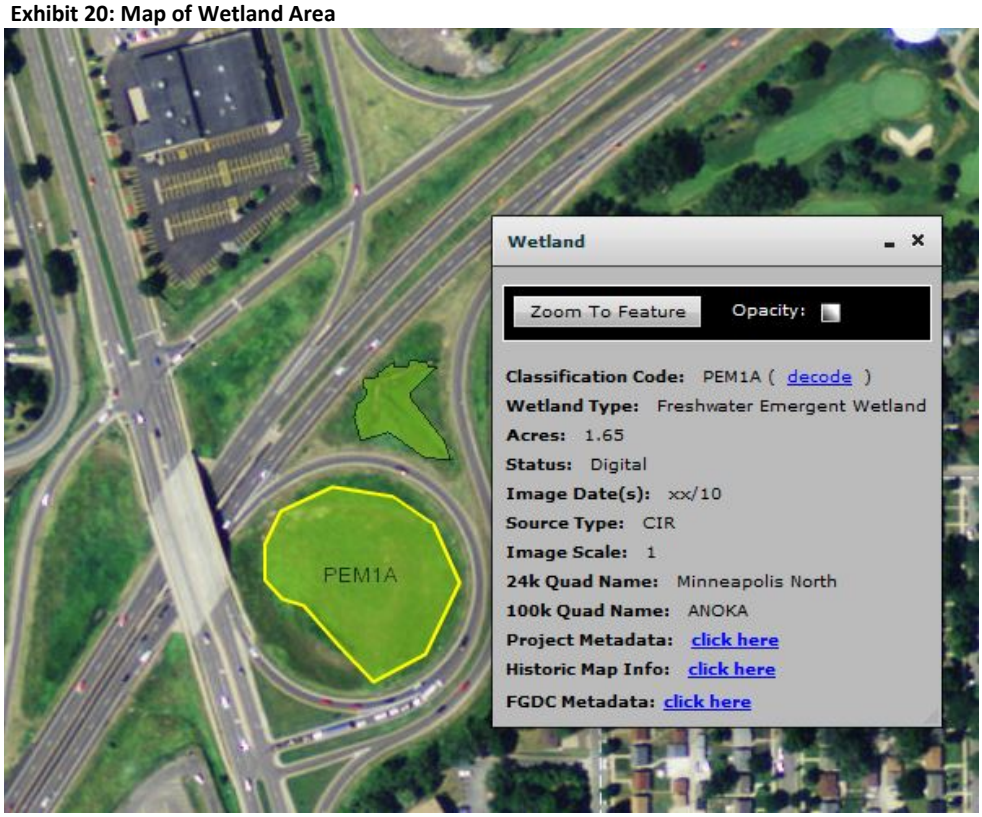
At each station location, all Project elements will be constructed entirely within rights-of-way that are already disturbed for transportation use, so there will be no additional use of the above 4(f) resources.

Q. IMPACTS ON WETLANDS

Show potential wetlands and boundaries on a map. Integrate data from the National Wetlands Inventory. Describe the project's impact on on-site and adjacent wetlands. If the project impacts wetlands, provide documentation of consultations and permits from the U.S. Army Corps of Engineers, as well as, minimization and mitigation efforts. If applicable, provide documentation to demonstrate that wetlands are not present, or the proposed project will not impact any wetland areas.

The Project will be constructed entirely within existing transportation rights-of-way. There are no wetlands immediately adjacent to any proposed stations. As a result, the Project is not anticipated to impact any existing wetland areas. There is an existing 1.65 acre freshwater emergent wetland located near the intersection of Brooklyn Boulevard and Highway 100 in the City of Brooklyn Center.[22] See Exhibit 20 below for additional information. However, a planned C Line station is anticipated to be about 900'-1,000' south of this wetland with no anticipated impacts.

Exhibit 20: Map of Wetland Area



[22] Source: National Wetlands Inventory, Wetlands Mapper V2, U.S. Fish and Wildlife Service:

R. FLOODPLAIN IMPACTS

Determine if the project is within a 100-year floodplain. Review FEMA 100-year FIRMs on the FEMA website: http://msc.fema.gov/webapp/wcs/stores/servlet/info?storeId=10001&catalogId=10001&langId=-1&content=firmetteHelp_0&title=FIRMette%20Tutorial. Include a FIRM floodplain map, if available. Include all floodplain FIRM numbers that occur in the project area and the effective or revision date for each FIRM. Include the FEMA FIRM numbers for the project area, even if the 100-year floodplain has not been delineated. If the proposed project is located within the 100-year floodplain describe what will be done to address possible flooding of the proposed project location and flooding induced by the project due to reduced capacity to retain storm water runoff. Provide documentation on how the project will be designed to restore floodplain capacity. If applicable, provide documentation to demonstrate that the project is not sited in a floodplain. If a determination cannot be made whether or not the project is within a 100-year floodplain, contact the county flood control district or the local floodplain manager for assistance.

None of the stations in the Project area are located within the 100-year floodplain. FIRMs for the Project area are as follows:

- FIRM Panel 27053C0357 (downtown Minneapolis area);
- FIRM Panel 27053C0356E (Olson Memorial Highway area);
- FIRM Panel 27053C0218 (Penn Avenue area);
- FIRM Panel 27053C0216E (Penn Avenue and Osseo Road area); and
- FIRM Panel 27053C0212E (Brooklyn Center area)

S. IMPACTS ON WATER QUALITY, NAVIGABLE WATERWAYS, & COASTAL ZONES

If any of these resources are implicated, describe the project's potential impacts. Determine if National Pollutant Discharge Elimination System (NPDES) permits are applicable as a result of ground disturbance or point sources that will discharge pollutants into waters of the United States. Refer to best practice measures at: http://cfpub.epa.gov/npdes/stormwater/menuofbmps/. How will storm water be treated during and after construction? How will wastewater from bus washing facilities be treated? Determine if project area is in a sole-source aquifer, if not document in narrative: http://cfpub.epa.gov/safewater/sourcewater/sourcewater.cfm?action=SSA.

The proposed Project will have no impact on navigable waterways or coastal zones as none of these are located in or near Project sites. The Project is not located within a sole-source aquifer; the nearest sole-source aquifer is approximately 80 miles north of the Project area.[24]

[24] More information at: http://www.epa.gov/region5/water/gwdw/solesourceaquifer/index.htm

The Project falls within the jurisdiction of the Shingle Creek/West Mississippi Watershed Management Commission[25], the Bassett Creek Watershed Organization[26], and the Mississippi Watershed Management Organization.[27]

Metro Transit will follow watershed organization rules and standards when designing stormwater management elements at these sites. Erosion control measures will be taken during the Project construction phase to control surface runoff and sedimentation. In accordance with state and federal regulations, detailed drainage plans and erosion control plans for the Project will be submitted as part of the application for a National Pollutant Discharge Elimination System (NPDES) permit, to be obtained from the MPCA prior to construction.

T. IMPACTS ON ECOLOGICALLY-SENSITIVE AREAS AND ENDANGERED SPECIES

Describe any natural areas (woodlands, prairies, wetlands, rivers, lakes, streams, designated wildlife or waterfowl refuges, and geological formations) on or near the proposed project area. If present, state the results of consultation with the state department of natural resources and, if appropriate, the U.S. Fish and Wildlife Service on the impacts to critical habitats and on threatened and endangered fauna and flora that may be affected. Refer to: http://www.fws.gov/Endangered/

Ecologically Sensitive Areas

The Project will construct enhanced bus stops entirely within existing and previously disturbed transportation rights-of-way in highly developed urban areas. Theodore Wirth Park and Bassett Creek Park are the only natural areas near the Project area. The closest station location is approximately 1,000 feet from Theodore Wirth Park, and one-third mile from Bassett Creek Park. No impacts are anticipated as a result of the Project.

Endangered Species

A review of the US Fish and Wildlife Service (USFWS) Endangered Species Program website identified one species, the northern long-eared bat (*Myotis septentrionalsi*), within Hennepin County. Based on the nature of the proposed location of the Project area action (i.e., construction of bus stops within existing transportation rights-of-way and operation of buses on existing roadways in a highly developed, urban area), no impacts are anticipated to the northern long-eared bat as a result of the Project.

The Minnesota Department of Natural Resources (DNR) has been contacted and has determined that the Project will have no effect on sensitive areas or endangered species. See Attachment 10 for the DNR letter dated August 4, 2015.

Correspondence regarding the proposed action was provided to the USFWS (September 10, 2015). The USFWS concurred with the finding that the Project would have no effect on

[25] Shingle Creek/West Mississippi District rules available at: http://www.shinglecreek.org/rules-and-standards.html
[26] Bassett Creek rules available at: http://www.bassettcreekwmo.org/developer/standards-requirements
[27] Mississippi Watershed Planning Program available at: http://mwmo.org/reports/watershed-management-plan/

threatened or endangered species within Hennepin or Ramsey counties. Please see Attachment 11 for USFWS correspondence dated September 21, 2015.

U. IMPACTS ON SAFETY AND SECURITY

Describe the measures that would need to be taken to provide for the safe and secure operation of the project after its construction. List any security measures that are planned as part of the project (e.g., security guards, fencing, secured access, lighting, cameras, etc.)

C Line stations will be designed to provide safe and secure use of the sites. The following specific measures will be taken at these stations:

Environmental / Physical Design Strategies

- Lighting will be installed throughout transit waiting areas to increase visibility.
- Signage, lighting, and distinct paving material will be used to delineate transit waiting zones as opposed to adjacent restricted or private areas.
- Transit station shelters will be designed to be open and transparent, avoiding dark, isolated compartments.
- Security cameras will be deployed at stations where appropriate, functioning both as a passive (deterring) strategy and an active way to monitor sites.
- The C Line stations with the highest anticipated activity are adjacent to retail, office, and other commercial developments that bring activity and natural surveillance to the area.
- Snow and ice will be removed promptly to minimize slipping hazards for transit customers and pedestrians walking through the station areas.
- Materials and features at the stations will be durable and well-maintained to communicate that the area is under surveillance and consistent care.

Active Surveillance Strategies

- Metro Transit and local police will continue to provide active surveillance and monitoring at these stations, as they currently do.
- Fare inspection will be conducted at random on vehicles by Metro Transit police.
- Metro Transit will review security camera footage to follow up on suspicious activity or incidents.

V. IMPACTS CAUSED BY CONSTRUCTION

Describe the construction plan and identify construction impacts with respect to noise, dust, utility disruption, debris and spoil disposal, air quality, water quality, erosion, safety and security, and disruptions of traffic and access to businesses or residential property. Identify steps that will be taken to provide alternatives or mitigate the impacts of construction impacts. Cite applicable local, state, and

federal regulations, and any standards or best management practices that will be followed. If applicable, please include any NPDES best practice measures (http://cfpub.epa.gov/npdes/stormwater/menuofbmps/).

At each station platform site, sidewalk and/or lane, demolition and excavation will be required to prepare the right-of-way for platform construction. Following excavation, communications infrastructure will be connected to the sites, new sidewalk and platform concrete panels will be poured, and station shelters and amenities will be installed. All station platforms will be constructed within existing transportation rights-of-way.

Metro Transit will actively seek to minimize community impacts during the construction phase. Construction activities will be phased to coordinate with other planned reconstruction slated for the same construction season. A Transportation Management Plan (TMP) will be completed as part of the final design phase in order to manage access to pedestrian facilities, trails, properties adjacent to construction sites, bus stops, and other system users. Incentives such as lane rental fees may be built into construction contracts to limit the duration of lane closures and related traffic disruption during construction.

The delivery method and phasing plan for C Line construction will be determined during the detailed design and engineering phase. Construction of C Line stations will be coordinated closely with other agencies' street reconstruction projects. Agency partners and relevant future project area infrastructure improvements include:

- City of Minneapolis - 7th Street Transit Advantages project;
- City of Minneapolis - 8th Street reconstruction project;
- Metro Transit - Blue Line Light Rail Extension project;
- Metro Transit - 7th Street & Olson Pilot Station project;
- Hennepin County - Penn Avenue Community Works project; and
- Brooklyn Center - Brooklyn Boulevard reconstruction project.

Construction of stations on 8th Street in downtown Minneapolis is anticipated to occur in conjunction with a City of Minneapolis reconstruction project. C Line operations are anticipated to begin with temporary improvements on 8th Street prior to the coordinated construction of 8th Street and applicable C Line stations. Similar use of temporary improvements is anticipated elsewhere on the corridor to facilitate construction coordination and C Line operations (i.e., Olson Memorial Highway for Olson & Penn, Olson & Humboldt, and Olson & Bryant stations).

The Project will be constructed within busy urban streets, with near-continual construction activities. Typically, construction activities temporarily impact pedestrian and/or vehicular access to businesses directly adjacent to stations. Vehicular access to businesses and other corridor uses may be restricted during certain construction activities; for example, as concrete driveway aprons are reconstructed. The construction contractor and project outreach staff will notify the public and affected business owners or residents in advance of construction activities. Construction will be phased and timed as feasible to minimize the duration and extent of any access impacts. Pedestrian access routes and trail connections will

be maintained throughout construction. Metro Transit has considerable experience in scheduling and staging construction activities to allow the normal flow of commerce.

With Project activities distributed over 37 platform locations, there are opportunities to coordinate construction activities to minimize disruptions in any location and mitigate specific concerns. For example, when/where possible Metro Transit will construct C Line stations within the construction timeline of other roadway improvements occurring at the same time and location (see relevant future project area infrastructure improvements noted above). This reduces construction impacts to a single coordinated effort instead of two independent construction projects happening in quick succession. For the construction of standalone C Line stations unable to be coordinated with other infrastructure projects, construction activities will be staggered throughout the corridor to minimize the intensity and duration of impacts at any single station location.

Erosion and sedimentation on all exposed soils within the Project will be minimized by using the appropriate Best Management Practices (BMPs) during construction. BMPs greatly reduce construction-related sedimentation and help to control erosion and runoff. Ditches, dikes, silt fences, sediment basins, and temporary seeding will be used as temporary erosion control measures during construction grading.

Noise and dust normal to construction will occur as a result of this Project. A Project of this nature will not typically generate any excessive odors during construction. Construction noise will be in accordance with City ordinances, which limit the hours during which construction activities may occur. Construction equipment will be fitted with mufflers that will be maintained throughout the construction process. Dust generated during construction will be minimized through standard dust control measures such as watering. After construction is complete, dust levels are anticipated to be minimal because all soil surfaces will be in permanent cover (i.e. pavement or landscaped areas).

Throughout the construction phase, Project outreach staff will communicate regularly with adjacent residents, business owners, and the public to convey schedule expectations for construction activities and work to resolve concerns.

The action described above meets the criteria for a NEPA categorical exclusion (CE) in accordance with 23 CFR Part 771.118.

_____

Applicant's Environmental Reviewer **Date**

_____

FTA Grant Representative **Date**

LIST OF ATTACHMENTS

Attachment 1	Detailed Station Locations and Concepts
Attachment 2	Air Quality Conformity
Attachment 3	Zoning of Properties Adjacent to Station Sites
Attachment 4	Planned Land Use (Minneapolis and Brooklyn Center)
Attachment 5	Penn Avenue Traffic Study
Attachment 6	7th Street Transit Advantage Correspondence
Attachment 7	Section 106 Documentation
Attachment 8	Noise and Vibration Technical Memorandum
Attachment 9	Section 4(f) Correspondence
Attachment 10	DNR Correspondence
Attachment 11	USFWS Correspondence

ATTACHMENT 1

Detailed Station Locations and Concepts

Attachment 1: Detailed Station Locations and Concepts

Key to Colors for Shelter Improvements:

New shelter (none existing)	New shelter (at existing shelter location)	New shelter (different corner than existing shelter)

#	Location	Adjacent Property Address	Shelter Improvements	Platform Improvements	Other Improvements
1	Brooklyn Center Transit Center	2900 County Road 10 Minneapolis, MN 55430	No new shelter	No curb relocation	Pylon station marker, signage, and equipment installation
2	Northbound Xerxes & 56th	1300 Shingle Creek Crossing Brooklyn Center, MN 55430	No new shelter	No curb relocation	Pylon station marker, signage, and equipment installation
3	Southbound Xerxes & 56th	5601 Xerxes Ave N Brooklyn Center, MN 55430	New shelter (within existing shelter location)	No curb relocation	Pylon station marker, signage, and equipment installation
4	Northbound Brooklyn & 51st	5100 Brooklyn Blvd Brooklyn Center, MN 55430	New shelter (none existing)	No curb relocation	Pylon station marker, signage, and equipment installation
5	Southbound Brooklyn & 51st	5120 Lilac Dr N Brooklyn Center, MN 55430	New shelter (none existing)	No curb relocation	Pylon station marker, signage, and equipment installation
6	Northbound Penn & 43rd	4264 Penn Ave N Minneapolis, MN 55412	New shelter (none existing)	Bumpout	Pylon station marker, signage, and equipment installation
7	Southbound Penn & 43rd	4301 Penn Ave N Minneapolis, MN 55412	New shelter (none existing)	Bumpout	Pylon station marker, signage, and equipment installation
8	Northbound Penn & Dowling	3758 Penn Ave N Minneapolis, MN 55412	New shelter (none existing)	Bumpout	Pylon station marker, signage, and equipment installation
9	Southbound Penn & Dowling	3803 Penn Ave N Minneapolis, MN 55412	New shelter (none existing)	Bumpout	Pylon station marker, signage, and equipment installation
10	Northbound Penn & 36th	3600 Penn Ave N Minneapolis, MN 55412	New shelter (none existing)	Bumpout	Pylon station marker, signage, and equipment installation
11	Southbound Penn & 36th	3555 Penn Ave N Minneapolis, MN 55412	New shelter (new shelter south of 36th; existing shelter north of 36th)	Bumpout	Pylon station marker, signage, and equipment installation
12	Northbound Penn & Lowry	3204 Penn Ave N Minneapolis, MN 55412	New shelter (none existing)	No curb relocation	Pylon station marker, signage, and equipment installation
13	Southbound Penn & Lowry	3201 Penn Ave N Minneapolis, MN 55412	New shelter (within existing shelter location)	No curb relocation	Pylon station marker, signage, and equipment installation
14	Northbound Penn & 29th	2824 Penn Ave N Minneapolis, MN 55411	New shelter (none existing)	Bumpout	Pylon station marker, signage, and equipment installation
15	Southbound Penn & 29th	2903 Penn Ave N Minneapolis, MN 55411	New shelter (none existing)	Bumpout	Pylon station marker, signage, and equipment installation
16	Northbound Penn & West Broadway	2125 West Broadway Minneapolis, MN 55411	No new shelter	No curb relocation	Pylon station marker, signage, and equipment installation
17	Southbound Penn & West Broadway	2220 West Broadway Minneapolis, MN 55411	No new shelter	No curb relocation	Pylon station marker, signage, and equipment installation
18	Northbound Penn & Golden Valley	1900 Penn Ave N Minneapolis, MN 55411	New shelter (none existing)	Bumpout	Pylon station marker, signage, and equipment installation

Attachment 1: Detailed Station Locations and Concepts

#	Location	Adjacent Property Address	Shelter Improvements	Platform Improvements	Other Improvements
19	Southbound Penn & Golden Valley	2201 Penn Ave N Minneapolis, MN 55411	No new shelter	Bumpout	Pylon station marker, signage, and equipment installation
20	Northbound Penn & Plymouth	2100 Plymouth Ave N Minneapolis, MN 55411	New shelter (new shelter north of Plymouth; existing shelter south of Plymouth)	Bumpout	Pylon station marker, signage, and equipment installation
21	Southbound Penn & Plymouth	2201 Plymouth Ave N Minneapolis, MN 55411	New shelter (new shelter north of Plymouth; existing shelter south of Plymouth)	Bumpout	Pylon station marker, signage, and equipment installation
22	Northbound Olson & Penn	610 Penn Ave N Minneapolis, MN 55411	New shelter (within existing shelter location)	No curb relocation	Pylon station marker, signage, and equipment installation
23	Southbound Olson & Penn	530 Penn Ave N Minneapolis, MN 55405	New shelter (within existing shelter location)	No curb relocation	Pylon station marker, signage, and equipment installation
24	Northbound Olson & Humboldt	1300 Olson Memorial Hwy Minneapolis, MN 55411	New shelter (within existing shelter location)	No curb relocation	Pylon station marker, signage, and equipment installation
25	Southbound Olson & Humboldt	525 Humboldt Ave N Minneapolis, MN 55405	New shelter (within existing shelter location)	No curb relocation	Pylon station marker, signage, and equipment installation
26	Northbound Olson & Bryant	652 Bryant Ave N Minneapolis, MN 55411	New shelter (none existing)	No curb relocation	Pylon station marker, signage, and equipment installation
27	Southbound Olson & Bryant	901 Olson Memorial Hwy Minneapolis, MN 55405	New shelter (within existing shelter location)	No curb relocation	Pylon station marker, signage, and equipment installation
28	Northbound Olson & 7th	615 7th St N Minneapolis, MN 55411	No new shelter	No curb relocation (Bumpout installed 2015)	Signage and equipment installation
29	Southbound Olson & 7th	501 Royalston Ave N Minneapolis, MN 55405	No new shelter	No curb relocation (Bumpout installed 2015)	Signage and equipment installation
30	7th Street Garage	29 9th St N Minneapolis, MN 55403	No new shelter	No curb relocation	Pylon station marker, signage, and equipment installation
31	8th & Nicollet	800 Nicollet Mall Minneapolis, MN 55402	New shelter (none existing)	No curb relocation	Pylon station marker, signage, and equipment installation
32	8th & 3rd	321 8th St S Minneapolis, MN 55402	New shelter (within existing shelter location)	No curb relocation	Pylon station marker, signage, and equipment installation
33	8th & Park	801 Park Ave Minneapolis, MN 55404	New shelter (within existing shelter location)	No curb relocation	Pylon station marker, signage, and equipment installation
34	7th & Hennepin	600 Hennepin Ave Minneapolis, MN 55403	No new shelter	No curb relocation (Bumpout installed 2015)	Signage, and equipment installation
35	7th & Nicollet	629 Nicollet Mall Minneapolis, MN 55402	No new shelter	No curb relocation (Bumpout installed 2015)	Signage, and equipment installation
36	7th & 3rd	300 6th St S Minneapolis, MN 55487	New shelter (none existing)	Bumpout	Pylon station marker, signage, and equipment installation
37	7th & Park	716 7th St S Minneapolis, MN 55415	New shelter (within existing shelter location)	Bumpout	Pylon station marker, signage, and equipment installation

ATTACHMENT 2

Air Quality Conformity

Attachment 2: Air Quality Conformity

U.S. DEPARTMENT OF TRANSPORTATION

Federal Highway Administration
Minnesota Division
380 Jackson Street, Suite 500
St. Paul, MN 55101-4802

Federal Transit Administration
Region 5
200 West Adams Street, Suite 320
Chicago, IL 60606

October 28th, 2015

Mr. Charles Zelle
Commissioner
Minnesota Department of Transportation
395 John Ireland Boulevard
St. Paul, MN 55155

Subject: Approval of Minnesota FY 2016 – 2019 STIP and FHWA/FTA Statewide Planning Finding

Dear Commissioner Zelle:

The following is in response to MnDOT's transmittal of the Minnesota Fiscal Year (FY) 2016 – 2019 Statewide Transportation Improvement Program (STIP) requesting approval.

In order to approve the subject STIP document, including the Transportation Improvement Programs (TIPS) contained therein, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) must make a determination that the STIP is based on a continuing, cooperative, and comprehensive planning process. Additionally, in accordance with 23 United States Code (U.S.C.) 135(g)(8) and Title 23 Code of Federal Regulations (CFR) Part 450.218(b):

> *The FHWA and the FTA shall review the STIP or amend the STIP, and make a joint finding on the extent to which the STIP is based on a statewide transportation planning process that meets or substantially meets the requirements of 23 U.S.C. 135 and 135, 49 U.S.C. 5303 and 5304, and subparts A,B, and C of this part.*

As a result, FHWA and FTA have jointly undertaken a review of the statewide planning process of the Minnesota State Department of Transportation (MnDOT). In accordance with these requirements, the following findings are provided.

The following strengths of the statewide and metropolitan planning process have been identified as noteworthy:

- ***MnSHIP*** – This 20-year Highway Investment Plan details a series of investment scenarios under differing priorities, providing an analytical underpinning to MnDOT's selected approach of balancing asset management with investment in local priorities and mobility. It should be applauded for providing MnDOT with an informed and risk-based investment process to guide the next 20 years.

- ***Functional Classification Review*** – MnDOT completed a systematic analysis and extensive inter-governmental coordination to categorize urban and rural road hierarchy. The functional classification review was a collaborative and effective process, and it is commended.

- ***Asset Management Plan*** – MnDOT's extensive efforts to develop an asset management plan have resulted in a number of improvements to how MnDOT manages its assets. Proactively serving as a pilot state for Asset Management Plan development, MnDOT's Asset Management Plan is now an example to advance the practice nationally.

The following areas of the statewide and metropolitan planning process have been identified as areas for enhancement:

- ***Corridor Planning*** – Corridor Planning is an opportunity to coordinate multiple performance needs and local and state projects within a systematic analysis of a corridor. These studies can be utilized to identify needs and phase implementation effectively to save costs and impacts to the travelling public.

- ***MPO Performance Targets*** – Performance-based planning is an MPO requirement of MAP-21. As the final Planning rule is still in development, we recommend the MPO's begin to identify the appropriate performance targets for their respective planning organizations. While FHWA and FTA will provide more guidance as it becomes available, a proactive approach to performance-based planning will ease the MPO's upcoming transition.

- ***STIP Public Presentation*** – While the fundamentals of 23 CFR 450.210 are met, the STIP can be presented in a format that is more conducive to public use. We recommend updating the website to call out/highlight amendments, change the project descriptions to public-friendly language, and include a visual representation of the project locations in a mapping tool.

- ***Performance Illustration in the STIP*** – MnDOT has been proactive in the development performance measures/targets in anticipation of MAP-21 and the STIP provides a yearly

opportunity to illustrate these performance outcomes. We recommend the current and projected performance outcomes are illustrated in the STIP to improve the accountability of investment decisions.

Accordingly, based on the State DOT and MPO self-certifications of their statewide and metropolitan planning processes, in addition to our involvement in the State and MPO transportation planning processes, the FHWA and FTA hereby find that the 2016-2019 STIP is based on a transportation planning process that substantially meetings the requirements of 23 U.S.C. Sections 134 and 135, U.S.C. Sections 5303-5304, 23 CFR 450 (Subparts B and C), and 49 CFR Part 613 (Subparts B and C). Minnesota's 2016 – 2019 STIP is therefore approved.

This approval also includes the corresponding individual MPO Transportation Improvement Programs (TIPs) that comprise the STIP, as well approval of a joint FHWA/FTA air quality conformity determination for the Metropolitan Council's TIP pursuant to 40 CFR 93 (transportation conformity regulations).

It should be noted that approval of the 2016 – 2019 STIP is not to be construed as a Federal-aid eligibility determination. Each project must satisfy the specific requirements of the program from which Federal funds are requested, as well as other Federal requirements as appropriate before Federal funds are authorized.

Thank you for your continued effort to improve the STIP process and ensure a cooperative, continuous, and comprehensive transportation process. We recognize the complexity of assembling the STIP and appreciate the hard work and effort expended by staff involved. We look forward to working together to advance the projects and programs in the STIP, and to continuing to provide the traveling public with a transportation system of the highest caliber.

Should you have any questions regarding this STIP approval and Planning Finding, please contact Mr. Kris Riesenberg, FHWA Technical Services Team Leader at (651) 291-6114, or Mr. Bill Wheeler, FTA Community Planner at (312) 353-2639.

Sincerely,

for Arlene Kocher
Division Administrator
Federal Highway Administration

Marisol R. Simón
Regional Administrator
Federal Transit Administration

Cc: Trang Chu
Brian Gage
Mark Nelson
Roberta Retzlaff

U.S. Department
of Transportation

Federal Highway Administration

Federal Transit Administration

FHWA, Minnesota Division
380 Jackson Street
Cray Plaza, Suite 500
St. Paul, MN 55101-4802

FTA, Region V
200 West Adams Street
Suite 320
Chicago, IL 60606-5253

March 13, 2015

Charles A. Zelle
Commissioner of Transportation
Department of Transportation
MS 100, Transportation Building
St. Paul, Minnesota 55155

Re: Twin Cities Metropolitan Council Transportation Policy Plan (TPP) Air Quality Conformity

Dear Mr. Zelle:

The Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) have reviewed the documentation supporting the transportation conformity determination for the 2040 Transportation Policy Plan (TPP) adopted by the Twin Cities Metropolitan Council on January 14th, 2015.

Based on our review and consultation with the U.S. Environmental Protection Agency (EPA), the Minnesota Pollution Control Agency (MPCA), and the Minnesota Department of Transportation (MnDOT), there are no unresolved issues regarding this conformity determination. Therefore, we hereby find that the 2040 TPP meets all conformity determination requirements under the Clean Air Act Amendments of 1990.

Additionally, we find the 2040 TPP to satisfactorily comply with the requirements of 23 CFR 450.322 regarding the review and update of metropolitan transportation plans in air quality non-attainment and maintenance areas at least every four years. As such, this action restarts the four-year update cycle for the Metropolitan Council TPP and corresponding conformity determination.

Should you have questions concerning this action, please contact Kris Riesenberg, FHWA Minnesota Division at (651) 291- 6114, or Bill Wheeler, FTA Region V at (312) 353-2639.

Sincerely,

David Scott
Acting Division Administrator
FHWA – MN

Marisol R. Simón
Regional Administrator
FTA – Region V

Cc: Michael Leslie, EPA

Minnesota Pollution Control Agency
520 Lafayette Road North | St. Paul, Minnesota 55155-4194 | 651-296-6300
800-657-3864 | 651-282-5332 TTY | www.pca.state.mn.us | Equal Opportunity Employer

May 22, 2015

Ms. Elaine Koutsoukos
Transportation Advisory Board Coordinator
Metropolitan Council
390 Robert Street North
St. Paul, MN 55101-1805

RE: Draft 2016-2019 Draft Transportation Improvement Program

Dear Ms. Koutsoukos:

The Minnesota Pollution Control Agency (MPCA) has completed its formal review of the draft 2016-2019 Transportation Improvement Program (TIP). The MPCA has examined the draft TIP for conformance with a check list of requirements from the joint Transportation Conformity Rule (Rule) of the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Transportation. The intent of the Rule is to ensure compliance with the Clean Air Act Amendments of 1990 and the transportation reauthorization bill "Moving Ahead for Progress in the 21st Century" (MAP-21) when a Metropolitan Planning Organization (MPO) or state department of transportation serves as a distribution agency for federal transportation funds.

