

6.0 Indirect Effects and Cumulative Impacts

6.1 Introduction

This chapter of the Draft EIS addresses potential indirect and cumulative impacts of the Bottineau Transitway project.

Indirect effects are those that are caused by the proposed action (in this case the Bottineau Transitway Build alternatives) but occur later in time and/or proximity while being reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in land use patterns, population density, or growth rate, and related effects on air and water and other natural systems and the built environment.

Cumulative impacts result from “the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR § 1508.7). The purpose of a cumulative impacts analysis “is to ensure that federal decisions consider the full range of consequences of actions” (CEQ 1997). Cumulative impacts could occur through the combination of a Build alternative’s direct and indirect effects, combined with other development that is not directly related to the Build alternative.

6.2 Methodology

6.2.1 General Approach

The indirect and cumulative impact assessment follows the National Environmental Policy Act (NEPA) (40 CFR 1500-12508) and the following specific guidance documents:

- Considering Cumulative Effects Under the National Environmental Policy Act (Council on Environmental Quality (CEQ), 1997)
- Consideration of Cumulative Impacts in EPA Review of NEPA Documents (Environmental Protection Agency, 1999)
- Interim Guidance: Questions and Answers Regarding Indirect and Cumulative Impact Considerations in the NEPA Process (Federal Highway Administration, 2003)
- Guidance on the Consideration of Past Actions in Cumulative Effects Analysis (CEQ, 2005)
- Desk Reference for Estimating Indirect Effects of Proposed Transportation Projects (National Cooperative Highway Research Program (NCHRP) Report 466)

While the methodology and level of detail for indirect and cumulative impacts analyses are not dictated by NEPA, FHWA guidance specifies that “*the document needs to present a reasonably complete and accurate picture of the probable consequences involved in implementation of a proposed project, commensurate with the potential for adverse impacts. . .*”. The FHWA guidance further specifies that the analysis must be of sufficient detail to be “*useful to the decisionmaker in deciding whether, or how, to alter the program to lessen cumulative impacts.*” The analysis and discussion in this chapter has been prepared with this guidance in mind.

6.2.2 Methods

6.2.2.1 Indirect Effects

Analysis Methods

Given the urban and suburban nature of the Bottineau Transitway study area, the assessment of indirect effects focuses on changes in land use and the intensity of development that could occur around the project and impacts that may follow from these changes. Although no residential, commercial, or industrial development is proposed by the project, transitway development is known to serve as a catalyst for residential and commercial development, in particular in areas surrounding stations.

In the study area, this type of development is desired and the local and regional governments have prepared for and enabled it with corresponding land use plans and zoning regulations. So while secondary impacts from new development are identified, the new development itself may be considered positive.

Specific potential indirect impacts were identified qualitatively using the following methodology.

- Existing Conditions and Trends: Review and analyze the existing condition of each potentially affected resource as described in the chapters on the Draft EIS. The review focused on understanding the status, viability, and historical context of each resource to determine the relative vulnerability of the resource to secondary impacts. The existing conditions analysis also provides an understanding of the condition of the resources over a broader geographic area, which is critical to assessing the potential for indirect impacts that may be separated in both space and time. The existing conditions analysis methods used were quantitative and qualitative, depending on the approach in each relevant Draft EIS section.
- Project Impacts: Review and analyze the impacts from the proposed action (Bottineau Transitway Build alternatives) on each resource, as described in the chapters of the Draft EIS. In order to anticipate how the project might result in indirect impacts, this review focused on outcomes – the state of the resource assuming the project (the various Build alternatives) has been implemented. The understanding of project impacts combined with existing conditions and past trends was used to provide an understanding of the state of each resource and its likely vulnerability to any secondary impacts identified.
- Indirect impacts: Identify potential indirect impacts and estimate their magnitude based on understanding of existing conditions and trends and project impacts. The indirect effects analysis used a qualitative understanding of the causal nature of impacts to the built and natural environment likely to result from development, drawing on analyses for similar projects locally and elsewhere. This included a checklist approach, reviewing each resource area described in the Draft EIS for potential physical, spatial and ecological (system) interactions. The descriptions of potential impacts are by necessity qualitative. Rather than attempting a complex analysis to quantify potential impacts, the emphasis of the analysis is on being comprehensive with respect to potentially affected resources and estimating potential magnitude.

Differences between and among alternatives with respect to their potential indirect impacts are noted as relevant in the discussion in Section 6.4. However, for both indirect and cumulative impacts there is relatively little differentiation among the build alternatives. Although the Build alternatives are differentiated in some of their direct impacts, they all are located in the same general corridor and are subject to the same land use and development controls and other regulations. With respect to cumulative impacts, the alternatives are all subject to the same set of reasonably foreseeable future actions.

Geographic Boundary

The analysis for indirect effects focuses on a half-mile radius around each of the proposed transit stations ([Figure 6.2-1](#)). This approach is supported by the National Cooperative Highway Research Program (NCHRP) Report 466: *Desk Reference for Estimating Indirect Effects of Proposed Transportation Projects* which states, “development effects are most often found up to one-half mile around a transit station.”

