Arlington
WASHINGTON

Manufacturing and Industrial Center Planned Action

Draft Environmental Impact Statement
October 2020

Prepared by:
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Transpo Group

Cover Letter

October 1, 2020

Subject: Cascade Industrial Center Planned Action EIS

Dear Reader,

The Cascade Industrial Center (formerly called the Arlington-Maryville Manufacturing Industrial Center or AMMIC) is a vibrant industrial employment center for the city of Arlington. Given the area's importance to the local and regional economy, and its desire to keep the center vital and thriving, the City completed a subarea plan that included a vision, and goals and policies for the future. This proposal is to adopt a Planned Action consistent with RCW 43.21c.440 and associated Comprehensive Plan amendments to address necessary capital investments that study implementation of the Arlington-Marysville Manufacturing Industrial Center (AMMIC) Subarea Plan.

The City is evaluating three alternatives in the attached Draft Environmental Impact Statement (DEIS):

- **No Action Alternative** – The Current Comprehensive Plan and Zoning would be retained and allow modest job increases. Given current market conditions this is likely to reflect existing job sectors in the subarea.
- **Alternative 1: Cascade Center Vision Job Sectors**: Alternative 1 is based on the vision for job growth, geographical distribution, and sector mix of the AMMIC Subarea Plan. Higher density employment is anticipated on sites identified as "opportunity sites" in the Subarea Plan and development at existing employment density is anticipated on the remaining sites with development capacity. Employment uses would be designed to take advantage of the area's natural features, including a relocated Edgecomb Creek. In addition to high density industrial or manufacturing employment, workforce training, incubators and similar entrepreneurial support facilities would be newly established. Future development under this alternative is anticipated to include a small amount of new residential development that is compatible with the industrial land use mix of the center.

  Alternative 2: High Growth Trend Sectors: Alternative 2 anticipates a high growth scenario for employment within the center. Employment increases are anticipated across the center on all sites with development capacity. Similar to Alternative 1, employment uses would be designed to take

advantage of the area's natural features, including a relocated Edgecomb Creek. The sectoral mix of employment under this alternative is anticipated to reflect current trends.

The Draft EIS evaluates the three alternatives for potential adverse and beneficial impacts to the environment including: natural environment, cultural resources, transportation, land use and aesthetics, public services, and utilities.

During and following a Draft EIS comment period, a Preferred Alternative will be developed that is anticipated to be in the range of the alternatives above and may mix and match features. The Preferred Alternative would be evaluated in the Final EIS. Responses to comments on the Draft EIS will also be provided in the Final EIS. The key issues facing decision makers include:

- Development of a Preferred Alternative illustrating the desired future for the subarea.
- Type and level of growth to be incentivized in a Planned Action.
- Type and location of new street investments to serve new growth.

With the publication of this Draft EIS a 30-day comment period has been established from October 1, 2020 to October 30, 2020. Comments are due by 5:00 PM, October 30, 2020 and should be directed to:

Marc Hayes, Community and Economic Development Director
City of Arlington
18204 59th Dr. NE
Arlington, WA 98223
mhayes@arlingtonwa.gov

Submittal of comments by email is preferred. Please include in the subject line "Cascade Industrial Center Draft EIS Comments." A community meeting to introduce the planned action, alternatives, and Draft EIS is scheduled on **October 6, 2020**. The meeting is hosted by the Arlington Planning Commission. An Open House component is scheduled to begin at 5:30 pm and the Planning Commission Meeting at 7:00 pm. The zoom can be accessed through the following link:
https://arlingtonwa.zoom.us/j/82350757022?pwd=MmxJNzdhbHQ0Y0RJdTVuKzJoUjFYQT09

You may review the City of Arlington's website for more information at http://www.arlingtonwa.gov/310/Public-Notices. If you desire clarification or have questions please call Marc Hayes at 360.403.3457 or by mhayes@arlingtonwa.gov

Thank you for your interest in the Cascade Industrial Center.

Sincerely,

Marc Hayes

Marc Hayes

Community and Economic Development Director and SEPA Responsible Official

Fact Sheet

Project Title

Arlington Manufacturing and Industrial Center Planned Action

Proposed Action and Alternatives

The Arlington portion of the Cascade Industrial Center (CIC) is a long-standing industrial employment center with a diverse range of manufacturing, warehousing and distribution businesses. The City desires to ensure that the CIC continues to be a economically vital center with both regional and local significance. With this goal, the City adopted a subarea plan for the Center with a vision, land use, and economic development action strategies. The subarea plan was adopted by reference into the Comprehensive Plan. The City intends to adopt a planned action under RCW 43.21C.440 to facilitate future permitting of devleopment consistent with the subarea plan.

To help form the planned action, the City is evaluting three alternatives:

- **No Action Alternative** – The Current Comprehensive Plan and Zoning would be retained and allow modest increases in jobs.
- **Alternative 1 Cascade Center Vision Job Sectors:** Alternative 1 is based on the vision for job growth, geographical distribution, and sector mix of the Arlington-Marysville Manufacturing Industrial Center (AMMIC) Subarea Plan. Higher density employment is anticipated on sites identified as "opportunity sites" in the Subarea Plan and lower density development (at existing employment density) is anticipated on the remaining sites with development capacity. High density employment is anticipated in sectors identified in the Subarea Plan such as aerospace, advanced manufacturing, food processing, maritime, wood products and mass timber manufacturing.

- **Alternative 2: High Growth Trend Sectors:** Alternative 2 anticipates a high growth scenario for employment within the center. Employment increases are anticipated across the center on all sites with development capacity.

Through the Draft EIS public outreach opportunities during the comment period and in response to comments, a Preferred Alternative will be developed that is anticipated to be in the range of the alternatives above and may mix and match features.

Proponent and Lead Agency

City of Arlington

Location

The Study Area is about 2,170 acres in area based on parcels, and is bounded by the Portage Creek Wildlife area and Cemetery Road in the north, Arlington Downtown to the east, the City of Marysville on the south, and Smokey Point Boulevard and Totem Park to the west.

Tentative Date of Implementation

Winter 2020

Responsible Official

Marc Hayes, Community and Economic Development Director
City of Arlington
18204 59th Dr. NE
Arlington, WA 98223
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Contact Person

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City of Arlington

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Arlington, WA 98223
Ph: 360.403.3457
mhayes@arlingtonwa.gov

Licenses or Permits Required

The Planned Action requires a 60-day review by the State of Washington Department of Commerce and other state agencies. Locally, the Planned Action will be considered by the Planning Commission and their recommendations forwarded to the City Council who will deliberate and determine approval.

Authors and Principal Contributors to the EIS

Under the direction of the Arlington Community Development Department, the consultant team prepared the EIS as follows:

- BERK Consulting: Planned Action SEPA Lead, Alternative Development, Land Use/Aesthetics
- Herrera: Plants and Animals, Water Resources, Utilities
- CRC: Cultural Resources
- Transpo Group: Transportation

Draft EIS Date of Issuance

October 1, 2020

Draft EIS Comment Period

Comment Period

The City of Arlington is requesting comments from citizens, agencies, tribes, and all interested parties on the Draft EIS from 10/ 01/2020 to 10/ 30/2020. Comments are due by 5:00 PM, 10/30/2020.

All written comments should be directed to:

Marc Hayes, Community and Economic Development Director
City of Arlington
18204 59th Dr. NE
Arlington, WA 98223
Ph: 360.403.3457
mhayes@arlingtonwa.gov

Submittal of comments by email is preferred. Please include in the subject line "Arlington Manufacturing and Industrial Center Draft EIS Comments."

Public Meeting

A public open house and workshop to review alternatives, and the planned action, is scheduled for **October 6, 2020** hosted by the Arlington Planning Commission over Zoom teleconferencing. An Open House component is scheduled to begin at 5:30 pm and the Planning Commission Meeting at 7:00 pm. The zoom can be accessed through the following link: https://arlingtonwa.zoom.us/j/82350757022?pwd=MmxJNzdhbHQ0Y0RJdTVuKzJoUjFYQT09

Date of Final Action

January 2021

Location of Background Data

Prior SEPA documents have addressed the Arlington CIC uniquely or cumulatively, including:

- City of Arlington Comprehensive Plan Environmental Impact Statement (EIS), 2015
- Snohomish County Comprehensive Plan EIS, 2015
- Determination of Non-Significance and Checklist for Subarea Plan for the Arlington-Marysville Manufacturing Industrial Center

You may review the City of Arlington's website for more information at www.arlingtonwa.gov/. If you desire clarification or have questions, please contact Marc Hayes at 360.403.3457 or by mhayes@arlingtonwa.gov.

Purchase/Availability of Draft EIS

This Draft EIS is available for review at Arlington City Hall: 238 N Olympic Avenue, Arlington, WA 98223. The Draft EIS is posted on the City of Arlington's website at http://www.arlingtonwa.gov/310/Public-Notices. Compact disks or thumb drives are available for purchase at cost at Arlington City Hall.

Distribution List

The following agencies, organizations, and individuals received a notice of availability for the Draft and Final EIS. Digital copies of the documents were also provided to agencies with jurisdiction, local service providers, and other interested parties upon request.

Federal and Tribal Agencies

- Arlington Postmaster & Office
- Stillaguamish Tribe of Indians
- Tulalip Tribe of Indians

State and Regional Agencies

- Department of Agriculture
- Department of Archaeology and Historic Preservation
- WSDOT Aviation Division
- Department of Commerce
- Department of Corrections
- Department of Ecology
- Energy Facility Site Evaluation Council (EFSEC)
- Department of Fish and Wildlife
- Department of Health
- Department of Natural Resources
- Parks and Recreation Commission
- Puget Sound Clean Air Agency
- Puget Sound Partnership
- Puget Sound Regional Council
- Department of Social and Health Services

- Department of Transportation

County Officials

- Snohomish County – Public Works
- Snohomish Co. Traffic Review (SEPA)
- Snohomish County – Planning
- Snohomish County – Boundary Review

Adjacent Jurisdictions

- City of Marysville – Planning
- City of Marysville – Utilities
- City of Marysville – Cross Connection

Services, Utilities, and Transit

- Burlington Northern Railroad
- Cascade Natural Gas
- Community Transit
- Energy Facility Site Evaluation Council
- Snohomish County PUD
- Snohomish Health District
- Waste Management
- Arlington School District
- Lakewood School District

Community Organizations and Individuals

- Notice is sent to a Community Development Department Listserv of persons interested in planning in the City.