The Rule requires that the MPOs base their TIPs and long-range Comprehensive Transportation Plans (Plan) on the latest planning assumptions. As a result, the draft TIP's air quality conformity analysis is based on the most current Metropolitan Council (the Council) socioeconomic data used in Thrive MSP 2040, which was adopted by the Council on May 28, 2014. The planning document provides the Council with the socioeconomic data (planning assumptions) to develop long range forecasts of regional highway and transit facility needs.

On November 8, 2010, the EPA approved a limited maintenance plan request for the Twin Cities carbon monoxide (CO) maintenance area. Under a limited maintenance plan, the EPA has determined that there is no requirement to project emissions over the maintenance period and that "an emission budget may be treated as essentially not constraining for the length of the maintenance period." The reason is that it is unreasonable to expect that the Twin Cities maintenance area will experience so much growth within this period that a violation of CO National Ambient Air Quality Standard (NAAQS) would result. Therefore, no regional modeling analysis is required; however, federally funded projects are still subject to "hot spot" analysis requirements. The limited maintenance plan adopted in 2010 determines that the level of CO emissions and resulting ambient concentrations will continue to demonstrate attainment of the CO NAAQS.

The current TIP was also prepared in accordance with the public participation plan for transportation planning adopted by the Council on November 10, 2010. This process satisfies MAP-21 requirements for public participation, as well as the public consultation procedures requirements of the Conformity Rule.

Based on a review of the analysis described in the conformity Appendix B and submitted by the Council, the MPCA concurs with the conformity determination that the projects included in the 2016-2019 Draft TIP meet all relevant regional emissions analysis and budget tests as described therein. The 2016-2019 Draft TIP also conforms to the relevant sections of the Federal Conformity Rule and the applicable sections of the Minnesota State Implementation Plan for air quality.

The MPCA appreciates the opportunity to review this document as part of the EPA Transportation Conformity Rule consultation process. The MPCA staff also appreciates the cooperation of the interagency consultation group that includes the Council, EPA, Minnesota Department of Transportation (MnDOT), and Federal Highway Administration (FHWA) for their immediate assistance in resolving all policy and technical analysis issues with respect to the projects' air quality classification and their willingness to accept the suggested course of action.

If you have any questions, please feel free to contact me at 651-757-2486 or amanda.smith@state.mn.us.

Sincerely,

Amanda Jarrett Smith
Air Policy Planner
Environmental Analysis and Outcomes Division

AJS:je

cc: Kris Riesenberg, FHWA
Michael Leslie, Region 5, EPA
Jonathan Ehrlich, Metropolitan Council
Arlene McCarthy, Metropolitan Council
Steve Albrecht, Technical Advisory Committee (TAC) Chair
Timothy Mayasich, TAC Funding and Programing Committee Chair
Bobbi Retzlaf, MnDOT
Brian Isaacson, MnDOT
David Thornton, MPCA
Shannon Lotthammer, MPCA
Frank Kohlasch, MPCA
Mary Jean Fenske, MPCA
Innocent Eyoh, MPCA

Minnesota Pollution Control Agency
520 Lafayette Road North | St. Paul, Minnesota 55155-4194 | 651-296-6300
800-657-3864 | 651-282-5332 TTY | www.pca.state.mn.us | Equal Opportunity Employer

July 25, 2014

Ms. Arlene McCarthy
Director
Metropolitan Transportation Services
Metropolitan Council
390 North Robert Street
St. Paul, MN 55101

RE: Air Quality Conformity Analysis for the 2040 Transportation Policy Plan

Dear Ms. McCarthy:

The Minnesota Pollution Control Agency (MPCA) has completed its review of the 2040 Transportation Policy Plan (Plan) submitted by the Metropolitan Council (Council). The Minnesota Interagency Air Quality Conformity Consultation Committee, with representatives from the MPCA, Council, Minnesota Department of Transportation (MnDOT), Federal Highway Administration (FHWA), and the U.S. Environmental Protection Agency (EPA), was consulted during the preparation of the Plan. Several ongoing communications also occurred along with periodic meetings, draft reports, e-mails, and phone calls.

On November 8, 2010, the EPA approved a Limited Maintenance Plan for the Twin Cities maintenance area. Under a Limited Maintenance Plan, the EPA has determined that there is no requirement to project emissions over the maintenance period and that "an emissions budget may be treated as essentially not constraining for the length of the maintenance period". The EPA made this determination because it is unreasonable to expect that the Twin Cities maintenance area would experience so much growth in that period that a violation of the carbon monoxide National Ambient Air Quality Standards would result. No regional modeling analysis is required; however, federally-funded projects are still subject to "hot spot" analysis requirements.

I have examined the document for conformity with a checklist of requirements from the joint Federal Transportation Conformity Rule of the EPA and the U.S. Department of Transportation. Based on this information, the MPCA has determined that the projects included in the 2040 Plan meet all relevant regional emissions analysis and budget tests as required by the Conformity Rule.

Therefore, the 2040 Plan fully meets and conforms to the relevant sections of the Federal Transportation Conformity Rule and to the applicable sections of the Minnesota State Implementation Plan for Air Quality.

Ms. Arlene McCarthy
Page 2
July 25, 2014

The MPCA appreciates the opportunity given to review this document as part of the EPA's Transportation Conformity Rule consultation process, and for the great work done by the Council's staff in completing this analysis in a timely fashion. The MPCA also appreciates the cooperation of the interagency consultation group with their immediate assistance in resolving all policy and technical issues with respect to the Plan's Air Quality Conformity determination.

If you have any questions, please contact me at 651-757-2486 or by e-mail at amanda.smith@state.mn.us.

Sincerely,



Amanda Jarrett Smith
Air Policy Planner
Environmental Analysis and Outcomes Division

AJS:je

cc: Jonathan Ehrlich, Metropolitan Council
Elaine Koutsoukos, Metropolitan Council
Patricia Bursaw, MnDOT and TAC Chair
Karl Keel, City of Bloomington, F&P Chair
Brian Isaacson, MnDOT
Susan Moe, FHWA
Michael Leslie, EPA
J. David Thornton, MPCA
Shannon Lotthammer, MPCA
Frank Kohlasch, MPCA
Mary Jean Fenske, MPCA
Innocent Eyoh, MPCA

ATTACHMENT 3

Zoning of Properties Adjacent to Station Sites

Attachment 3: Zoning of Adjacent Properties

Updated: 2/3/2016

Site #	Location	Adjacent Property Address	Zoning[a]
Minneapolis			
0	7th Street & Park Avenue	716 7th St S Minneapolis, MN 55415	B4N – Downtown Neighborhood
1	7th Street & 3rd/4th Avenues	300 South 6th St Minneapolis, MN 55487	B4-2 – Downtown Business
2	7th Street & Nicollet Mall	629 Nicollet Mall Minneapolis, MN 55402	B4-2 – Downtown Business
3	7th Street & 1st/Hennepin Avenues	600 Hennepin Avenue Minneapolis, MN 55403	B4S-2 – Downtown Service
24	8th Street & Park Avenue	801 Park Avenue Minneapolis, MN 55404	B4N – Downtown Neighborhood
23	8th Street & 3rd/4th Avenues	321 S 8th St Minneapolis, MN 55402	B4-2 – Downtown Business
22	8th Street & Nicollet Mall	800 Nicollet Mall Minneapolis, MN 55402	B4-2 – Downtown Business
20	7th St Garage	29 9th Street N Minneapolis, MN 55403	B4S-1 – Downtown Service
4S	Southbound 7th Street & Olson Memorial Hwy	501 Royalston Avenue N Minneapolis, MN 55405	I2 – Industrial (medium)
4N	Northbound 7th Street & Olson Memorial Hwy	615 7th Street N Minneapolis, MN 55411	C2 – Commercial (neighborhood corridor)
5S	Southbound Olson Memorial Hwy & Bryant Ave	901 Olson Memorial Hwy Minneapolis, MN 55405	I1 – Industrial (light)
5N	Northbound Olson Memorial Hwy & Bryant Avenue	652 Bryant Avenue N Minneapolis, MN 55411	R4 – Residential (multi family, medium density)
6S	Southbound Olson Memorial & Humboldt Avenue	525 Humboldt Avenue N Minneapolis, MN 55405	R5 – Residential (multi family, high density)
6N	Northbound Olson Memorial & Humboldt Avenue	1300 Olson Memorial Hwy Minneapolis, MN 55411	R5 – Residential (multi family, high density)

Attachment 3: Zoning of Adjacent Properties

Site #	Location	Adjacent Property Address	Zoning[a]
7S	Southbound Olson Memorial Hwy & Penn Avenue	530 Penn Avenue N Minneapolis, MN 55411	R1A – Residential (one family, light density)
7N	Northbound Olson Memorial Hwy & Penn Avenue	610 Penn Avenue N Minneapolis, MN 55411	R2B – Residential (two family, light density)
8S	Southbound Penn Avenue & Plymouth Avenue	2201 Plymouth Avenue N Minneapolis, MN 55411	OR2 – Service/Office (High Density)
8N	Northbound Penn Avenue & Plymouth Avenue	2100 Plymouth Avenue N Minneapolis, MN 55411	C2 – Commercial (neighborhood corridor)
9S	Southbound Penn Avenue & Golden Valley Road	2201 Golden Valley Road Minneapolis, MN 55411	C1 – Commercial (neighborhood)
9N	Northbound Penn Avenue & Golden Valley Road	1900 N Penn Avenue Minneapolis, MN 55411	C1 – Commercial (neighborhood)
10S	Southbound Penn Avenue & West Broadway Avenue	2220 West Broadway Minneapolis, MN 55411	C3A – Commercial (community activity center)
10N	Northbound Penn Avenue & West Broadway Avenue	2125 West Broadway Avenue Minneapolis, MN 55411	C3A – Commercial (community activity center)
25S	Southbound Penn Avenue & 29th Avenue	2903 N Penn Avenue Minneapolis, MN 55411	R4 – Residential (multi family, medium density)
25N	Northbound Penn Avenue & 29th Avenue	2824 N Penn Avenue Minneapolis, MN 55411	R1A – Residential (one family, light density)
11S	Southbound Penn Avenue & Lowry Avenue	3201 N Penn Avenue Minneapolis, MN 55412	C2 – Commercial (neighborhood corridor)
11N	Northbound Penn Avenue & Lowry Avenue	3204 N Penn Avenue Minneapolis, MN 55412	C1 – Commercial (neighborhood)
12S	Southbound Penn Avenue & 36th Avenue	3555 N Penn Avenue Minneapolis, MN 55412	C1 – Commercial (neighborhood)
12N	Northbound Penn Avenue & 36th Avenue	3600 N Penn Avenue Minneapolis, MN 55412	R4 – Residential (multi family, medium density)
13S	Southbound Penn Avenue & Dowling Avenue	3803 N Penn Avenue Minneapolis, MN 55412	R4 – Residential (multi family, medium density)
13N	Northbound Penn Avenue & Dowling Avenue	3758 N Penn Avenue Minneapolis, MN 55412	C1 – Commercial (neighborhood)

Attachment 3: Zoning of Adjacent Properties

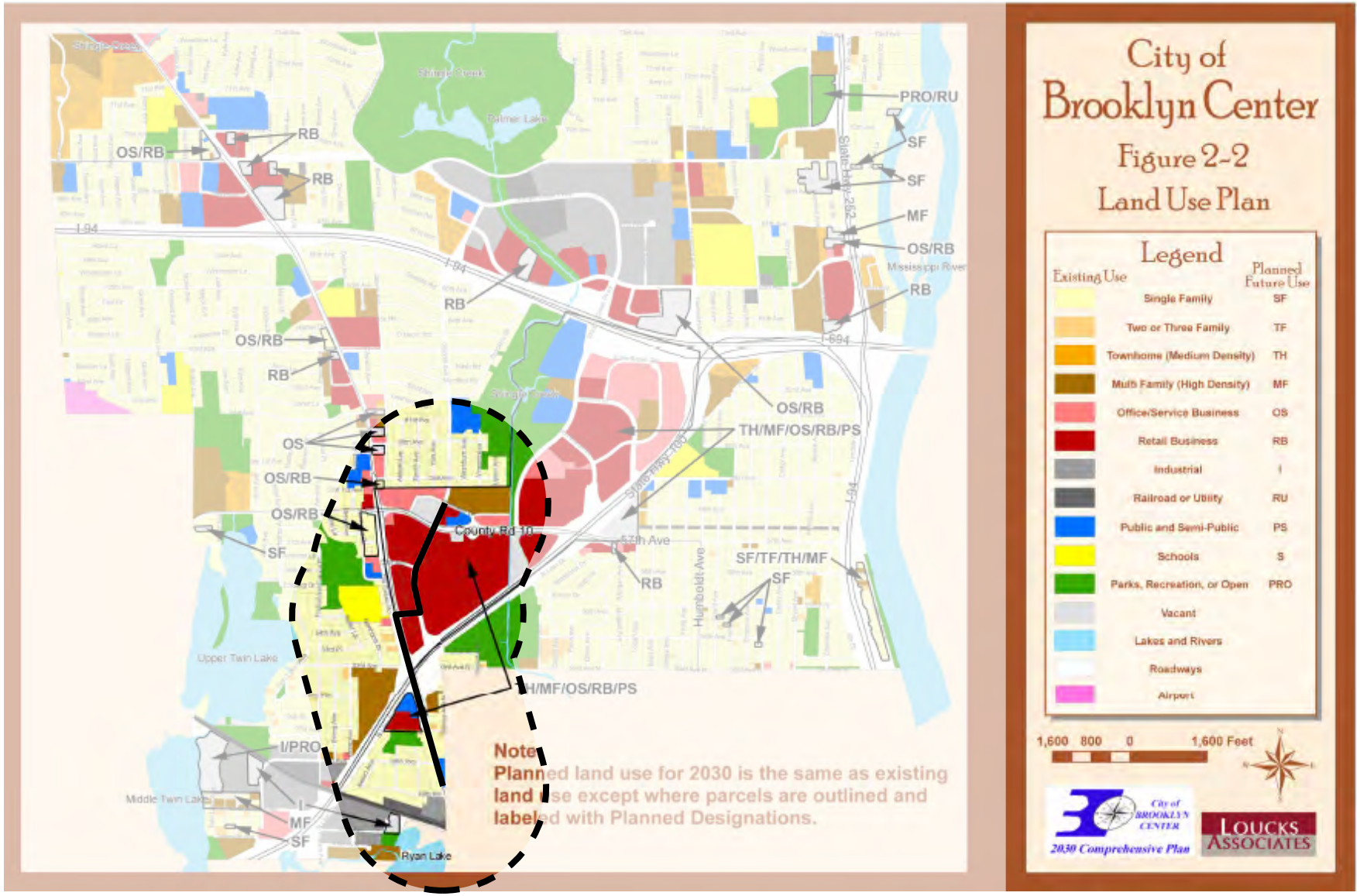
Site #	Location	Adjacent Property Address	Zoning[a]	
14S	Southbound Penn Avenue & 43rd Avenue	4301 N Penn Avenue Minneapolis, MN 55412		R1A – Residential (one family, light density)
14N	Northbound Penn Avenue & 43rd Avenue	4264 N Penn Avenue Minneapolis, MN 55412		R1 – Residential (one family, light density)
Brooklyn Center				
16S	Southbound Brooklyn Boulevard & 51st Avenue	5120 Lilac Drive N Brooklyn Center, MN 55430		R3 – Residential (multi family, townhouse/condo)
16N	Northbound Brooklyn Boulevard & 51st Avenue	5100 Brooklyn Boulevard Brooklyn Center, MN 55430		R1 – Residential (one family, dwelling)
18S	Southbound Xerxes Avenue & 56th Avenue	5601 Xerxes Avenue N Brooklyn Center, MN 55430		C2 – Commercial
18N	Northbound Xerxes Avenue & 56th Avenue	1300 Shingle Creek Crossing Brooklyn Center, MN 55430		C2 – Commercial
19	Brooklyn Center Transit Center	2900 County Road 10 Minneapolis, MN 55430		C2 – Commercial

[a] Source: City of Minneapolis Zoning Map (April 2015), City of Brooklyn Center Zoning Map (October 2013)

ATTACHMENT 4

Planned Land Use (Minneapolis and Brooklyn Center)

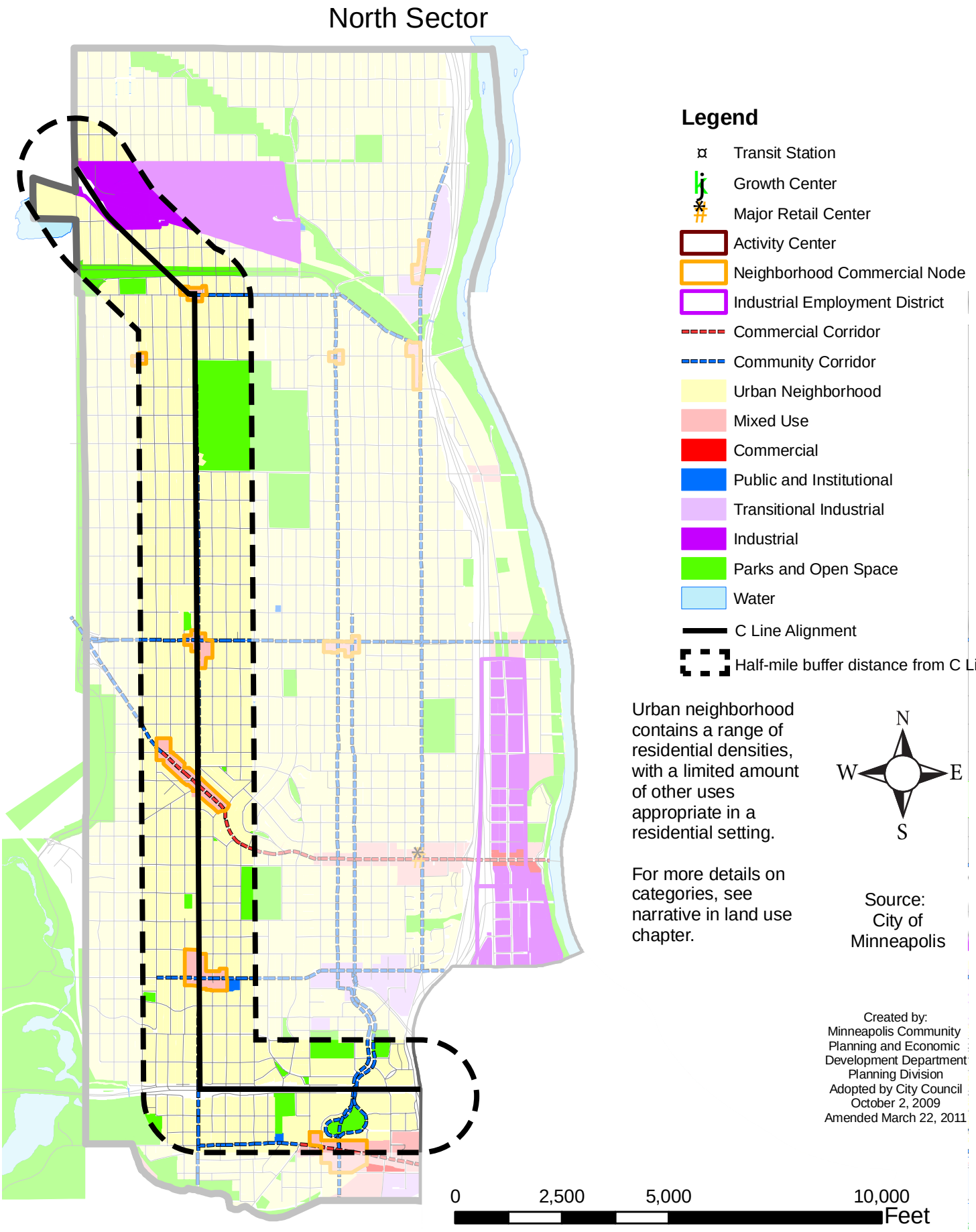
Attachment 4A: Planned Land Uses Along C Line Corridor - Brooklyn Center



C Line Alignment

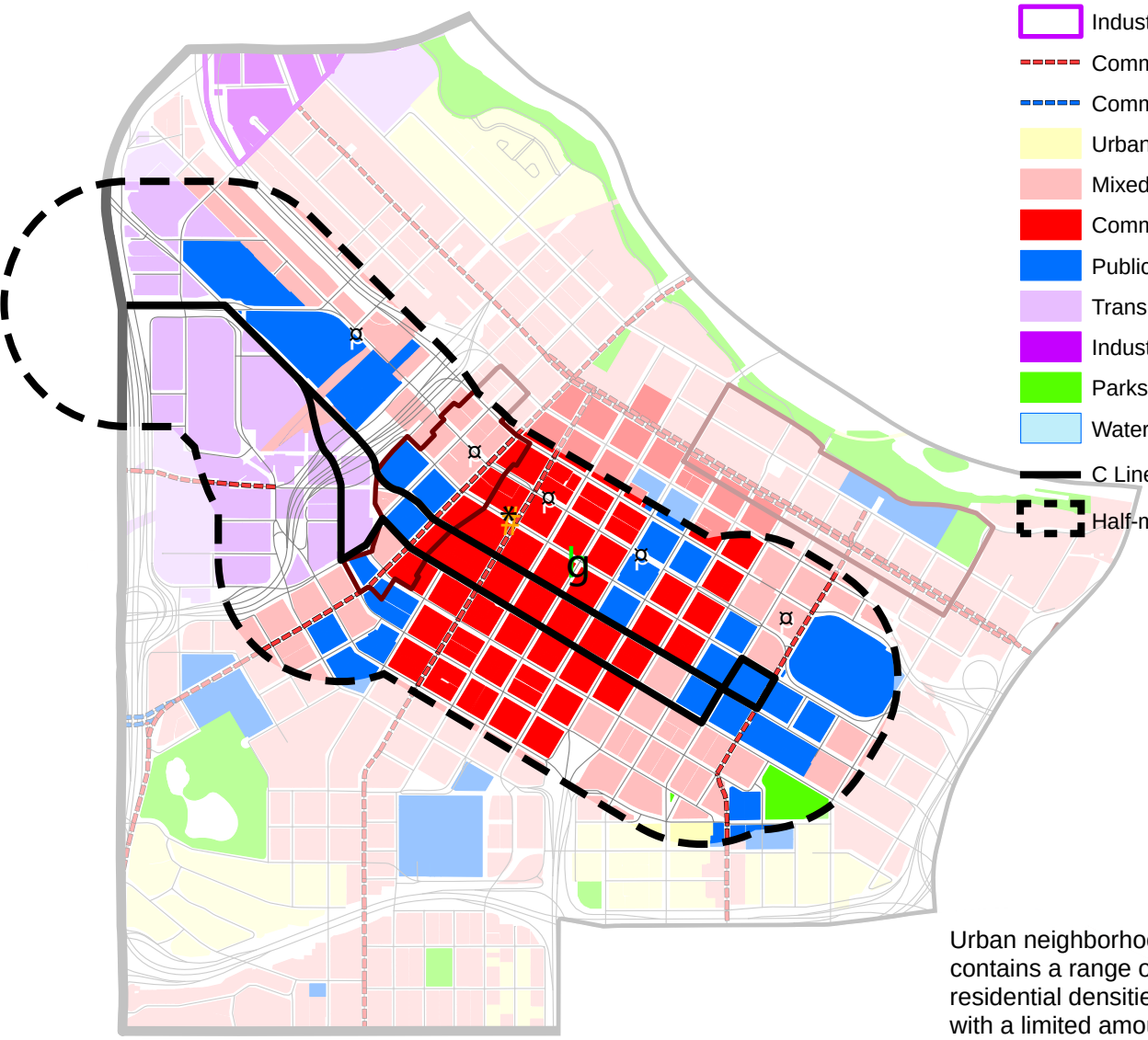
Half-mile buffer distance from C Line

Attachment 4B: Planned Land Uses Along C Line Corridor - North Minneapolis



Attachment 4C: Planned Land Uses Along C Line Corridor - Downtown Minneapolis

Downtown Sector



Legend

- Transit Station
- Growth Center
- Major Retail Center
- Activity Center
- Neighborhood Commercial Node
- Industrial Employment District
- Commercial Corridor
- Community Corridor
- Urban Neighborhood
- Mixed Use
- Commercial
- Public and Institutional
- Transitional Industrial
- Industrial
- Parks and Open Space
- Water
- C Line Alignment
- Half-mile buffer distance from C Line

N W E S

Urban neighborhood contains a range of residential densities, with a limited amount of other uses appropriate in a residential setting.

For more details on categories, see narrative in land use chapter.

Source: City of Minneapolis

Created by: Minneapolis Community Planning and Economic Development Department Planning Division
Adopted by City Council October 2, 2009
Amended March 22, 2011
Amended August 16, 2011

0 2,500 5,000 10,000 Feet

ATTACHMENT 5

Penn Avenue Traffic Study

SRF Consulting Group, Inc. | Engineers Planners Designers

Draft Memorandum

SRF No. 0148403

To: Mark Koegler, ASLA, CEO
Hoisington Koegler Group Inc.

From: Emily Gross, Engineer
Liz Heyman, Transportation Planner
Craig Vaughn, P.E., PTOE, Principal

Date: August 25, 2015

Subject: Transportation System Conditions Technical Memorandum for the Penn Avenue Community Works

Introduction

The Penn Avenue study area extends approximately 5.4 miles from I-394 to 44th Avenue along Penn Avenue and from 44th Avenue to 49th Avenue along Osseo Road (see Figure 1). The study area is completely within the City of Minneapolis; however, both Penn Avenue and Osseo Road are owned and maintained by Hennepin County as CSAH 2. The majority of the intersecting roadways are local facilities under the City of Minneapolis jurisdiction (except for Trunk Highway 55, which is a State facility).

The documentation contained herein is an overview of the existing transportation system, including a snapshot of forecast traffic conditions. The overview draws upon data collected along the corridor, review of existing planning documents, input received from the Project Management Team (PMT), and forecast traffic conditions. The following areas are summarized:

- Existing roadway configuration and classification
- Daily traffic volumes
- Access inventory
- Crash analysis
- Parking analysis
- Traffic operations



PENN AVENUE
VISION AND IMPLEMENTATION FRAMEWORK

| Livability | Economic Development | Job Creation | Beautification | Connectivity/Mobility |

MAY 2014

Roadway Configuration and Classification

Roadway Configuration

The roadway configuration refers to the corridor geometry within the curb-to-curb space of the roadway. For purposes of this description the corridor has been segmented into Penn Avenue and Osseo Road sections. Penn Avenue is a two-lane undivided facility from I-394 to 44th Avenue. On-street parking is permitted on both sides of the street throughout this section of the corridor. However, parking is restricted near the public street intersections. While the majority of the corridor is not striped with turn lanes, the roadway is wide enough for two vehicles to occupy the area striped for a single lane where parking is not permitted. This provides the opportunity for each intersection to utilize the extra space as 'pseudo' right- and/or left-turn lanes (see Figure 2). There are striped turn lanes at select, few intersections along the corridor (i.e. TH 55, West Broadway Avenue, Lowry Avenue, and 44th Avenue).

> **Osseo Road from 44th Avenue to 45th Avenue is a two-lane** divided facility with turn lanes. North of 45th Avenue, Osseo Road is a four-lane undivided facility. No parking is allowed along Osseo Road throughout.

Osseo Road from 44th Avenue to 45th Avenue is a two-lane divided facility with turn lanes. North of 45th Avenue, Osseo Road is a four-lane undivided facility. No parking is allowed along Osseo Road throughout.

Roadway Functional Classification

The City of Minneapolis and Hennepin County classify their roadway systems based on functional classification standards set by the Metropolitan Council. Functional classification ensures that non-transportation factors, such as land use and development, are taken into account when planning and designing streets and highways. There are multiple classes of roadways within the Penn Avenue study area, as shown in Table 1.

Table 1: Classification of Roadways within the Penn Avenue Study Area

Roadway	Functional Classification (1)	Speed Limit
Penn Avenue (CSAH 2)	B-Minor Arterial Roadway	30 mph
Osseo Road (CSAH 152) (south of 45th Avenue)	A-Minor Augmenter Arterial Roadway	30 mph
Osseo Road (CSAH 152) (north of 45th Avenue)	A-Minor Reliever Arterial Roadway	35 mph
Key Roadways Intersecting Penn Avenue Study Area		
Cedar Lake Road	Local Roadway	30 mph
Glenwood Avenue (CSAH 40)	A-Minor Reliever Arterial Roadway	30 mph
Highway 55 (Olson Memorial Highway)	Principal Arterial Roadway	30 mph
Plymouth Avenue	Local Roadway	30 mph
Golden Valley Road (CSAH 66)	A-Minor Augmenter Arterial Roadway	30 mph
West Broadway Avenue (CSAH 81)	A-Minor Augmenter Arterial Roadway	35 mph
Lowry Avenue (CSAH 153)	B-Minor Arterial Roadway	30 mph
Dowling Avenue	Local Roadway	30 mph
44th Avenue (CSAH 152)	A-Minor Augmenter Arterial Roadway	30 mph

(1) Based on Hennepin County Transportation Systems Plan

Penn Avenue is classified as a B-Minor arterial roadway within the urban core. Minor arterials make up the class of roadways including a few minor state highways, most county roads, and some major city streets. These roads primarily provide mobility, carrying short to medium length trips (two to six miles), and have controlled land access that is usually regulated through a permitting process. The 'urban core' classification highlights the constraints of fully developed areas that have a tightly woven network of public streets with relatively short block lengths of 300-660 feet, similar to what is found on Penn Avenue.