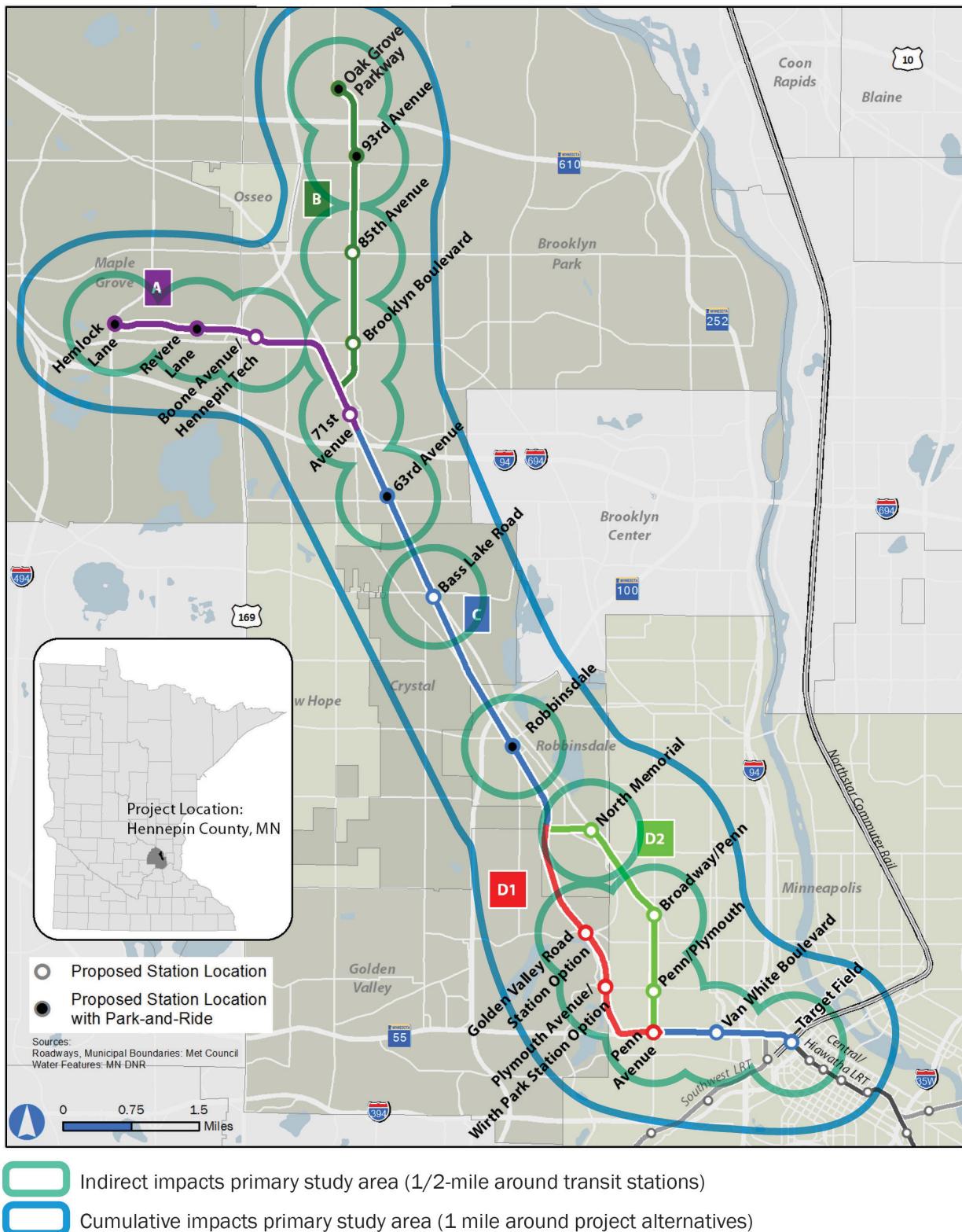
Indirect effects of the Bottineau Transitway (such as induced development) would be most likely to occur in the areas around stations because of the improved access to those locations provided by the new transit service. Beyond a half-mile, new development induced by the project is less likely. However, secondary development impacts beyond a half-mile radius of the stations are possible. For example, new development in a station area could have natural resource impacts that follow the resource itself for a given distance rather than the half-mile boundary relevant to the build environment. To address this, potential natural resource impacts were analyzed following natural resource boundaries (e.g., wetland complex, waterway, floodplain, habitat).

6.2.2.2 Cumulative Impacts

Consistent with regulatory guidance for a cumulative impacts analysis, the development actions considered for the cumulative impacts analyses include those that are past, present, and reasonably foreseeable. For the purpose of this analysis, development actions were considered according to the following three categories and time horizons:

- Past: Past actions are summarized in the existing conditions section of each issue area in the Draft EIS (Chapters 3, 4, and 5) and reflect the current state of the resource within the boundaries of this analysis.
- Present: Present actions are those projects by local, state, or federal agencies just completed or under construction; or private development projects known to local jurisdictions.
- Future: Reasonably foreseeable future actions (see Section 6.3) are those that have reached some local, state, or federal government approval (including private development approvals) and thus could be under construction anytime between the present through the year 2030, the planning horizon for the Bottineau Transitway traffic and other impacts analysis.

Figure 6.2-1 Primary Study Areas for Indirect and Cumulative Impacts



Analysis Methods

The following specific methods were used in the analysis of cumulative impacts.