Media

- Everett Herald

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1.0 Summary

The proposed study area is the Arlington Cascade Industrial Center encompassing about 2,291 acres surrounding and including the Arlington Municipal Airport (AWO). See Exhibit 1

1.1 Purpose

The proposal includes the adoption of a Planned Action consistent with RCW 43.21c.440 and associated Comprehensive Plan amendments to address necessary capital investments that study implementation of the Arlington-Marysville Manufacturing Industrial Center (AMMIC) Subarea Plan and associated implementing policies/regulatory amendments. Opportunity sites identified in the subarea plan are further evaluated for potential job growth and mix that meet the subarea plan vision, goals, and intent for jobs in aerospace, robotics, advanced manufacturing, food processing, maritime, wood products and mass timber. Job increases of nearly 5,000 to 9,000 or more are studied representing potential capacity under the current Comprehensive Plan (No Action) and under two Action Alternatives that vary capital investments and any necessary policy or code amendments that encourage added land use and growth consistent with the Subarea Plan. Action alternatives also consider options for Edgecomb Creek realignment and restoration.

Through the Draft EIS public outreach opportunities during the comment period and in response to comments, a Preferred Alternative will be developed that is anticipated to be in the range of the alternatives above and may mix and match features

This Draft EIS is organized into chapters as follows:

- Chapter 1.0 Summary
- Chapter 2.0 Proposal and Alternatives
- Chapter 3.0 Environment, Impacts, and Mitigation
  - Section 3.1 Natural Environment
  - Section 3.2 Cultural Resources
  - Section 3.3 Transportation

  - Section 3.4 Land Use and Aesthetics
  - Section 3.5 Utilities and Public Services
- Chapter 4.0 Acronyms and References
- Chapter 5.0 Appendices

For each environmental topic the affected environment, or existing conditions, are described. The effects of each alternative on the environmental topic are evaluated. Where adverse impacts are identified, mitigation measures are identified

Exhibit 1. Study Area

Source: City of Arlington, 2020; BERK, 2020.

1.2 Planning Process

The CIC EIS builds on the subarea plan planning process. Public participation was an important aspect of the subarea planning process; feedback informed various stages of Plan development, from visioning, plan alternatives, goals and policies. Engagement activities included stakeholder interviews, an online community survey, a vision public workshop, advisory committee meetings, a draft plan workshop and public meetings during the legislative process. The Planned action will include comment opportunities during the

- **Draft EIS** – Prepare a Draft EIS to test alternatives in September-October 2020.
- **Preferred Alternative and Final Plan –** Considering the Draft EIS and public input, engage stakeholders and the community to create a Preferred Alternative. Develop a Final Plan and EIS incorporating the Preferred Alternative by the end of 2020.

1.3 Public Comment Opportunities

Current and Future Comment Opportunities

With the publication of this Draft EIS, a 30-day comment period has been established from October 1, 2020 to October 31, 2020. A public meeting is planned in this period to assist with development of a Preferred Alternative.

The Planning Commission will hold a public hearing on the Draft Subarea Plan and Planned Action. Their recommendations will be forwarded to the City Council for a public hearing and deliberation. The schedule will be included at the project website.

1.4 Objectives and Alternatives

1.4.1 Objectives

SEPA requires a statement of objectives that address the purpose and need for the proposal. The proposal objectives for the CIC are based on the AMMIC Subarea Plan Guiding Principles and objectives for Coordinated Planning.

Guiding Principles

Coordinated investments and regional impact.

- Coordinated investments within the AMMIC allow it to function as a regional center with a focus on production, especially advanced manufacturing. AMMIC businesses leverage and support manufacturing industrial activity across the region, including activities at Paine Field, Port of Everett and Port of Seattle Tacoma. In addition to Arlington and Marysville, Snohomish County and the central Puget Sound region benefit from development in the AMMIC through its positive impact on regional economic health and competitiveness.

Economic diversity.

- The presence of a variety of economic activities allows cities and regions to be resilient against changing economic trends and cycles. The AMMIC provides opportunities for a broad range of economic activities and industries. Employment-rich production businesses contribute to job growth in the Center. These include business in advanced manufacturing, aerospace, food processing, mass timber, as well as broader manufacturing activity. AMMIC businesses also engage in repair and distribution to support and leverage manufacturing and industrial activity.

Building on and strengthening distinctive competitive advantages.

- The AMMIC enjoys a distinct competitive advantage in the region for manufacturing, especially related to aerospace. In addition to a diverse range of firms, the AMMIC builds on this recognized business and industry clusters to leverage its comparative advantage and agglomeration benefits.

Economic activity and opportunity.

- AMMIC's industrial businesses create jobs that pay good wages and are accessible to people with all levels of education. Partnerships with local community colleges, high schools, as well as other local and regional institutions ensure residents have access to training opportunities and businesses have access to a trained workforce. The presence of affordable housing in both Arlington and Marysville support the local workforce and economy.

Accessibility and connectivity.

- Planned transportation improvements in and around the AMMIC have increased capacity, reduced conflicts with the railroad, and improved freight connectivity. AMMIC employees can access readily available public transit, including the future SWIFT BRT on Smokey Point Blvd. The Cities of Arlington and Marysville, local businesses and Community Transit, have partnered to provide innovative, on-demand transit or feeder routes that serve industrial

facilities and provide good connections to transit and to park and ride facilities. Nonmotorized facilities within the AMMIC have improved and employees and residents enjoy easy access to the Arlington Airport Trail and the Centennial Trail.

High quality design.

- Industrial development in the MIC is consistent with design standards to ensure quality development that benefits property owners and the Cities.

Sustainability.

- Development in the AMMIC is consistent with standards for modern industrial development and environmental requirements. Where feasible, industrial facilities integrate low impact development concepts, including rain gardens, pervious pavements, and green roofs. Industrial development also utilizes alternative energy sources such as wind and solar power.

1.4.2 Alternatives

This Environmental Impact Statement (EIS) studies three alternatives described below and is further detailed in Chapter 2:

- **No Action Alternative** – The Current Comprehensive Plan and Zoning would be retained and allow modest job increases. Given current market conditions this is likely to reflect existing job sectors in the subarea.
- **Alternative 1: Cascade Center Vision Job Sectors**: Alternative 1 is based on the vision for job growth, geographical distribution, and sector mix of the Arlington-Marysville Manufacturing Industrial Center (AMMIC) Subarea Plan. Higher density employment is anticipated on sites identified as "opportunity sites" in the Subarea Plan and lower density development (at existing employment density) is anticipated on the remaining sites with development capacity. High density employment is anticipated in sectors identified in the Subarea Plan such as aerospace, advanced manufacturing, food processing, maritime, wood products and mass timber manufacturing. The greatest increases in employment are anticipated on undeveloped, shovel-ready land at the Airport Business Park site immediately west of the Arlington Municipal Airport. Slightly smaller increases are anticipated on the site north of the airport at 47th Ave NE, on the parcel at the intersection of 67th Ave NE and 199th St NE, on the site east of 59th Ave and south of 172nd Avenue NE, and on the site east of the airport and west of 67th Ave NE. Employment uses would be designed to take advantage of the area's natural features, including a relocated Edgecomb Creek. In addition to high density industrial or manufacturing employment, workforce training, incubators and similar entrepreneurial support facilities would be newly established on the Airport Business Park site immediately west of the airport. This would support the industry sectors identified in the

Subarea Plan especially food processing and seafood industries and robotics. Along with diverse industrial development, future development under this alternative is anticipated to include a small amount of new residential development that is compatible with the industrial land use mix of the center. See Exhibit 8. This alternative supports net increases of employment of 6,625 jobs, 516 dwellings, and 1,383 residents. See Exhibit 6.

- **Alternative 2: High Growth Trend Sectors** – Alternative 2 anticipates a high growth scenario for employment within the center. Employment increases are anticipated across the center on all sites with development capacity. See Exhibit 10. The greatest increases in employment are anticipated on undeveloped, shovel-ready land at the Airport Business Park site immediately west of the Arlington Municipal Airport and the site north of the airport at 47th Ave NE. Slightly smaller increases of employment are anticipated on the parcel at the intersection of 67th Ave NE and 199th St NE, on the site east of 59th Ave and south of 172nd Avenue NE, and on the site east of the airport and west of 67th Ave NE. Similar to Alternative 1, employment uses would be designed to take advantage of the area's natural features, including a relocated Edgecomb Creek.

  The sectoral mix of employment under this alternative is anticipated to reflect current patterns and countywide trends. Current employment patterns show less than half of the total jobs in Manufacturing and close to 20% of jobs in Warehousing, Transportation and Utilities. Workforce training, incubators and similar entrepreneurial support facilities or residential development suitable to industrial districts are not anticipated in this alternative. Without a focus on manufacturing sectors identified in the Subarea Plan, and supportive investments in workforce training and education, this pattern is expected to continue. See Exhibit 8. This alternative supports net increases of employment of 8,844 jobs with no changes to dwellings or population compared to existing conditions and the No Action Alternative. See Exhibit 9.

Through the Draft EIS public outreach opportunities during the comment period and in response to comments, a Preferred Alternative will be developed that is anticipated to be in the range of the alternatives above and may mix and match features.

Major features of the alternatives are described and compared below.

Land Use

Each alternative proposes a different mix of employment sectors within existing land use designations, particularly Alternative 1. See Exhibit 2.

Exhibit 2. Alternative Parcel Acres by Zoning District

Designation	No Action Acres	Alternative 1	Alternative 2
General Industrial	861.86	861.86	861.86
Aviation Flightline	737.02	737.02	737.02
Light Industrial	236.68	312.52	236.68
Business Park	165.57	193.01	165.57
General Commercial	165.23	63.44	165.23
Highway Commercial	88.42	86.93	88.42
Public/Semi-Public	35.98	35.98	35.98
Grand Total	**2,290.78**	**2,290.78**	**2,290.78**

Source: BERK, 2020.