Osseo Road is classified as an A-Minor Augmenter arterial roadway from 44th Avenue to 45th Avenue and an A-Minor Reliever arterial roadway north of 45th Avenue. A-Minor Relievers and Augmenters supplement the system of principal arterials (i.e. interstate highways and certain major state trunk highways) and tend to serve longer trips.

Traffic Data Collection

Traffic data collection is a key component of any project where traffic operations need to be assessed. Historical data was reviewed along the corridor to gain an understanding of the existing conditions. Intersection turning movement counts were gathered from the City of Minneapolis during the weekday a.m. and p.m. peak periods at the following locations along the Penn Avenue corridor:

- Cedar Lake Road
- Plymouth Avenue
- West Broadway Avenue
- Dowling Avenue
- Glenwood Avenue
- Golden Valley Road
- Lowry Avenue
- 44th Avenue

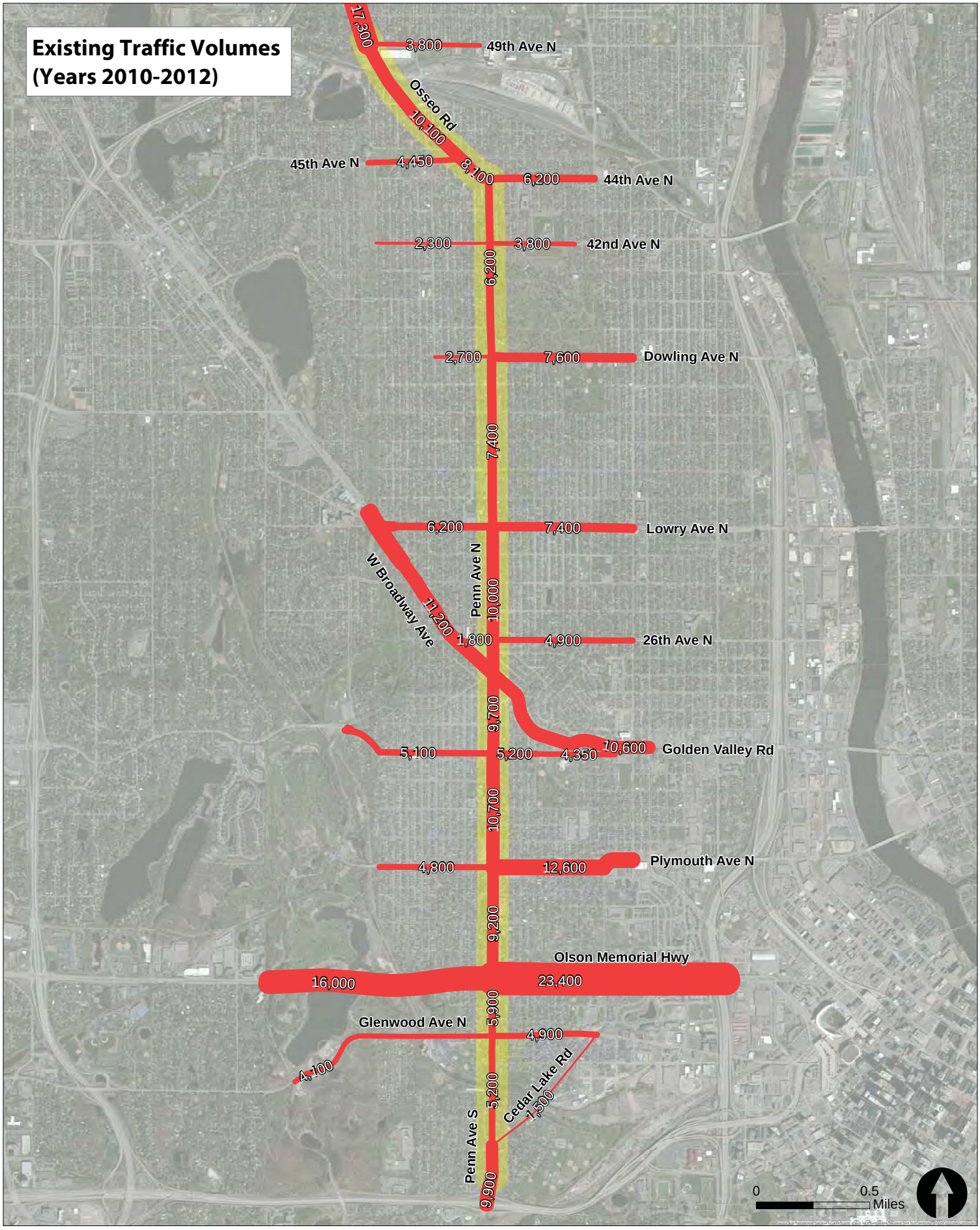
These eight key intersections were identified early on by the Project Management Team (PMT) as the appropriate intersections for review along the Penn Avenue corridor. The weekday a.m. peak hour was determined to be from 7:30 – 8:30 a.m. and the p.m. peak hour from 4:45 – 5:45 p.m. Appendix A contains the a.m. and p.m. peak period turning movement count data for the eight key intersections.

Penn Avenue Average Daily Traffic Volume

Traffic volumes in the study area vary by roadway segment, as shown in Figure 3. In the southern end of the study area, average daily traffic (ADT) volumes are approximately 5,000 to 6,000 vehicles per day (vpd) between Cedar Lake Road and Highway 55, but nearly double to 10,000 vpd at the entrance to I-394. Between Highway 55 and Lowry Avenue ADTs range from 9,000 to 10,000 vpd. North of Lowry Avenue to 44th Avenue the ADT volumes range from approximately 6,000 to 7,500 vpd. Along Osseo Road, north of 44th Avenue ADT volumes return to approximately 10,000 vpd and then rise significantly to 17,3000 vpd north of 49th Avenue, outside of the study area.

Cross Street Average Daily Traffic

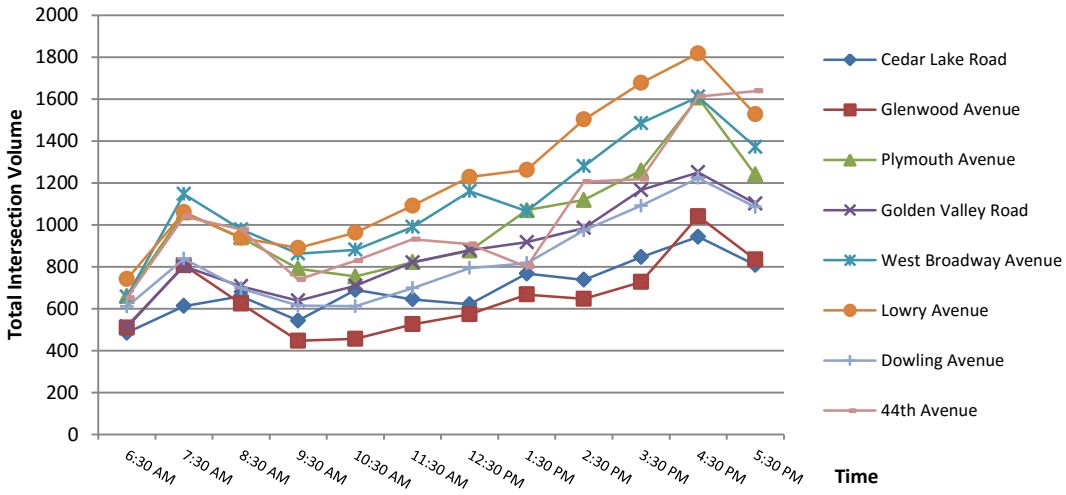
Highway 55 has the highest ADT volumes ranging from 16,000 to 23,400 vpd west and east of Penn Avenue, respectively. West Broadway Avenue, west and east of Penn Avenue, and Plymouth Avenue, east of Penn Avenue, have the next highest level of ADT volumes, all ranging from approximately 10,000 to 12,000 vpd. The remaining major cross streets have ADT volumes that range from approximately 2,000 to 7,500 vpd.


Existing Traffic Volumes
(Years 2010-2012)
17,300
3,800
49th Ave N
Osseo Rd
10,100
45th Ave N
4,450
8,100
6,200
44th Ave N
2,300
3,800
42nd Ave N
6,200
2,700
7,600
Dowling Ave N
7,400
6,200
7,400
Lowry Ave N
W Broadway Ave
11,200
Penn Ave N
10,000
1,800
4,900
26th Ave N
9,700
5,100
5,200
4,350
10,600
Golden Valley Rd
10,700
4,800
12,600
Plymouth Ave N
9,200
Olson Memorial Hwy
16,000
23,400
5,900
Glenwood Ave N
4,900
4,100
Cedar Lake Rd
1,500
5,200
Penn Ave S
9,900
0
0.5
Miles

Hourly Traffic Profile on Penn Avenue

Hourly traffic volumes in the Penn Avenue study area peak slightly during the a.m. peak hour, but then gradually build to its highest levels in the p.m. peak period. This pattern is shown in Figure 4, which illustrates total traffic volumes at key intersections along Penn Avenue. For example, following the orange line representing volumes at the Penn Avenue/Lowry Avenue intersection, traffic volumes start at approximately 800 vehicles per hour (vph) at 6:30 a.m. and rise to approximately 1,000 vph at their peak during the a.m. peak period - decreasing around 8:30 a.m. After 9:30 a.m., volumes rise throughout the day until reaching their highest peak of approximately 1,800 vph during the p.m. peak period. This pattern is repeated at all eight key intersections shown, demonstrating that traffic levels in the study area are highest during the p.m. peak period.

Figure 4: Penn Avenue Hourly Traffic Profile



Access Inventory

Access plays a critical role in how roadway facilities operate. The goal of managing access is to achieve an optimal balance between what is needed for safe, efficient roadway operations, and the need to provide access to adjacent properties and businesses. A high frequency of access along a given segment of roadway can reduce capacity and adversely affect operations.

Access Spacing

The entire Penn Avenue study area has approximately 135 access points, including public, residential driveways, and commercial driveways, which equates to approximately 25 access points per mile (or an access point approximately every 200 feet). These access locations are shown in Figure 5. It should be noted that throughout the total 5.4 mile study area there are 17 signalized intersections.



Signalized and other Public Access Points



Commercial Access Points



Residential Access Points



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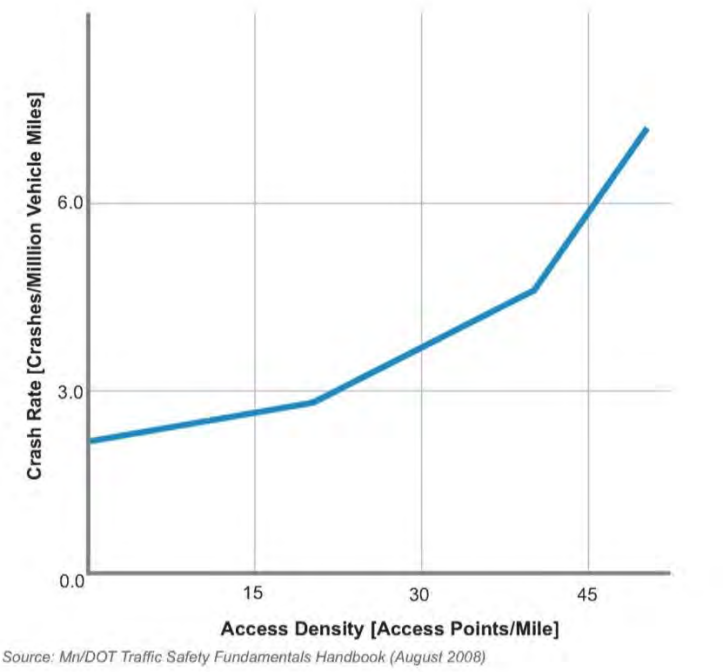
Access/ Safety Relationshi8p

Numerous independent studies have shown that the number of access points along a given segment correlate with the segment's crash rate. In 1998, MnDOT's Research Report No. 1998-27 *Statistical Relationship between Vehicular Crashes and Highway Access*, reviewed the relationship between access density and crash rates along select Minnesota roads. The study found a direct relationship between access density and crash rates along urban roadways.

Figure 6 below, from MnDOT's *Traffic Safety Fundamentals Handbook*, describes the relationship between lower access density and reduced crash rates for urban two-lane conventional roadways.

Figure 6: Access Density and Crash Rate Relationship



Source: Mn/DOT Traffic Safety Fundamentals Handbook (August 2008)

Crash Analysis

Crash Data

A crash analysis was performed for select intersections and roadway segments within the Penn Avenue study area based on data from January 1, 2005 through December 31, 2009. The crash data was provided by Hennepin County. Additional data, such as crash types, were obtained from MnDOT using the Minnesota Crash Mapping Analysis Tool (MnCMAT).

Crash Analysis Methodology

Intersection and segment crash rates were calculated in the Penn Avenue study area and then compared to typical Hennepin County crash rates for intersections and segments with similar characteristics.

It should be noted that a higher than average crash rate does not necessarily indicate a significant crash problem. Therefore, the critical crash rate was calculated to determine the statistical significance of the above average crash rates. If the calculated crash rate is below the critical crash rate, the crashes can be considered to have occurred due to the random nature of crashes and not a geometric design or traffic control issue.

Crash Analysis Results

The results of the crash analysis are shown in Figure 7 (for more detailed crash rate calculations, please see Appendix B). Results indicate 12 intersections and 13 segments have crash rates higher than average for intersections and segments with similar characteristics. Five intersections and five segments have crash rates higher than their respective critical crash rates. This indicates that there may be a significant crash issue at these locations and mitigation should be considered.

The majority of the crashes within the Penn Avenue study area, particularly at the intersections/segments identified as being over the critical crash rate, were rear-end, side-swipe same direction, and right-angle crashes; these crash types are discussed further in Table 2.

Table 2: Typical Crashes Found in the Penn Avenue Corridor

Type of Crash	Potential Causal Factor	Possible Countermeasures

Rear end	It is typical of signalized intersections to have a higher incidence of rear-end collisions. This is sometimes caused by motorists not recognizing the back of the queues as they approach the signal or not identifying that vehicles are stopping in front of them at the traffic signal.
	
	Rear-end crashes can also occur where there is not a designated turn lane for vehicles to maneuver out of the main line to slow down and make a turn.
		• Install/improve warning signage
		• Reduce speed limit with enforcement
		• Reduce access to the mainline
		• Prohibit turns
		• At signalized intersections:
		  ○ Install visors
		  ○ Install back plates
		  ○ Relocate/add signal heads
		  ○ Re-time signal
		  ○ Adjust phase change interval
		  ○ Increase red clearance interval



Segment Crash Rates



Intersection Crash Rates



Pedestrian Crash Severity

Penn Avenue Study Area

Segment Crash Rate Severity

- Existing crash rate less than the average crash rate
- Existing crash rate between the average and critical crash rate
- Existing crash rate greater than the critical crash rate

Note: Crash data provided by Hennepin County for dates 2005-2009.

Intersection Crash Rate Severity

- Existing crash rate less than the average crash rate
- Existing crash rate between the average and critical crash rate
- Existing crash rate greater than the critical crash rate

Note: Crash data provided by Hennepin County for dates 2005-2009.

Pedestrian Crash Severity

- Minor Injury
- Incapacitating Injury
- Fatality

Note: Crash data pulled from MnCMAT for dates 2007-2014.

0 0.5 Miles

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Table 3: Typical Crashes Found in the Penn Avenue Corridor – Continued

Type of Crash	Potential Causal Factor	Possible Countermeasures
Sideswipe same direction	Side-swipe crashes frequently occur along corridors where cars commonly weave in and out of lanes, or switch lanes frequently, to avoid a vehicle slowing down to make a left or right turn. As stated previously, currently there are very few left- and right-turn lanes along the corridor. Field observations indicate that at intersections, motorists frequently treat the northbound and southbound approaches as shared left-thru/shared right-thru turn lanes, which may be contributing to the sideswipe crashes.	• Install/improve warning signage • Reduce speed limit with enforcement • Install raised median • Install left- and/or right-turn lanes • Prohibit right-turn-on-red • Remove on-street parking

Right angle	Right-angle crashes are common along corridors with high access density. Many of the crashes are likely caused by vehicles slowing down along Penn Avenue to make a turn or vehicles exiting an access point.	• Reduce access to mainline
		• Install/improve signage
		• Reduce speed limit with enforcement
		• If poor visibility of traffic signal or restricted sight distance:
		  ○ Install/improve warning sign
		  ○ Install stop bar closer to cross road
		  ○ Relocate/add signal heads

Concentration of Head-On Collisions

A concentration of five head-on collisions was found at the Penn Avenue/33rd Avenue intersection from January 1, 2005 through December 31, 2009. Two of the crashes involved motorists that were under the influence of drugs/alcohol and three of the crashes involved pedestrians or bicyclists. However, since this timeframe a pedestrian signal was installed (push button activated), and no head-on collisions have been reported at this intersection after the installation of the pedestrian signal.

Parking Analysis

A parking analysis was performed to determine current parking demand in the Penn Avenue study area.

Parking Analysis Methodology

Quantitative Assessment of Supply and Demand

A quantitative assessment was used to determine parking supply and demand in the following areas:

- On-street parking along Penn Avenue, from I-394 to 44th Avenue

  - As previously mentioned, no parking is permitted along Osseo Road
- On-street parking along cross streets within one-block east or west of Penn Avenue
- Off-street parking within a 330 foot radius of seven key corridor intersections
  - Key corridor intersections were determined by Hennepin County and Metro Transit project team staff

Aerial photographs and Google Street View were used to determine the parking supply on Penn Avenue, which was then field verified. To determine the supply of on-street parking in the corridor it was assumed that one vehicle occupies approximately 20 feet of curbside space per parking spot.

To determine demand on-street parking counts were collected by SRF Consulting Group on Wednesday, May 21, 2014 during the following times:

- Overnight/morning: 4:30 a.m. – 6:30 a.m.
- Midday: 11:30 a.m. – 1:30 p.m.
- Evening: 6:00 p.m. – 8:00 p.m.

Qualitative Assessment

A qualitative assessment was performed to determine on-street parking utilization along Oliver Avenue and Queen Avenue (north/south parallel routes of Penn Avenue). The qualitative assessment was performed during the same three time periods as the quantitative assessment. The qualitative assessment involved a visual inspection and relative rating of on-street parking rates along segments of Oliver Avenue and Queen Avenue between I-394 to 44th Avenue.

Parking Survey Results and Key Findings

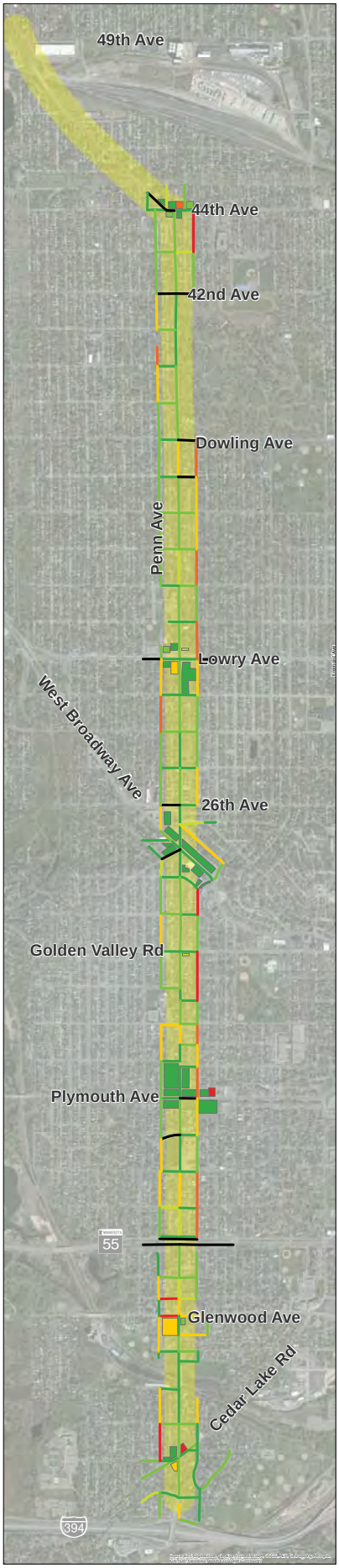
Results

Results of the parking utilization surveys are shown in Figure 8 and summarized in Table 4 and Table 5. Detailed parking supply and demand counts along the Penn Avenue segments, cross-streets, and parking lots during each of the times are provided in Appendix C.

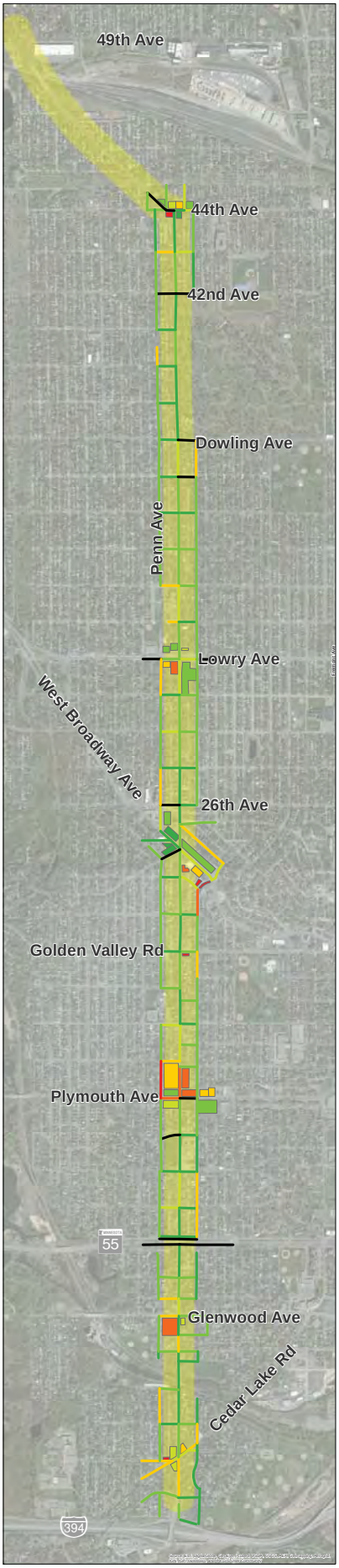
Key Findings

Results indicate that there is not a parking shortage in the Penn Avenue study area. However, demand was higher near the corridor's seven key intersections. Specifically, some of the highest utilization rates in the corridor were seen during the midday time at the corridor's commercial nodes at Cedar Lake Road, Plymouth Avenue, West Broadway Avenue, and 44th Avenue.

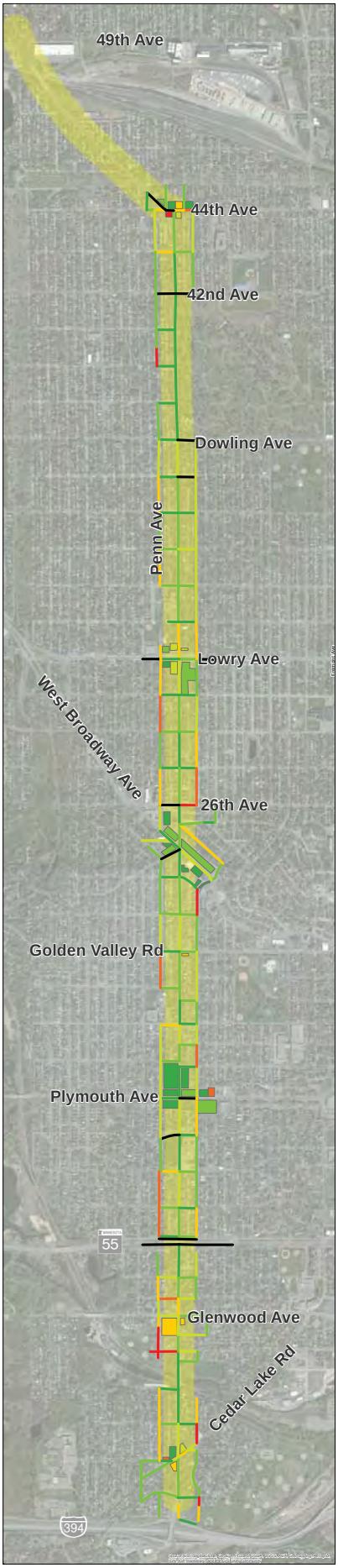
Results of the qualitative assessment demonstrated that on-street parking along Oliver Avenue and Queen Avenue was highest during the overnight/morning and evening time, suggesting that residents are using these streets for overnight parking.



Morning: 4:30 a.m.- 6:30 a.m.



Midday: 11:00 a.m. - 1:00 p.m.



Evening: 6:00 p.m. - 8:00 p.m.

Penn Avenue Study Area

On Street Parking Demand

- No Parking
- 0% - 10%
- 10% - 30%
- 30% - 50%
- 50% - 70%
- 70% - 90%
- 90% - 100%

Commercial Lot Parking Demand

- 0% - 10%
- 10% - 30%
- 30% - 50%
- 50% - 70%
- 70% - 90%
- 90% - 100%

0 0.5 Miles

Table 4: On-Street Parking Utilization

Segments	Supply	Morning		Midday		Evening	
		Occupied Spaces	Percent	Occupied Spaces	Percent	Occupied Spaces	Percent
I-394 North Ramps to Cedar Lake Road							
Penn Avenue	42	10	24%	20	48%	12	29%
Cross-Streets	175	34	19%	25	14%	13	7%
Cedar Lake Road to Glenwood Avenue							
Penn Avenue	122	13	11%	22	18%	25	20%
Cross-Streets	195	70	36%	41	21%	56	29%
Glenwood Avenue to Highway 55							
Penn Avenue	73	21	29%	11	15%	14	19%
Cross-Streets	75	33	44%	23	31%	34	45%
Highway 55 to Plymouth Avenue							
Penn Avenue	141	44	31%	26	18%	35	25%
Cross-Streets	103	8	8%	19	18%	20	19%
Plymouth Avenue to Golden Valley Road							
Penn Avenue	144	24	17%	24	17%	29	20%
Cross-Streets	113	12	11%	22	19%	16	14%
Golden Valley Road to West Broadway Avenue							
Penn Avenue	106	20	19%	15	14%	27	25%
Cross-Streets	151	5	3%	26	17%	34	23%
West Broadway Avenue to Lowry Avenue							
Penn Avenue	193	24	12%	35	18%	33	17%
Cross-Streets	253	71	28%	65	26%	69	27%
Lowry Avenue to Dowling Avenue							
Penn Avenue	229	74	32%	72	31%	66	29%
Cross-Streets	123	12	10%	18	15%	11	9%
Dowling Avenue to 44th Avenue							
Penn Avenue	274	31	11%	22	8%	26	9%
Cross-Streets	156	24	15%	34	22%	32	21%
Total							
Penn Avenue	**1,324**	**261**	**20%**	**247**	**19%**	**267**	**20%**
Cross-Streets	**1,344**	**269**	**20%**	**273**	**20%**	**285**	**21%**

Table 5: Off-Street Parking Utilization

Nodal Study Area	Supply	Morning		Midday		Evening	
		Occupied Spaces	Percent	Occupied Spaces	Percent	Occupied Spaces	Percent
Cedar Lake Road	30	11	37%	15	50%	10	33%
Glenwood Avenue	14	6	43%	8	57%	8	57%
Plymouth Avenue	485	19	4%	245	51%	45	9%
Golden Valley Road	3	1	33%	3	100%	2	67%
West Broadway Avenue	284	5	2%	100	35%	33	12%
Lowry Avenue	219	16	7%	68	31%	55	25%
44th Avenue	72	16	22%	31	43%	27	38%

Traffic Operations

A traffic operations analysis was conducted to determine how the Penn Avenue study area currently operates, to identify the future capacity limitations (if any), and to recommend potential corridor configurations that accommodate alternative modes; existing and future year 2035 a.m. and p.m. peak hour conditions were reviewed.

5.4 miles of Penn Avenue and eight key intersections were examined. The following key intersections were included (all along Penn Avenue):

- Cedar Lake Road
- Glenwood Avenue
- Plymouth Avenue
- Golden Valley Road
- West Broadway Avenue
- Lowry Avenue
- Dowling Avenue
- 44th Avenue

As previously reported, existing turning movement counts were gathered from the City of Minneapolis for the a.m. and p.m. peak hour conditions. Given the hourly traffic volume comparison presented earlier, the a.m. peak hour condition was not reviewed as part of the traffic operations analysis; the p.m. peak hour was analyzed because it represents the most conservative condition throughout the day. Analysis of the existing p.m. peak hour conditions will indicate how traffic currently operates in the study area. Table 6 summarizes the data sources used as the foundation for the intersection capacity analysis.

Table 6: Intersection Capacity Analysis Data Sources

Data	Source	Date of collection	Notes
Intersection Turning Movement Volumes	City of Minneapolis	March/May 2013 Cedar Lake Road intersection was collected in 2010	Historical traffic volumes along Penn Avenue have remained the same and in some areas have decreased in recent years. Therefore, no growth was applied to the turning movement counts.
Existing Signal Timing	City of Minneapolis	May 2014	City of Minneapolis plans to optimize signal timing plans along Penn Avenue in Summer 2014
Transit Routes & Stop Locations	Metro Transit	June 2013	

All key intersections were analyzed using the VISSIM (version 5.40) traffic modeling software. VISSIM software was used to accurately account for the multimodal characteristics of the Penn Avenue corridor – including pedestrians, bicycles, on-street parking, transit vehicle operations, and typical vehicular traffic. VISSIM is the only software program that can comprehensively account for each of these elements.