- Existing Conditions and Trends: Review and analyze the existing condition of each potentially affected resource as described in the chapters on the Draft EIS. The assessment of existing conditions conducted for each resource by definition includes the impact of past actions on the condition of the resource. Thus, the review focused on understanding the status, viability, and historical context of each resource to determine the relative vulnerability of the resource to cumulative impacts. The existing conditions analysis methods used were quantitative and qualitative, depending on the approach in each relevant Draft EIS section.
- Project Impacts: Review and analyze the impacts from the proposed action (Bottineau Transitway build alternatives) on each resource, as described in the chapters of the Draft EIS. In order to anticipate how the project would contribute to cumulative impacts, this review focused on outcomes – the state of the resource assuming the project (the various Build alternatives) has been implemented. The understanding of project impacts combined with existing conditions and past trends was used to provide an understanding of the state of each resource and its likely vulnerability to impacts from other present or reasonably foreseeable future actions.
- Impacts of Other Actions: Identify other present actions and reasonably foreseeable future actions and their possible impacts to each resource. These actions and the process used to identify them are discussed in Section 6.3. Potential impacts from each action were identified using a checklist approach to consider each project area resource in relation to each action. For example, many of the reasonably foreseeable future actions are residential or commercial development projects. The understanding of the status of the existing resources (provided in the existing conditions analysis) combined with knowledge of the types of impacts typical from land development allows one to describe qualitatively the resources that likely would be affected. The result is a listing of each resource that is anticipated to be potentially affected by these actions.
- Cumulative Impact: Identify potential cumulative impacts to each resource by considering the combination of existing conditions and trends, project impacts, and the impacts of other present actions and other reasonably foreseeable future actions. As with the other steps, this was completed using a checklist approach to ensure that all potentially affected resources were considered. Professional judgment was used to reach conclusions as to the potential magnitude of cumulative impacts, taking into account the frequency, duration, magnitude, and extent of potential past, present, and future impacts. The results of the analysis (Section 6.4-1) are generally qualitative, reflecting the general lack of available data on other present and future actions. However, the lack of quantification does not prevent the analysis from considering potential magnitude of the impact and is not considered to limit the value or thoroughness of the analysis.

Geographic Boundary

The primary study area for the analysis of cumulative impacts is an area of one mile on each side of the proposed Build alternative alignments ([Figure 6.2-1](#)). This area was selected based on guidance documents and the study areas used in the Draft EIS. However, the boundary varies by the resource being considered. For example, air, water and habitat impacts could be greater depending on the location of the resource and the degree of impact. Thus, the potential degree of spatial impact was considered for each resource within this basic framework.

6.3 Reasonably Foreseeable Future Actions

The actions listed in [Table 6.3-1](#) are projects and developments currently anticipated through state and local plans, known private development actions, and planned and funded roadway and other infrastructure projects generally within the boundaries of analysis described above. These actions were

identified through coordination with the local agency partners serving on the project Advise, Review, and Communicate Committee (ARCC). The members of the ARCC include the cities of Brooklyn Park, Crystal, Golden Valley, Maple Grove, Minneapolis and Robbinsdale; Hennepin County; MnDOT; and the Metropolitan Council/Metro Transit.

None of these future actions are the result of the Bottineau Transitway Project; their implementation is not dependent on whether or not the project is implemented. These actions are reasonably foreseeable in that they are likely to occur by virtue of being funded, approved, or part of an officially adopted planning document.

It should be noted that future station area planning other future planning initiatives may identify other actions that are not included in the reasonably foreseeable future actions identified at this time.

Table 6.3-1. Reasonably Foreseeable Future Actions¹ by Alignment

Action	Estimated Construction Timing	Description	Potential Environmental Impacts of Action
Alignment A (Maple Grove)			
MCES Interceptor Sewer	2012-2015	Creation of large central park for events	Parklands, water resources, stormwater, community facilities
Donegal Mixed-Use Development Plan	2012-2017	139 units of single-family residential 230 units of multi-family residential 55,230 s.f. of retail	Transportation, stormwater, water resources, wetlands, visual, land use, business impacts
Hemlock Apartments	2012-2013	100 affordable apartments	Construction, visual, stormwater, environmental justice
Maple Grove Gravel Mining Special Area Plan (GMASAP)	2012-2030	116 units of low density residential 1,878 units of medium density residential 1,118 units of high density residential 11,000,000 s.f. of regional mixed use, non-retail focus 483,000 s.f. of regional mixed use 3,782,248 s.f. of office/light industrial/warehouse/manufacturing	Transportation, stormwater, water resources, wetlands, visual, land use, business impacts
SilverCrest Communities	2013-2014	400+ units of senior housing	Construction, visual, stormwater, environmental justice
Skye at Arbor Lakes	2012-2013	467 market rate apartments	Construction, visual, stormwater, environmental justice

Action	Estimated Construction Timing	Description	Potential Environmental Impacts of Action
Alignment B (Brooklyn Park)			
CSAH 103/West Broadway Project (93rd Avenue to Candlewood)	2014-2015	Roadway upgrade to four-lane divided urban section, with trails	Transportation, stormwater, right-of-way, visual, construction
Target North Campus AUAR Update	Near-term 2015; long-term 2030	1,700,000 s.f. of office, 300,000 s.f. of commercial & 130,600 s.f. of tech/data support buildings	Transportation, stormwater, water resources, wetlands, visual, construction
TH 610 extension to I-94 EIS	Contingent on funding	Planning stage (unfunded) Prior segment completed in 2012	Transportation, stormwater, right-of-way, visual, water resources, construction
TH 81/TH 169 Landscaping	2014	Landscape the right-of-way of the new project	No anticipated impacts
TH 169/CSAH 30 Interchange Project	2013	Half-diamond type interchange	Transportation, stormwater, right-of-way, visual, construction
TH 169/CSAH 109 Landscape Project	2013	Right-of-way landscaping	No anticipated impacts
Alignment C (BNSF)			
Phased Improvements for CSAH 81	Ongoing	Reconstruction of roadway from TH 100 to CSAH 30 with capacity and stormwater management upgrades	Transportation, stormwater, right-of-way, visual, construction
The Cavanagh Senior Housing	2013-2014	130 units of affordable senior housing	Construction, visual, stormwater, environmental justice
Crystal Lake Regional Trail Master Plan	To be determined	Master plan for 11-mile paved multi-use trail to connect to regional trail network	Transportation, stormwater, construction, community facilities
Proposed Robbinsdale Wastewater Treatment Facility	To be determined	Construction of new treatment plant adjacent to the BNSF corridor Project currently in planning stage	Water quality, construction
Alignments D1, D2, and D Common Section (Robbinsdale/Golden Valley/Minneapolis)			
Theodore Wirth Regional Park Master Plan	2012-2014	Master plan to guide over \$5 million in improvements	Community facilities, wildlife
Target Field Station	2012 – 2014	Multimodal transportation hub in downtown Minneapolis	Construction, land use, stormwater, traffic and transportation, business impacts