No Action Alternative

The No Action Alternative would continue the current Comprehensive Plan designation and Zoning for the study area. No changes to the Comprehensive Plan to addressed added infrastructure investments in the Capital Facility Plan or other amendments necessary to implement Subarea Plan strategies for CIC opportunity sites in Arlington would be addressed. No Planned Action would be adopted to facilitate environmental review of new development or redevelopment.

The current intent for the Arlington portion of the CIC is to serve as a manufacturing and industrial employment center, with a diverse range of industrial activities that provide employment opportunities for residents in Snohomish County and the region.

The majority (~80%) of the Study Area is currently zoned for industrial/aviation uses across Aviation Flightline, General Industrial, and Light Industrial zoning districts. See Exhibit 13 and Exhibit 14. The No Action Alternative would allow for net growth rounded to 4,824 jobs with no changes to housing. See Exhibit 12. The No Action Alternative plans assume current employment density and sectoral distribution with the existing 4,969 jobs maintained and increased; however, there are no incentives or investments planned.

Exhibit 3. Current Zoning Designations within CIC, 2020

Source: City of Arlington, 2020; Snohomish County, 2020; BERK, 2020.

Alternative 1: Cascade Center Vision Job Sectors

Alternative 1 is based on the vision for job growth, geographical distribution, and sector mix of the Arlington-Marysville Manufacturing Industrial Center (AMMIC) Subarea Plan. Higher density employment is anticipated on sites identified as "opportunity sites" in the Subarea Plan and lower density development (at existing employment density) is anticipated on the remaining sites with development capacity. High density employment is anticipated in sectors identified in the Subarea Plan such as aerospace, advanced manufacturing, food processing, maritime, wood products and mass timber manufacturing. The greatest increases in employment are anticipated on undeveloped, shovel-ready land at the Airport Business Park site immediately west of the Arlington Municipal Airport. Slightly smaller increases are anticipated on the site north of the airport at 47th Ave NE, on the parcel at the intersection of 67th Ave NE and 199th St NE, on the site east of 59th Ave and south of 172nd Avenue NE, and on the site east of the airport and west of 67th Ave NE. Employment uses would be designed to take advantage of the area's natural features, including a relocated Edgecomb Creek. In addition to high density industrial or manufacturing employment, workforce training, incubators and similar entrepreneurial support facilities would be newly established on the Airport Business Park site immediately west of the airport. This would support the industry sectors identified in the Subarea Plan especially food processing and seafood industries and robotics. Along with diverse industrial development, future development under this alternative is anticipated to include a small amount of new residential development that is compatible with the industrial land use mix of the center

Exhibit 4. Alternative 1: Cascade Center Vision Job Sectors

Source: City of Arlington 2020; BERK, 2020.

Alternative 2: High Growth Trend Sectors

Alternative 2 anticipates a high growth scenario for employment within the center. Employment increases are anticipated across the center on all sites with development capacity. See Exhibit 10. The greatest increases in employment are anticipated on undeveloped, shovel-ready land at the Airport Business Park site immediately west of the Arlington Municipal Airport and the site north of the airport at 47th Ave NE. Slightly smaller increases of employment are anticipated on the parcel at the intersection of 67th Ave NE and 199th St NE, on the site east of 59th Ave and south of 172nd Avenue NE, and on the site east of the airport and west of 67th Ave NE. Similar to Alternative 1, employment uses would be designed to take advantage of the area's natural features, including a relocated Edgecomb Creek.

The sectoral mix of employment under this alternative is anticipated to reflect current patterns and countywide trends. Current employment patterns show less than half of the total jobs in Manufacturing and close to 20% of jobs in Warehousing, Transportation and Utilities. Workforce training, incubators and similar entrepreneurial support facilities or residential development suitable to industrial districts are not anticipated in this alternative. Without a focus on manufacturing sectors identified in the Subarea Plan, and supportive investments in workforce training and education, this pattern is expected to continue.

Exhibit 5. Alternative 2: High Growth Trend Sectors

Source: City of Arlington 2020; BERK, 2020.

Future Alternatives

Following the Draft EIS comment period, the City may develop a Preferred Alternative that is similar to a studied alternative or in the range of the studied alternatives. The Preferred Alternative may combine different features of the studied alternatives.

Land Use Comparison

Each alternative proposes a different mix of employment sectors within existing land use designations, particularly Alternative 1. See Exhibit 19.

Exhibit 6. Alternative Parcel Acres by Zoning District

Designation	No Action Acres	Alternative 1	Alternative 2
General Industrial	861.86	861.86	861.86
Aviation Flightline	737.02	737.02	737.02
Light Industrial	236.68	312.52	236.68
Business Park	165.57	193.01	165.57
General Commercial	165.23	63.44	165.23
Highway Commercial	88.42	86.93	88.42
Public/Semi-Public	35.98	35.98	35.98
Grand Total	**2,290.78**	**2,290.78**	**2,290.78**

Source: BERK, 2020.

Growth

Each alternative's projected growth is listed in Exhibit 20. Alternative 2 has the greatest total employment and would retain and increase jobs. It would not add any new dwellings compared to the No Action Alternative. Alternative 1 would increase employment by 6,625, or 1,801 jobs more than the No Action Alternative and 2,219 less than Alternative 2. Alternative 1 would support the vision, intent and sectoral mix outlined in the Subarea Plan and accommodate supportive uses such as educational/workforce training facilities and business incubators. Alternative 1 would also add a small number of dwellings such as live/work units suitable in industrial districts compared to the No Action Alternative and Alternative 2.

Exhibit 7. Alternative Comparison of Total and Net Growth

	Existing	No Action	Net Change*	Alternative 1	Net Change*	Alternative 2	Net Change*
Population	890	890	0	2,273	1,383	890	0
Dwellings	332	332	0	848	516	332	0
Jobs	4,969	9,793	4,824	11,594	6,625	13,813	8,844

*Net change compared to existing.
Source; PSRC 2020; Transpo Group 2020; BERK, 2020.

The total population, housing, and jobs for each alternative is illustrated in Exhibit 21. As noted above, Alternative 2 has the greatest total jobs with sectors similar to current conditions and trends whereas Alternative 1 grows jobs compared to No Action Alternative and has a different sectoral mix than both the No Action and Alternative 2; Alternative 1 has a smaller number of total jobs than Alternative 2 and has includes a small share of housing. Given the location of the CIC, the No Action Alternative would likely result in a mix of industrial and commercial employment sectors. Though the No Action Alternative has capacity for jobs, without further investment there are not likely to be the land use mix or employment sectors envisioned in the Subarea Plan.

Exhibit 8. Total Population, Dwellings, and Jobs 2040 by Alternative

Source: PSRC 2020; Transpo Group 2020: BERK, 2020.

Planned Actions

Action Alternatives 1 and 2 propose the designation of a Planned Action in the Study Area, as authorized under SEPA (RCW 43.21C.440 and WAC 197-11-164 through -172). Planned actions provide more detailed environmental analysis during the area-wide planning phase, rather than during the permit review process. Future projects in the Study Area that develop under the designated Planned Action will not require SEPA threshold determinations at the time of permit application if they are certified as consistent with the type of development, growth and traffic assumptions, and mitigation measures studied in the EIS. Such projects are still required to comply with adopted laws and regulations and would undergo review pursuant to the City's adopted land use and building permit procedures.

See Exhibit 22 for a summary of the process. A draft Planned Action Ordinance is included in Appendix C.

Exhibit 9. Planned Action Process

Source: BERK, 2020.

Comparison of Features

Based on the description of alternatives in this chapter, Exhibit 23 compares the features of the alternatives in terms of changes to plans and regulations and infrastructure investments.

Exhibit 10. Alternative Features

Feature	No Action Alternative	Alternative 1	Alternative 2
Plans and Regulations			
Continue Current Plans and Regulations	X		X
Implements Subarea Plan including changes to Capital Facilities Element to Support Growth		X	X

Feature	No Action Alternative	Alternative 1	Alternative 2
Implements Changes to Development Regulations Consistent with Subarea Plan		X	
Planned Action Ordinance		X	X
Investments			
Current Transportation Investments	X	X	X
Added Multimodal Transportation Investments to support Job Types		X	X
Add trail in the buffer of relocated Edgecomb creek		X	X

Source: BERK, 2020.

1.5 Key Issues and Options

1.5.1 Other Alternatives

The City explored several options for a mix of land use and zoning designations with during the Subarea Plan process before creating a bookend of alternatives to test in this Draft EIS. These Draft EIS alternatives are meant to identify pros, cons, and tradeoffs of employment intensities and patterns. It is anticipated a preferred alternative would be developed through public input and evaluated in the Final EIS, and could combine or mix and match elements of the Draft EIS Alternatives

1.5.2 Major Issues, Significant Areas of Controversy and Uncertainty, and Issues to be Resolved

The key issues facing decision makers include:

- Development of a Preferred Alternative illustrating the desired future for the subarea.
- Type and level of growth to be incentivized in a Planned Action.
- Type and location of new street investments to serve new growth.

1.6 Summary of Impacts and Mitigation Measures

1.6.1 Natural Environment

How did we analyze Natural Environment?

Impacts on the natural environment were identified by evaluating the presence, extent, and type of existing natural resources through a review of available information about the site (e.g., surveys and studies); identifying changes anticipated under each action alternative compared to the No Action Alternative such as housing and employment density, changes in impervious surfaces, and changes in open spaces and habitat; and analyzing anticipated effects of those changes on specific elements of the natural environment in the study area. Sources included a literature review of existing soils, wetlands, streams, vegetation and fish and wildlife.

What impacts did we identify?

Impacts to natural resources in the study area from all alternatives could include impacts to wetlands, streams, buffers, existing vegetation, and fish and wildlife.

Impacts common to all alternatives also include temporary construction-related exposure to soil erosion until building sites are permanently stabilized. These impacts will be minimized by implementation of stormwater requirements related to stormwater pollution prevention at construction sites.