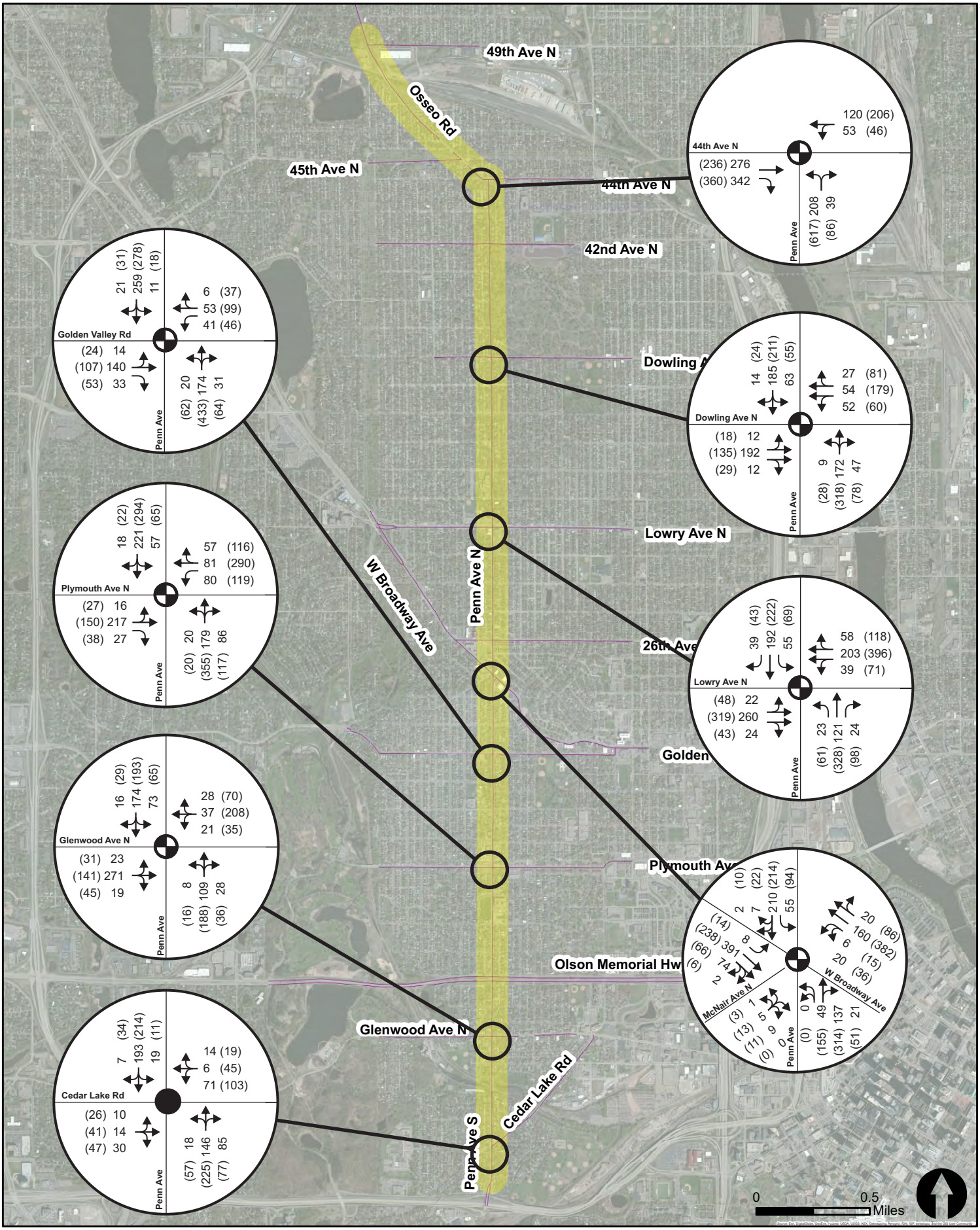
Capacity analysis results identify a Level of Service (LOS) which indicates the quality of traffic flow through an intersection. Intersections are given a ranking from LOS A through LOS F. The LOS results are based on average delay per vehicle. The delay threshold values are shown in Table 7. LOS A indicates the best traffic operation, with vehicles experiencing minimal delays. LOS F indicates an intersection where demand exceeds capacity, or a breakdown of traffic flow. LOS A through D is generally considered acceptable by drivers in urban environments.

Table 7: Level of Service Criteria for Signalized and Unsignalized Intersections

LOS Designation	Signalized Intersection Average Delay/Vehicle (seconds)	Unsignalized Intersection Average Delay/Vehicle (seconds)
A	≤ 10	≤ 10
B	> 10 – 20	> 10 - 15
C	> 20 – 35	> 15 - 25
D	> 35 – 55	> 25 - 35
E	> 55 – 80	> 35 - 50
F	> 80	> 50

Existing Conditions

The existing geometrics, traffic volumes and traffic controls of the intersections were used to model the current condition (see Figure 9). The existing transit service plans, stop locations, and dwell times for all existing bus routes that travel on Penn Avenue in the study area were applied in the model. For more detail on the local bus assumptions please see Appendix D.



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Results of the existing operations analysis shown in Table 8 indicate that all key intersections currently operate at an acceptable overall LOS D or better during the p.m. peak hour; with existing traffic controls and geometric layout (see Figure 9). The average and max queue along each of the approaches at the study intersections are shown in Figure 10. Appendix E provides an expanded review of the intersections operations analysis, including movement/approach/overall intersection delays.

Table 8: Existing Intersection Capacity Analysis

Penn Avenue Intersection	P.M. Peak Hour	
	LOS	Delay
Cedar Lake Road (1)	C	15 sec.
Glenwood Avenue	C	31 sec.
Plymouth Avenue	C	25 sec.
Golden Valley Road	D	37 sec.
West Broadway Avenue	C	31 sec.
Lowry Avenue	B	17 sec.
Dowling Avenue	C	24 sec.
44th Avenue	C	31 sec.

(1) Indicates an unsignalized intersection with all-way stop control.

While all of the study intersections operate with acceptable overall levels of service, there are some queuing issues along Penn Avenue. At the Penn Avenue/44th Avenue intersection, the average and max queues in the northbound direction are approximately 700 feet and 1,500 feet respectively. It should be noted that the City of Minneapolis plans to update the signal timing at all of the intersections within the Penn Avenue study area this summer (2014), which should reduce the queues and improve operations/efficiencies.

Year 2035 No Build Conditions

Year 2035 no build conditions were analyzed to understand how the transportation network will operate with the existing roadway configuration and future traffic growth. The following information details the future operations of the corridor.



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Roadway Configuration and Transit Assumptions

The existing intersection configurations were assumed at the key intersections, except for the addition of future Bus Rapid Transit (BRT) C Line modifications. C Line modifications will require bus bumpouts at select intersections to accommodate loading/unloading of buses; these bus bumpouts will result in buses stopping in the north and south travel lanes along Penn Avenue. Table 9 summarizes the C Line assumptions incorporated into the year 2035 no build model. The C Line service plan was assumed. The service plan includes increased frequencies for C Line rapid buses but also reductions in local service along Penn Avenue. Under the C Line service plan it is assumed that dwell times will be shorter for local buses on Penn Avenue, because the majority of riders on the existing Route 19 (the local route that serves Penn Avenue) will shift to use the C Line service. For a more detailed discussion of C Line geometric conditions and ridership forecasts please see *Transit System Conditions Technical Memorandum for the Penn Avenue Community Works* report (under separate cover).

Table 9: Summary of C Line Station Concept Assumptions

Penn Avenue Intersection	Station Concept Configuration	Directional Station	Concept Platform Location
Cedar Lake Road	-	-	-
Glenwood Avenue	-	-	-
Plymouth Avenue	Bumpout	Northbound	Farside
	Bumpout	Southbound	Farside
Golden Valley Road	Bumpout	Northbound	Farside
	Bumpout	Southbound	Farside
West Broadway Avenue	Bumpout	Northbound	Farside
	Curbside	Southbound	Nearside
Lowry Avenue	Curbside	Northbound	Farside
	Curbside	Southbound	Nearside
Dowling Avenue	Bumpout	Northbound	Nearside
	Bumpout	Southbound	Nearside
44th Avenue	Curbside	Northbound	Farside (after turn onto Osseo Road)
	Curbside	Southbound	Nearside (before turn onto Penn Avenue)

All existing traffic control was maintained under year 2035 no build conditions. However, the signal timing was assumed to be optimized at each of the intersections.

Traffic Forecasts

Hennepin County forecasted year 2030 average daily traffic (ADT) volumes and historical ADT volumes were reviewed to determine the expected growth in traffic within the Penn Avenue study area. This was then compared to the land use redevelopment opportunities in the study area to determine a growth rate to apply to each of the study intersections. The following growth rates were applied to the existing turning movement volumes to develop year 2035 traffic volumes:

- Cedar Lake Road – 0.25 % / year
- Glenwood Avenue – 0.5% / year
- Plymouth Avenue – 0.75% / year
- Golden Valley Road – 0.5% / year
- West Broadway Avenue – 0.75% / year
- Lowry Avenue – 0.75% / year
- Dowling Avenue – 0.5% / year
- 44th Avenue – 0.5% / year

The year 2035 no build condition geometrics, volumes and traffic controls are shown in Figure 11.

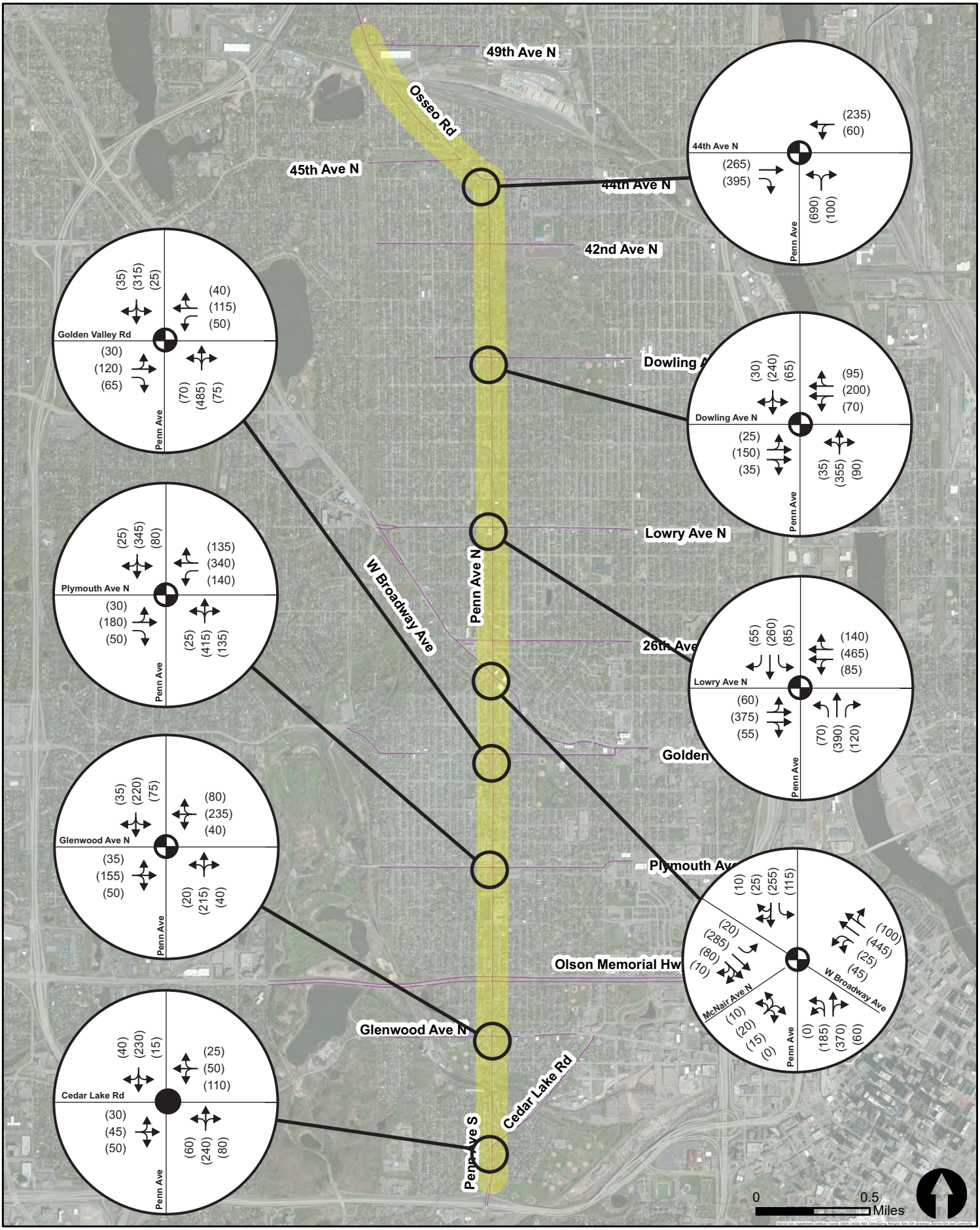
Year 2035 No Build Condition Intersection Operations

Results of the Year 2035 no build conditions intersection capacity analysis are shown in Figure 12 and summarized in Table 10. The results indicate that all study intersections are expected to operate at an acceptable overall LOS D or better during the p.m. peak hour, with the year 2035 geometric/ transit assumptions and traffic control. Appendix F provides an expanded review of the intersections operations analysis, including movement/approach/overall intersection delays.

Table 10: Year 2035 No Build Intersection Capacity Analysis

Penn Avenue Intersection	P.M. Peak Hour	
	LOS	Delay
Cedar Lake Road (1)	C	17 sec.
Glenwood Avenue	B	19 sec.
Plymouth Avenue	C	24 sec.
Golden Valley Road	B	19 sec.
West Broadway Avenue	D	43 sec.
Lowry Avenue	C	25 sec.
Dowling Avenue	C	21 sec.
44th Avenue	C	29 sec.

(1) Indicates an unsignalized intersection with all-way stop control.



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MAY 2014



PENN AVENUE
VISION AND IMPLEMENTATION FRAMEWORK

| Livability | Economic Development | Job Creation | Beautification | Connectivity/Mobility |

MAY 2014

While all of the study intersections operate with acceptable levels of service, there are some queuing issues along Penn Avenue. The following queuing issues are expected under year 2035 no build conditions at the study intersections:

- Penn Avenue/Plymouth Road
    - Westbound average and max queues extend approximately 110 feet and 590 feet, respectively.
- Penn Avenue/Golden Valley Road
    - Northbound average and max queues extend approximately 40 feet and 590 feet, respectively.
- Penn Avenue/Broadway Avenue
    - Northbound average and max queues extend approximately 255 feet and 1,110 feet, respectively.
- Penn Avenue/Lowry Avenue
    - Northbound average and max queues extend approximately 50 feet and 515 feet, respectively.
- Penn Avenue/44th Avenue
    - Northbound average and max queues extend approximately 700 feet and 1,500 feet respectively.

Appendix A

Existing Intersection Turning Movement Counts

LOC ID	INT ID	ROAD 1	ROAD 2	ROAD 3	ROAD 4	COMMUNITY	TMC DATE
TM-0040	40	Penn Av S	Cedar Lake Road S			Bryn - Mawr	9/16/2010

	NB				EB				SB				WB			
Start Time	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped
6:30 AM	1	24	1	0	2	2	3	3	3	39	3	0	6	2	4	1
6:45 AM	7	33	3	0	3	0	5	1	1	33	0	0	9	2	1	1
7:00 AM	13	22	15	0	1	1	13	1	3	38	4	0	16	1	5	0
7:15 AM	12	23	12	0	10	2	12	3	10	52	10	2	15	1	7	3
7:30 AM	11	42	13	1	7	2	14	8	8	63	3	2	23	1	5	2
7:45 AM	1	39	16	1	2	6	12	11	1	49	1	6	21	3	1	1
8:00 AM	5	30	20	1	0	2	2	8	4	58	1	7	20	1	6	3
8:15 AM	1	35	36	0	1	4	2	0	6	23	2	0	7	1	2	0
8:30 AM	0	48	22	0	0	0	0	0	3	43	0	1	19	0	1	2
8:45 AM	4	71	30	0	0	0	3	4	1	52	0	1	14	1	2	5
9:00 AM	2	60	17	2	2	0	3	5	8	35	0	3	15	0	10	1
9:15 AM	7	56	23	0	1	0	4	4	5	76	4	0	17	0	1	1
9:30 AM	2	45	20	4	0	0	3	4	7	67	0	1	18	0	6	4
9:45 AM	1	19	13	0	0	0	0	0	0	25	0	0	2	0	0	1
10:00 AM	3	53	23	2	0	0	4	5	8	49	0	1	13	0	3	1
10:15 AM	5	52	18	0	1	1	5	3	1	53	0	2	20	0	3	3
10:30 AM	3	58	26	1	0	0	4	4	8	62	0	1	28	1	1	1
10:45 AM	2	78	28	3	1	0	3	5	9	52	1	2	24	0	4	1
11:00 AM	5	47	21	0	0	3	6	2	2	56	0	2	12	2	0	1
11:15 AM	4	54	17	2	1	0	2	6	2	39	3	0	15	0	6	3
11:30 AM	4	55	28	7	0	1	1	11	6	51	1	1	25	2	1	2
11:45 AM	10	44	29	0	0	1	4	1	2	38	0	3	20	1	6	0
12:00 PM	5	61	14	1	0	1	4	4	5	54	2	3	13	2	4	1
12:15 PM	4	56	15	3	1	1	6	13	2	38	2	3	16	1	8	3
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	11	41	11	1	10	5	8	0	3	34	3	3	17	2	1	5
1:00 PM	6	51	24	0	2	8	6	0	0	41	3	4	13	2	3	3
1:15 PM	11	53	21	2	2	3	9	0	1	39	7	1	15	2	3	2
1:30 PM	18	46	19	2	2	5	17	2	1	55	8	3	14	10	0	5
1:45 PM	20	62	20	1	8	5	19	4	1	42	9	4	23	5	2	2
2:00 PM	17	44	17	1	10	7	22	2	1	48	8	1	27	3	5	0
2:15 PM	5	41	28	3	2	6	12	5	1	29	3	2	12	6	3	5
2:30 PM	11	49	13	0	4	4	7	0	2	20	3	2	13	3	0	3
2:45 PM	14	82	17	0	10	3	11	0	8	47	4	4	14	3	1	0
3:00 PM	14	72	13	0	6	7	22	5	4	45	2	2	8	1	4	0
3:15 PM	10	68	18	0	4	8	23	4	2	35	6	8	12	6	5	1
3:30 PM	19	57	10	3	7	2	14	5	1	52	10	4	27	4	3	1
3:45 PM	11	60	17	0	4	6	16	3	2	45	5	8	18	7	2	3
4:00 PM	8	73	13	6	6	11	17	6	0	52	3	2	18	8	2	10
4:15 PM	14	64	27	1	7	3	30	2	4	49	7	5	21	7	3	4
4:30 PM	11	70	19	0	7	13	32	3	4	46	5	5	23	10	6	4
4:45 PM	15	57	21	2	9	8	11	0	0	58	8	2	23	13	4	5
5:00 PM	15	68	18	1	7	9	11	3	3	55	4	0	19	13	9	2
5:15 PM	15	56	23	2	6	11	9	8	2	62	12	1	34	9	0	3
5:30 PM	12	44	15	5	4	13	16	5	6	39	10	3	27	10	6	6
5:45 PM	8	78	24	0	7	4	10	1	5	56	3	3	15	6	5	5

LOC ID	INT ID	ROAD 1	ROAD 2	ROAD 3	ROAD 4	COMMUNITY	TMC DATE
TM-0040	40	Penn Av S	Cedar Lake Road S			Bryn - Mawr	9/16/2010

	NB				EB				SB				WB			
Start Time	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped
6:00 PM	12	59	17	0	2	3	14	0	2	43	11	1	16	5	1	0

LOC ID	INT ID	ROAD 1	ROAD 2	ROAD 3	ROAD 4	COMMUNITY	TMC DATE
TM-0017	17	Penn Av N	Glenwood Av N			Harrison	3/27/2013

	NB				EB				SB				WB			
Start Time	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped
6:00 AM	1	6	3	1	0	10	2	1	6	7	1	0	3	1	5	0
6:15 AM	1	8	2	1	2	7	3	0	3	7	0	0	3	2	5	0
6:30 AM	0	9	1	3	2	10	3	1	9	23	0	1	4	3	7	0
6:45 AM	0	21	6	1	7	21	3	1	10	28	4	0	5	6	2	0
7:00 AM	0	15	5	2	2	34	2	1	13	34	1	0	7	7	6	0
7:15 AM	3	33	5	2	4	44	6	2	11	59	6	0	3	12	14	0
7:30 AM	1	38	7	2	5	70	3	0	23	53	3	0	7	12	6	0
7:45 AM	3	22	10	0	9	71	5	2	18	36	0	0	7	4	6	0
8:00 AM	1	21	5	1	5	72	2	3	17	47	5	2	5	8	7	0
8:15 AM	3	28	6	0	4	58	9	1	15	38	8	1	2	13	9	0
8:30 AM	1	20	8	0	4	61	7	1	14	33	5	0	3	9	8	1
8:45 AM	3	21	6	3	1	40	5	1	10	35	0	1	1	8	4	0
9:00 AM	3	20	6	4	2	34	9	5	10	42	3	1	12	3	5	1
9:15 AM	5	37	9	6	4	27	8	3	14	38	2	0	9	7	8	0
9:30 AM	1	23	6	1	6	14	5	3	12	24	3	2	4	10	3	1
9:45 AM	2	27	7	1	2	13	8	0	10	21	3	0	12	4	4	0
10:00 AM	0	21	7	1	3	10	1	3	9	29	3	1	3	7	5	1
10:15 AM	3	27	6	1	4	13	1	4	12	27	1	0	12	6	13	0
10:30 AM	2	23	8	1	4	15	3	1	6	19	3	1	7	3	16	1
10:45 AM	4	26	10	0	5	16	4	2	3	26	0	1	6	7	7	0
11:00 AM	4	25	9	6	1	14	4	2	6	28	3	0	5	10	11	1
11:15 AM	2	22	11	0	0	13	4	2	9	19	0	0	7	10	16	0
11:30 AM	1	28	6	2	0	9	8	3	13	28	2	0	11	12	14	1
11:45 AM	5	30	8	2	3	11	7	4	12	25	4	0	8	5	11	0
12:00 PM	3	34	8	2	2	14	8	4	12	24	3	0	3	14	3	0
12:15 PM	4	24	6	1	3	19	7	1	14	30	4	1	4	11	11	1
12:30 PM	5	29	8	3	3	10	6	4	11	25	1	0	9	6	18	1
12:45 PM	2	31	2	5	2	16	10	1	6	25	4	0	8	11	14	3
1:00 PM	5	21	7	7	7	15	4	3	10	40	1	2	7	10	15	0
1:15 PM	4	49	7	1	5	16	7	4	15	35	2	2	14	10	6	1
1:30 PM	8	33	3	0	3	18	10	1	11	27	4	2	13	8	18	0
1:45 PM	5	45	9	3	4	16	6	2	12	35	1	0	12	10	16	4
2:00 PM	3	55	9	2	4	13	2	3	12	31	3	0	7	24	18	0
2:15 PM	5	44	4	3	10	14	6	3	8	33	5	0	6	15	10	0
2:30 PM	8	52	5	1	10	12	10	4	7	20	5	0	11	17	20	1
2:45 PM	3	42	10	6	6	12	4	2	11	46	4	1	2	12	12	1
3:00 PM	5	40	8	1	2	16	7	3	5	34	0	1	11	10	13	0
3:15 PM	4	32	8	6	7	11	5	6	14	40	5	0	5	13	11	1
3:30 PM	7	35	12	3	7	16	6	3	10	20	5	0	2	17	19	3
3:45 PM	5	35	6	13	6	20	2	5	17	39	5	0	4	16	12	3
4:00 PM	2	69	5	14	7	16	5	5	13	22	5	0	6	23	15	4
4:15 PM	4	45	5	1	7	23	4	4	16	47	4	0	11	36	14	0
4:30 PM	6	57	9	5	8	24	5	3	13	53	8	0	5	37	16	0
4:45 PM	5	52	12	4	3	31	15	4	13	31	6	2	7	47	22	2
5:00 PM	4	58	10	0	12	31	7	4	16	45	7	0	6	54	17	0
5:15 PM	5	41	5	1	9	44	11	1	22	57	8	0	12	65	10	0

LOC ID	INT ID	ROAD 1	ROAD 2	ROAD 3	ROAD 4	COMMUNITY	TMC DATE
TM-0017	17	Penn Av N	Glenwood Av N			Harrison	3/27/2013

	NB				EB				SB				WB			
Start Time	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped
5:30 PM	2	37	9	5	7	35	12	1	14	60	8	0	10	42	21	2
5:45 PM	5	43	9	4	7	30	12	3	11	48	5	0	4	51	15	1
6:00 PM	3	38	9	2	4	19	12	2	13	31	11	1	5	23	14	0
6:15 PM	6	33	3	3	3	24	6	0	7	37	2	0	5	19	11	0
6:30 PM	5	38	6	3	1	12	6	3	20	23	3	1	4	18	8	0
6:45 PM	4	34	4	4	5	9	9	8	10	31	10	2	2	13	9	3

LOC ID	INT ID	ROAD 1	ROAD 2	ROAD 3	ROAD 4	COMMUNITY	TMC DATE
TM-0482	482	Plymouth Av N	Penn Av N			Near - North	3/21/2013

	NB				EB				SB				WB			
Start Time	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped
0:00 13	0	12	1	0	0	1	1	0	3	2	1	0	1	2	3	0
12:15 AM	1	9	1	0	1	2	0	0	1	8	1	0	1	7	3	0
12:30 AM	2	14	4	0	0	5	2	0	2	7	4	0	1	9	0	0
12:45 AM	1	7	1	0	1	1	0	0	1	13	1	0	4	5	2	0
1:00 AM	0	7	1	0	1	4	0	0	2	8	1	0	2	2	1	0
1:15 AM	1	11	2	0	4	2	0	1	1	1	1	0	1	4	1	0
1:30 AM	0	4	3	0	0	1	0	0	4	3	1	0	4	4	2	0
1:45 AM	1	8	1	0	0	2	0	0	1	3	0	0	1	3	1	0
2:00 AM	2	6	0	1	2	0	1	0	0	2	0	0	3	1	1	0
2:15 AM	3	6	3	0	1	0	0	0	1	5	1	0	0	2	0	0
2:30 AM	0	3	2	0	0	0	0	1	1	5	0	0	0	3	1	0
2:45 AM	1	2	0	0	0	0	2	0	0	2	0	0	0	1	2	0
3:00 AM	0	2	0	1	1	0	0	0	0	0	0	0	0	2	0	0
3:15 AM	0	7	3	0	0	0	0	0	0	3	0	0	0	0	0	0
3:30 AM	0	1	1	0	0	1	0	0	0	3	0	0	0	3	2	0
3:45 AM	0	3	0	0	0	1	0	0	0	1	0	0	1	0	0	0
4:00 AM	0	4	0	0	1	3	0	0	4	1	0	0	2	1	1	0
4:15 AM	0	3	3	0	0	0	1	0	2	5	1	0	0	1	3	0
4:30 AM	0	2	1	0	0	2	0	0	1	11	1	1	1	0	1	1
4:45 AM	0	4	4	0	0	1	0	0	1	9	0	0	1	1	2	0
5:00 AM	0	7	0	1	0	4	1	0	3	14	0	0	4	5	0	0
5:15 AM	2	5	2	1	0	6	1	0	1	16	0	1	3	1	0	0
5:30 AM	1	10	6	0	1	7	5	0	6	16	0	0	7	1	1	0
5:45 AM	1	3	4	0	0	7	6	0	7	18	1	0	6	5	1	0
6:00 AM	0	16	3	0	0	10	1	0	5	20	1	1	8	1	1	0
6:15 AM	1	22	5	0	2	8	8	0	2	27	0	0	8	4	2	0
6:30 AM	1	18	7	0	0	15	6	0	7	33	2	0	12	5	2	0
6:45 AM	1	22	17	0	5	28	5	0	14	39	4	2	15	7	7	0
7:00 AM	5	26	9	0	4	31	4	1	14	40	1	2	8	7	6	0
7:15 AM	4	42	18	2	3	63	10	7	13	40	1	0	19	16	5	3
7:30 AM	2	43	23	0	2	63	9	1	16	69	3	1	27	20	6	2
7:45 AM	5	46	25	0	6	54	4	3	13	62	7	0	16	18	18	0
8:00 AM	5	42	19	4	4	60	11	2	12	46	4	2	22	24	16	2
8:15 AM	8	48	19	5	4	40	3	4	16	44	4	1	15	19	17	9
8:30 AM	9	47	19	1	1	58	2	4	20	52	3	1	8	26	17	2
8:45 AM	10	59	30	3	2	40	7	2	17	55	3	1	11	21	11	3
9:00 AM	8	48	16	2	2	28	7	0	14	45	2	2	12	18	10	1
9:15 AM	7	50	16	0	3	22	8	1	10	44	5	0	13	13	11	2
9:30 AM	5	51	20	6	1	26	6	0	16	53	5	1	6	19	17	7
9:45 AM	8	45	14	1	1	15	7	1	8	47	2	2	14	15	12	3
10:00 AM	6	51	19	5	5	21	4	4	23	45	3	3	10	13	10	5
10:15 AM	4	34	10	4	4	20	6	2	13	36	3	4	11	13	14	4
10:30 AM	7	39	16	2	5	12	7	3	13	49	3	3	13	10	15	2
10:45 AM	6	47	5	5	0	15	2	4	15	36	2	2	10	16	18	0
11:00 AM	2	47	16	1	2	14	4	1	18	55	3	0	9	16	12	2
11:15 AM	4	55	13	5	5	17	6	1	8	33	4	1	12	18	20	3
11:30 AM	3	56	13	1	4	15	6	1	14	47	4	4	17	23	16	2
11:45 AM	7	39	10	1	4	23	8	3	16	55	5	0	10	17	6	4
12:00 PM	7	49	5	2	8	16	7	0	16	53	4	2	9	22	6	0

LOC ID	INT ID	ROAD 1	ROAD 2	ROAD 3	ROAD 4	COMMUNITY	TMC DATE
TM-0482	482	Plymouth Av N	Penn Av N			Near - North	3/21/2013