Action	Estimated Construction Timing	Description	Potential Environmental Impacts of Action
Green Line (Southwest) LRT	2017 opening	15-mile LRT line between Minneapolis and Eden Prairie	Stormwater, right-of-way, visual, construction, land use, business impacts, transportation (transit use, traffic patterns, freight rail traffic)
Northern Lights Express	To be determined	New 110-mph passenger rail service between downtown Minneapolis and Duluth	Construction, transportation (travel patterns, freight rail operations), stormwater
Green Line (Central) LRT	2014 opening	9.5-mile LRT line on University Avenue between Minneapolis and St. Paul	Stormwater, right-of-way, visual, construction, land use, business impacts, transportation (transit use, traffic patterns)
Midwest High Speed Rail	To be determined	High speed rail service between Minneapolis and Chicago	Stormwater, right-of-way, visual, construction, land use, business impacts, transportation (transit use, traffic patterns)
Heritage Park Master Plan	Ongoing	Redevelopment of 145-acre former public housing development into sustainable, affordable urban neighborhood	Stormwater, water resources, wetlands, visual, land use, community facilities, environmental justice
Van White Bridge	Dec 2013	New bridge over BNSF rail tracks/Basset Creek connecting north and south Minneapolis	Construction, stormwater, traffic and transportation
Public and private development, downtown Minneapolis	Ongoing	Multiple office, residential and mixed use development projects in North Loop and adjacent neighborhoods in downtown Minneapolis	Construction, stormwater, business impacts, traffic and transportation

¹ Reasonably foreseeable future actions are identified through the year 2030, the planning horizon for the Bottineau Transitway Project.

6.4 Potential Indirect Effects and Cumulative Impacts

This section describes the potential for indirect effects that might result from the Bottineau Transitway Project, and cumulative impacts that also might result from the Bottineau Transitway Project are considered. These are considered in combination with past trends and the reasonably foreseeable future actions described in Section 6.3. The discussion is summarized in [Table 6.4-1](#).

6.4.1 Transportation

Indirect

The areas of potential indirect effects of the project on transportation include transit, roadway (including autos, transit vehicles, and freight), bicycle, and pedestrian modes and facilities. Ridership forecasts for the project show an increase in new transit trips, which is associated with a decrease in auto trips as a

result of people switching from auto to transit for the first time. While the intent of implementing a transitway is to attract new riders, it is nevertheless an indirect effect, in that people may choose to use the new facility once it is constructed based on its benefits in relation to their transportation needs.

Implementation of the Bottineau Transitway also would result in ridership on and operational changes to the existing local bus system as trips are redistributed once the transitway is operational. Trips via bicycle and pedestrian modes would increase in direct relation to the increase in transit trips, as a certain number of transit riders would access the transit system by foot and/or bicycle. It is likely that demand for pedestrian and bicycle access to transit stations would increase as an indirect result of the project.

Cumulative

Continued development of transit and transportation facilities in the project area over time, combined with future actions and the direct and indirect effects of the Bottineau Transitway Project, would be expected to increase demand for transportation as a whole, as activity and development density increase. The decrease in auto trips as a result of the project would reduce the cumulative demand on the roadway system while increasing the demand on transit, bicycle, and pedestrian facilities, compared to trends without the project. Future station area planning activities would be expected to address needs for enhanced station area pedestrian and bicycle connections in correlation with future development/redevelopment plans.

Mitigation

Because the indirect effects and cumulative impacts identified above are consistent with the comprehensive plans of the communities affected, as well and county and regional plans, no mitigation is required.

6.4.2 Land Use

Indirect

Land use is guided by local jurisdiction zoning and comprehensive plans. Changes in land use designation (for example, change from single family to multi-family residential or change from residential to commercial) typically must be approved through a local planning process.

A major public investment such as the Bottineau Transitway often provides momentum and market changes that prompt new development or redevelopment. Assuming such development is consistent with existing approved land uses, this in and of itself does not constitute an indirect land use impact, as the designated land use would not change. However, such development pressures can lead to pressure to change zoning, typically in the form of increasing the intensity of allowed development. Thus, the Bottineau Transitway could indirectly result in land use changes, particularly in station areas, in the form of intensified uses. In many of the station areas, such change is already anticipated and approved in local comprehensive plans, and other additional changes may be addressed under station area planning activities.

Cumulative

Continued development of transit and transportation facilities in the project area over time combined with future actions and the direct and indirect effects of the Bottineau Transitway Project could cumulatively result in land use changes in the study area, most likely in the form of increased residential and commercial densities or other intensification of land use. These trends likely would continue until demands for housing, retail, office, and/or industrial needs are met.

Mitigation

The cities in the corridor have planned for future growth and development with their individual comprehensive plans. Potential indirect and cumulative impacts on land use are compatible with these

plans and plans for the region, which state the desire for transit to alleviate traffic and congestion. No mitigation is required.