What is different between the alternatives?

Employment increases are anticipated across the Study Area under the No Action Alternative and both Action Alternatives; however, the proposed land uses and level of intensity would differ between each alternative. Substantial differences in impacts to the natural environment between the No Action Alternative and Action Alternatives 1 and 2 could occur based on the level of development activities in or adjacent to critical areas and their buffers. Action Alternative 1 and Action Alternative 2 would both result in more rapid and intense development than the No Action Alternative and have a greater risk of impacts to critical areas.

What are some solutions or mitigation for Natural Environment impacts?

All alternatives are expected to attract development within the study area and within critical areas and/or buffers. The City of Arlington will comply with applicable federal, state, and local environmental regulations and apply reasonable mitigation measure to reduce significant adverse impacts.

Potential measures to mitigate adverse impacts of specific projects within the Study Area, as well as avoidance and minimization measures that would be part of those projects, will be refined through final design and permitting of each project. During redevelopment or new development under all alternatives, opportunities exist to strategically reduce impervious surfaces, employ low impact development techniques, and restore native vegetation to improve the conditions of the natural environment in these spaces.

The surface water runoff volume from the site is expected to increase under all the alternatives because the proposed development will increase the total area of impervious surfaces. However, development projects will be required to install stormwater facilities that control flow rates and treat stormwater pollutants prior to discharge to receiving water bodies. For redevelopment projects, this would result in an overall improvement (relative to existing conditions) for older developments that do not currently have modern stormwater management facilities.

The relocation of Edgecomb Creek away from the ditches and into a more naturally sinuous channel with a riparian corridor could ensure that sufficient wetland and stream advanced mitigation is incorporated into the selected Action Alternatives to address habitat and critical areas impacts associated with some of the proposed development in the CIC.

With mitigation, what is the ultimate outcome?

Under all proposed alternatives, any redevelopment or new development will require compliance with all applicable regulations to avoid, minimize, or mitigate any impacts to critical areas including wetlands, streams, buffers, and critical aquifer recharge areas. Redevelopment or new development will also need to meet stormwater requirements to protect surface and groundwater from increased flow or water quality impacts. Therefore, no significant unavoidable adverse impacts are anticipated on the natural environment under any of the proposed alternatives.

1.6.2 Cultural Resources

How did we analyze Cultural Resources?

Assessment methods included a review of previous ethnographic, historical, and archaeological investigations in the local area, a records search at on DAHP's Washington Information System for Architectural and Archaeological Records Data (WISAARD) (DAHP 2020a) for known sites in the immediate area, a review of relevant background literature and maps (including General Land Office [GLO], United States Geological Service [USGS], and county atlases), preliminary field investigations, and the preparation of this report. The Consultant (CRC) contacted cultural resource staff of the Snohomish Tribe, Stillaguamish Indian Tribe, and Tulalip Tribes. This correspondence was not intended to be or replace formal government-to-government consultation. This assessment utilized research design that considered previous studies, the magnitude and nature of the undertaking, the nature and extent of potential effects on historic properties, and the likely nature and location of historic properties within the project, as well as other applicable laws, standards, and guidelines (per 36 CFR 800.4(b)(1)) (DAHP 2020b).

For the purposes of this project, a cultural resource of significance will include any historic property which has been deemed eligible for addition to an historical register, including the National Register of Historic Places (NRHP), the Washington Heritage Register (WHR), or county and city level registers. In general, all archaeological sites are considered resources of significance and should be avoided or mitigated appropriately. Exceptions to this include select historic era archaeological sites which have been deemed ineligible for listing on an historic register based on NRHP criteria for significance.

Based on NRHP assessment criteria developed by the National Park Service (NPS 2002:2), historical significance is conveyed by properties that:

A. Are associated with events that have made a significant contribution to the broad patterns of our history; or

B. Are associated with the lives of persons significant in our past; or

C. Embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. Have yielded, or may be likely to yield, information important in prehistory or history.

According to NRHP guidelines, the "essential physical features" of a property must be intact for it to convey its significance, and the resource must retain its integrity, or "the ability of a property to convey its significance" (NPS 2002:44). The seven aspects of integrity are:

1) Location (the place where the historic property was constructed or the place where the historic event occurred);
2) Design (the combination of elements that create the form, plan, space, structure, and style of a property);
3) Setting (the physical environment of a historic property);
4) Materials (the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property);
5) Workmanship (the physical evidence of the crafts of a particular culture or people during any given period of history or prehistory);
6) Feeling (a property's expression of the aesthetic or historic sense of a particular period of time); and
7) Association (the direct link between an important historic event or person and a historic property).

Criteria used for assessment of potential eligibility for the Washington Heritage Register (WHR) are similar to NRHP criteria (DAHP 2019). Criteria to qualify include:

- The resource should have documented historical significance at the local or state level;
- The resource should have a high to medium level of integrity; and
- The resource must be at least 50 years old. If newer, the resource should have documented exceptional significance.

What impacts did we identify?

Proposed work has the potential to impact known archaeological sites and historic properties of significance. Development under any of the proposed alternatives would presumably result in removal of two archeological sites and two historic properties recorded within the proposed action. Site 45SN720 has been determined not eligible for the NRHP; disturbance to this site would not generate significant impacts. Disturbances to the remaining three resources, including any archaeological test excavations, would require further consultation with DAHP.

Exhibit 11. Cultural resources which meet the threshold of significance

Cultural Resource	Type	Register Status	Section
Arlington Municipal Airport – Bore Sighting Range	Historic Property	Determined eligible	16
Arlington Municipal Airport – Small Arms Range	Historic Property	Determined eligible	21
45SN26	Pre-Contact Lithic Scatter	No determination made	22
45SN720	**Historic Isolate**	**Determined not eligible**	**22**

Source: DAHP 2020b, CRC 2020.

Surface and subsurface investigations indicated substantial surface disturbances throughout the surveyed parcels with disturbance sources varying from repeated clear-cutting of the forest, changes to creek flow and flooding, road cut and construction, utilities installation, and fill zones. The negative shadow of an early to mid-twentieth century house was observed in parcel 31051500202400. The structure appears to have been removed recently and no intact features were observed. A road cut observed in parcel 31051400304200 was of late-twentieth century construction and does not meet the threshold of significance. No previously unrecorded archaeological sites or historic properties were identified through this survey. However, due to the limited nature of the survey, it remains possible for as-yet unknown potentially significant archaeological or historic sites to be present within the project. It is therefore recommended that DAHP be consulted to determine need for cultural resources surveys for any specific development actions under the proposal.

What is different between the Alternatives?

There is no difference in impact between each of the alternatives for cultural resources. Under all studied Alternatives, additional growth and development will occur in the study area, leading to potential increases in height and bulk of buildings and increased land use intensity, resulting in similar impacts to cultural resources.

What are some solutions or mitigation for Cultural Resources impacts?

Regarding cultural resources, mitigation refers to the outcome of the consultation process when a significant impact to cultural resources is identified. In such situations, mitigation is used to moderate impacts. The following measures could be implemented to help avoid and manage significant impacts to recorded and as-yet unrecorded cultural resources within the Arlington CIC:

- Consult DAHP to determine need for cultural resources surveys for any specific development

actions under the proposal. The preliminary field investigations conducted in this study were based on a conceptual design and provide a general history of the study area and limited insight into the subsurface conditions within tested areas that may be developed under the proposal.

- Continue coordination of cultural resource avoidance and mitigation programs for future project-level development through formal government-to-government consultation with the Snohomish Tribe, Stillaguamish Indian Tribe, and Tulalip Tribes. Tribes often are able to provide additional information regarding cultural resources not documented in published literature which can help direct cultural resources investigations and support compliance assessments to ensure that cultural resources are not significantly impacted by development activities.
- Consider partnering with existing businesses or agencies with a strong interest in history, and which likely maintain good historical records of the project location.

Under the Archaeological Sites and Resources Act (RCW 27.53) and the Indian Graves and Records Act (RCW 27.44), a permit from DAHP is required to conduct activities that may alter an archaeological site containing prehistoric objects. This includes importing fill, compaction, use of heavy machinery, tree removal, construction, and any other activities that would change or impact the site. Such a permit would be needed for development in the location of site 45SN26.

Should any potentially significant archaeological or historic sites be encountered in development under the proposal and it is not possible to avoid them, impacts would be generated. These impacts could potentially be minimized through development and implementation of mitigation measures appropriate to the nature and extent of discovered sites. Mitigation measures may include one or more of the following:

- Limiting the magnitude of the proposed work;
- Modifying proposed development through redesign or reorientation to minimize or avoid further impacts to resources;
- Rehabilitation, restoration, or repair of affected resources;
- Preserving and maintaining operations for any involved significant historic structures;
- Archaeological monitoring, testing, or data recovery excavations;
- Documentation of historic elements of the built environment through photographs, drawings and narrative, at the appropriate level based upon Department of Archaeology and Historic Preservation standards (DAHP 2020a).

With mitigation, what is the ultimate outcome?

With mitigation, the ultimate outcome is no significant unavoidable impacts to cultural resources.

1.6.3 Transportation

How did we analyze Transportation?

Transportation impacts were evaluated consistent with the methods of the Arlington Comprehensive Plan 2017 with the exception of the SR 531 corridor. The SR 531 corridor was evaluated using microsimulation to determine intersection delay, corridor travel times and intersection vehicle queues based on coordination with WSDOT. The transportation analysis includes 2040 traffic forecasts using the City of Arlington travel demand mode and an evaluation of street system operations, non-motorized and transit facilities. Transportation impacts of the Action Alternatives were identified through a comparison to the No Action Alternative.

What impacts did we identify?

Transportation demands for all modes would be increased with the Action Alternatives compared to the No Action Alternative. Transit ridership and travel times would increase during the weekday PM peak hours with the alternatives. There are non-motorized facilities to facilitate walking and biking and it is anticipated that as development occurs and transportation improvements are completed additional non-motorized facilities would be constructed. Under the No Action Alternative and Action Alternatives, 6 of the 12 study intersections are forecast to operate at LOS F during the weekday PM peak hour. Additionally, under the Action Alternatives, eastbound travel times along SR 531 between I-5 and SR 9 are anticipated to decrease and increase in the westbound direction when compared to the No Action Alternative. The evaluation includes improvements already contemplated in the WSDOT's STIP and City's TIP.