	NB				EB				SB				WB			
Start Time	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped
12:15 PM	3	52	11	1	4	18	1	6	22	50	2	0	12	15	12	2
12:30 PM	5	51	15	5	2	13	7	1	24	45	2	1	10	15	13	5
12:45 PM	9	59	16	4	2	24	4	6	20	52	3	1	10	20	27	6
1:00 PM	9	50	12	1	4	16	1	2	14	49	6	2	11	22	26	0
1:15 PM	10	45	12	3	7	16	2	3	24	50	6	1	7	16	14	5
1:30 PM	3	55	21	6	2	12	7	0	20	53	4	4	21	28	25	3
1:45 PM	3	59	23	3	4	20	2	3	13	71	7	2	23	26	26	3
2:00 PM	7	78	13	0	10	11	1	2	18	72	5	0	15	21	19	3
2:15 PM	6	74	13	1	1	21	5	1	13	57	7	1	14	38	23	4
2:30 PM	4	72	15	4	8	21	11	5	10	52	4	2	24	34	18	9
2:45 PM	9	67	16	2	3	21	6	3	17	61	5	1	21	23	23	9
3:00 PM	8	62	20	2	5	15	7	2	21	60	3	5	24	25	26	4
3:15 PM	5	72	25	0	4	18	10	3	12	72	7	4	22	27	24	8
3:30 PM	6	67	17	1	8	25	10	3	13	61	9	1	21	37	31	5
3:45 PM	5	64	21	2	8	25	4	3	12	64	3	3	24	35	19	7
4:00 PM	6	95	17	6	3	24	3	4	13	78	2	2	30	42	22	7
4:15 PM	7	69	33	10	5	29	3	4	20	61	4	4	30	48	26	8
4:30 PM	7	79	25	8	5	27	7	4	12	75	3	0	36	61	36	3
4:45 PM	6	91	27	3	6	35	9	2	20	85	5	1	32	69	32	2
5:00 PM	3	85	36	3	9	40	13	0	20	75	6	1	28	62	24	4
5:15 PM	10	95	25	5	6	37	6	5	14	75	6	4	34	75	33	0
5:30 PM	1	84	29	2	6	38	10	1	11	59	5	1	25	84	27	2
5:45 PM	6	67	24	3	9	31	7	0	13	58	8	2	19	47	16	4
6:00 PM	3	65	14	1	6	28	8	1	18	61	5	0	15	59	20	4
6:15 PM	7	58	22	1	6	18	5	1	6	55	5	0	18	33	21	1
6:30 PM	7	63	13	1	3	17	7	1	7	49	5	1	12	36	14	3
6:45 PM	2	55	15	2	3	18	10	1	17	51	6	0	16	24	18	3
7:00 PM	9	50	14	3	7	16	1	0	10	52	6	1	10	22	13	0
7:15 PM	3	54	10	1	5	11	2	1	10	51	6	1	15	23	18	1
7:30 PM	2	45	8	1	0	12	3	0	2	42	3	0	12	27	22	2
7:45 PM	6	57	12	0	3	11	7	3	12	36	4	1	14	23	15	2
8:00 PM	3	41	11	1	10	12	4	0	7	34	5	0	12	23	11	1
8:15 PM	5	40	8	1	2	11	3	0	10	33	9	0	15	19	8	0
8:30 PM	5	47	7	1	9	7	3	2	8	38	6	0	8	21	8	1
8:45 PM	1	52	6	0	2	8	9	1	6	34	7	0	6	18	10	0
9:00 PM	5	43	10	1	7	10	4	3	2	29	5	0	10	11	15	0
9:15 PM	3	27	8	0	9	10	2	0	4	31	3	1	13	14	10	0
9:30 PM	8	35	4	0	0	8	2	2	5	25	2	0	6	16	7	0
9:45 PM	4	34	5	1	5	9	3	1	4	30	4	1	2	11	9	0
10:00 PM	2	43	3	0	0	7	3	3	0	28	3	0	11	17	9	1
10:15 PM	2	36	8	2	3	7	3	0	12	26	1	0	6	11	4	0
10:30 PM	3	29	5	0	2	7	4	0	5	24	2	0	3	20	8	0
10:45 PM	6	26	6	2	4	6	2	2	3	21	3	0	5	10	8	1
11:00 PM	5	22	4	0	1	3	3	1	2	15	2	0	6	7	5	1
11:15 PM	2	31	3	1	2	7	5	0	1	14	2	0	2	10	7	0
11:30 PM	0	20	3	0	2	4	3	0	5	21	1	0	2	10	2	0
11:45 PM	4	12	5	0	2	2	1	1	3	18	1	0	0	12	0	2

LOC ID	INT ID	ROAD 1	ROAD 2	ROAD 3	ROAD 4	COMMUNITY	TMC DATE
TM-0797	797	Penn Av N	Golden Valley Road N			Willard - Hay	3/21/2013

	NB				EB				SB				WB			
Start Time	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped
6:00 AM	1	16	2	0	1	5	8	4	0	18	1	0	1	5	0	1
6:15 AM	4	15	5	0	1	7	9	0	1	20	0	1	2	3	0	0
6:30 AM	4	21	1	0	1	12	7	4	3	29	3	0	3	9	3	1
6:45 AM	2	33	3	0	3	16	8	0	2	48	6	0	6	6	2	0
7:00 AM	3	27	3	0	6	29	11	4	2	34	5	1	6	13	4	0
7:15 AM	4	32	8	2	2	23	13	4	3	37	3	1	3	13	1	0
7:30 AM	5	37	10	0	5	50	9	3	0	72	4	0	3	12	0	0
7:45 AM	8	50	4	4	0	35	7	1	6	70	6	1	14	19	2	1
8:00 AM	5	46	5	5	4	29	7	2	3	60	5	10	11	15	3	5
8:15 AM	2	41	12	0	5	26	10	3	2	57	6	6	13	7	1	0
8:30 AM	2	36	8	1	3	20	14	0	7	71	5	1	4	14	1	0
8:45 AM	4	48	13	0	5	19	3	5	5	62	6	0	5	10	2	0
9:00 AM	7	55	8	2	4	13	10	2	1	41	8	0	10	12	5	0
9:15 AM	6	44	12	1	4	16	9	6	0	41	5	7	9	14	6	2
9:30 AM	6	50	7	1	1	12	9	3	4	59	6	2	6	11	3	2
9:45 AM	6	50	10	3	5	11	5	2	1	54	1	4	8	12	1	1
10:00 AM	7	47	10	6	4	14	7	3	2	40	2	1	5	16	6	1
10:15 AM	1	46	7	1	2	12	3	2	3	42	3	1	2	14	6	2
10:30 AM	2	48	9	4	5	12	11	4	3	47	2	2	4	15	5	0
10:45 AM	7	69	14	1	2	23	6	5	2	42	3	1	6	12	1	2
11:00 AM	9	45	15	0	4	25	7	4	2	55	10	4	5	11	3	0
11:15 AM	4	66	10	2	6	11	2	1	0	36	4	1	12	12	6	0
11:30 AM	6	70	7	5	6	26	6	2	1	51	12	0	5	10	2	2
11:45 AM	9	57	7	0	3	14	11	3	1	56	11	1	7	10	3	0
12:00 PM	2	69	11	3	5	28	2	3	4	60	11	2	9	16	5	0
12:15 PM	6	65	9	4	7	19	13	3	3	56	2	0	6	17	5	3
12:30 PM	7	64	9	5	8	24	11	1	1	64	7	1	7	11	0	0
12:45 PM	13	58	12	1	9	35	7	1	2	73	5	0	10	14	1	0
1:00 PM	4	65	13	10	6	19	5	3	1	69	5	4	12	29	5	6
1:15 PM	6	58	11	0	6	12	10	0	3	52	7	0	7	16	7	2
1:30 PM	10	51	15	2	9	22	9	0	6	56	6	1	13	21	4	3
1:45 PM	4	65	10	6	5	25	13	0	5	63	7	1	15	19	5	0
2:00 PM	6	82	12	11	3	17	8	1	4	60	5	2	10	23	5	2
2:15 PM	3	77	13	1	3	15	2	12	7	66	4	5	9	13	12	2
2:30 PM	7	92	12	1	3	16	7	8	0	53	7	6	4	19	6	5
2:45 PM	5	74	9	4	7	19	12	2	2	69	11	7	11	22	5	0
3:00 PM	9	87	7	4	10	23	5	7	6	63	12	1	6	20	7	1
3:15 PM	5	78	16	3	10	15	5	18	5	75	5	15	17	23	4	0
3:30 PM	11	87	9	6	6	21	12	7	7	67	14	2	10	19	10	14
3:45 PM	8	82	10	5	7	20	16	6	9	64	8	0	9	19	4	1
4:00 PM	16	99	19	6	2	26	15	11	4	90	12	1	10	26	7	0
4:15 PM	11	99	19	2	15	22	2	10	10	74	5	1	18	31	5	2
4:30 PM	12	89	25	8	7	30	15	6	4	77	7	4	16	35	9	3
4:45 PM	14	107	13	3	5	26	11	1	1	69	6	4	9	23	8	3
5:00 PM	18	109	16	3	4	32	12	6	6	65	9	9	12	32	6	5
5:15 PM	12	101	14	9	9	20	16	11	8	64	9	4	16	26	17	4
5:30 PM	18	116	21	5	6	29	14	6	3	80	7	5	9	18	6	0
5:45 PM	11	97	13	2	2	23	5	6	6	55	6	6	14	15	4	2

LOC ID	INT ID	ROAD 1	ROAD 2	ROAD 3	ROAD 4	COMMUNITY	TMC DATE
TM-0797	797	Penn Av N	Golden Valley Road N			Willard - Hay	3/21/2013

	NB				EB				SB				WB			
Start Time	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped
6:00 PM	8	98	17	1	10	28	10	3	3	67	6	0	9	27	11	2
6:15 PM	10	67	17	10	2	27	8	12	8	48	8	4	5	25	5	0
6:30 PM	12	64	11	5	8	18	5	5	9	58	8	2	8	21	11	0
6:45 PM	9	59	17	1	8	14	13	4	4	55	7	2	8	24	8	2

LOC ID	INT ID	ROAD 1	ROAD 2	ROAD 3	ROAD 4	COMMUNITY	TMC DATE
TM-0264	264	Broadway Av W	Penn Av N	McNair Av N		Willard - Hay	3/19/2013

15 Minute Counts

DATE	TIME	INTID	NBL2	NBL	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NEL2	NEL	NET	
3/19/2013	45	264		6	3	1			1	7	0	0		0	7	2	0	1	1	5		2		0	0	0
3/19/2013	745	264		13	33	6			10	41	3	0		2	98	25	0	8	2	42		10		1	1	2
3/19/2013	800	264		12	35	6			12	54	1	0		1	89	15	1	3	1	47		4		0	1	4
3/19/2013	815	264		15	35	8			21	45	2	0		3	87	19	1	4	0	32		5		0	2	1
3/19/2013	830	264		15	37	2			17	56	0	0		3	66	12	1	4	5	29		19		0	2	0
3/19/2013	845	264		15	45	11			19	38	3	0		3	59	21	0	8	0	31		19		1	0	2
3/19/2013	900	264		9	44	10			12	46	1	0		2	61	12	0	6	0	36		9		0	2	2
3/19/2013	915	264		19	30	4			15	27	1	0		1	48	9	0	8	0	31		5		0	0	2
3/19/2013	930	264		11	43	6			18	38	3	0		1	50	15	0	5	2	26		7		0	1	2
3/19/2013	945	264		13	33	8			15	35	4	0		0	34	12	0	8	3	42		9		0	2	1
3/19/2013	1000	264		12	50	13			15	29	2	0		2	42	5	0	5	1	36		11		0	0	1
3/19/2013	1015	264		9	33	7			17	36	2	0		2	39	10	1	9	3	44		7		0	2	1
3/19/2013	1030	264		13	45	5			10	25	3	0		2	52	9	0	10	1	31		12		0	0	0
3/19/2013	1045	264		16	26	7			18	36	3	0		3	33	9	1	6	2	40		11		0	2	6
3/19/2013	1100	264		13	38	10			19	29	2	0		3	31	11	0	6	7	43		7		1	2	3
3/19/2013	1115	264		19	43	9			14	40	1	0		1	48	9	0	9	1	44		10		0	4	5
3/19/2013	1130	264		10	57	7			16	31	6	0		3	52	7	0	6	5	31		18		0	0	1
3/19/2013	1145	264		13	38	9			17	38	1	0		4	52	12	2	8	4	35		6		0	1	5
3/19/2013	1200	264		16	46	17			19	33	6	0		2	39	13	0	8	4	51		15		1	2	2
3/19/2013	1215	264		19	42	9			21	29	3	0		1	37	15	0	12	1	50		19		3	5	4
3/19/2013	1230	264		9	47	8			21	58	2	0		0	54	16	1	13	5	51		25		2	4	1
3/19/2013	1245	264		19	48	13			21	41	3	0		2	70	12	1	6	3	44		15		1	3	3
3/19/2013	1300	264		15	45	10			16	40	3	0		0	61	14	1	18	4	43		25		2	3	4
3/19/2013	1315	264		18	37	3			15	49	2	0		2	58	19	2	8	5	48		15		0	2	3
3/19/2013	1330	264		15	45	11			21	41	4	0		0	44	15	0	15	0	37		22		2	1	3
3/19/2013	1345	264		13	44	11			23	37	6	0		1	51	16	1	12	7	42		8		0	2	2
3/19/2013	1400	264		11	53	8			20	49	5	0		4	58	8	1	10	5	34		12		0	2	0
3/19/2013	1415	264		19	51	10			25	42	2	0		1	36	8	0	6	8	52		19		2	5	1
3/19/2013	1430	264		25	66	10			14	46	9	0		3	45	18	0	18	3	44		13		0	4	2
3/19/2013	1445	264		16	68	9			24	46	3	0		0	52	15	1	6	4	56		19		1	2	4
3/19/2013	1500	264		23	54	19			11	45	6	0		5	44	16	2	16	2	70		14		1	2	2
3/19/2013	1515	264		32	69	7			26	55	9	1		0	48	15	1	15	4	54		22		1	4	4
3/19/2013	1530	264		17	61	12			33	68	4	0		5	67	21	2	13	5	68		16		0	5	1
3/19/2013	1545	264		22	64	4			24	47	5	0		5	72	17	1	14	7	75		12		0	2	5
3/19/2013	1600	264		25	65	7			20	57	3	0		4	74	23	1	8	6	76		16		0	4	4
3/19/2013	1615	264		25	64	9			20	47	2	0		1	66	16	3	7	7	66		15		1	3	3
3/19/2013	1630	264		27	58	12			21	49	4	0		2	70	11	2	8	8	86		21		1	5	5
3/19/2013	1645	264		32	65	9			23	47	10	1		4	53	22	3	7	5	82		21		0	3	2
3/19/2013	1700	264		44	90	15			30	53	4	0		3	73	12	1	5	3	98		23		0	4	2
3/19/2013	1715	264		43	89	13			12	58	2	1		4	52	16	1	16	8	100		23		1	4	1
3/19/2013	1730	264		36	70	14			29	59	4	0		3	60	16	1	8	4	102		19		1	2	4
3/19/2013	1745	264		28	62	17			18	47	3	0		2	48	19	0	11	6	75		11		0	6	4
3/19/2013	1800	264		19	56	6			16	64	5	0		8	51	23	1	7	9	67		15		0	4	4
3/19/2013	1815	264		14	54	7			16	46	6	0		7	62	3	3	7	7	56		9		2	4	4
3/19/2013	1830	264		15	65	6			23	42	9	0		4	47	20	0	8	3	69		19		0	4	3
3/19/2013	1845	264		15	60	11			18	31	9	0		1	49	12	2	4	7	60		15		1	7	4

LOC ID	INT ID	ROAD 1	ROAD 2	ROAD 3	ROAD 4	COMMUNITY	TMC DATE
TM-0075	75	Lowry Av N	Penn Av N			Jordan	3/21/2013

	NB				EB				SB				WB			
Start Time	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped
0:00 13	4	9	3	0	2	8	0	2	1	8	3	0	2	12	2	0
12:15 AM	0	9	4	0	3	7	0	0	2	3	1	0	4	9	2	0
12:30 AM	1	8	7	0	2	2	2	1	1	9	2	1	2	5	3	0
12:45 AM	0	9	3	1	0	5	0	0	1	3	1	0	3	10	4	0
1:00 AM	0	4	3	0	0	4	0	0	1	5	0	0	2	5	3	0
1:15 AM	0	2	2	0	0	10	0	1	2	2	0	0	1	8	1	0
1:30 AM	0	7	0	0	1	7	0	0	1	2	2	0	5	2	3	0
1:45 AM	0	4	8	0	0	6	0	0	1	1	0	0	0	5	2	2
2:00 AM	0	3	1	0	1	5	1	0	0	5	1	0	1	8	2	0
2:15 AM	1	3	1	0	0	2	0	0	3	4	0	0	1	1	1	0
2:30 AM	0	6	2	0	0	4	0	0	2	4	1	1	2	4	2	0
2:45 AM	0	3	0	0	1	3	1	0	0	2	0	0	4	4	0	0
3:00 AM	0	4	2	0	0	3	0	0	2	5	0	2	1	2	3	0
3:15 AM	0	5	1	0	0	2	0	0	2	0	0	0	2	4	2	0
3:30 AM	0	4	3	0	1	5	0	0	1	1	2	0	2	7	0	0
3:45 AM	0	2	1	0	0	1	1	0	1	1	1	0	0	3	2	0
4:00 AM	0	3	0	0	0	2	0	0	2	1	2	0	0	2	0	0
4:15 AM	1	1	0	0	0	1	1	0	1	4	3	0	2	4	0	0
4:30 AM	1	3	1	0	1	3	2	0	1	4	2	0	1	5	0	1
4:45 AM	0	3	3	0	0	6	0	0	1	1	2	0	2	4	0	0
5:00 AM	0	2	2	0	0	4	0	0	0	6	2	1	4	9	0	0
5:15 AM	0	4	2	2	2	17	1	2	2	3	4	0	2	11	0	0
5:30 AM	1	5	8	0	1	14	3	0	1	5	4	0	1	17	0	0
5:45 AM	3	6	0	0	0	13	2	3	2	4	3	0	4	13	2	0
6:00 AM	3	4	2	0	2	18	1	1	6	11	3	0	5	20	0	0
6:15 AM	1	10	5	0	1	18	2	2	6	10	2	1	3	31	7	1
6:30 AM	3	15	5	1	8	39	3	0	5	13	6	0	4	37	8	0
6:45 AM	4	23	5	0	10	52	4	0	8	18	4	0	5	51	12	0
7:00 AM	2	16	4	1	4	45	6	4	7	17	3	0	5	38	5	1
7:15 AM	3	31	7	6	3	66	3	6	13	32	5	0	11	57	16	2
7:30 AM	5	48	2	1	9	73	10	2	11	48	12	1	13	60	23	1
7:45 AM	4	18	8	1	5	74	2	2	12	54	8	0	10	42	9	1
8:00 AM	7	24	5	1	4	62	6	4	16	48	8	4	10	50	12	1
8:15 AM	7	31	9	5	4	51	6	5	16	42	11	1	6	51	14	5
8:30 AM	10	30	2	1	4	62	9	6	18	39	11	1	16	55	12	1
8:45 AM	6	30	12	1	7	51	7	10	18	38	13	7	13	45	8	1
9:00 AM	6	28	5	3	5	50	10	9	8	20	8	3	14	35	8	4
9:15 AM	6	29	10	3	5	42	12	5	9	31	12	1	8	47	14	5
9:30 AM	10	32	6	1	9	46	8	5	5	31	15	4	11	48	8	5
9:45 AM	6	36	16	2	3	45	7	4	14	34	6	3	7	36	12	1
10:00 AM	10	35	9	1	6	46	10	3	8	20	11	5	16	46	10	5
10:15 AM	10	39	10	3	6	41	12	4	8	22	8	2	17	33	6	6
10:30 AM	11	34	13	3	3	41	7	8	8	36	9	2	15	56	8	11
10:45 AM	12	28	13	2	7	54	12	4	3	31	8	0	10	41	14	3
11:00 AM	8	43	10	3	5	41	12	5	4	38	11	6	8	39	13	3
11:15 AM	10	37	21	4	9	46	9	11	11	30	9	5	14	48	13	0

LOC ID	INT ID	ROAD 1	ROAD 2	ROAD 3	ROAD 4	COMMUNITY	TMC DATE
TM-0075	75	Lowry Av N	Penn Av N			Jordan	3/21/2013

	NB				EB				SB				WB			
Start Time	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped
11:30 AM	5	54	22	3	6	58	7	11	12	25	11	10	9	39	18	2
11:45 AM	15	41	17	3	7	57	12	5	13	31	7	3	12	42	12	7
12:00 PM	6	53	15	0	7	49	8	3	11	42	10	2	18	57	16	2
12:15 PM	13	44	15	2	6	51	13	7	15	36	7	1	15	42	10	8
12:30 PM	12	39	16	4	12	50	12	11	13	32	15	9	17	56	18	11
12:45 PM	13	44	19	2	6	53	13	8	12	43	6	6	16	50	14	6
1:00 PM	14	51	19	1	10	44	12	6	12	49	15	3	16	64	17	4
1:15 PM	16	35	12	7	13	68	15	3	12	41	12	2	17	57	27	3
1:30 PM	15	36	14	2	11	54	12	10	11	50	7	4	18	47	15	0
1:45 PM	9	37	20	1	5	51	11	8	17	34	11	4	11	50	35	4
2:00 PM	11	43	13	8	9	68	11	6	13	46	17	5	13	65	14	3
2:15 PM	13	52	14	9	14	54	11	17	11	39	23	6	11	87	29	9
2:30 PM	10	55	27	7	9	69	6	6	15	45	12	4	10	74	23	9
2:45 PM	16	61	17	2	13	58	18	16	17	48	11	9	19	71	32	4
3:00 PM	12	67	25	0	7	68	9	15	19	56	14	6	13	64	26	8
3:15 PM	11	57	25	1	13	72	13	5	28	52	11	7	15	72	18	20
3:30 PM	7	51	16	11	15	70	16	8	20	39	17	6	16	72	32	12
3:45 PM	8	85	20	7	9	79	16	14	9	47	15	13	29	69	26	18
4:00 PM	12	55	23	0	17	80	11	10	20	51	18	11	18	102	30	12
4:15 PM	11	71	28	5	18	81	15	7	7	58	16	8	22	99	31	11
4:30 PM	18	64	21	8	9	82	13	6	14	63	22	5	24	85	30	13
4:45 PM	17	89	28	6	15	77	11	7	16	63	9	11	18	92	26	8
5:00 PM	19	85	23	1	12	80	15	10	21	46	9	11	18	101	30	11
5:15 PM	16	73	24	8	12	82	9	4	18	59	10	0	14	110	26	8
5:30 PM	9	81	23	0	9	80	8	6	14	54	15	4	21	93	36	6
5:45 PM	12	64	22	6	13	63	11	14	13	49	13	5	19	67	28	7
6:00 PM	16	76	20	0	11	64	6	6	22	52	8	8	12	72	18	2
6:15 PM	9	51	11	0	7	59	12	9	16	47	16	1	15	75	16	3
6:30 PM	9	65	17	5	10	51	9	8	14	48	9	3	14	60	18	6
6:45 PM	8	56	16	5	14	60	9	4	7	47	10	1	23	45	31	15
7:00 PM	5	59	17	6	8	47	2	10	15	35	6	4	15	62	25	14
7:15 PM	7	53	14	2	9	43	9	4	11	41	7	5	23	48	20	1
7:30 PM	6	59	19	1	8	57	14	16	15	38	5	5	17	46	11	7
7:45 PM	4	45	13	2	9	52	6	13	11	36	11	3	14	50	20	8
8:00 PM	10	46	16	5	6	43	12	6	13	28	12	9	11	42	30	8
8:15 PM	7	41	19	5	10	38	4	5	14	31	4	1	8	37	18	10
8:30 PM	2	38	18	0	2	30	7	5	5	53	6	8	11	34	16	5
8:45 PM	2	43	15	0	10	53	6	5	12	35	14	9	8	40	21	3
9:00 PM	3	41	12	2	8	27	2	0	10	26	7	0	12	36	9	0
9:15 PM	3	24	13	1	6	35	7	1	14	21	9	0	10	37	15	2
9:30 PM	6	35	16	2	11	46	5	1	7	25	2	0	12	30	14	5
9:45 PM	7	28	11	2	4	30	7	9	5	22	6	5	10	26	13	8
10:00 PM	2	33	7	0	3	24	4	9	12	27	6	5	2	22	9	3
10:15 PM	5	26	7	2	3	13	6	4	2	19	3	4	5	12	6	3
10:30 PM	2	19	6	2	2	16	3	0	4	16	1	1	10	30	9	6
10:45 PM	4	19	4	2	2	19	2	4	7	17	4	0	6	31	4	1

Lowry Ave

LOC ID	INT ID	ROAD 1	ROAD 2	ROAD 3	ROAD 4	COMMUNITY	TMC DATE
TM-0075	75	Lowry Av N	Penn Av N			Jordan	3/21/2013

	NB				EB				SB				WB			
Start Time	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped
11:00 PM	2	14	13	1	3	16	4	2	3	11	3	1	4	22	5	2
11:15 PM	4	13	4	0	3	17	1	0	2	12	2	0	3	16	2	1
11:30 PM	4	16	6	0	2	17	1	0	5	11	3	0	8	13	1	0
11:45 PM	1	12	3	1	1	21	4	0	4	13	4	1	2	9	1	0

LOC ID	INT ID	ROAD 1	ROAD 2	ROAD 3	ROAD 4	COMMUNITY	TMC DATE
TM-0966	966	Penn Av N	Dowling Av N			Cleveland	3/21/2013

	NB				EB				SB				WB			
Start Time	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped
6:00 AM	0	4	5	0	1	20	1	0	5	7	1	0	2	5	4	0
6:15 AM	2	10	5	0	1	41	2	0	10	15	0	0	3	8	4	0
6:30 AM	1	12	6	0	2	35	4	0	7	14	6	0	9	8	5	0
6:45 AM	2	17	14	0	2	42	5	1	11	24	0	0	22	7	2	0
7:00 AM	1	23	7	1	4	39	3	1	11	18	0	0	9	14	6	2
7:15 AM	0	51	9	0	0	40	2	1	24	44	1	0	14	20	13	0
7:30 AM	3	66	14	0	6	49	2	2	15	44	4	0	13	13	7	0
7:45 AM	4	35	14	0	1	56	2	0	18	61	6	0	9	13	7	0
8:00 AM	1	33	9	0	2	44	5	0	11	53	2	0	8	11	4	0
8:15 AM	1	38	10	0	3	43	3	0	19	27	2	0	22	17	9	0
8:30 AM	2	39	15	0	1	43	4	0	13	39	2	1	15	15	8	0
8:45 AM	5	32	15	0	1	36	4	0	17	35	5	0	9	15	10	0
9:00 AM	4	30	15	0	3	29	1	0	15	27	1	0	10	16	4	0
9:15 AM	2	33	18	0	2	32	4	0	11	27	1	0	12	15	5	0
9:30 AM	2	39	16	0	1	16	1	0	13	41	3	0	12	15	8	0
9:45 AM	2	34	12	0	1	25	0	0	7	34	3	0	13	17	10	0
10:00 AM	4	32	12	0	2	24	3	0	9	26	4	0	12	14	9	0
10:15 AM	3	38	12	0	0	22	4	0	8	18	1	1	12	17	4	1
10:30 AM	2	32	7	0	1	24	4	0	5	25	0	0	9	11	7	0
10:45 AM	6	32	5	0	0	14	5	3	13	35	1	0	6	18	4	0
11:00 AM	7	45	11	0	1	16	2	0	8	30	3	0	12	20	7	0
11:15 AM	2	44	19	0	0	26	3	5	8	31	5	1	10	27	9	0
11:30 AM	3	46	13	1	3	24	3	8	11	28	5	4	12	12	9	1
11:45 AM	5	23	13	0	5	20	5	0	12	36	6	0	8	27	12	0
12:00 PM	4	58	13	0	1	18	2	2	6	38	4	0	18	17	7	0
12:15 PM	4	39	19	0	3	16	2	7	11	40	2	0	10	16	9	0
12:30 PM	1	51	15	1	3	21	4	1	8	39	4	0	12	26	10	1
12:45 PM	5	50	18	0	3	14	2	0	8	45	2	1	15	11	7	3
1:00 PM	6	52	10	0	2	30	3	0	12	52	5	0	12	16	7	0
1:15 PM	5	43	18	0	4	16	5	1	18	52	3	1	13	26	10	0
1:30 PM	4	38	23	0	2	24	4	0	14	45	4	0	16	21	17	0
1:45 PM	4	37	29	0	2	21	4	0	5	41	3	0	18	28	7	0
2:00 PM	4	44	14	0	5	16	1	6	14	54	2	1	22	29	15	0
2:15 PM	4	48	17	0	1	13	3	1	4	43	4	1	12	29	8	0
2:30 PM	2	44	19	0	7	25	2	2	13	38	5	0	15	26	14	0
2:45 PM	2	60	13	0	4	21	1	0	20	59	5	0	18	33	13	0
3:00 PM	2	65	15	0	1	21	4	3	19	63	3	3	10	38	12	2
3:15 PM	4	65	22	1	2	22	4	4	14	57	9	4	10	38	15	1
3:30 PM	7	59	17	2	4	28	6	4	8	52	3	1	14	41	11	1
3:45 PM	8	69	21	0	6	42	3	2	18	40	6	0	17	40	13	0
4:00 PM	10	72	13	0	5	23	5	2	17	42	7	0	24	35	13	1
4:15 PM	9	83	21	0	2	34	2	0	6	56	5	0	19	39	16	0
4:30 PM	6	69	28	0	7	33	7	0	11	45	5	0	22	47	21	0
4:45 PM	3	83	23	0	2	48	8	0	11	58	7	1	15	46	15	4
5:00 PM	10	76	25	2	3	26	6	0	16	52	4	2	11	51	21	2
5:15 PM	10	65	20	1	6	32	7	1	15	46	7	0	18	49	27	1
5:30 PM	5	94	10	0	7	29	8	8	13	55	6	0	16	33	18	0
5:45 PM	8	74	16	0	2	32	4	0	18	43	7	1	15	40	18	0
6:00 PM	4	68	15	0	4	22	7	5	15	47	4	1	17	40	10	0

LOC ID	INT ID	ROAD 1	ROAD 2	ROAD 3	ROAD 4	COMMUNITY	TMC DATE
TM-0966	966	Penn Av N	Dowling Av N			Cleveland	3/21/2013