6.4.3 Community Character, Services, and Facilities

Indirect

As described elsewhere, a potential indirect effect of the project would be that new businesses and residential developments are attracted to locate in the station areas. This new development could in turn result in increased use of and demand for community services (parks for example) and facilities (recreation centers, for example) and changes in community character (a quiet area becomes busier). For locations where comprehensive plans call for mixed-use development, such changes in character would be consistent with planned growth and development.

Cumulative

Over time, continued development of transit and transportation facilities in the project area, combined with future actions and the direct and indirect effects of the Bottineau Transitway Project, would place increased demands on community services and facilities and would change community character. For locations where comprehensive plans call for mixed-use development, such changes in character would be consistent with planned growth and development.

Mitigation

The types of indirect and cumulative impacts identified are typically consistent with and governed by applicable land use plans. No mitigation is required.

6.4.4 Displacement of Residents and Businesses

Indirect

New development at Bottineau Transitway station areas could potentially result in the displacement of existing residents and/or businesses. Any such displacements would be guided by applicable laws and would need to be consistent with zoning and comprehensive plans. Given the focus on more compact mixed-use and transit-oriented development in applicable land use plans, any such displacements would be likely to result in a net increase in development densities (impacts discussed in other sections).

Cumulative

Continued development of transit and transportation facilities in the project area over time, combined with future actions and the direct and indirect effects of the Bottineau Transitway Project, could cumulatively result in displacements of residents and/or businesses. However, the land uses in the station areas are guided by individual community comprehensive plans and typically show level or increasing development densities. The need for additional transportation infrastructure to support new development could result in additional displacements.

Mitigation

As described above, the project could result in a cumulative impact on residences and businesses through acquisition and displacement. However, new development, along with available housing in the corridor, would likely create more jobs and housing opportunities than what would be lost. No mitigation is required for indirect or cumulative impacts.

6.4.5 Cultural Resources

Indirect

Development and redevelopment associated with the proposed transit stations could change the setting, context, and land use in the station areas (typically within a half-mile radius or less from the station).

Such changes could have indirect effects on existing historic resources, such as changing the visual quality of the setting by adding a new (modern) building, adding a transportation facility, or increasing the density of the area. It is also possible the development induced by the project could directly affect historic properties through demolition, change in property values, or other impacts.

Cumulative

Over time, continued development of transit and transportation facilities in the project area, combined with future actions and the direct and indirect effects of the Bottineau Transitway Project including new development induced by the project in the station areas, could result in changes that diminish the integrity of a historic property's or district's location, feeling, or association. Some properties could be converted or demolished to take advantage of development or redevelopment opportunities.

Mitigation

All indirect and cumulative impacts to historic properties are subject to the protections and regulations of Section 106. Any committed mitigation is documented in the Section 106 Memorandum of Agreement for the Bottineau Transitway Project.

6.4.6 Visual and Aesthetic Resources

Indirect

The primary contributor to indirect impacts on visual and aesthetic resources would be from changes to development that might result indirectly from the project. Typically, this would take the form of construction of a new building, the development of which would be in some way catalyzed by construction of the Bottineau Transitway. Development induced by the project would most likely occur within a half mile of stations, as described above. The type and degree of impact would depend on the location, size, and context of any new development. For example, a new building in a developed neighborhood that is in keeping with the scale and character of the existing neighborhood would typically be seen as a positive impact on visual resources, whereas a new building that does not fit in with the existing character could be seen as a negative impact. Generally, impacts would be minor given the already developed nature of most of the study area.

Cumulative

Continued development of transit and transportation facilities in the project area over time, combined with future actions and the direct and indirect effects of the Bottineau Transitway Project, would cumulatively change views in the project area over time. Specifically, views would become more organized and urbanized; wide-open views would, in some cases, become more closed. These changes are consistent with adopted comprehensive plans for the study area communities, which call for continued development of transportation infrastructure and land.

Mitigation

Development that occurs in response to the Bottineau Transitway and future actions would likely have a visual impact on the corridor. All development is regulated through applicable municipal codes and land use plans. No additional mitigation is required.

6.4.7 Parklands and Open Space

Indirect

Parks and open spaces are important community resources and are considered an asset in the study area; regional parks (such as Theodore Wirth Regional Park, which would be directly accessible by Alternatives A-C-D1 and B-C-D1) are also potential generators of new transit trips. Greater levels of park and open space use could result from the increased accessibility provided by the project and by new

populations who could be attracted to the project area as a result of the project. Greater use of park and open space resources could in turn create strain on facilities and increased maintenance levels.

Cumulative

Continued development of transit and transportation facilities in the project area over time, combined with future actions, natural population growth, and the direct and indirect effects of the Bottineau Transitway Project, would cumulatively increase use of parks and open spaces in the project area over time. Without attentive management and adequate funding, overuse and/or degradation of facilities or resources could result. Because cities and park jurisdictions typically forecast and plan for future population growth over time, such potential impacts would be expected.

Mitigation

The Metropolitan Council and the municipalities in the corridor have plans to expand and enhance parks and open spaces in the area to meet the demand of population growth over time. No additional mitigation is required.

6.4.8 Business Impacts

Indirect

Adverse indirect impacts to businesses could result from displacement as a result of new development (see Section 6.4.4). Potential positive indirect impacts could include improved access to customers and employees as a result of the improved connectivity provided by the Bottineau Transitway.

Cumulative

Continued development of transit and transportation facilities in the project area over time, combined with future actions and the direct and indirect effects of the Bottineau Transitway Project, may cumulatively strengthen the business climate by providing improved transportation access to customers and employees. While individual businesses could be affected negatively, the overall (cumulative) result would be expected to be positive.