What is different between the alternatives?

Action Alternative 2 is anticipated to generate more weekday PM peak hour trips compared to Action Alternative 1 and the No Action Alternative. As a result of the higher trip generation, it is anticipated that increases in traffic volumes, delays and travel times would be higher with Alternative 2 compared to the No Action Alternative and Alternative 1.

What are some solutions or mitigation for Transportation impacts?

The transportation analysis highlighted the need for the planned but uncertain improvements along SR 531 between 43rd Street NE and 67th Avenue NE. In addition, a traffic signal should be installed at the 67th Avenue NE/NE 188th Street intersection to address future operational issues

with the alternatives. The CIC development could contribute a proportional cost share to unfunded improvements.

As development occurs, required frontage improvements would help complete the network and new development would be required to pay traffic impact fees to contribute towards planned improvements.

Other mitigation measures include:

- **Transportation Impact Fees** – The City of Arlington has a traffic impact fee program and developers would be required to pay fees to mitigate transportation impacts.
- **Transportation Demand Management (TDM)** - The City should consider TDM mitigation measures. TDM works to move people out of single occupant vehicles (SOVs) to more sustainable modes like walking, biking, and transit. As part of the alternatives mitigation, it is recommended that businesses be required to implement transportation demand management plans. To support TDM, Community Transit has planned enhancements including a Swift line that would improve service in the study area and help encourage transit use. In addition, as part of the SR 531 corridor improvements multiuse trails are planned for both sides of the corridor and other roadway improvements and frontage improvements would provide enhancements to sidewalks and bicycle facilities.
- **Intelligent Transportation Systems (ITS)** - ITS improvements such as adaptive signal control systems would improve traffic operations at intersections within the CIC area.
- **Capacity Improvements** – Adding capacity at key intersections that are impacted by the CIC and development in the area could improve LOS and decrease vehicle delays.
- **LOS Policy –** Increasing capacity at intersections and along the roadway system may improve LOS for vehicles; however, it could create impacts for other modes. The City may desire to revisit LOS policies to have a more multimodal LOS that gives priority to other modes and considers connectivity of the pedestrian and bicycle network and/or minimizing barriers for non-auto modes.

1.6.4 Land Use and Aesthetics

How did we analyze Land Use and Aesthetics?

This analysis addresses consistency of the studied alternatives with City and regional plans and policies. This section also addresses physical land use patterns within and surrounding the Study Area, considering changes in type and intensity of industrial and residential uses. Existing land use pattern conditions are based on field reconnaissance, imagery review, and Snohomish County and City of Arlington parcel data.

What impacts did we identify?

The evaluation reviewed whether alternatives would cause:

- Inconsistency with current plans and policies.
- Differences in activity levels at boundaries of uses likely to result in incompatibilities.
- Change to land use patterns or development intensities that preclude reasonable transitions between areas of less intensive zoning and more intensive zoning.

Policy Consistency: All alternatives are consistent with Growth Management Act (GMA) goals to focus growth and reduce sprawl in the region. All alternatives would support an industrial center per the City's Comprehensive Plan though some would alter the level of jobs, distribution and sectors.

Land Use Patterns in the Center: All studied alternatives include some amount of redevelopment. As redevelopment occurs within the Study Area, there is the potential for localized land use compatibility impacts to occur where newer development is of greater height and intensity than existing development. These compatibility impacts, if they occur, are temporary and will be resolved over time. The extent of these conflicts varies by alternative and can be reduced by the application of existing or new development and industrial design standards.

New growth is expected to occur under all the studied alternatives, although the amount of growth and composition of the mix of land uses will vary by alternative. Activity levels would increase across the Study Area with new businesses, employees and some residents.

Land Use Surrounding the Study Area: Land use compatibility impacts are unlikely to occur to the south, southwest or north of the Study Area due to physical barriers, topography, or the buffer requirements of the Arlington Municipal Airport.

What is different between the alternatives?

Policy Consistency: The No Action Alternative and the Action Alternatives would continue to meet GMA goals by identifying the CIC as a manufacturing industrial center which can focus growth and avoid sprawl in the region. However, with no further investments the area may be less likely to redevelop as envisioned in the AMMIC Subarea Plan under the No Action Alternative. Given its relatively lower employment capacity, the No Action Alternative is also less likely to assist the City in meeting its growth allocations for 2035, whereas the Action Alternatives could assist with that objective.

Land Use Patterns in the Center: Overall there are no differences in allowed heights under the No Action Alternative or the Action Alternatives. Alternative 1 would distribute high-density employment growth on sites identified as priority sites in the AMMIC subarea plan while the No Action Alternative and Alternative 2 are anticipated to continue existing patterns of growth.

The greatest employment growth is associated with Alternative 2 and only Alternative 1 anticipates a slight increase in residential growth. The No Action Alternative has the lowest growth anticipated of the three alternatives. There are proposed industrial design standards for development compatibility.

Land Use Surrounding the Study Area: Compatibility conflicts could occur due to changes in the mix of land use and changes related to the increased intensity and height of new development. Building height increases on the northwest side of the Study Area, west of 47th Ave NE could place future buildings of up to 50 feet in this area. However, these maximum heights are not likely since much of the land is also restricted by FAA regulations. Within the Study Area there is limited potential for land use conflicts under the No Action Alternative or Action Alternatives since new development is not anticipated to be of greater height or intensity compared to existing development.

What are some solutions or mitigation for Land Use and Aesthetics impacts?

- The manufacturing industrial center is intended to take the majority of the city's projected employment growth. Minor changes to the Comprehensive Plan would be incorporated into the implementation of the Action Alternatives to ensure full consistency between the Comprehensive Plan and the Subarea Plan.
- Careful attention in the creation of industrial development-specific design standards could limit any potential land use compatibility conflicts between the Study Area and in adjacent areas.

With mitigation, what is the ultimate outcome?

Under all studied alternatives, additional growth and development will occur in the Study Area, leading to increases in height and bulk of buildings and increased land use intensity. This transition is unavoidable but is not considered significant or adverse within an urban area designated as a Manufacturing Industrial Center in the Comprehensive Plan.

Future growth is likely to create temporary or localized land use compatibility issues as development occurs. The potential impacts related to these changes may differ in intensity and location in each of the alternatives. However, with existing and new development regulations, and design guidelines, no significant adverse impacts are anticipated.

1.6.5 Utilities and Public Services

How did we analyze Utilities and Public Services?

Utilities were analyzed by considering how the proposed alternatives, including changes in population, dwelling units, and jobs would affect water demand, wastewater generation, and the quantity of stormwater runoff. Stormwater quality is discussed in the Natural Environment section.

What impacts did we identify?

Increased demand for drinking water, increased wastewater generation, and changes in surfaces that generate the need for additional stormwater infrastructure.

What is different between the alternatives?

Demand for water and generation of wastewater are scalable with population and jobs. As a result, all the alternatives increase water demand and wastewater generation. The Action Alternatives include larger increases in jobs than the No Action Alternative, so the Action Alternatives would result in larger increases in water demand and wastewater generation. Alternative 1 includes some additional population, which are not included in the No Action Alternative and Alternative 2. Alternative 2 includes more new jobs than the No Action Alternative or Alternative 1. Base on application of planning level estimates of water demand and wastewater generation per person and per employee, Alternative 2 is expected to result in the greatest increase in water demand and wastewater generation; however, water use can vary significantly by industry.

There is no substantial difference between the No Action Alterative, Alternative 1, or Alternative 2, from the standpoint of stormwater flow generation and ability of the stormwater system to convey the flow.

What are some solutions or mitigation for Utilities and Public Services impacts?

- The Arlington Comprehensive Plan addresses levels of service and capital improvements for fire, police, and parks. This is updated periodically with the Comprehensive Plan.
- The Arlington Municipal Code includes common open space standards for new residential developments.
- The City could incentivize or require participation in regional stormwater when concepts are developed to help spur development and water quality and stormwater management.
- The City could employ crime prevention through environmental design standards through its industrial design guidelines.
- Park and recreation improvements are proposed with each action alternative such as in association with the relocation of Edgecomb Creek.

With mitigation, what is the ultimate outcome?

No significant unavoidable adverse impacts are anticipated for the water, wastewater, and stormwater utilities under any of the alternatives. The City has developed comprehensive plans for all three utilities and these plans are updated regularly to reflect system needs. The capital project needs to support redevelopment of the Study Area are similar in scale to projects that the utilities execute on a regular basis. The costs of these improvements would be partially offset by general facility connection charges and rates for service.

2.0 Proposal and Alternatives

2.1 Introduction and Purpose

The proposal includes the adoption of a Planned Action consistent with RCW 43.21c.440 and associated Comprehensive Plan amendments to address necessary capital investments that study implementation of the Arlington-Marysville Manufacturing Industrial Center (AMMIC) Subarea Plan and associated implementing policies/regulatory amendments. Opportunity sites identified in the subarea plan are further evaluated for potential job growth and mix that meet the subarea plan vision, goals, and intent for jobs in aerospace, robotics, advanced manufacturing, food processing, maritime, wood products and mass timber. Job increases of nearly 5,000 to 9,000 or more are studied representing potential capacity under the current Comprehensive Plan (No Action) and under two Action Alternatives that vary capital investments and any necessary policy or code amendments that encourage added land use and growth consistent with the Subarea Plan. Action alternatives also consider options for Edgecomb Creek realignment and restoration.

2.2 Description of the Study Area

The study area is the Arlington portion of the Cascade Industrial Center. Formerly known as the Arlington-Marysville Manufacturing Industrial Center the CIC straddles the cities of Arlington and Marysville. The Arlington portion of this center encompasses about 2,291 acres surrounding and including the Arlington Municipal Airport (AWO).

2.3 Process

2.3.1 Planning Process

The Arlington CIC planning process reflects two phases summarized below.