	NB				EB				SB				WB			
Start Time	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped
6:15 PM	4	50	16	0	2	26	7	4	19	59	6	1	19	34	19	0
6:30 PM	4	56	28	1	1	23	7	1	5	44	5	1	11	38	10	1
6:45 PM	2	52	20	1	5	21	4	1	8	34	9	0	19	29	14	1

LOC ID	INT ID	ROAD 1	ROAD 2	ROAD 3	ROAD 4	COMMUNITY	TMC DATE
TM-0142	142	44th Av N	Penn Av N			Victory	5/1/2013

	NB				EB				SB				WB			
Start Time	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped
6:30 AM	32	0	4	0	1	31	61	0	0	0	0	0	6	28	0	0
6:45 AM	23	0	4	0	0	32	30	0	0	0	0	0	2	17	1	0
7:00 AM	35	1	10	0	0	30	49	0	0	0	0	0	5	18	0	0
7:15 AM	46	0	3	1	0	63	81	2	0	0	0	0	16	22	0	1
7:30 AM	65	0	10	0	0	59	69	2	0	0	0	0	17	27	0	0
7:45 AM	54	1	3	0	0	73	85	2	0	0	0	0	26	36	0	0
8:00 AM	36	0	13	0	0	81	126	1	0	0	0	0	2	29	0	0
8:15 AM	53	1	13	1	0	63	62	0	0	0	0	0	8	28	0	0
8:30 AM	57	0	5	0	0	64	110	0	0	0	0	0	6	43	0	0
8:45 AM	98	0	10	0	0	31	79	0	0	0	0	0	9	38	3	0
9:00 AM	60	1	13	0	0	47	76	2	0	0	0	0	7	32	2	0
9:15 AM	76	0	5	1	0	16	49	1	0	0	0	0	9	22	10	0
9:30 AM	57	0	2	0	1	26	43	1	0	0	0	0	7	22	5	3
9:45 AM	65	0	6	0	0	35	56	1	0	0	0	0	4	18	1	1
10:00 AM	80	1	13	1	0	19	64	1	0	0	0	0	7	20	1	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
10:30 AM	36	0	6	0	0	36	60	0	0	0	0	0	12	35	1	0
10:45 AM	66	0	3	0	0	20	54	1	0	0	0	1	10	20	0	0
11:00 AM	62	0	10	0	1	34	99	0	0	0	0	0	5	32	2	1
11:15 AM	108	0	8	1	0	34	51	0	0	0	0	0	5	18	1	1
11:30 AM	79	0	14	0	0	51	64	0	0	0	0	0	7	35	0	1
11:45 AM	92	0	10	0	0	35	45	0	1	0	0	0	9	39	1	0
12:00 PM	60	1	19	0	0	25	57	0	0	0	0	0	9	31	1	1
12:15 PM	67	9	4	0	0	51	71	3	0	0	0	0	7	37	0	0
12:30 PM	61	0	5	0	0	36	76	0	0	0	0	0	4	21	1	0
12:45 PM	79	0	8	0	0	28	99	1	0	0	0	0	10	28	1	2
1:00 PM	103	0	11	0	0	49	54	0	0	0	0	0	8	34	4	1
1:15 PM	73	1	8	0	0	29	32	2	0	0	0	0	8	35	2	2
1:30 PM	20	0	0	0	0	3	5	0	0	0	0	0	0	1	0	0
1:45 PM	61	0	7	0	0	25	46	0	0	0	0	0	5	23	0	0
2:00 PM	62	0	15	0	0	50	48	2	0	0	0	0	9	42	0	4
2:15 PM	74	0	7	0	1	30	82	4	0	0	0	0	4	21	0	2
2:30 PM	129	0	13	0	0	51	70	3	0	0	0	0	6	40	1	3
2:45 PM	124	1	15	0	0	38	87	1	0	0	0	0	8	26	1	4
3:00 PM	68	6	5	0	1	57	64	1	0	0	0	0	15	44	0	0
3:15 PM	129	0	8	0	1	67	62	2	0	1	0	0	14	54	0	0
3:30 PM	135	0	9	0	1	57	71	1	0	0	0	0	13	76	0	1
3:45 PM	71	0	4	0	0	15	36	2	0	0	0	0	1	14	0	0
4:00 PM	138	0	4	0	0	25	112	4	0	0	0	0	10	19	0	0
4:15 PM	131	0	13	0	2	89	121	1	0	0	0	0	7	44	0	2
4:30 PM	183	0	16	0	0	77	80	5	0	0	0	0	21	73	2	0
4:45 PM	134	0	18	0	1	53	74	0	0	0	0	0	9	45	0	0
5:00 PM	135	0	26	0	0	61	121	6	0	0	0	2	6	42	0	0
5:15 PM	179	1	19	0	0	67	89	3	0	1	0	0	18	61	1	2
5:30 PM	169	0	23	4	0	55	76	10	0	0	0	0	13	58	0	1
5:45 PM	169	0	14	8	1	76	76	4	0	0	0	0	7	48	0	3
6:00 PM	182	0	18	1	0	37	116	3	0	0	0	0	14	51	0	0

LOC ID	INT ID	ROAD 1	ROAD 2	ROAD 3	ROAD 4	COMMUNITY	TMC DATE
TM-0142	142	44th Av N	Penn Av N			Victory	5/1/2013

	NB				EB				SB				WB			
Start Time	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	80	0	8	3	0	41	59	3	0	0	0	0	6	36	0	3
6:45 PM	76	0	5	0	0	30	56	6	0	0	0	0	13	21	0	0

Appendix B

Crash Analysis Tables

Appendix B – Crash Analysis

Penn Avenue Intersections	Crashes	Actual	Average	Critical
Cedar Lake Road	15	**0.91**	0.9	1.53
Glenwood Avenue	9	0.47	0.9	1.50
Highway 55	48	**0.84**	0.73	1.05
Oak Park Avenue	10	0.57	0.90	1.51
12th Avenue North	7	0.39	0.90	1.51
Plymouth Avenue	36	**1.08**	0.90	1.33
14th Avenue North	13	**0.68**	0.58	1.02
16th Avenue North	12	**0.63**	0.58	1.03
Golden Valley Road	33	**1.24**	0.90	1.38
West Broadway Avenue	41	**1.09**	0.72	1.09
26th Avenue North	39	**1.70**	0.90	1.42
Lowry Avenue North	66	**1.97**	0.90	1.38
34th Avenue North	16	0.86	0.90	1.56
36th Avenue North	26	**1.61**	0.41	0.86
Dowling Avenue North	40	**1.58**	0.90	1.45
42nd Avenue North	15	0.79	0.90	1.52
44th Avenue North	17	**0.89**	0.27	0.61
Osseo Road Intersections				
Penn Avenue/44th Avenue North	8	0.42	0.90	1.49
45th Avenue North	9	0.39	0.41	0.77
Victory Memorial Parkway	17	0.67	0.90	1.25
47th Avenue North	4	0.18	0.27	0.59
49th Avenue North	15	0.47	0.90	1.42

Appendix B – Crash Analysis – Continued

Penn Avenue Segments	Crashes	Actual	Average	Critical
I-394 North Ramps to Cedar Lake Road	9	**3.24**	3.23	6.19
Cedar Lake Road Glenwood Avenue	13	3.09	3.23	5.61
Glenwood Avenue to Highway 55	6	2.97	3.23	6.73
Highway 55 to Oak Park Avenue	24	**8.35**	3.23	6.14
Oak Park Avenue to 12th Avenue North	3	**3.55**	3.23	8.88
12th Avenue North to Plymouth Avenue	3	2.96	3.23	8.34
Plymouth Avenue to 14th Avenue North	3	**4.14**	3.23	9.37
14th Avenue North to 16th Avenue North	6	**5.52**	3.23	8.14
16th Avenue North to Golden Valley Road	14	**4.55**	3.23	6.03
Golden Valley Road to West Broadway Avenue	27	**6.03**	3.23	5.53
West Broadway Avenue to 26th Avenue North	7	**5.06**	3.23	7.52
26th Avenue North to Lowry Avenue North	71	**9.54**	3.23	4.99
Lowry Avenue North to 34th Avenue North	18	**6.63**	3.23	6.23
34th Avenue North to 36th Avenue North	27	**9.95**	3.23	6.21
36th Avenue North to Dowling Avenue North	14	**5.16**	3.23	6.23
Dowling Avenue North to 42nd Avenue North	12	1.85	3.23	5.13
42nd Avenue North to 44th Avenue North	13	**5.17**	3.23	6.34
Osseo Road Segments				
Penn Avenue/44th Avenue North to 45th Avenue North	4	**4.88**	4.15	10.09
Victory Memorial Parkway to 47th Avenue North	14	2.83	4.15	6.84
47th Avenue North to 49th Avenue North	2	0.33	4.15	6.46

Appendix C

Parking Utilization Surveys

Location	From	To	Supply	Morning (4:30 - 6:30)		Midday (11:30 - 1:30)		Evening (6:00 - 8:00 p.m.)	
				Occupied Spaces	Utilization	Occupied Spaces	Utilization	Occupied Spaces	Utilization
On Street Parking Data									
394 - Cedar Lake Rd									
Penn Ave	Oliver Ave S	Mount View Ave	6	3	50%	1	17%	3	50%
Penn Ave	Mount View Ave	Cedar Lake Road	36	7	19%	19	53%	9	25%
Penn Ave Subtotal	**-**	-	**42**	**10**	**24%**	**20**	**48%**	**12**	**29%**
Oliver Ave S	Penn Ave S	Queen Ave S	12	3	25%	0	0%	0	0%
Mount View Ave	Oliver Ave S	Russel Ave S	68	3	4%	3	4%	3	4%
W Laurel Ave	Oliver Ave S	Russel Ave S	30	13	43%	20	67%	8	27%
Cedar Lake Rd	Oliver Ave S	Queen Ave S	65	15	23%	2	3%	2	3%
Cross-Street Subtotal (394-Cedar Lake)	**-**	-	**175**	**34**	**19%**	**25**	**14%**	**13**	**7%**
Cedar Lake Rd - Glenwood Ave N									
Penn Ave	Cedar Lake Road	W Hawthorne Ave	39	8	21%	8	21%	15	38%
Penn Ave	W Hawthorne Ave	Chestnut Ave W	43	1	2%	3	7%	3	7%
Penn Ave	Chestnut Ave W	1 1/2 Ave N	1	0	0%	0	0%	0	0%
Penn Ave	1 1/2 Ave N	2nd Ave N	6	0	0%	0	0%	0	0%
Penn Ave	2nd Ave N	3rd Ave N	18	4	22%	11	61%	2	11%
Penn Ave	3rd Ave N	Glenwood Ave N	15	0	0%	0	0%	5	33%
Penn Ave Subtotal	-	-	**122**	**13**	**11%**	**22**	**18%**	**25**	**20%**
W Hawthorne Ave	Oliver Ave S	Queen Ave S	37	7	19%	3	8%	3	8%
Chestnut Ave W	Penn Ave S	Queen Ave S	23	2	9%	5	22%	1	4%
1 1/2 Ave N	Oliver Ave N	Penn Ave N	17	0	0%	1	6%	4	24%
2nd Ave N	Oliver Ave N	Queen Ave N	36	6	17%	10	28%	23	64%
3rd Ave N	Oliver Ave N	Penn Ave N	38	25	66%	11	29%	15	39%
Glenwood Ave N	Oliver Ave N	Queen Ave N	44	30	68%	13	30%	10	23%
Cross-Street Subtotal (Cedar Lake Rd - Glenwood Ave N)	-	-	**195**	**70**	**36%**	**43**	**22%**	**56**	**29%**
Glenwood Ave N - Highway 55									
Penn Ave	Glenwood Ave N	4th Ave N	12	6	50%	5	42%	6	50%
Penn Ave	4th Ave N	5th Ave N	23	10	43%	3	13%	5	22%
Penn Ave	5th Ave N	Highway 55	38	5	13%	3	8%	3	8%
Penn Ave Subtotal	-	-	**73**	**21**	**29%**	**11**	**15%**	**14**	**19%**
4th Ave N	Oliver Ave N	Queen Ave N	42	26	62%	16	38%	26	62%
5th Ave N	Oliver Ave N	Queen Ave N	33	8	24%	7	21%	8	24%
Olson Memorial Hwy	Oliver Ave N	Queen Ave N	NP	NP	NP	NP	NP	NP	NP
Cross-Street Subtotal (394-Cedar Lake)	-	-	**75**	**34**	**45%**	**23**	**31%**	**34**	**45%**

Location	From	To	Supply	Morning (4:30 - 6:30)		Midday (11:30 - 1:30)		Evening (6:00 - 8:00 p.m.)	
				Occupied Spaces	Utilization	Occupied Spaces	Utilization	Occupied Spaces	Utilization
Highway 55 - Plymouth Ave N									
Penn Ave	Highway 55	8th Ave N	35	12	34%	3	9%	9	26%
Penn Ave	8th Ave N	Oak Park Ave	40	22	55%	12	30%	12	30%
Penn Ave	Oak Park Ave	12th Ave N	23	0	0%	2	9%	0	0%
Penn Ave	12th Ave N	Plymouth Ave N	43	10	23%	9	21%	14	33%
Penn Ave Subtotal	-	-	**141**	**44**	**31%**	**26**	**18%**	**35**	**25%**
N Frontage Rd	Oliver Ave N	Queen Ave N	20	1	5%	1	5%	2	10%
8th Ave N	Oliver Ave N	Queen Ave N	37	7	19%	6	16%	6	16%
Oak Park Ave	Oliver Ave N	Queen Ave N	26	0	0%	1	4%	11	42%
12th Ave N	Oliver Ave N	Queen Ave N	6	0	0%	0	0%	0	0%
Plymouth Ave N	Oliver Ave N	Queen Ave N	14	0	0%	11	79%	1	7%
Cross-Street Subtotal (Glenwood Ave N - Highway 55)	-	-	**103**	**8**	**8%**	**19**	**18%**	**20**	**19%**
Plymouth Ave N - Golden Valley Rd									
Penn Ave	Plymouth Ave N	14th Ave N	11	0	0%	8	73%	1	9%
Penn Ave	14th Ave N	15th Ave N	19	0	0%	6	32%	2	11%
Penn Ave	15th Ave N	16th Ave N	24	12	50%	8	33%	10	42%
Penn Ave	16th Ave N	17th Ave N	42	4	10%	2	5%	2	5%
Penn Ave	17th Ave N	Golden Valley Rd	48	8	17%	8	17%	14	29%
Penn Ave Subtotal	-	-	**144**	**24**	**17%**	**32**	**22%**	**29**	**20%**
14th Ave N	Oliver Ave N	Queen Ave N	26	0	0%	8	31%	1	4%
15th Ave N	Oliver Ave N	Penn Ave N	14	2	14%	2	14%	2	14%
16th Ave N	Oliver Ave N	Queen Ave N	28	7	25%	4	14%	6	21%
17th Ave N	Oliver Ave N	Queen Ave N	37	3	8%	6	16%	5	14%
Golden Valley Rd	Oliver Ave N	Queen Ave N	8	0	0%	2	25%	2	25%
Cross-Street Subtotal (Plymouth Ave N - Golden Valley Rd)	-	-	**113**	**12**	**11%**	**22**	**19%**	**16**	**14%**
Golden Valley Rd - W Broadway Ave									
Penn Ave	Golden Valley Rd	21st Ave N	45	9	20%	4	9%	16	36%
Penn Ave	21st Ave N	23rd Ave N	48	10	21%	8	17%	11	23%
Penn Ave	23rd Ave N	W Broadway Ave	13	1	8%	3	23%	0	0%
Penn Ave Subtotal	-	-	**106**	**20**	**19%**	**15**	**14%**	**27**	**25%**
21st Ave N	Oliver Ave N	Queen Ave N	32	3	9%	2	6%	5	16%
23rd Ave N	Oliver Ave N	Queen Ave N	36	0	0%	7	19%	0	0%
Ferrant Pl	McNair Ave	Walton Ave	23	0	0%	3	13%	5	22%
Mcnair Ave	W Broadway Ave	Queen Ave N	NP	NP	NP	NP	NP	NP	NP
W Broadway Ave	Logan Ave N	Queen Ave N	57	1	2%	16	28%	18	32%
24th Ave N	W Broadway Ave	Queen Ave N	26	1	4%	1	4%	11	42%
Cross-Street Subtotal (Golden Valley Rd - W Broadway Ave)	-	-	**174**	**5**	**3%**	**29**	**17%**	**39**	**22%**

Location	From	To	Supply	Morning (4:30 - 6:30)		Midday (11:30 - 1:30)		Evening (6:00 - 8:00 p.m.)	
				Occupied Spaces	Utilization	Occupied Spaces	Utilization	Occupied Spaces	Utilization
W Broadway Ave - Lowry Ave N									
Penn Ave	W Broadway Ave	25th Ave N	16	0	0%	3	19%	3	19%
Penn Ave	25th Ave N	26th Ave N	17	0	0%	1	6%	0	0%
Penn Ave	26th Ave N	27th Ave N	40	5	13%	0	0%	6	15%
Penn Ave	27th Ave N	29th Ave N	39	1	3%	4	10%	3	8%
Penn Ave	29th Ave N	30th Ave N	46	13	28%	10	22%	10	22%
Penn Ave	30th Ave N	Lowry Ave N	35	5	14%	17	49%	11	31%
Penn Ave Subtotal	-	-	**193**	**24**	**12%**	**35**	**18%**	**33**	**17%**
Logan Ave N	W Broadway Ave	N Willow Ave	18	5	28%	7	39%	3	17%
N Willow Ave	Penn Ave N	Logan Ave N	48	33	69%	24	50%	25	52%
25th Ave N	Oliver Ave N	Queen Ave N	32	10	31%	4	13%	8	25%
26th Ave N	Oliver Ave N	Queen Ave N	11	0	0%	0	0%	11	100%
27th Ave N	Oliver Ave N	Queen Ave N	32	0	0%	1	3%	0	0%
29th Ave N	Oliver Ave N	Queen Ave N	32	8	25%	9	28%	7	22%
30th Ave N	Oliver Ave N	Queen Ave N	32	0	0%	3	9%	0	0%
Lowry Ave N	Newton Ave N	Russel Ave N	19	0	0%	7	37%	3	16%
Queen Ave N	W Broadway Ave	26th Ave N	29	15	52%	10	34%	12	41%
Cross-Street Subtotal (W Broadway Ave - Lowry Ave N)	-	-	**253**	**71**	**28%**	**65**	**26%**	**69**	**27%**
Lowry Ave N - Dowling Ave N									
Penn Ave	Lowry Ave N	33rd Ave N	14	3	21%	2	14%	7	50%
Penn Ave	33rd Ave N	34th Ave N	44	8	18%	21	48%	9	20%
Penn Ave	34th Ave N	35th Ave N	44	15	34%	13	30%	13	30%
Penn Ave	35th Ave N	36th Ave N	43	10	23%	11	26%	12	28%
Penn Ave	36th Ave N	37th Ave N	43	12	28%	10	23%	8	19%
Penn Ave	37th Ave N	Dowling Ave N	41	26	63%	15	37%	17	41%
Penn Ave Subtotal	-	-	**229**	**74**	**32%**	**72**	**31%**	**66**	**29%**
33rd Ave N	Oliver Ave N	Queen Ave N	25	0	0%	4	16%	0	0%
34th Ave N	Oliver Ave N	Queen Ave N	18	2	11%	6	33%	3	17%
35th Ave N	Oliver Ave N	Queen Ave N	29	6	21%	6	21%	7	24%
36th Ave N	Oliver Ave N	Queen Ave N	30	4	13%	2	7%	1	3%
37th Ave N	Oliver Ave N	Queen Ave N	11	0	0%	0	0%	0	0%
Dowling Ave N	Oliver Ave N	Queen Ave N	10	0	0%	0	0%	0	0%
Cross-Street Subtotal (Lowry Ave N - Dowling Ave N)	-	-	**123**	**12**	**10%**	**18**	**15%**	**11**	**9%**

Location	From	To	Supply	Morning (4:30 - 6:30)		Midday (11:30 - 1:30)		Evening (6:00 - 8:00 p.m.)	
				Occupied Spaces	Utilization	Occupied Spaces	Utilization	Occupied Spaces	Utilization
Dowling Ave N - 44th Ave N									
Penn Ave	Dowling Ave N	39th Ave N	33	6	18%	2	6%	2	6%
Penn Ave	39th Ave N	40th Ave N	48	6	13%	3	6%	4	8%
Penn Ave	40th Ave N	41st Ave N	46	4	9%	5	11%	4	9%
Penn Ave	41st Ave N	42nd Ave N	47	1	2%	3	6%	2	4%
Penn Ave	42nd Ave N	43rd Ave N	54	8	15%	6	11%	4	7%
Penn Ave	43rd Ave N	44th Ave N	46	6	13%	3	7%	10	22%
Penn Ave Subtotal	-	-	**274**	**31**	**11%**	**22**	**8%**	**26**	**9%**
39th Ave N	Penn Ave N	Queen Ave N	15	2	13%	0	0%	1	7%
40th Ave N	Penn Ave N	Queen Ave N	17	0	0%	0	0%	0	0%
41st Ave N	Penn Ave N	Queen Ave N	15	2	13%	1	7%	1	7%
42nd Ave N	Oliver Ave N	Queen Ave N	NP	NP	NP	NP	NP	NP	NP
43rd Ave N	Oliver Ave N	Queen Ave N	32	9	28%	16	50%	13	41%
44th Ave N	Oliver Ave N	Queen Ave N	22	0	0%	4	18%	10	45%
Oliver Ave N	44th Ave N	45th Ave N	29	3	10%	10	34%	4	14%
Penn Ave N	44th Ave N	45th Ave N	26	8	31%	3	12%	3	12%
Osseo Rd N	Penn Ave N	Queen Ave N	NP	NP	NP	NP	NP	NP	NP
Cross-Street Subtotal (Dowling Ave N - 44th Ave N)	-	-	**156**	**24**	**15%**	**34**	**22%**	**32**	**21%**
Parking Lot Data									
Cedar Lake Nodal Parking Lots									
NE Parking Lots	-	-	7	7	100%	4	57%	3	43%
NW Parking Lots	-	-	17	0	0%	9	53%	3	18%
SW Parking Lots	-	-	6	4	67%	2	33%	4	67%
Subtotal Cedar Lake Parking Lots	-	-	**30**	**11**	**37%**	**15**	**50%**	**10**	**33%**
Glenwood Ave N Nodal Parking Lots									
SE Parking Lots	-	-	8	2	25%	3	38%	5	63%
SW Parking Lots	-	-	6	4	67%	5	83%	3	50%
Subtotal Glenwood N Ave Parking Lots	-	-	**14**	**6**	**43%**	**8**	**57%**	**8**	**57%**
Plymouth Ave N Nodal Parking Lots									
NE Parking Lots	-	-	172	17	10%	119	69%	21	12%
NW Parking Lots	-	-	132	1	1%	76	58%	9	7%
SE Parking Lots	-	-	89	1	1%	12	13%	12	13%
SW Parking Lots	-	-	92	0	0%	38	41%	3	3%
Subtotal Plymouth Ave N Parking Lots	-	-	**485**	**19**	**4%**	**245**	**51%**	**45**	**9%**
Golden Valley Rd Nodal Parking Lots									
SE Parking Lots	-	-	3	1	33%	3	100%	2	67%
Subtotal Golden Valley Rd Parking Lots	-	-	**3**	**1**	**33%**	**3**	**100%**	**2**	**67%**
W Broadway Ave Parking Lots									
NE Parking Lots	-	-	42	0	0%	12	29%	7	17%
NW Parking Lots	-	-	106	1	1%	12	11%	13	12%
SE Parking Lots	-	-	92	4	4%	74	80%	5	5%
SW Parking Lots	-	-	44	0	0%	2	5%	8	18%
Subtotal W Broadway Ave Parking Lots	-	-	**284**	**5**	**2%**	**100**	**35%**	**33**	**12%**

Location	From	To	Supply	Morning (4:30 - 6:30)		Midday (11:30 - 1:30)		Evening (6:00 - 8:00 p.m.)	
				Occupied Spaces	Utilization	Occupied Spaces	Utilization	Occupied Spaces	Utilization
Lowry Ave Nodal Parking Lots									
NE Parking Lots	-	-	5	2	40%	2	40%	2	40%
NW Parking Lots	-	-	45	3	7%	9	20%	13	29%
SE Parking Lots	-	-	130	3	2%	33	25%	34	26%
SW Parking Lots	-	-	39	8	21%	24	62%	6	15%
Subtotal Lowry Ave Parking Lots	-	-	**219**	**16**	**7%**	**68**	**31%**	**55**	**25%**
44th Ave N Nodal Parking Lots									
NE Parking Lots	-	-	20	10	50%	7	35%	6	30%
NW Parking Lots	-	-	26	1	4%	9	35%	2	8%
SE Parking Lots	-	-	11	1	9%	0	0%	4	36%
SW Parking Lots	-	-	15	4	27%	15	100%	15	100%
Subtotal 44th Ave N Parking Lots	-	-	**72**	**16**	**22%**	**31**	**43%**	**27**	**38%**

Appendix D

Transit – Local Bus Assumptions

Penn Avenue Rapid Bus - Current Transit Service Operating Within Corridor

TRAVEL ON PENN/OSSEO

				Bus Trips per Direction	
	Direction of travel on corridor	**Enters**	**Leaves**	**AM Peak Hour (7-8)**	**PM Peak Hour (4-5)**
19	SB Osseo/Penn	North of 49th	Highway 55	6	6
	NB Penn/Osseo	Highway 55	North of 49th	9	6
5K/M	SB Osseo/Penn	North of 49th	44th Ave.	5	5
	NB Penn/Osseo	44th Ave.	North of 49th	7	7
32C	SB Penn	Lowry	26th Ave	0	0
	NB Penn	26th Ave	Lowry	3	0
9D/P	SB Penn	Glenwood Avenue	Cedar Lake Rd	2	2
	NB Penn	Cedar Lake Rd	Glenwood Avenue	2	2
721	SB Osseo	44th Ave.	North of 49th	2	1
	NB Osseo	North of 49th	44th Ave.	1	2
724	SB Osseo	44th Ave.	North of 49th	0	0
	NB Osseo	North of 49th	44th Ave.	1	0

TURN ON/OFF PENN (Dowling & Lowry)

	Direction of travel on corridor	**Enters**	**Leaves**	**AM Peak Hour (7-8)**	**PM Peak Hour (4-5)**
19H	SB Penn	Dowling	n/a	1	1
	NB Penn	n/a	Dowling	0	2
19Y	SB Penn	Lowry	n/a	2	0
	NB Penn	n/a	Lowry	0	1

CROSS PENN

	Direction of travel on corridor	**Enters**	**Leaves**	**AM Peak Hour (7-8)**	**PM Peak Hour (4-5)**
5F	Crosses Penn, eastbound	26th Ave.	26th Ave.	2	2
	Crosses Penn, westbound	26th Ave.	26th Ave.	0	2
14 N/R	Crosses Penn, eastbound	West Broadway Ave.	West Broadway Ave.	2	2
	Crosses Penn, westbound	West Broadway Ave.	West Broadway Ave.	2	2
14 D/G/L	Crosses Penn, eastbound	Golden Valley Rd.	Golden Valley Rd.	2	2
	Crosses Penn, westbound	Golden Valley Rd.	Golden Valley Rd.	3	2
32	Crosses Penn, eastbound	Lowry Ave.	Lowry Ave.	6	2
	Crosses Penn, westbound	Lowry Ave.	Lowry Ave.	2	2
7	Crosses Penn, eastbound	Plymouth Ave.	Plymouth Ave.	2	2
	Crosses Penn, westbound	Plymouth Ave.	Plymouth Ave.	2	2
755	Crosses Penn, eastbound	Highway 55	Highway 55	2	2
	Crosses Penn, westbound	Highway 55	Highway 55	2	2
30	Crosses Penn, eastbound	Golden Valley Rd.	Golden Valley Rd.	2	2
	Crosses Penn, westbound	Golden Valley Rd.	Golden Valley Rd.	2	2
9 C/H/N	Crosses Penn, eastbound	Cedar Lake Rd	Cedar Lake Rd	2	2
	Crosses Penn, westbound	Cedar Lake Rd	Cedar Lake Rd	2	2
9B	Crosses Penn, eastbound	Glenwood Avenue	Glenwood Avenue	2	2
	Crosses Penn, westbound	Glenwood Avenue	Glenwood Avenue	2	2

Appendix E

Existing VISSIM Results

Existing Conditions VISSIM Model
Penn Avenue Corridor Study
Arterial MOEs (P.M. Peak Hour 4:45 - 5:45 P.M.)

SRF Consulting Group, Inc.

Penn Avenue at Cedar Lake Road

Approach	Movement	Simulated Volume (vph)	Average Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	54	33	20.0	C	20.6	C	15.4	C
	Thru	225	33	21.1	C				
	Right	71	33	19.4	C				
Southbound	Left	9	12	12.5	B	14.3	B		
	Thru	211	12	14.6	B				
	Right	36	12	13.0	B				
Eastbound	Left	26	3	9.2	A	8.9	A		
	Thru	37	3	10.2	B				
	Right	46	0	7.7	A				
Westbound	Left	107	5	10.3	B	10.5	B		
	Thru	45	5	12.1	B				
	Right	19	0	8.2	A				

Penn Avenue at Glenwood Road

Approach	Movement	Simulated Volume (vph)	Average Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	13	10	22.4	C	16.1	B	16.8	B
	Thru	193	10	17.1	B				
	Right	33	10	7.9	A				
Southbound	Left	61	23	20.8	C	19.1	B		
	Thru	196	23	19.5	B				
	Right	30	23	12.7	B				
Eastbound	Left	31	12	22.0	C	16.4	B		
	Thru	140	12	18.1	B				
	Right	41	12	6.6	A				
Westbound	Left	36	19	20.3	C	15.7	B		
	Thru	205	19	17.9	B				
	Right	70	19	6.8	A				

Penn Avenue at Plymouth Road

Approach	Movement	Simulated Volume (vph)	Average Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	19	25	19.0	B	17.1	B	17.6	B
	Thru	350	25	18.8	B				
	Right	115	25	11.5	B				
Southbound	Left	68	22	27.4	C	20.1	C		
	Thru	290	22	18.9	B				
	Right	19	21	11.4	B				
Eastbound	Left	25	6	26.8	C	14.3	B		
	Thru	144	6	14.3	B				
	Right	42	6	6.7	A				
Westbound	Left	119	32	19.8	B	17.6	B		
	Thru	284	32	18.1	B				
	Right	114	32	14.1	B				

* Results shown are the average of 10 model runs.
** Results shown represent all single occupancy vehicles (SOV).
Note: Transit operations were modeled and impacts of this operation are included with the SOV delays reported.