Mitigation

Development that occurs in response to the Bottineau Transitway and the reasonably foreseeable future actions would be expected to increase access to businesses in the area and expand the base of potential local consumers. No additional mitigation is required.

6.4.9 Safety and Security

Indirect

It is possible that the increased development density and intensity anticipated around new transit stations would affect law enforcement and security providers. New planned concentrations of residential, commercial, and other uses would put more transit riders, pedestrians, and bicyclists in proximity with transit vehicles, tracks, crossings, and freight rail, potentially creating safety conflicts. This could in turn place greater demands on security providers and/or require changes in current patrol routes, schedules, and equipment needs.

Cumulative

The continued development of transit and transportation facilities in the project area over time, combined with future actions, natural population growth, and the direct and indirect effects of the Bottineau Transitway Project, may cumulatively add to the demands on law enforcement and security providers, potentially affecting staffing levels and budgets over the long-term.

Mitigation

Safety and security measures to address induced development and future actions would be planned for by the local municipalities, counties, and emergency service providers. Metro Transit will provide security at and around the stations, and transit rider, pedestrian, and bicycle safety features will be incorporated into design and maintained/enforced over time. No additional mitigation is required.

6.4.10 Environmental Justice**Indirect**

Potential indirect effects on environmental justice populations could result from increased development and redevelopment in the station areas. While not every station area is likely to see significant change in the short-term, those where demand for new development is stronger would be likely to experience increased property values and corresponding increases in rents and real estate taxes. While these impacts would be experienced by all populations within the study area, low-income persons may experience them to a greater extent and, particularly if they rent rather than own property, more likely as an adverse impact.

Cumulative

Development around station areas in combination with future actions could result in increased property values and corresponding increases in rents and real estate taxes. While these impacts could be experienced by all populations in the study area, low-income persons are more likely to experience them as adverse.

Mitigation

No mitigation is identified.

6.4.11 Public Utilities**Indirect**

It is possible that the increased development density and intensity anticipated around new transit stations would affect utility providers. New planned concentrations of residential, commercial, and other uses could cause changes in the patterns and level of demand for utilities in the area. Typically, utility fees charged to users offset net new costs to provide more service. In some cases, such changes could be beneficial to providers because higher density land use typically results in more efficient distribution of services.

Cumulative

The continued development of transit and transportation facilities in the project area over time, combined with future actions, natural population growth, and the direct and indirect effects of the Bottineau Transitway Project, may cumulatively add to the demands on and customer base of utilities in the study area. The efficiencies of more compact development patterns (anticipated in station areas) would be expected to provide operating efficiencies to the utility providers over the long-term.

Mitigation

To meet any increased demand on utilities from induced development and future actions, providers would plan appropriately through their regular planning processes that address population growth and service demand. No additional mitigation is required.

6.4.12 Hydrology and Floodplains

Indirect

New development induced by the project may adversely affect hydrology and floodplains without the implementation of best management practices (BMPs).

Cumulative

Continued development of transit and transportation facilities in the project area over time, combined with future actions and the direct and indirect effects of the Bottineau Transitway Project, may cumulatively affect hydrology and floodplains without the implementation of BMPs.

Mitigation

All permanent impacts on hydrology and floodplains caused by induced development and future actions would be mitigated according to applicable regulations. No additional mitigation is required.

6.4.13 Wetlands

Indirect

Indirect impacts on wetlands from the Bottineau Transitway would be possible to the extent that any new development induced by the project results in wetland impacts. This is less likely if typical BMPs are followed.

Cumulative

Continued development of transit and transportation facilities in the project area over time, combined with future actions and the direct and indirect effects of the Bottineau Transitway Project, could cumulatively affect wetlands, in particular without the implementation of BMPs.

Mitigation

All permanent impacts on wetlands caused by induced development and future actions would be mitigated according to applicable regulations. No additional mitigation is required.

6.4.14 Geology, Soils, and Topography

Indirect

No indirect impacts to geology, soils, or topography are anticipated from the Bottineau Transitway Project.

Cumulative

Direct impacts to geology and soils will occur solely during construction; no long-term impacts are anticipated. No direct impacts to topography are identified. Given the lack of impact and/or temporary impact only, no cumulative impacts to these resources are anticipated.

Mitigation

Given the lack of identified impacts, no mitigation is required.

6.4.15 Hazardous Materials Contamination

Indirect

Anticipated development and redevelopment around transit stations could affect hazardous materials sites if proper BMPs (which are legally required) are not employed. Contaminated sites would be required to be cleaned up as development occurs.

Cumulative

Continued development of transit and transportation facilities in the project area over time, combined with future actions and the direct and indirect effects of the Bottineau Transitway Project, would contribute to the remediation of hazardous materials sites, as such sites would be required to be cleaned up as a condition of development or redevelopment.

Mitigation

Developers and agencies involved in future actions and induced development would be required to follow all state and federal laws concerning hazardous materials. No additional mitigation is required.

6.4.16 Noise and Vibration**Indirect**

Anticipated development around transit stations would expose more people to transit noise and noise potentially generated by park-and-ride facilities. Some reductions in automobile-related noise could occur as a result of people using transit and/or walking and bicycling instead of using automobiles. Similarly, new development induced by the project also could result in an increase in the number of residential land uses exposed to ground-borne vibration from LRT, automobiles, and buses at transit stations and in station areas.

Cumulative

As population growth in the study area continues and the trend toward more density puts more people near transportation corridors, the number of people exposed to road and transit noise would increase. The Bottineau Transitway Project would add a new noise source to the impact area, but it would also allow for and encourage the use of alternative modes of transportation and might reduce total trip length (and thus transportation noise) through compact development.