- **Draft Plan and EIS** – Prepare a Draft EIS to test alternatives.
- **Preferred Alternative and Final Plan** – Considering the Draft EIS and public input, engage stakeholders and the community to create a Preferred Alternative. Develop a Final EIS incorporating the Preferred Alternative.

2.3.2 Public Comment Opportunities

AMMIC Subarea Plan Engagement Efforts

Public participation was an important aspect of the subarea planning process; feedback informed various stages of Plan development, from visioning, plan alternatives, goals and policies. Engagement activities included:

Stakeholder Interviews

In September 2017, the project team conducted eight interviews with individual stakeholders, property owners, and business owners in the MIC. The interviews provided insights into the needs and concerns in the area as well as an opportunity to introduce and connect interviewees to the upcoming planning process.

Online Community Survey

In March 2018, an online survey was distributed to residents in both cities as well as business owners and employees in the MIC. This was a way to both increase awareness of the Subarea Planning process and gather input from people who could not attend in-person meetings. A total of eighty-four respondents provided feedback through the online survey. Their input underscored the needs and concerns raised through interviews.

Vision Public Workshop

More than 80 property owners and community members attended the AMMIC Subarea Plan kickoff workshop on April 4, 2018 to learn about the project and provide input. The consultant team set up project boards including informational and interactive boards to receive public input. The public had opportunities to provide input through three ways:

- An open house where the consultant team was at hand to provide information and answer

- questions. There were also boards where points of interest or ideas for future improvements could be noted.
- A facilitated large group discussion.
- Three smaller group discussions, which involved a facilitated conversation and mapping activity.

Advisory Committee Meetings

In addition to these engagement activities, the Cities created an advisory group to review technical information, provide input and recommendations, and works collectively to refine components of the Subarea Plan. This group was comprised of senior technical staff from regional agencies, and AMMIC business and property owners. The advisory group met three times over the course of preparation of the Subarea Plan to provide input on substantive aspects of plan development.

Draft Plan Public Workshop

More than 80 property owners and community members attended the AMMIC Subarea Plan workshop on October 17, 2018 to provide input on the draft plan concepts. The consultant team set up project boards including informational and interactive boards to receive public input. The meeting included an open house, presentation, question and answer session and time for one-on-one discussion with City staff and consultants. Attendees were encouraged to provide input related to strengths and weaknesses in the Plan.

Legislative Process

The AMMIC Subarea Plan was adopted by Council in December 2018 following a Planning Commission hearing and recommendation.

Recent Public Engagement Efforts

To date public comment opportunities have included the activities described below. Event summaries are included in Appendix B.

EIS Scoping – April 2020. A public scoping notice was issued to a mailing list and posted online to receive comments on issues that should be studied in the EIS. The scoping period extended from April 8 to April 29, 2020.

Current and Future Comment Opportunities

With the publication of this Draft EIS, a 30-day comment period has been established from October 1, 2020 to October 31, 2020. A public meeting is planned in this period to assist with

development of a Preferred Alternative.

The Planning Commission will hold a public hearing on the Draft Subarea Plan and Planned Action. Their recommendations will be forwarded to the City Council for a public hearing and deliberation. The schedule will be included at the City of Arlington website: http://www.arlingtonwa.gov/310/Public-Notices

2.4 Objectives and Alternatives

2.4.1 Proposal Objectives

SEPA requires a statement of objectives that address the purpose and need for the proposal. The proposal objectives for the EEC are based on the AMMIC Subarea Plan Guiding Principles and objectives for coordinated planning and investments.

Guiding Principles

Coordinated investments and regional impact.

Coordinated investments within the AMMIC allow it to function as a regional center with a focus on production, especially advanced manufacturing. AMMIC businesses leverage and support manufacturing industrial activity across the region, including activities at Paine Field, Port of Everett and Port of Seattle Tacoma. In addition to Arlington and Marysville, Snohomish County and the central Puget Sound region benefit from development in the AMMIC through its positive impact on regional economic health and competitiveness.

Economic diversity.

The presence of a variety of economic activities allows cities and regions to be resilient against changing economic trends and cycles. The AMMIC provides opportunities for a broad range of economic activities and industries. Employment-rich production businesses contribute to job growth in the Center. These include business in advanced manufacturing, aerospace, food processing, mass timber, as well as broader manufacturing activity. AMMIC businesses also engage in repair and distribution to support and leverage manufacturing and industrial activity.

Building on and strengthening distinctive competitive advantages.

The AMMIC enjoys a distinct competitive advantage in the region for manufacturing, especially related to aerospace. In addition to a diverse range of firms, the AMMIC builds on this recognized business and industry clusters to leverage its comparative advantage and

agglomeration benefits.

Economic activity and opportunity.

AMMIC's industrial businesses create jobs that pay good wages and are accessible to people with all levels of education. Partnerships with local community colleges, high schools, as well as other local and regional institutions ensure residents have access to training opportunities and businesses have access to a trained workforce. The presence of affordable housing in both Arlington and Marysville support the local workforce and economy.

Accessibility and connectivity.

Planned transportation improvements in and around the AMMIC have increased capacity, reduced conflicts with the railroad, and improved freight connectivity. AMMIC employees can access readily available public transit, including the future SWIFT BRT on Smokey Point Blvd. The Cities of Arlington and Marysville, local businesses and Community Transit, have partnered to provide innovative micro-transit or feeder routes that serve industrial facilities and provide good connections to transit and to park and ride facilities. Nonmotorized facilities within the AMMIC have improved and employees and residents enjoy easy access to the Arlington Airport Trail and the Centennial Trail.

High quality design.

Industrial development in the MIC is consistent with design standards to ensure quality development that benefits property owners and the Cities.

Sustainability.

Development in the AMMIC is consistent with standards for modern industrial development and environmental requirements. Where feasible, industrial facilities integrate low impact development concepts, including rain gardens, pervious pavements, and green roofs. Industrial development also utilizes alternative energy sources such as wind and solar power.

2.4.2 Alternatives

No Action Alternative

The No Action Alternative would continue the current Comprehensive Plan designation and Zoning for the study area. No changes to the Comprehensive Plan to addressed added infrastructure investments in the Capital Facility Plan or other amendments necessary to implement Subarea Plan strategies for CIC opportunity sites in Arlington would be addressed. No Planned Action would be adopted to facilitate environmental review of new development or

redevelopment.

The current intent for the Arlington portion of the CIC is to serve as a manufacturing and industrial employment center, with a diverse range of industrial activities that provide employment opportunities for residents in Snohomish County and the region.

The majority (~80%) of the Study Area is currently zoned for industrial/aviation uses across Aviation Flightline, General Industrial, and Light Industrial zoning districts. See Exhibit 13 and Exhibit 14. The No Action Alternative would allow for net growth rounded to 4,824 jobs with no changes to housing. See Exhibit 12. The No Action Alternative plans assume current employment density and sectoral distribution with the existing 4,969 jobs maintained and increased; however, there are no incentives or investments planned.

Exhibit 12. No Action Alternative: Current and Planned Growth

	Population	Dwellings	Jobs
Existing	890	332	4,969
Planned Growth (net) 2040	0	0	4,824
Total		**216**	**9,793**

Source: City of Arlington, 2020; PSRC 2020; Transpo Group, 2020; BERK, 2020.

Exhibit 13. Study Area Zoning by Acreage, 2020

Zone	Acres
General Industrial	862
Aviation Flightline	737
Light Industrial	237
Business Park	166
General Commercial	165
Highway Commercial	88
Public/Semi Public	36
Total	**2,291**

Source: City of Arlington, 2020; Snohomish County, 2020; BERK, 2020.

Exhibit 14. Current Zoning Within Study Area

Source: City of Arlington, 2020; Snohomish County, 2020; BERK, 2020.

Alternative 1: Cascade Center Vision Job Sectors

Alternative 1 is based on the vision for job growth, geographical distribution, and sector mix of the Arlington-Marysville Manufacturing Industrial Center (AMMIC) Subarea Plan. Higher density employment is anticipated on sites identified as "opportunity sites" in the Subarea Plan and lower density development (at existing employment density) is anticipated on the remaining sites with development capacity. High density employment is anticipated in sectors identified in the Subarea Plan such as aerospace, robotics, advanced manufacturing, food processing, maritime, wood products and mass timber manufacturing. The greatest increases in employment are anticipated on undeveloped, shovel-ready land at the Airport Business Park site immediately west of the Arlington Municipal Airport. Slightly smaller increases are anticipated on the site north of the airport at 47th Ave NE, on the parcel at the intersection of 67th Ave NE and 199th St NE, on the site east of 59th Ave and south of 172nd Avenue NE, and on the site east of the airport and west of 67th Ave NE. Employment uses would be designed to take advantage of the area's natural features, including a relocated Edgecomb Creek. In addition to high density industrial or manufacturing employment, workforce training, incubators and similar entrepreneurial support facilities would be newly established on the Airport Business Park site immediately west of the airport. This would support the industry sectors identified in the Subarea Plan especially food processing and seafood industries and robotics. Along with diverse industrial development, future development under this alternative is anticipated to include a small amount of new residential development that is compatible with the industrial land use mix of the center. See Exhibit 16. This alternative supports net increases of employment of 6,625 jobs, 516 dwellings, and 1,383 residents. See Exhibit 15.

Exhibit 15 Alternative 1: Current and Planned Growth

	Existing	Alternative 1: 2040	Net Change*
Population	890	2,273	1,383
Dwellings	332	848	516
Jobs	4,969	11,594	8,844

*Net change compared to existing.
Source; PSRC 202; Transpo Group 2020; BERK, 2020.

Alternative 1 would implement the AMMIC Subarea Plan and include Comprehensive Plan amendments to address necessary capital investments as well as zoning changes that increase Light Industrial and Business Park zoning and decrease General Commercial and Highway Commercial zoning. See Exhibit 16. This alternative will adopt a Planned Action Ordinance to help facilitate environmental review of new development and redevelopment.

Exhibit 16. Alternative 1: Cascade Center Vision Job Sectors

Source: BERK, 2020.