Existing Conditions VISSIM Model
Penn Avenue Corridor Study
Arterial MOEs (P.M. Peak Hour 4:45 - 5:45 P.M.)

SRF Consulting Group, Inc.

Penn Avenue at Golden Valley Road

Approach	Movement	Simulated Volume (vph)	Average Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	59	31	18.4	B	15.9	B	16.5	B
	Thru	431	32	16.1	B				
	Right	65	31	12.3	B				
Southbound	Left	21	11	18.8	B	12.2	B		
	Thru	277	11	12.1	B				
	Right	30	11	8.1	A				
Eastbound	Left	25	13	27.8	C	19.6	B		
	Thru	105	13	24.1	C				
	Right	52	13	6.6	A				
Westbound	Left	45	16	27.7	C	23.3	C		
	Thru	99	16	26.4	C				
	Right	33	15	8.1	A				

Penn Avenue at Broadway Avenue

Approach	Movement	Simulated Volume (vph)	Average Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	MCN Left	0	0	0.0	A	31.8	C	30.9	C
	Left	155	64	29.1	C				
	Thru	313	64	36.1	D				
	Right	48	63	12.8	B				
Southbound	Left	95	44	29.4	C	36.0	D		
	Thru	214	44	39.1	D				
	MCN Right	17	44	37.1	D				
	Right	6	44	30.5	C				
Eastbound	Left	13	20	23.0	C	29.9	C		
	Thru	238	21	30.0	C				
	Right	61	21	31.1	C				
	MCN Right	5	20	29.5	C				
Westbound	Left	33	21	24.3	C	25.6	C		
	MCN Left	20	21	21.9	C				
	Thru	379	21	25.0	C				
	Right	61	21	31.1	C				
Northeastbound	Left	5	3	57.6	E	54.9	D		
	Thru	13	3	53.3	D				
	Right	10	3	55.8	E				
	Right 2	0	0	0.0	A				

Penn Avenue at Lowry Avenue

Approach	Movement	Simulated Volume (vph)	Average Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	58	29	13.1	B	15.6	B	19.2	B
	Thru	327	29	18.4	B				
	Right	97	29	7.9	A				
Southbound	Left	69	18	14.4	B	14.4	B		
	Thru	215	18	15.7	B				
	Right	44	18	7.9	A				
Eastbound	Left	45	24	41.1	D	21.8	C		
	Thru	315	24	20.8	C				
	Right	46	24	10.0	B				
Westbound	Left	71	38	35.0	C	23.1	C		
	Thru	387	38	23.1	C				
	Right	116	38	15.8	B				

* Results shown are the average of 10 model runs.
** Results shown represent all single occupancy vehicles (SOV).
Note: Transit operations were modeled and impacts of this operation are included with the SOV delays reported.

Existing Conditions VISSIM Model
Penn Avenue Corridor Study
Arterial MOEs (P.M. Peak Hour 4:45 - 5:45 P.M.)

Penn Avenue at Dowling Avenue

Approach	Movement	Simulated Volume (vph)	Average Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	29	36	23.3	C	18.2	B	17.3	B
	Thru	318	36	20.0	C				
	Right	76	36	8.9	A				
Southbound	Left	50	29	26.5	C	21.9	C		
	Thru	215	29	22.2	C				
	Right	23	29	9.5	A				
Eastbound	Left	20	8	17.8	B	13.7	B		
	Thru	135	8	14.9	B				
	Right	28	7	5.3	A				
Westbound	Left	58	15	17.7	B	14.0	B		
	Thru	174	15	16.3	B				
	Right	86	15	6.8	A				

Penn Avenue at 44th Avenue

Approach	Movement	Simulated Volume (vph)	Average Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	575	**692**	72.2	**E**	70.6	**E**	38.3	**D**
	Right	83	**692**	59.6	**E**				
Eastbound	Thru	236	11	12.7	B	8.7	A		
	Right	362	11	6.1	A				
Westbound	Left	49	31	32.3	C	24.9	C		
	Thru	211	31	23.2	C				

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* Results shown are the average of 10 model runs.
** Results shown represent all single occupancy vehicles (SOV).
Note: Transit operations were modeled and impacts of this operation are included with the SOV delays reported.

Appendix F

Year 2035 No Build VISSIM Results

2035 No Build Conditions VISSIM Model
Penn Avenue Corridor Study
Arterial MOEs (P.M. Peak Hour 4:45 - 5:45 P.M.)

SRF Consulting Group, Inc.

Penn Avenue at Cedar Lake Road

Approach	Movement	Simulated Volume (vph)	Average Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	57	48	23.3	C	24.7	C	17.2	C
	Thru	238	48	25.3	D				
	Right	74	49	23.6	C				
Southbound	Left	10	14	13.7	B	15.1	C		
	Thru	221	14	15.4	C				
	Right	38	14	13.3	B				
Eastbound	Left	27	3	8.9	A	8.6	A		
	Thru	39	3	10.2	B				
	Right	48	0	7.2	A				
Westbound	Left	114	6	10.5	B	10.7	B		
	Thru	48	6	12.1	B				
	Right	20	0	8.6	A				

Penn Avenue at Glenwood Road

Approach	Movement	Simulated Volume (vph)	Average Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	15	12	22.0	C	16.8	B	19.4	B
	Thru	213	12	17.9	B				
	Right	36	12	7.9	A				
Southbound	Left	68	39	29.3	C	25.6	C		
	Thru	217	39	25.8	C				
	Right	34	39	16.7	B				
Eastbound	Left	34	14	20.8	C	17.7	B		
	Thru	155	14	19.2	B				
	Right	45	14	10.1	B				
Westbound	Left	40	23	22.9	C	16.8	B		
	Thru	228	23	18.6	B				
	Right	78	23	8.4	A				

Penn Avenue at Plymouth Road

Approach	Movement	Simulated Volume (vph)	Average Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	22	20	22.4	C	14.4	B	24.2	C
	Thru	410	20	15.4	B				
	Right	135	20	10.1	B				
Southbound	Left	78	18	24.5	C	16.6	B		
	Thru	341	17	15.2	B				
	Right	23	17	10.0	A				
Eastbound	Left	30	17	65.3	E	25.8	C		
	Thru	168	17	22.5	C				
	Right	47	17	12.6	B				
Westbound	Left	138	108	41.3	D	38.4	D		
	Thru	329	108	38.7	D				
	Right	132	109	34.5	C				

* Results shown are the average of 10 model runs.
** Results shown represent all single occupancy vehicles (SOV).
Note: Transit operations were modeled and impacts of this operation are included with the SOV delays reported.

2035 No Build Conditions VISSIM Model
Penn Avenue Corridor Study
Arterial MOEs (P.M. Peak Hour 4:45 - 5:45 P.M.)

SRF Consulting Group, Inc.

Penn Avenue at Golden Valley Road

Approach	Movement	Simulated Volume (vph)	Average Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	65	38	21.4	C	17.5	B	19.6	B
	Thru	477	38	17.6	B				
	Right	73	38	12.8	B				
Southbound	Left	23	10	18.3	B	11.5	B		
	Thru	308	10	11.5	B				
	Right	33	10	7.3	A				
Eastbound	Left	29	25	40.9	D	28.3	C		
	Thru	115	25	34.7	C				
	Right	58	25	9.4	A				
Westbound	Left	51	29	38.7	D	32.1	C		
	Thru	110	29	35.8	D				
	Right	36	28	12.0	B				

Penn Avenue at Broadway Avenue

Approach	Movement	Simulated Volume (vph)	Average Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	MCN Left	0	0	0.0	A	62.4	E	43.3	D
	Left	176	254	59.5	E				
	Thru	359	255	68.3	E				
	Right	57	251	34.6	C				
Southbound	Left	111	59	35.8	D	39.0	D		
	Thru	248	59	40.2	D				
	MCN Right	20	59	44.0	D				
	Right	6	61	34.0	C				
Eastbound	Left	16	32	27.9	C	35.9	D		
	Thru	280	32	36.6	D				
	Right	73	32	35.5	D				
	MCN Right	6	31	32.0	C				
Westbound	Left	39	37	28.4	C	30.5	C		
	MCN Left	23	37	24.0	C				
	Thru	445	37	30.2	C				
	Right	73	32	35.5	D				
Northeastbound	Left	6	4	62.7	E	61.2	E		
	Thru	15	4	64.0	E				
	Right	11	4	56.5	E				
	Right 2	0	0	0.0	A				

Penn Avenue at Lowry Avenue

Approach	Movement	Simulated Volume (vph)	Average Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	68	50	18.0	B	21.5	C	24.5	C
	Thru	381	50	25.5	C				
	Right	113	50	10.0	A				
Southbound	Left	81	23	16.8	B	15.8	B		
	Thru	251	23	17.1	B				
	Right	52	23	7.8	A				
Eastbound	Left	53	34	56.2	E	25.3	C		
	Thru	369	33	22.6	C				
	Right	54	34	13.4	B				
Westbound	Left	81	65	51.1	D	31.4	C		
	Thru	452	66	30.2	C				
	Right	137	65	23.3	C				

* Results shown are the average of 10 model runs.
** Results shown represent all single occupancy vehicles (SOV).
Note: Transit operations were modeled and impacts of this operation are included with the SOV delays reported.

2035 No Build Conditions VISSIM Model
Penn Avenue Corridor Study
Arterial MOEs (P.M. Peak Hour 4:45 - 5:45 P.M.)

Penn Avenue at Dowling Avenue

Approach	Movement	Simulated Volume (vph)	Average Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	32	22	14.8	B	11.7	B	20.8	C
	Thru	354	22	11.9	B				
	Right	85	22	9.6	A				
Southbound	Left	57	17	17.7	B	13.2	B		
	Thru	240	17	12.4	B				
	Right	26	17	10.6	B				
Eastbound	Left	22	26	34.2	C	28.8	C		
	Thru	149	26	32.7	C				
	Right	32	25	7.1	A				
Westbound	Left	65	64	43.2	D	35.0	D		
	Thru	195	64	40.9	D				
	Right	96	64	17.6	B				

Penn Avenue at 44th Avenue

Approach	Movement	Simulated Volume (vph)	Average Queue (ft)	Movement Delay (sec/veh)	Movement LOS	Approach Delay (sec/veh)	Approach LOS	Overall Delay (sec/veh)	Overall LOS
Northbound	Left	683	188	31.8	C	30.7	C	28.5	C
	Right	99	187	23.1	C				
Eastbound	Thru	260	39	23.4	C	15.3	B		
	Right	402	38	10.0	B				
Westbound	Left	54	74	88.3	F	53.3	D		
	Thru	232	75	45.2	D				

H:\Projects\8403\TS\VISSIM\2_2035_No_Build\06_MOEs

* Results shown are the average of 10 model runs.
** Results shown represent all single occupancy vehicles (SOV).
Note: Transit operations were modeled and impacts of this operation are included with the SOV delays reported.

ATTACHMENT 6

7th Street Transit Advantage Correspondence

Attachment 6: 7th Street Transit Advantage Correspondence

C Line DCE Information: 7th Street Transit Advantage Project Coordination

7th & Hennepin and 7th & Nicollet Transit Improvements
August 12, 2015

Many of the planned elements of Metro Transit's A Line, C Line, and other future corridor arterial BRT projects are consistent with improvements being made at individual bus stops across the region today, including some sites where customer need for improved facilities is high today and BRT is planned for the future. Two future C Line sites in downtown Minneapolis are among those targeted for near-term improvements and future BRT.

Metro Transit and the City of Minneapolis are implementing the 7th St. Transit Advantage Project to improve the transit experience and pedestrian realm at 7th & Hennepin and 7th & Nicollet. Improvements include new curb and gutter, wider sidewalks, and enhanced transit shelters with real-time signage. Construction began summer 2015 and is anticipated to be completed spring 2016. The two project locations will also be integrated as C Line stations upon the new service's planned 2018 opening. As a result, area improvements will benefit both current customers of local routes and future users of planned C Line service.

The 7th St. Transit Advantage Project will immediately improve the transit experience with curb extensions and large shelters that will meet current transit needs and become important elements of the corridor's C Line. As part of concrete platform construction, the 7th St. Transit Advantage Project is also constructing foundations for pylons at both Hennepin Avenue and Nicollet Mall to mark the bus stops and house technology enhancements (real-time information annunciator, security camera, real-time signage) to be utilized by local route customers and future C Line customers.

Metro Transit plans to purchase and deploy two pylon signs and related technology, consistent with BRT designs, for near-term (pre-C Line) installation at these enhanced bus stops. The two pylons and related equipment will be purchased entirely with local funding outside of the C Line project, and as such will be advanced independent of C Line NEPA clearance. Installation of these elements now will provide needed customer amenities in the near-term and ensure that pylon foundations and related conduit stubs are not left exposed between completion of the 7th St. Transit Advantage Project in 2016 and the start of C Line service in 2018.

These sites will be made BRT ready by the 2017 C Line corridor construction project with installation of fare collection equipment, signage, and BRT branding.

See the following page for photos of constructed improvements and pylon location at the 7th and Hennepin location as of August 2015.

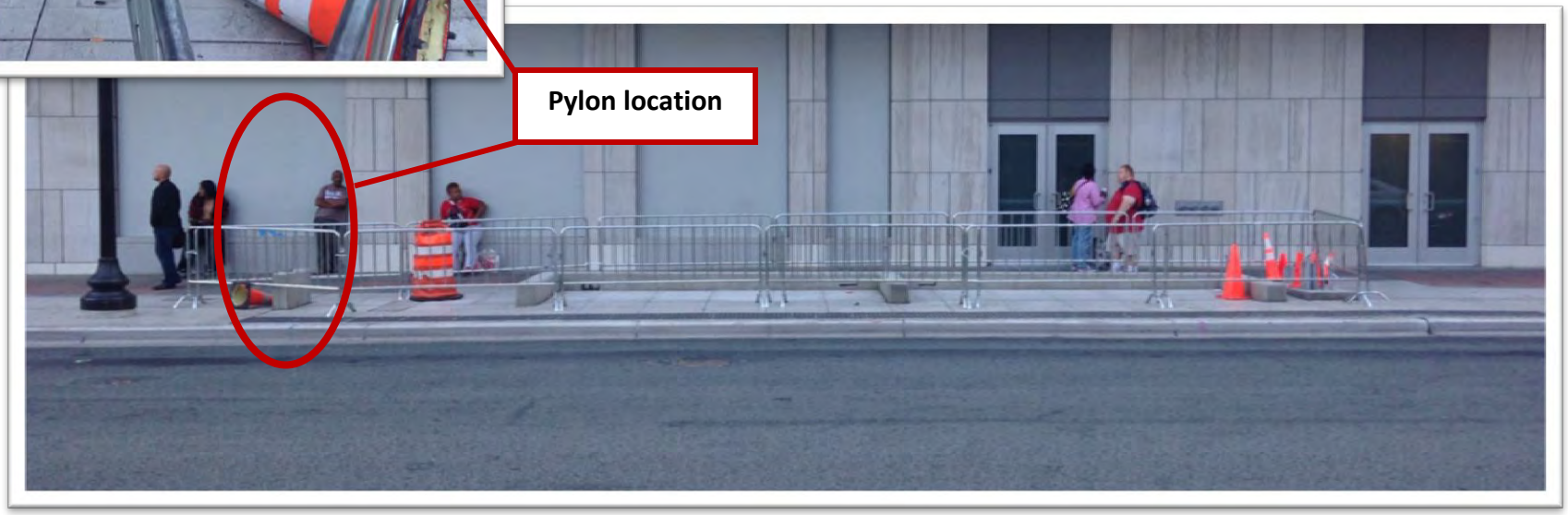


7th St. Transit Advantages Project and C Line Coordination

August 2015 Photos

Left: Bus stop improvements at S. 7th St. and N. 1st Ave./Hennepin Ave. Pylon will be located at front of bus stop near the intersection of S. 7th St. and N. 1st Ave. Photo is looking east toward Hennepin Ave.

Below: Profile view of pylon location at front of bus stop. S. 7th St. and Nicollet Mall will consist of similar improvements. Both the Hennepin and Nicollet project locations are planned to be station locations for the C Line BRT service.



ATTACHMENT 8

Noise and Vibration Technical Memorandum

Cross-Spectrum Acoustics

Cross-Spectrum Acoustics Inc.

P.O. Box 90842
Springfield MA 01139

358 South 700 E, Ste B214
Salt Lake City, UT 84102

TECHNICAL MEMORANDUM

To: Dan Edgerton, Zan Associates

From: Scott Edwards, Cross-Spectrum Acoustics Inc.

Date: June 29, 2015

Project Reference: J2015-1030 – Minneapolis C Line BRT – DRAFT Noise Assessment

This technical memorandum provides a summary of the noise assessment for the proposed C Line corridor in the Cities of Brooklyn Center and Minneapolis, MN. The proposed C Line corridor is an 8.4-mile bus improvement project that will increase service and improve stations along the existing Route 19 bus route. A general noise assessment was conducted to determine the potential for noise impact as a result of the proposed action.

METHODOLOGY

Noise impact has been evaluated using the general noise assessment methodology contained in Chapter 5 of the Federal Transit Administration (FTA) noise and vibration guidance manual (Report FTA-VA-90-1003-06, May 2006). The steps in a general noise assessment for a bus rapid transit (BRT) project include:

- Identifying noise-sensitive land uses in the corridor using aerial photography, GIS data and field surveys
- Projecting project noise levels from BRT operations
- Assessing impact from BRT sources by comparing the project noise with the estimated existing noise using the criteria detailed below
- Recommending mitigation at locations where project noise levels exceed the impact criteria

Projected noise levels for the C Line study area are based on BRT operational data and existing traffic studies provided by the Met Council. Specific assumptions used in the noise impact assessment include:

- BRT speeds are assumed to be equal to the posted speed limits, as C Line buses will be operating within traffic on existing roads. Posted speed limits range from 30 mph to 40 mph within the C Line corridor. An average speed of 35 mph was used for predicting project noise levels, in accordance with FTA noise general methodology for BRT projects.
- The operating hours were assumed to be the same as the existing Route 19 weekday bus operations
- The C Line level of service during peak operating hours was assumed to be four additional buses per hour above the existing Route 19 service (two more buses per hour in each direction), with a total of 16 buses per hour during peak transit hours (eight buses per hour in each direction)
- BRT vehicle reference sound exposure levels (SELs) are assumed to be 82 dBA per FTA guidance for diesel-powered buses

The noise impact criteria for this project are based on the information contained in Chapter 3 of the FTA noise and vibration guidance manual. The FTA noise impact criteria are based on well-documented research on community response to noise and are based on both the existing level of noise and the change in noise exposure due to a project.

FTA noise impact is assessed at noise sensitive receptors, which include the following types of land uses:

- **Category 1:** Tracts of land where quiet is an essential element in their intended purpose, such as recording studios, concert halls, National Historic Landmarks with significant outdoor use, and outdoor amphitheaters.
- **Category 2:** Residential properties and buildings where people normally sleep, such as homes, hospitals, and hotels.
- **Category 3:** Institutional land uses where it is important to avoid interference with speech, meditation or concentration, such as schools, libraries, theaters, churches, museums, and certain historical sites and parks.

The noise impact criteria for each noise sensitive land use are defined by the two curves shown in Figure 1, which allow increasing project noise as existing noise levels increase, up to a point at which impact is determined based on project noise alone. The FTA noise impact criteria include three levels of impact, as shown in Figure 1. The three levels of impact include:

- **No Impact:** In this range, the proposed project is considered to have no impact since, on average; the introduction of the project will result in an insignificant increase in the number of people highly annoyed by the new project noise.
- **Moderate Impact:** At the moderate impact range, changes in the cumulative noise level are noticeable to most people, but may not be sufficient to cause strong, adverse reactions from the community. In this transitional area, other project-specific factors must be considered to determine the magnitude of the impact and the need for mitigation, such as the existing level, predicted level of increase over existing noise levels and the types and numbers of noise-sensitive land uses affected.
- **Severe Impact:** At the severe impact range, a significant percentage of people would be highly annoyed by the new project noise. Severe noise impacts are considered to be "significant" under NEPA, and should be avoided if possible. Noise mitigation should be applied for severe impacts where feasible.

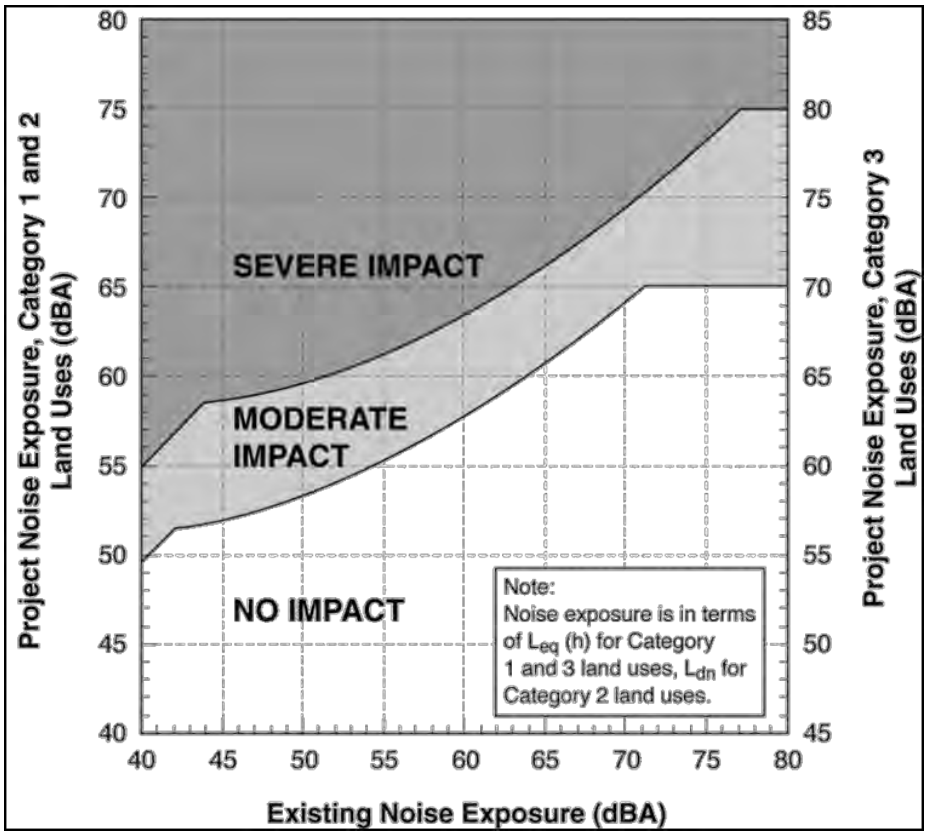


Figure 1. Noise Impact Criteria

EXISTING CONDTIONS

The proposed C Line corridor is currently served by Metro Transit Route 19 buses. There are currently a total of 12 Route 19 buses per peak hour (six buses per peak hour in each direction). Noise-sensitive land use for the C Line study area was identified based on aerial photography, project drawings and a site survey. Based on the information from these sources, noise sensitive land uses for each segment of the corridor is as follows:

- **Osseo Road/Brooklyn Boulevard** – At the north end, the C Line terminates at the existing Brooklyn Center Transit Center. Between the Brooklyn Center Transit Center and Highway 100, the corridor is dominated by commercial properties throughout the shopping center. South of Highway 100, noise sensitive land uses are largely made up of single-family residential properties, but also include Brookdale Covenant Church.
- **Penn Avenue** – Penn Avenue is an arterial two-lane roadway with parking on each side of the road. Noise sensitive land uses in this area are dominated by single-family residential properties, but also include Minneapolis Believers in Christ Church, Lincoln Junior High School, KMOJ radio station, Spirit and Truth Church, Cleveland Park Community School, and the Penn School.
- **Olson Memorial Highway** – Olson Memorial Highway is a six-lane highway separated by a median. Noise sensitive land uses in this area are dominated by single-family and multi-family residential properties, but also include Summer Branch Library, Wayman A.M.E. Church, Seed Academy, and Zion Baptist Church. Noise sensitive land uses are generally greater than 100 feet from the center of Olson Memorial Highway, and are serviced by frontage roads.
- **Downtown Minneapolis** – At the south end, the C Line corridor terminates in downtown Minneapolis, traveling on 7th and 8th Streets from Olson Memorial Highway to just east of Park Ave S. This urban downtown area is made up of primarily commercial properties. Noise sensitive land uses in this area include Pantages Theatre, The Skywalk Theatre, St. Olaf Catholic Church, First Covenant Church, Hennepin County Medical Center (hospital), the Sexton Lofts, Center Village (condos), and City Heights Condominiums.

The study area is currently exposed to existing Route 19 bus service, as well as daily traffic volumes ranging from 6,000 to 23,000 vehicles per day and other local noise sources. Based on ambient noise measurements conducted for other transit projects in the study area, typical daily traffic volumes, and FTA guidance for ambient noise conditions due to population density and distance from major noise sources (interstate highways I-94 and I-394, and freight rail lines), the existing noise levels in the C Line study area are assumed to range from 60 to 70 dBA (Peak-Hour Leq). For this assessment, the lower end of this range was assumed as the most conservative method of determining the potential for impact from the proposed project.

RESULTS

The FTA general noise assessment of the proposed C Line BRT project was conducted for two scenarios of bus operations:

- The first scenario only considered the change in bus operations from the existing Route 19 bus service to the proposed C Line bus service as the project (i.e. 4 buses per peak hour).
- The second scenario conservatively considered the existing Route 19 and change in bus operations due to the C Line service as the project (i.e. 16 total buses per peak hour).

Typically the "project" noise as defined by FTA is only the change in operations or service due to the project. However, in order to ensure that the noise assessment is conservative and that there would be no noise impacts due to the project, the second scenario, assuming all bus operations (Route 19 and the change due to the C Line) as the project, was assessed. The results of the general noise assessment are presented below in Table 1 for both scenarios.

Table 1. FTA General Noise Assessment Results

Scenario	Source of Project Noise	Predicted Project Noise Level (Peak-Hour Leq, dBA)	Existing Ambient Noise Level That Would Cause Moderate Impact (Peak-Hour Leq, dBA)	Predicted Existing Ambient Noise Level (Peak-Hour Leq, dBA)	Level of Noise Impact
1	4 buses per peak hour	50	<40	>60	No Impact
2	16 buses per peak hour	56	<55	>60	No Impact

The first scenario results in a predicted project noise level of 50 dBA (Peak-Hour Leq). Referencing the FTA project noise impact criteria (See Figure 1), moderate noise impact would occur if existing ambient noise levels were below 40 dBA (Peak-Hour Leq).

The second scenario results in a predicted project noise level of 56 dBA (Peak-Hour Leq). Referencing the FTA project noise impact criteria (See Figure 1), moderate noise impact would occur if existing ambient noise levels were below 55 dBA (Peak-Hour Leq).

Based on ambient noise measurements conducted for other transit projects in the study area and FTA guidance for predicting ambient noise conditions, existing noise levels are conservatively expected to be greater than 60 dBA (Peak-Hour Leq), which are above the thresholds for noise impact in both operational scenarios. Therefore, no noise impact is predicted as a result of the proposed C Line project.

ATTACHMENT 9

Section 4(f) Correspondence

Metro Transit

To: Ann Rexine, Three Rivers Park District
From: Scott Janowiak, Metro Transit
Date: October 21, 2015

RE: C Line Arterial BRT and Twin Lakes Regional Trail Section 4(f) Coordination

This correspondence addresses potential impacts to the Twin Lakes Regional Trail resulting from the proposed C Line arterial bus rapid transit (BRT) project. On October 19th we met to discuss the project and initiate any required Section 4(f) coordination related to the Twin Lakes Regional Trail. The information below is intended to provide background information that will ultimately be used to complete required Section 4(f) processes.

Metro Transit is requesting concurrence that the anticipated temporary construction impacts to the Twin Lakes Regional Trail will constitute a *de minimis* impact. Any impacts resulting from the C Line will not adversely affect the features, attributes, or activities qualifying the property for protection. Additional information is provided below and includes the following:

I. General project description;
II. Project construction description; and
III. Discussion of impacts

I. General project description

The C Line will provide enhanced bus service between the Brooklyn Center Transit Center in the City of Brooklyn Center and downtown Minneapolis via the Penn Avenue corridor (see Exhibit 1 for a basic map of the C Line). The purpose of the project is provide faster, more reliable, and more attractive transit service in the corridor without expanding the roadway's footprint. It will substantially replace the existing high-frequency local route Route 19. Construction is scheduled for 2017. The project will not construct any dedicated busways. Station platforms about 60 feet long and 10-12 feet wide will be constructed within the existing transportation right-of-way. Within the limits of the platforms, the project will also construct passenger amenities like a landmark pylon and off-board fare collection. Final station designs are dependent upon site-specific conditions evaluated during the project's detailed design and engineering phase. See Exhibit 2 for a general depiction of a full arterial BRT station investment.

Regarding impacts to Three Rivers Park District trail facilities, the planned northbound platform located at the intersection of Xerxes Avenue and 56th Avenue will be adjacent to the Twin Lakes Regional Trail (see Exhibit 3 for more information). It will replace an existing bus stop in the same location. Customers will continue to cross the trail to board and exit the bus as they do today. Temporary impacts to a short trail segment (approximately 100 feet long) and surrounding area are anticipated to allow construction of the platform and related platform features (e.g., a landmark pylon with real-time signage technology, ticket vending machine, fare

card validator). A shelter is not planned at the Xerxes & 56th Avenue northbound platform due to its proximity to the northern terminus and anticipated use as primarily a drop-off location.