The Bottineau Transitway Project would contribute to increases in ground-borne vibration events along its alignment, and cumulative effects could occur where this project is near other public transportation vibration sources in downtown Minneapolis, such as at The Interchange at Target Field multimodal transportation hub where buses and other LRT and commuter rail lines are planned to converge.

Mitigation

Noise or vibration impacts caused by development or future actions would be assessed for mitigation on a project-by-project basis. No additional mitigation is required.

6.4.17 Habitat and Endangered Species**Indirect**

The Bottineau Transitway alternatives have the potential to cause indirect impacts to habitat and endangered species if proper BMPs are not followed. However, the planned use of BMPs and the limited amount of adjacent natural habitats in the study area would result in limited to no indirect impacts to biota (animal and plant life) and habitat. Other indirect effects could occur if development induced around the station areas results in direct impacts to natural habitat. However, the amount of these habitat effects would be limited, as the station areas are located within already urbanized and suburbanized areas, and the species present tend to be generalized species adapted to urban conditions. In addition, any such new development would be required to follow applicable permitting and other regulatory requirements related to protection of natural resources.

Cumulative

Future actions would be anticipated to have minor effects on habitat and endangered species similar to the indirect effects from the induced development because they are located in already urbanized and

suburbanized areas with limited amounts of natural habitat. The planned projects would be expected to adhere to BMPs during construction in order to limit indirect impacts to aquatic habitats, and no adverse cumulative impacts are anticipated.

Mitigation

No mitigation is required.

6.4.18 Water Quality and Stormwater

Indirect

The anticipated development and redevelopment activities around station areas likely would involve temporary soil disturbance and possible increases in impervious surfaces, which could indirectly affect water resources. However, these activities would be subject to current water quality regulations, and installation of required BMPs would protect water quality.

Cumulative

Cumulative impacts from future actions in the project-area watersheds could include increased sediment and pollutant load. However, future actions are subject to the same water quality regulations as the Bottineau Transitway and would use similar BMPs during construction and operation. Thus, no cumulative adverse impacts to water quality are anticipated.

Mitigation

Potential impacts from induced development and future actions on stormwater and water quality would be addressed by implementing BMPs. No additional mitigation is required.

6.4.19 Air Quality

Indirect

The Bottineau Transitway is expected to result in shifts from single-occupant vehicles to transit, an indirect impact of which would be a beneficial reduction in air pollutant emissions in the project area and the region.

Cumulative

Continued transportation and land development in the project area could result in increased air pollutant emissions. When combined with the Bottineau Transitway, which is expected to reduce the overall air pollutant load due to less automobile use, the cumulative impact on air quality could be an improvement over conditions without the project.

Mitigation

No mitigation is required.

6.4.20 Energy

Indirect

The Bottineau Transitway is expected to result in shifts from single-occupant vehicles to transit, an indirect impact of which would be a reduction in energy use in the project area and the region over the long-term. New development in the station areas could result in greater demand for electricity in these locations; however, this type of new urban development is typically more energy efficient than existing or less dense development.

Cumulative

Continued transportation and land development in the project area could result in increased energy use. When combined with the Bottineau Transitway, which is expected to use less energy than the No-Build alternative, the cumulative impact on energy use would likely be an improvement over conditions without the project.

Mitigation

No mitigation is required.

Table 6.4-1. Summary of Indirect Effects and Cumulative Impacts

Resource	Indirect Effects	Cumulative Impacts	Mitigation
Transportation	Travel by transit, pedestrian, and bicycle modes would increase and single occupant vehicles would decrease as a result of the project.	The Build alternatives in combination with the reasonably foreseeable future actions would increase overall transportation demand. Increases in demand for auto travel would be reduced as a result of the transitway project.	Because the indirect effects and cumulative impacts identified are consistent with the comprehensive plans of the communities affected, as well as county and regional plans, no mitigation is required.
Land Use	Potential for market-driven development that could lead to more dense and intensely used spaces along the corridor.	Reasonably foreseeable future actions would likely increase the density and intensity of development in the corridor.	The cities in the corridor have planned for future growth and development with their individual comprehensive plans. Potential indirect and cumulative impacts on land use are compatible with these plans and plans for the region, which state the desire for transit to alleviate traffic and congestion. No mitigation is required.
Community Character, Services, and Facilities	Transit-oriented development (TOD) in station areas would likely lead to denser land use patterns, attracting more development to the area, which could change community character.	The Build alternatives in combination with the reasonably foreseeable future actions would have the potential to change the character of neighborhoods in the study area. Lower income neighborhoods along the D2 portions of Alternatives A-C-D2 and B-C-D2 would be particularly susceptible to gentrification.	The types of indirect and cumulative impacts identified are typically consistent with and governed by applicable land use plans. No mitigation is required.