Alternative 2: High Growth Trend Sectors

Alternative 2 anticipates a high growth scenario for employment within the center. Employment increases are anticipated across the center on all sites with development capacity. See Exhibit 18. The greatest increases in employment are anticipated on undeveloped, shovel-ready land at the Airport Business Park site immediately west of the Arlington Municipal Airport and the site north of the airport at 47th Ave NE. Slightly smaller increases of employment are anticipated on the parcel at the intersection of 67th Ave NE and 199th St NE, on the site east of 59th Ave and south of 172nd Avenue NE, and on the site east of the airport and west of 67th Ave NE. Similar to Alternative 1, employment uses would be designed to take advantage of the area's natural features, including a relocated Edgecomb Creek. Areas of substantial development, besides the Airport Business Park, will be in the southwest quadrant of 51st Ave/172nd St. and the southwest quadrant of 67th Ave./172nd

The sectoral mix of employment under this alternative is anticipated to reflect current patterns and countywide trends. Current employment patterns show less than half of the total jobs in Manufacturing and close to 20% of jobs in Warehousing, Transportation and Utilities. Workforce training, incubators and similar entrepreneurial support facilities or residential development suitable to industrial districts are not anticipated in this alternative. Without a focus on manufacturing sectors identified in the Subarea Plan, and supportive investments in workforce training and education, this pattern is expected to continue. See Exhibit 18.

This alternative supports net increases of employment of 8,844 jobs with no changes to dwellings or population compared to existing conditions and the No Action Alternative. See Exhibit 17.

Exhibit 17. Alternative 2: Current and Planned Growth

	Existing	Alternative 2: 2040	Net Change*
Population	890	890	0
Dwellings	332	332	0
Jobs	4,969	13,813	8,844

*Net change compared to existing.
Source; PSRC 202; Transpo Group 2020; BERK, 2020.

Alternative 2 would adopt a Comprehensive Plan capital facility plan amendments regarding infrastructure investments necessary to support the study area, and a Planned Action Ordinance to help guide future development and facilitate environmental review of new development and redevelopment.

Exhibit 18. Alternative 2

Source: BERK, 2020.

Future Alternatives

Following the Draft EIS comment period, the City may develop a Preferred Alternative that is similar to a studied alternative or in the range of the studied alternatives. The Preferred Alternative may combine different features of the studied alternatives.

2.4.3 Alternative Comparisons

Major features of the alternatives are described and compared below.

Land Use

Each alternative proposes a different mix of employment sectors within existing land use designations, particularly Alternative 1. See Exhibit 19.

Exhibit 19. Alternative Parcel Acres by Zoning District

Designation	No Action Acres	Alternative 1	Alternative 2
General Industrial	861.86	861.86	861.86
Aviation Flightline	737.02	737.02	737.02
Light Industrial	236.68	312.52	236.68
Business Park	165.57	193.01	165.57
General Commercial	165.23	63.44	165.23
Highway Commercial	88.42	86.93	88.42
Public/Semi-Public	35.98	35.98	35.98
Grand Total	**2,290.78**	**2,290.78**	**2,290.78**

Source: BERK, 2020.

Growth

Each alternative's projected growth is listed in Exhibit 20. Alternative 2 has the greatest total employment and would retain and increase jobs. It would not add any new dwellings compared to the No Action Alternative. Alternative 1 would increase employment by 6,625, or 1,801 jobs more than the No Action Alternative and 2,219 less than Alternative 2. Alternative 1 would support the vision, intent and sectoral mix outlined in the Subarea Plan and

accommodate supportive uses such as educational/workforce training facilities and business incubators. Alternative 1 would also add a small number of dwellings such as live/work units suitable in industrial districts compared to the No Action Alternative and Alternative 2.

Exhibit 20. Alternative Comparison of Total and Net Growth

	Existing	No Action	Net Change*	Alternative 1	Net Change*	Alternative 2	Net Change*
Population	890	890	0	2,273	1,383	890	0
Dwellings	332	332	0	848	516	332	0
Jobs	4,969	9,793	4,824	11,594	6,625	13,813	8,844

*Net change compared to existing.
Source; PSRC 2020; Transpo Group 2020; BERK, 2020.

The total population, housing, and jobs for each alternative is illustrated in Exhibit 21. As noted above, Alternative 2 has the greatest total jobs with sectors similar to current conditions and trends whereas Alternative 1 grows jobs compared to No Action Alternative and has a different sectoral mix than both the No Action and Alternative 2; Alternative 1 has a smaller number of total jobs than Alternative 2 and includes a small share of housing. Given the location of the CIC, the No Action Alternative would likely result in a mix of industrial and commercial employment sectors. Though the No Action Alternative has capacity for jobs, without further investment there are not likely to be the land use mix or employment sectors envisioned in the Subarea Plan.

Exhibit 21. Total Population, Dwellings, and Jobs 2040 by Alternative

Source: PSRC 2020; Transpo Group 2020: BERK, 2020.

Planned Actions

Action Alternatives 1 and 2 propose the designation of a Planned Action in the Study Area, as authorized under SEPA (RCW 43.21C.440 and WAC 197-11-164 through -172). Planned actions provide more detailed environmental analysis during the area-wide planning phase, rather than during the permit review process. Future projects in the Study Area that develop under the designated Planned Action will not require SEPA threshold determinations at the time of permit application if they are certified as consistent with the type of development, growth and traffic assumptions, and mitigation measures studied in the EIS. Such projects are still required to comply with adopted laws and regulations and would undergo review pursuant to the City's adopted land use and building permit procedures.

See Exhibit 22 for a summary of the process. A draft Planned Action Ordinance is included in Appendix C.

Exhibit 22. Planned Action Process

Source: BERK, 2020.

Comparison of Features

Based on the description of alternatives in this chapter, Exhibit 23 compares the features of the alternatives in terms of changes to plans and regulations and infrastructure investments.

Exhibit 23. Alternative Features

Feature	No Action Alternative	Alternative 1	Alternative 2
Plans and Regulations			
Continue Current Plans and Regulations	X		X
Implements Subarea Plan including changes to Capital Facilities Element to Support Growth		X	X
Implements Changes to Development Regulations Consistent with Subarea Plan		X	
Planned Action Ordinance		X	X
Investments			
Current Transportation Investments	X	X	X
Added Multimodal Transportation Investments to support Job Types		X	X
Add trail in the buffer of relocated Edgecomb creek		X	X

Source: BERK, 2020.

Proposed design standards to implement Action Alternatives are anticipated to include:

Exhibit 24. Proposed Industrial Design Standards

Feature	
Site Context	▪ Integration of the natural environment ▪ Circulation ▪ Site Character

Feature	
	▪ Edges and adjacent areas ▪ Security and Lighting ▪ Landscaping ▪ Screening ▪ Service facilities ▪ Parking
Building Design	▪ Building form and scale ▪ Building orientation ▪ Building materials
Specific Development Types	▪ Industrial Complexes and Campus Industrial ▪ Incubator Industrial ▪ Advanced Manufacturing facilities ▪ Food processing facilities ▪ Maritime facilities ▪ Wood products manufacturing facilities ▪ Industrial service facilities ▪ Industrial live/work facilities

Source: BERK, 2020.

2.5 Benefits and Disadvantages of Delaying the Proposed Action

Delaying the proposed action would limit the overall amount of development in the Arlington portion of the CIC that could otherwise occur with the proposal by changing development regulations or approving a Planned Action Ordinance. Delaying the proposal would also delay any increased demand for public services or utilities associated with development. Delaying the proposal would delay improvements of water quality accompanying redevelopment and green infrastructure investments.

If the proposal is not adopted, the area would continue with the established industrial land use designation, though with a different employment sector mix than under the proposed action.

3.0 Environment, Impacts, and Mitigation

This chapter describes the affected environment, potential impacts, and mitigation measures for the following topics:

- Section 3.1 Natural Environment
- Section 3.2 Cultural Resources
- Section 3.3 Transportation
- Section 3.4 Land Use and Aesthetics
- Section 3.5 Utilities and Public Services

Following a description of current conditions (affected environment), the analysis compares and contrasts the alternatives and provides mitigation measures for identified impacts. It also summarizes whether there are significant unavoidable adverse impacts.

3.1 Natural Environment

This section addresses critical areas, geologically hazardous areas, water resources, and plants and animals.

3.1.1 Affected Environment

Critical Areas

The existing development within the study area is primarily high intensity industrial consisting of the 737-acre Arlington Municipal Airport and several manufacturing, processing, and fabrication firms. There are two creeks that flow through the study area: Edgecomb Creek and Portage Creek. Both creeks have documented salmonid presence or the potential to provide habitat for salmonids. There are a few isolated forested areas adjacent to Arlington Municipal Airport and within wetland and stream buffers. These areas and other parks and open spaces in the Study Area provide habitat for a variety of bird and mammal species and for stormwater infiltration. Other critical areas, including geologically hazardous areas, critical aquifer recharge areas, wetlands, and fish and wildlife conservation areas are mapped in both the developed and undeveloped areas of the study area. In addition to these natural resources within the CIC, the study area is bounded on the north by the Portage Creek Wildlife Reserve, a 157-acre natural area.

Each major critical area is addressed below including:

- Geologically Hazardous Areas
- Geologic Hazards
- Water Resources: Groundwater, Surface Water, Streams, Wetlands, and Water Quality
- Plants and Animals

Geologically Hazardous Areas

The study area is characterized by erosion hazards and liquefaction hazards. City of Arlington critical area regulations address public health and safety by requiring all development proposals on sites containing erosion hazard areas to submit an erosion control plan prior to the approval of any permit. Plans shall be consistent with the guidelines set forth in the International Building Code grading section and the Arlington Department of Public Works' construction standards specifications. Clearing for roads and utilities shall be limited to the minimum necessary to accomplish the engineering design. Development proposals on sites containing landslide hazard areas shall comply with the requirements set forth in AMC 20.93.630.b and c. Development

proposals located in landslide areas with slopes thirty-three percent or greater shall comply with the steep slope regulations described in AMC 20.93.630.c. Development proposals in landslide hazard areas with slopes less than thirty-three percent shall not increase surface water discharge or sedimentations and must demonstrate through geotechnical analysis that there is no significant risk to the development proposal or adjacent properties. If the provisions described above and set forth in AMC 20.93.630.b. are not met, a minimum buffer of fifty feet shall be provided from the edges of all landslide hazard areas.