II. Project construction description

Construction is anticipated to last approximately four to six weeks. Construction impacts will include ground disturbance within the platform construction limits. Measures to minimize surface impacts will be considered throughout the construction process and implemented where appropriate.

III. Discussion of impacts

As previously noted, construction is anticipated to last approximately four to six weeks. Any impacts to the trail will not extend beyond this duration of time. Adequate trail detours during construction will be coordinated with the Three Rivers Park District to accommodate trail users. The temporary construction activities will not result in permanent damage to the trail, and appropriate measures will be taken to ensure that the short trail segment will be restored to its previous condition.

Metro Transit is requesting Three Rivers Park District agency concurrence that the C Line constitutes a *de minimis* impact on the Twin Lakes Regional Trail that will not adversely affect the features, attributes, or activities qualifying the property for protection under Section 4(f).

Please contact me at scott.janowiak@metrotransit.org or 612-341-5733 to discuss further as necessary.

Exhibit 1

Metro Transit
C Line

Preliminary Station Locations
Subject to Change

Updated October 12, 2015

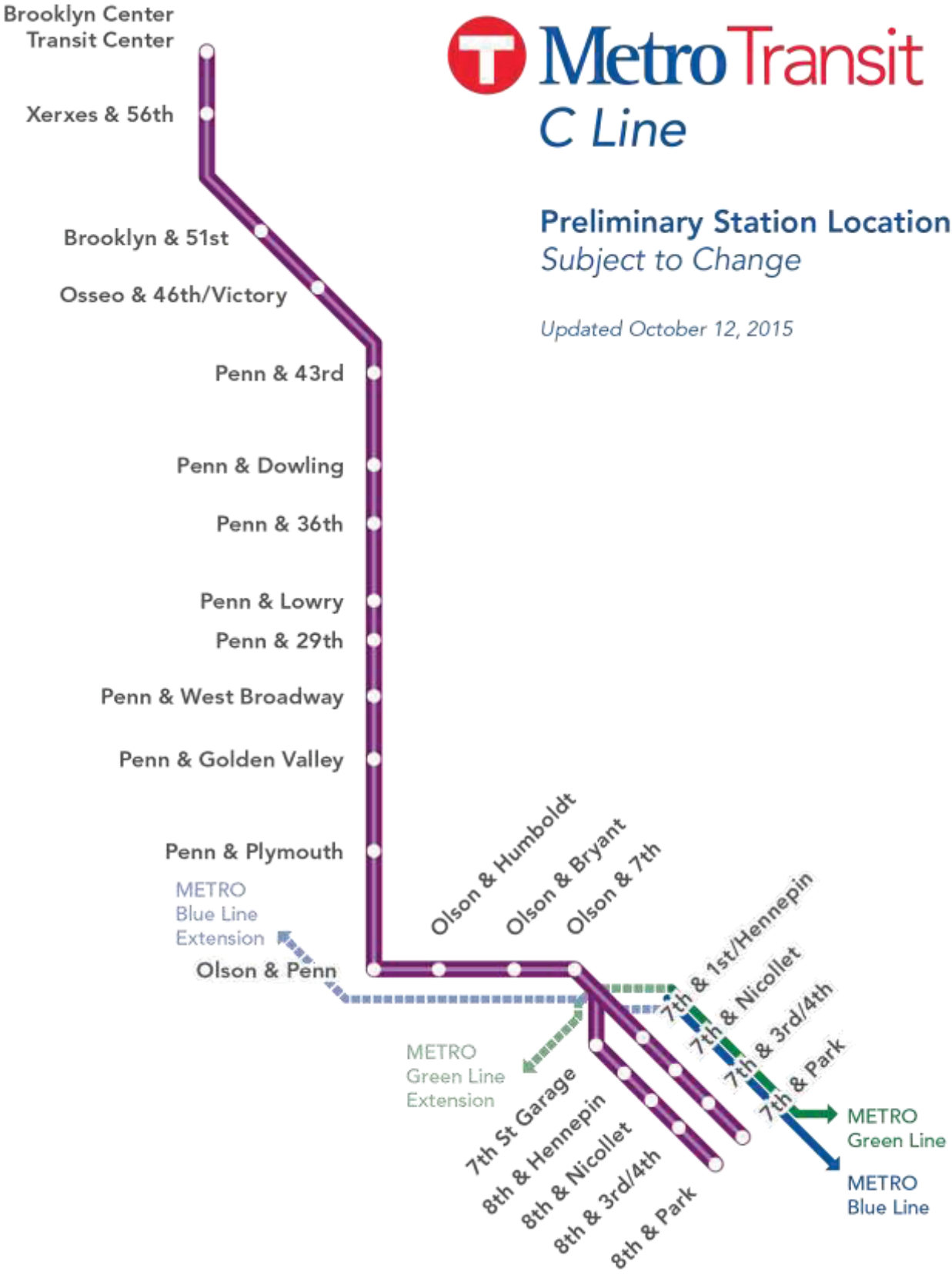
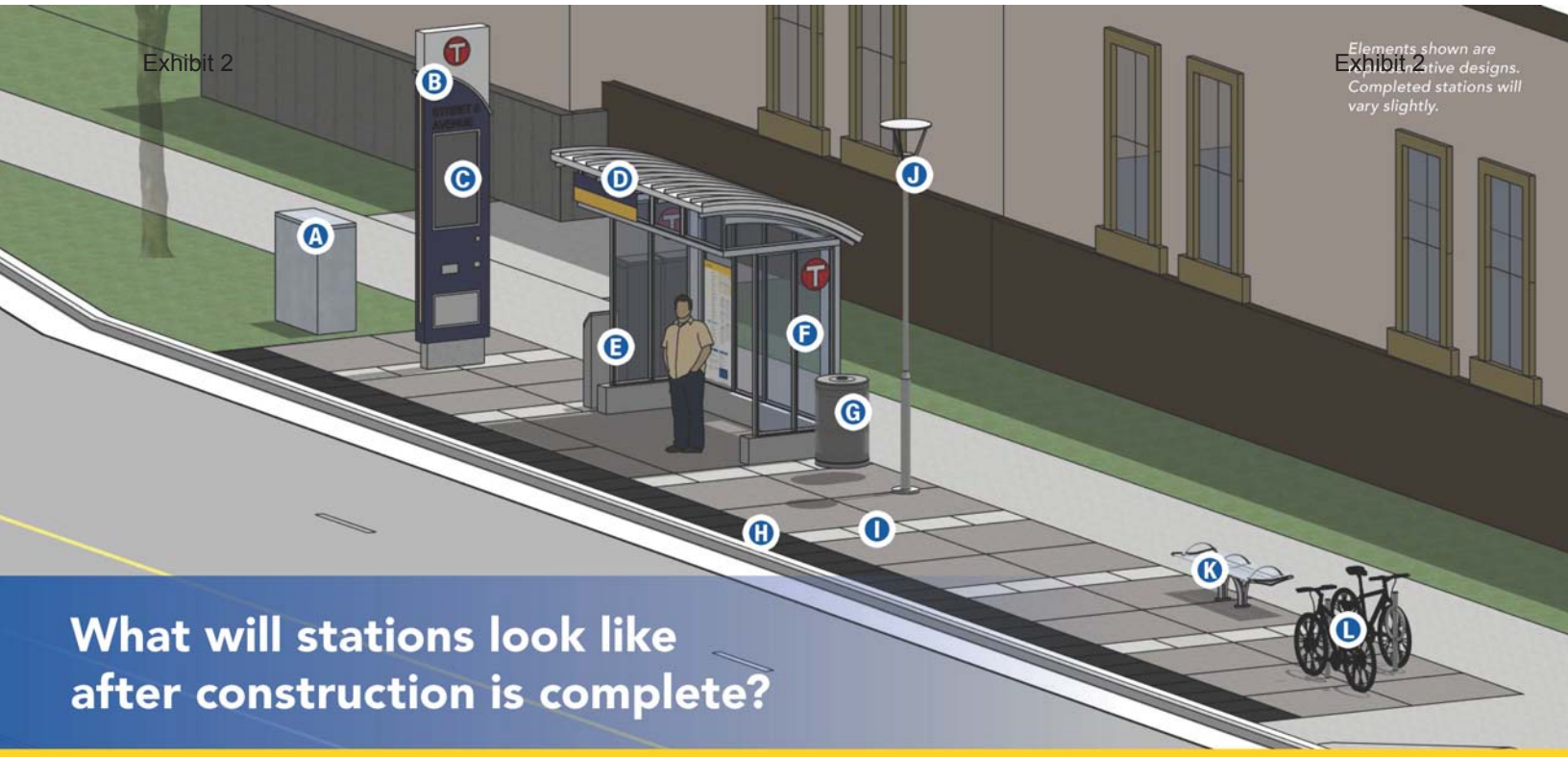


Exhibit 1

Exhibit 2

Exhibit 2



What will stations look like after construction is complete?

- **A** **Utility boxes** near station areas house necessary communications and electrical equipment.
- **B** **Pylon markers** help riders identify stations from a distance.
- **C** **Real-time NexTrip displays** provide bus information, and on-demand **annunciators** speak this information for people with low vision.
- **D** **Shelters** provide weather protection and feature on-demand **heaters** and integrated **lighting**. Shelter sizes will vary based on customer demand (small shown here).
- **E** **Ticket machines** and **fare card validators** collect all payment before customers board the bus.
- **F** **Emergency telephones** provide a direct connection to Metro Transit security. Stations also feature **security cameras**.
- **G** All stations feature **trash and recycling** containers.
- **H** Platform edges are marked with a cast-iron **textured warning strip** to keep passengers safely away from the curb while the bus approaches. Many stations also feature **raised curbs** for easier boarding.
- **I** **Platform areas** are distinguished by a dark gray concrete pattern.
- **J** Some stations have sidewalk-level **light fixtures** to provide a safe, well-lit environment. Fixtures will match existing lights in the surrounding area.
- **K** **Benches** at stations provide a place to sit.
- **L** Every station has **bike parking loops.**

Metro Transit

Exhibit 2

Exhibit 2


C Line: Xerxes & 56th Ave northbound platform + Twin Lakes Regional Trail
Exhibit 3
56th Avenue
Xerxes Avenue
Southbound platform
Northbound platform
Twin Lakes Regional Trail
N
Legend
General platform location
Exhibit 3
Exhibit 3

Metro Transit

To: Andrew Hogg, City of Brooklyn Center
From: Scott Janowiak, Metro Transit
Date: January 19, 2016

RE: C Line Arterial BRT and Twin Lakes Regional Trail Section 4(f) Coordination

This correspondence addresses potential impacts to the Twin Lakes Regional Trail resulting from the proposed C Line arterial bus rapid transit (BRT) project. I sent Steve Lillehaug an initial email January 6, 2016 identifying the need for coordination between our agencies to discuss the project and initiate any required Section 4(f) documentation related to the Twin Lakes Regional Trail. The information below is intended as a follow-up to our earlier communications and to provide background information that will ultimately be used to complete required Section 4(f) processes. As we discussed, in October I began Section 4(f) coordination with Ann Rexine, planner from Three Rivers Park District. I am pivoting this coordination to the City of Brooklyn Center after our mutual understanding that the City of Brooklyn Center and not Three Rivers Park District is, in fact, the agency currently with jurisdiction over the Twin Lakes Regional Trail.

Metro Transit is requesting concurrence that the anticipated temporary construction impacts to the Twin Lakes Regional Trail will constitute a *de minimis* impact. Any impacts resulting from the C Line will not adversely affect the features, attributes, or activities qualifying the property for protection. Additional information is provided below and includes the following:

I. General project description;
II. Project construction description; and
III. Discussion of impacts

I. General project description

The C Line will provide enhanced bus service between the Brooklyn Center Transit Center in the City of Brooklyn Center and downtown Minneapolis via the Penn Avenue corridor (see Exhibit 1 for a basic map of the C Line). The purpose of the project is to provide faster, more reliable, and more attractive transit service in the corridor without expanding the roadway's footprint. It will substantially replace the existing high-frequency local route Route 19. Construction is scheduled for 2017. The project will not construct any dedicated busways. Station platforms about 60 feet long and 10-12 feet wide will be constructed within the existing transportation right-of-way. Within the limits of the platforms, the project will also construct passenger amenities like a landmark pylon and off-board fare collection. Final station designs are dependent upon site-specific conditions evaluated during the project's detailed design and engineering phase. See Exhibit 2 for a general depiction of a full arterial BRT station investment.

Regarding impacts to City of Brooklyn Center trail facilities, the planned northbound platform located at the intersection of Xerxes Avenue and 56th Avenue will be adjacent to the Twin Lakes Regional Trail (see Exhibit 3 for more information). It will replace an existing bus stop in the

same location. Customers will continue to cross the trail to board and exit the bus as they do today. Temporary impacts to a short trail segment (approximately 100 feet long) and the immediately adjacent area are anticipated to allow construction of the platform and related platform features (e.g., a landmark pylon with real-time signage technology, ticket vending machine, fare card validator). A shelter is not planned at the Xerxes & 56th Avenue northbound platform due to its proximity to the northern terminus and anticipated use as primarily a drop-off location.

II. Project construction description

Construction is anticipated to last approximately four to six weeks. Construction impacts will include ground disturbance within the platform construction limits. Measures to minimize surface impacts will be considered throughout the construction process and implemented where appropriate.

III. Discussion of impacts

As previously noted, construction is anticipated to last approximately four to six weeks. Any impacts to the trail will not extend beyond this duration of time. Adequate trail detours during construction will be coordinated with the City of Brooklyn Center to accommodate trail users.

The temporary construction activities will not result in permanent damage to the trail, and appropriate measures will be taken to ensure that the short trail segment will be restored to its previous condition.

Metro Transit is requesting City of Brooklyn Center agency concurrence that the C Line constitutes a *de minimis* impact on the Twin Lakes Regional Trail that will not adversely affect the features, attributes, or activities qualifying the property for protection under Section 4(f).

Please contact me at scott.janowiak@metrotransit.org or 612-341-5733 to discuss further as necessary.

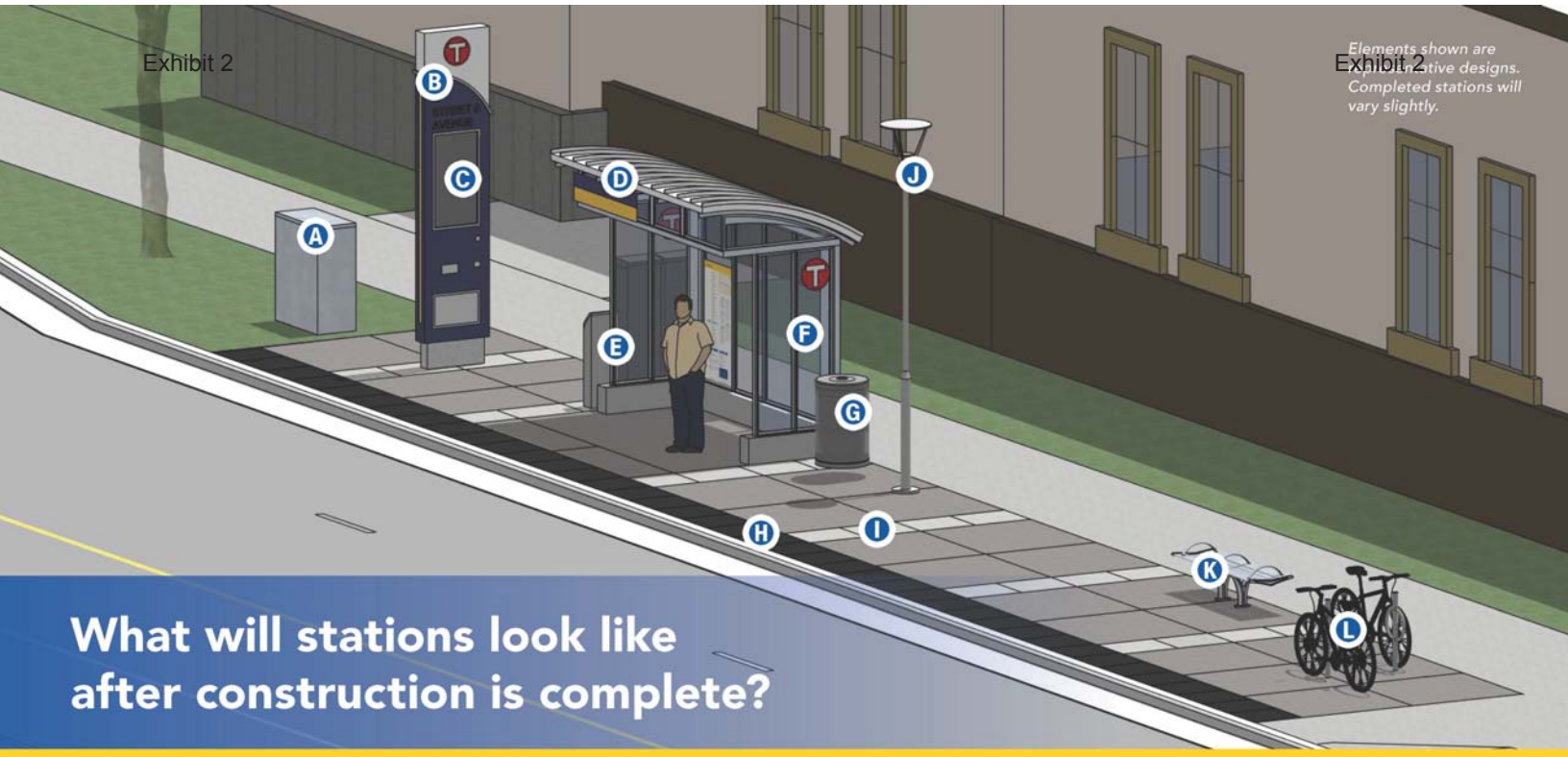
Exhibit 1



Exhibit 1

Exhibit 2

Exhibit 2



What will stations look like after construction is complete?

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- **B** **Pylon markers** help riders identify stations from a distance.
- **C** **Real-time NexTrip displays** provide bus information, and on-demand **annunciators** speak this information for people with low vision.
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- **L** Every station has **bike parking loops.**

Metro Transit

Exhibit 2

Exhibit 2


C Line: Xerxes & 56th Ave northbound platform + Twin Lakes Regional Trail
Exhibit 3
56th Avenue
Xerxes Avenue
Southbound platform
Northbound platform
Twin Lakes Regional Trail
N
Legend
General platform location
Exhibit 3
Exhibit 3

ThreeRivers
PARK DISTRICT

Three Rivers Park District Board of Commissioners

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Boe Carlson
Superintendent

February 12, 2016

Scott Janowiak, Planner
BRT/Small Starts
Metro Transit
560 Sixth Avenue North
Minneapolis, MN 55411-4398

RE: C Line Arterial BRT and Twin Lakes Regional Trail Section 4(f) Coordination

Mr. Janowiak,

The C Line Arterial BRT will provide enhanced bus service between the Brooklyn Center Transit Center in the City of Brooklyn Center (City) and downtown Minneapolis via the Penn Avenue corridor. A planned platform located at the intersection of Xerxes Avenue and 56th Avenue will be adjacent to the Twin Lakes Regional Trail – replacing a bus stop at the same location. Temporary impacts to a short trail segment (approximately 100 feet long) and the immediately adjacent area are anticipated to allow construction of the platform and related platform features (e.g., a landmark pylon with real-time signage technology, ticket vending machine, fare card validator). Construction is scheduled for 2017.

The City, as the underlying property owner, has jurisdiction over Twin Lakes Regional Trail - however, Three Rivers Park District (Park District) operates and maintains the trail through the City.

The Park District is supportive of the City's *de minimis* concurrence indicating that the Twin Lakes Regional Trail will not be adversely affected under Section 4(f).
The Park District also concurs with the City's conditional requests including, but not limited to:

1) Adequate trail detours during construction will be coordinated with the City of Brooklyn Center to accommodate trail users.

2) The trail must be restored to 10-feet wide with 3-foot clear zones on both sides and meet all other Three River Park District trail standards.

Sincerely,



Kelly Grissman, Director of Planning

CC: Steven Lillehaug, PE, PTOE, Brooklyn Center
Ann Rexine, Three Rivers Park District

February 8, 2016

Scott Janowiak, Planner
BRT/Small Starts
Metro Transit
560 Sixth Avenue North
Minneapolis, MN 55411-4398

The City of Brooklyn Center concurs with Metro Transit that the C Line bus rapid transit project constitutes a *de minimis* impact on the Twin Lakes Regional Trail that will not adversely affect the features, attributes, or activities qualifying the property for protection under Section 4(f). The City of Brooklyn Center is the agency with jurisdiction over trail facilities at the impacted location near the southeast corner of Xerxes Avenue and 56th Avenue

The City of Brooklyn Center requests the following conditions, as a part of this *de minimis* concurrence:

1) Adequate trail detours during construction will be coordinated with the City of Brooklyn Center to accommodate trail users.
2) The trail must be restored to 10-feet wide with 3-feet clear space on both sides and meet all other Three River Park District trail standards.

Sincerely,

Steven L. Lillehaug, PE, PTOE
Director of Public Works/City Engineer

c: Ann Rexine, Three Rivers Park District

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SP Brooklyn Ctr/Brooklyn Park

with the known office of issue being located in the county of:

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with additional circulation in the counties of:

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and has full knowledge of the facts stated below:

(A) The newspaper has complied with all of the requirements constituting qualification as a qualified newspaper as provided by Minn. Stat. §331A.02.

(B) This Public Notice was printed and published in said newspaper(s) once each week, for 1 successive week(s); the first insertion being on 04/21/2016 and the last insertion being on 04/21/2016.

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By: Charlene Vold
Designated Agent

Subscribed and sworn to or affirmed before me on 04/21/2016 by Charlene Vold.

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Notary Public

DARLENE MARIE MACPHERSON
Notary Public-Minnesota
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PUBLIC NOTICE

Metro Transit, a division of the Metropolitan Council, is currently pursuing federal funding through the Federal Transit Administration (FTA) for the C Line bus rapid transit project in the City of Brooklyn Center and the City of Minneapolis. The proposed project is an enhanced bus service traveling between the Brooklyn Center Transit Center and downtown Minneapolis via the Penn Avenue corridor. Buses will travel using existing travel lanes in mixed traffic, making limited stops at improved stations. The project is located in Hennepin County, Minnesota.

The proposed project is anticipated to result in temporary construction impacts to approximately 100 feet of the Twin Lakes Regional Trail at the southeast corner of Xerxes Avenue and 56th Avenue North in the City of Brooklyn Center. Adequate trail detours during construction will be coordinated, and appropriate measures will be taken to ensure that the trail segment will be restored to its previous condition. FTA has determined that Section 4(f) of the Department of Transportation Act of 1966, codified at 49 U.S.C. §303 and implemented in 23 C.F.R. Part 774, applies to the project. This action will temporarily occupy a Section 4(f) publicly owned recreational property for a transportation use. The City of Brooklyn Center has determined this temporary construction impact will not adversely affect the Twin Lakes Regional Trail. FTA intends to issue a de minimis finding for this action, thereby satisfying the responsibilities under Section 4(f) for this property.

The views of the public are being sought to help determine if the intended Section 4(f) de minimis finding is appropriate for the proposed project. Comments must be received no later than 30 days from the date of this notice. Please direct any comments or questions to:

Mr. Reginald Arkell,
Community Planner
Federal Transit Administration – Region 5
200 West Adams Street, Suite 320
Chicago, Illinois 60606
312-886-3704
reginald.arkell@dot.gov

Published in the
Brooklyn Center Sun Post
April 21, 2016
535328

Public Notices

Public Notices – PUBLIC NOTICE

Published April 21, 2016 at 9:33 am

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54°

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to:

Mr. Reginald Arkell,

Community Planner

Federal Transit Administration

Region 5

200 West Adams Street, Suite 320

Chicago, Illinois 60606

312-886-3704

reginald.arkell@dot.gov

Published in the

Brooklyn Center Sun Post

April 21, 2016

535328

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PUBLIC NOTICE

RE: C Line Bus Rapid Transit Project and the Twin Lakes Regional Trail

Metro Transit, a division of the Metropolitan Council, is currently pursuing federal funding through the Federal Transit Administration (FTA) for the C Line bus rapid transit project in the City of Brooklyn Center and the City of Minneapolis. The proposed project is an enhanced bus service traveling between the Brooklyn Center Transit Center and downtown Minneapolis via the Penn Avenue corridor. Buses will travel using existing travel lanes in mixed traffic, making limited stops at improved stations. The project is located in Hennepin County, Minnesota.

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Mr. Reginald Arkell, Community Planner
Federal Transit Administration – Region 5
200 West Adams Street, Suite 320
Chicago, Illinois 60606
312-886-3704
reginald.arkell@dot.gov


RIDER ALERT
PUBLIC NOTICE
RE: C Line Bus Rapid Transit Project and the Twin Lakes Regional Trail
Metro Transit, a division of the Metropolitan Council, is currently pursuing federal funding through the Federal Transit Administration (FTA) for the C Line bus rapid transit project in the City of Brooklyn Center and the City of Minneapolis. The proposed project is an enhanced bus service traveling between the Brooklyn Center Transit Center and downtown Minneapolis via the Penn Avenue corridor. Buses will travel using existing travel lanes in mixed traffic, making limited stops at improved stations. The project is located in Hennepin County, Minnesota.
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Mr. Reginald Arkell, Community Planner
Federal Transit Administration – Region 5
200 West Adams Street, Suite 320
612-373-3337
metrotransit.org

ATTACHMENT 10

DNR Correspondence

Attachment 10: MnDNR Correspondence

Minnesota Department of Natural Resources
Division of Ecological and Water Resources, Box 25
500 Lafayette Road
St. Paul, Minnesota 55155-4025
Phone: (651) 259-5091 E-mail: samantha.bump@state.mn.us

August 4, 2015 **Correspondence # ERDB 20160012**

Mr. Dan Edgerton
Zan Associates
105 5th Ave S, Suite 490
Minneapolis, MN 55401

RE: Natural Heritage Review of the proposed Metro Transit C Line;
Hennepin County

Dear Mr. Edgerton,

As requested, the above project has been reviewed for potential effects to known occurrences of rare features. A search of the Minnesota Natural Heritage Information System did identify rare features within an approximate one-mile radius of the proposed project, but these records did not include any federally listed species and were either historical or not of concern given the project details that were provided with the data request form. As such, I do not believe the proposed project will adversely affect any known occurrences of rare features.

However, please note that the northern long-eared bat (Myotis septentrionalis), a state-listed species of special concern, is found throughout Minnesota. During the winter this species hibernates in caves and mines, and during the active season (approximately April-October) it roosts underneath bark, in cavities, or in crevices of both live and dead trees. Activities that may impact this species include, but are not limited to, wind farm operation, any disturbance to hibernacula, and destruction/degradation of habitat (including tree removal).

Effective May 4, 2015, the U.S. Fish and Wildlife Service (USFWS) listed the northern long-eared bat as threatened under the Endangered Species Act (ESA) and implemented an interim 4(d) rule. The ESA prohibits take of this species without a permit unless the take is exempt under the interim 4(d) rule. If you believe that your project may adversely affect ("take") the northern long-eared bat, you should determine whether the "take" is exempt under the interim 4(d) rule or whether you need a Federal permit. To make this determination, please refer to the USFWS Key to the Interim 4(d) Rule available at http://www.fws.gov/midwest/endangered/mammals/nleb/Interim4dRuleKeyNLEB.html. Please note that the NHIS does not contain any known occurrences of northern long-eared bat roosts or hibernacula within an approximate one-mile radius of the proposed project.

The Natural Heritage Information System (NHIS), a collection of databases that contains information about Minnesota's rare natural features, is maintained by the Division of Ecological and Water Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. However, the NHIS is not an exhaustive inventory and thus does not represent all of the occurrences of rare features within the state. Therefore, ecologically significant features for which we have no records may exist within the project area. **If additional information becomes available regarding rare features in the vicinity of the project, further review may be necessary.**

For environmental review purposes, the results of this Natural Heritage Review are valid for one year; the results are only valid for the project location (noted above) and the project description provided on the NHIS Data Request Form. Please contact me if project details change or for an updated review if construction has not occurred within one year.

The Natural Heritage Review does not constitute review or approval by the Department of Natural

Resources as a whole. Instead, it identifies issues regarding known occurrences of rare features and potential effects to these rare features. To determine whether there are other natural resource concerns associated with the proposed project, please contact your DNR Regional Environmental Assessment Ecologist (contact information available at http://www.dnr.state.mn.us/eco/ereview/erp_regioncontacts.html). Please be aware that additional site assessments or review may be required.

Thank you for consulting us on this matter, and for your interest in preserving Minnesota's rare natural resources. An invoice will be mailed to you under separate cover.

Sincerely,



Samantha Bump
Natural Heritage Review Specialist

ATTACHMENT 11

USFWS Correspondence

Attachment 11: USFWS Correspondence

Dan Edgerton

From: Horton, Andrew <andrew_horton@fws.gov>
Sent: Monday, September 21, 2015 9:40 AM
To: Dan Edgerton
Subject: Re: Metro Transit C Line - Section 7 Endangered Species Act Coordination

Mr. Edgerton,

I have reviewed the proposed project and have no comments regarding your "no effect" determination.

Andrew Horton
Twin Cities Ecological Services Field Office
U.S. Fish and Wildlife Service
4101 American Blvd East
Bloomington, MN 55425-1665
(612) 725-3548 ext. 2208

On Thu, Sep 10, 2015 at 8:47 AM, Dan Edgerton <dedgerton@zanassoc.com> wrote:

> Dear Mr. Horton,
>
> Metro Transit is completing the environmental review process for the proposed C Line Enhanced Bus Project in Hennepin County, Minnesota. The proposed project includes federal funding through the Federal Transit Administration (FTA). A Categorical Exclusion document is being prepared to fulfill National Environmental Policy Act (NEPA) requirements. The FTA is the lead federal agency for this project.
>
> We are requesting USFWS review and concurrence with the no effect determination for the Metro Transit C Line Project as well as any other recommendations regarding the proposed action, as described in the attached letter.
>
> Please contact me at 612-207-5722 or dedgerton@zanassoc.com if you have any questions or require additional information.
>
> Thank you,
>
> Dan Edgerton