Resource	Indirect Effects	Cumulative Impacts	Mitigation
Displacements of Residences and Businesses	New station area development could result in displacements of existing uses, limited by zoning and comprehensive plans.	Additional transportation investments in the corridor to service induced development along with the reasonably foreseeable future actions could lead to the acquisition of right-of-way and the relocation of residents and businesses.	While there could be cumulative impacts from the acquisition and displacement of residents and businesses, induced development, along with available housing in the corridor, would likely create more jobs and housing opportunities than what would be lost. No mitigation is required for indirect or cumulative impacts.
Cultural Resources	More dense and intense development could affect the context of cultural resources.	Induced development associated with the Build alternatives in combination with the reasonably foreseeable future actions could cumulatively have an impact on cultural resources.	All indirect and cumulative impacts are subject to protections and regulations of Section 106. Any committed mitigation will be documented in the Section 106 Memorandum of Agreement.
Visual and Aesthetic Resources	Induced development around the stations would likely change the views of the area.	Induced development associated with the Build alternatives and additional transportation facilities in combination with the reasonably foreseeable future actions would change the views in neighborhoods and have a cumulative impact on aesthetics.	Development that occurs in response to the Bottineau Transitway and future actions would likely have a visual impact on the corridor. All development is regulated through applicable municipal codes. No additional mitigation is required.
Parklands and Open Space	Greater accessibility could lead to higher usage rates of parklands and open space along the corridor.	Induced development associated with the Build alternatives in combination with the reasonably foreseeable future actions and natural population growth would likely place a greater demand on parkland and open space and result in a cumulative impact.	The Metropolitan Council and the municipalities in the corridor have plans to expand and enhance parks and open spaces in the area to meet the demand of population growth. No additional mitigation is required.

Resource	Indirect Effects	Cumulative Impacts	Mitigation
Business Impacts	Transit accessibility improvements would likely lead to higher densities and more intense land use. Businesses would be better connected to both employees and consumers in the corridor.	Induced development associated with the Build alternatives in combination with the reasonably foreseeable future actions would likely increase the number of potential customers in the corridor.	Development that occurs in response to the Bottineau Transitway and the reasonably foreseeable future actions might increase access to businesses in the area and expand the base of potential local consumers. No additional mitigation is required.
Safety and Security	Increased development densities around stations could place greater demands on safety and security personnel and systems.	Increased development associated with the Build alternatives in combination with the reasonably foreseeable future actions may require more service personnel and could cumulatively strain local provider's capacity to deliver services.	Safety and security measures to address induced development and future actions would be planned for by cities, counties, and emergency service providers. Metro Transit will provide security at and around the stations. Transit rider, pedestrian, and bicycle safety features will be incorporated into design and maintained/enforced over time. No additional mitigation is required.
Environmental Justice	Demand for property would likely cause an increase in property values at some station areas. Over time, this could lead to gentrification.	Induced development associated with the Build alternatives in combination with the reasonably foreseeable future actions could have an impact on low income and minority populations through the gentrification of neighborhoods.	None required
Public Utilities	Induced development would put a greater demand on the existing utilities in the corridor.	Induced development associated with the Build alternatives in combination with the reasonably foreseeable future actions would likely put a greater demand on utilities in the corridor.	To meet any increased demand of utilities from induced development and future actions, utility providers would plan appropriately through their regular planning processes. No additional mitigation is required.

Resource	Indirect Effects	Cumulative Impacts	Mitigation
Hydrology and Floodplains	Induced development may affect hydrology and floodplains without the implementation of BMPs.	Induced development associated with the Build alternatives in combination with the reasonably foreseeable future actions could have a cumulative impact unless BMPs are implemented.	BMPs would be followed. Impacts would be mitigated according to applicable regulations. No additional mitigation is required.
Wetlands	Induced development may affect wetlands without the implementation of BMPs.	Induced development associated with the Build alternatives in combination with the reasonably foreseeable future actions could have a cumulative impact unless BMPs are implemented.	BMPs would be followed. Impacts would be mitigated according to applicable regulations. No additional mitigation is required.
Geology, Soils and Topography	No indirect impacts are anticipated.	No cumulative impacts are anticipated.	N/A (no indirect or cumulative impacts)
Hazardous Materials Contamination	If BMPs are followed, no adverse indirect impacts should occur; beneficial impacts would occur through remediation.	Induced development associated with the Build alternatives in combination with the reasonably foreseeable future actions would have a positive impact on remediation of contaminated sites.	Parties involved would be required to follow all state and federal laws concerning hazardous materials.
Noise and Vibration	Changes in development density and intensity would bring more people into contact with noise and vibration produced by LRT. Mode shifting could lead to a reduction in noise related to automobile traffic in the corridor.	Induced development associated with the Build alternatives in combination with the reasonably foreseeable future actions would likely result in more people and traffic in the area. This could cause a cumulative increase in noise levels. Cumulative vibration impacts could occur at transit hub in downtown Minneapolis.	Noise or vibration impacts caused by development or other future actions would be assessed for mitigation on a project-by-project basis. No additional mitigation is required.
Habitat and Endangered Species	New development induced by the project unlikely to result in impacts on habitat and endangered species.	Induced development associated with the Build alternatives in combination with the reasonably foreseeable future actions would not likely have a cumulative impact on habitat or endangers species due to the urbanized nature of the corridor.	None required (assumes BMPs followed for both indirect and cumulative)

Resource	Indirect Effects	Cumulative Impacts	Mitigation
Water Quality and Stormwater	No indirect impacts are anticipated with the use of BMPs.	Induced development associated with the Build alternatives in combination with the reasonably foreseeable future actions could increase the amount of impervious surfaces in the corridor and have a cumulative effect on water quality and stormwater without the use of BMPs.	Implementation of BMPs to reduce potential cumulative impacts from induced development
Air Quality	Mode shift away from automobiles would result in fewer cars and less congestion, resulting in positive impact on air pollution.	The project's positive contribution to air quality would improve cumulative conditions over what they would be without the project.	None required
Energy	Mode shift to LRT would likely lead to an operational efficiency in passenger transport and reduced energy use.	Induced development associated with the Build alternatives in combination with the reasonably foreseeable future actions could increase the amount of transit riders and cumulatively reduce the amount of energy consumed for transportation.	None required