Geologic Hazards

The study area is characterized by erosion hazards and liquefaction hazards. See Critical area regulations address public health and safety by regulating new development in terms of erosion control during construction, building code and foundations. Exhibit 25

Exhibit 25. Geologically Hazardous Areas

Source: City of Arlington 2012; Herrera 2020

Water Resources

Groundwater

The northern portion of the study area sits upon Arlington Alluvium, a very porous substrate with high infiltration potential. High groundwater in the southern portion of the study area limits the potential for stormwater infiltration. There is one mapped wellhead protection area (WHPA) near the Arlington Municipal Airport and two WHPAs that extend into the northwest corner of the study area. The aquifer that provides water for the City's airport well field is located under the Arlington Airport within the study area. The depth of the shallow aquifer is approximately 50 feet and depth of the deep aquifer is 150 feet. The Washington State Department of Health administers requirements for water systems (WAC 246-290 through 246-296). The City of Arlington's wellhead protection program addresses public health and groundwater protection by requiring all development proposals within a public groundwater recharge area or within 100 feet of a drinking water well to comply with the requirements in AMC 20.93.930 through 960 and WAC 246-290-135. Per WAC 246-290-135.b, a 100 foot and 200-foot sanitary control area shall be maintained around all wells and springs, respectively, unless engineering justification demonstrates that a smaller area can provide an adequate level of source water protection. Per AMC 20.93.930 and 940 a hydrogeologic site evaluation and best management practices plan is required for proposals within a public groundwater recharge area or within 100 feet of water wells. If a hydrogeologic site evaluation identifies significant impacts to critical public aquifer storage recharge areas, the project is required to document potential impacts and provide a detailed mitigation plan for avoiding potential impacts. Per AMC 20.93.950, the City may require that the mitigation plan include preventative measures, monitoring, process control, and remediation. See Exhibit 26 for wellhead protection areas and aquifer sensitivity in the study area.

Exhibit 26. Study Area Wellhead Protection Areas and Aquifer Sensitivity

Source: City of Arlington 2012; Herrera 2020

Surface Water

The study area straddles the divide between two river basins, the Stillaguamish and the Snohomish, which are regionally recognized as Water Resource Inventory Areas (WRIAs) 5 and 7, respectively (Arlington 2010). Runoff from the northern portion of the Study Area ultimately drains to the Stillaguamish via Portage Creek or the South Fork Stillaguamish. Runoff from the southern portion of the Study Area ultimately drains to the Snohomish via Edgecomb Creek.

Streams

Edgecomb Creek and Portage Creek constitute Fish and Wildlife Habitat Conservation Areas (FWHCAs) that provide habitat for federal and state listed fish species. Both creeks are classified as Type F-ESA streams, which are natural waters that have substantial fish, wildlife, or human use. Type F-ESA streams have a buffer of 150 feet according to AMC 20.93.730 that limits certain activities per AMC 20.93.720

Edgecomb Creek originates in the hills east of the study area and flows west then south before draining into the middle fork of Quilceda Creek. Within the study area Edgecomb Creek has been highly channelized for rail and agriculture (Marysville 2015). There is a narrow riparian buffer along the creek, but most of the land surrounding the creek has been converted to agricultural uses. There is a proposal to relocate the creek from its current alignment into a more natural channel with a riparian corridor that would provide better fish and wildlife habitat. The conceptual channel alignment would include (Marysville 2008):

- A low-flow channel for year-round stream flow
- A high-flow channel to convey flood flows, to address flooding issues in the basin
- Instream large woody debris for habitat
- 100- to 150-foot buffers on either side of the creek along the entire length of the project
- Native vegetation planting in the channel and buffer
- Off-channel rearing habitat
- Connection to hillside streams north of 162nd Street NE

The relocation of Edgecomb Creek away from the ditches and into a more naturally sinuous channel with a riparian corridor would benefit wildlife and stream habitat and provide an opportunity to integrate the stream with stormwater management in the study area. The City would implement a 150-foot vegetated buffer that would improve and protect the natural function of the stream (AMC 20.93.730). Creek relocation would also correct several culverts that pose a partial barrier to fish passage (WDFW 2018b). Removing or retrofitting those culverts to provide complete fish passage to all life stages of fish during all flows would improve salmonid habitat in the study area.

Portage Creek originates in the hills east of Arlington and flows generally northwest through the northeast corner of the study area before draining into the Stillaguamish River approximately 3.4 miles west of the study area. Both creeks in the study area either have documented salmonid presence or have the potential to provide habitat for salmonids, several of which are federally listed as Threatened or as State candidate species.

Wetlands

The City of Arlington and the National Wetland Inventory (NWI) identifies several Category II wetlands associated with Edgecomb Creek: two Category III wetlands on the Arlington/Marysville border and one Category III wetland in the northeast corner of the site. Standard buffer widths vary by jurisdiction and range from 35 feet for a Category IV wetland to 190 feet for a Category I wetland. Any development within a wetland or buffer will require compensatory mitigation at the appropriate ratios.

Exhibit 27. Study Area Streams and Wetlands

Source: City of Arlington 2012; Herrera 2020

Water Quality

Stormwater infrastructure in the study area includes collection, treatment, and storage systems with outfalls to Edgecomb and Portage Creeks, relying on them to convey storm flows away from the study area. "Runoff from urbanizing areas often results in greater volumes and more rapid rates of water flow over shorter durations relative to undeveloped areas. These modified flows can degrade the channels and harm the aquatic ecosystems they support" (Arlington 2010). Arlington has completed a number of culvert replacement projects to improve fish passage and reduce localized flooding in the area.

Most or all segments of the Stillaguamish River are identified (listed under CWA 303d) as impaired for fecal coliform, dissolved oxygen, and temperature (Ecology 2020). "Clean-up plans developed under two Stillaguamish Total Maximum Daily Load studies (TMDLs) are enforced through the NPDES wastewater discharge permit for the Arlington Water Reclamation Facility, and the NPDES Phase II stormwater general permit for Arlington and other cities" (Arlington 2017a).

Surface water in the southern portion of the study area drains to the Snohomish River via Edgecomb and Quilceda Creek which joins the Snohomish River delta near Marysville. The Snohomish River at its mouth is identified as impaired for Fecal Coliform, Temperature, Dissolved Oxygen, and pH (Ecology 2020). In 2008, Ecology developed a TMDL water clean plan for fecal coliform in the Snohomish River Tributaries, including Quilceda Creek. As a requirement of Snohomish County's NPDES permit, beginning in 2010, Snohomish County Public Works Surface Water Management Division began a monitoring program to identify and eliminate sources of fecal coliform within the TMDL coverage areas (Snohomish County)

Edgecomb Creek is generally highly disturbed and impacted by human land use patterns. Non-point source pollution from agriculture and urban development have increased the presence of pollutants in Edgecomb Creek. Data from Washington State Department of Ecology (Ecology 2020) indicates that high concentration of fecal coliform bacteria has been a concern in Edgecomb Creek in the past, but a TMDL has been implemented to address this concern (Otak 2010). Low dissolved oxygen levels are also a concern in the summer months and can compromise crucial fish habitat

Portage Creek is identified as impaired for dissolved oxygen and fecal coliform (Ecology 2020). The City of Arlington Comprehensive Plan (Arlington 2017) notes that surface water quality and quantity of riverine and riparian habitats associated with Portage Creek are in a state of recovery, but that it is of "paramount importance that…waterways be protected and managed to improve listed species population status and recover their functionality."

Plants and Animals

Plants

The Study Area is highly urbanized with only a small percentage of the area consisting of parks and open natural spaces. Vegetation communities throughout unmaintained areas, landscaped areas, and other small green spaces are likely dominated by Douglas fir (*Pseudotsuga menzesii*), western hemlock (*Tsuga heterophylla*) red alder (*Alnus rubra*), black cottonwood (*Populus balsamifera*), scotch broom (*Cytisus scoparius*), Himalayan blackberry (*Rubus armeniacus*), bull thistle (*Cirsium vulgare*) giant horsetail, hairy cat's ear (*Hypochaeris radicata*), and common dandelion (*Taraxucum officinale*).

There are several palustrine forested and palustrine emergent wetlands in the study area. Freshwater palustrine forested wetlands are likely dominated by willows (*Salix* spp.), black cottonwood, and red alder. Shrub species commonly found in these wetlands include Himalayan blackberry, rose spirea (*Spirea douglasii*), and salmonberry (*Rubus spectabilis*). Common emergent vegetation in freshwater wetlands consist of reed canarygrass (*Phalaris arundinacea*), cattail (*Typha* spp.), creeping buttercup (*Ranunculus repens*), and American skunkcabbage (*Lysichiton americanus*). Upland buffers between wetlands and adjacent impervious surfaces are likely dominated by Himalayan blackberry, bull thistle, tansy ragwort (*Senecio jacobea*), garlic mustard (*Aligria petioloata*), and gorse (*Ulex europgeus*).

No state or federal rare, sensitive, threatened, or endangered native plant species or important plant communities are documented in the study area (WDNR 2020).

Animals

Fish

Creeks in the study area either have documented salmonid presence or have the potential to provide habitat for salmonids, several of which are federally listed as threatened under the endangered species act (ESA). Both creeks in the study area may be used by ESA-listed Chinook salmon (*Oncorhynchus tshawytscha*) and Puget Sound steelhead (*Oncorhynchus mykiss*). Edgecomb Creek and Portage Creek may also be used by ESA-listed bull trout (*Salvelinus confluentus*) during foraging and migration. Additionally, both creeks within the study area are mapped for the presence of several recreational and commercially important species including pink salmon (*Oncorhynchus gorbuscha*), Puget Sound coho salmon (*Onchorhynchus kisutch*), and fall chum salmon (*Oncorhynchus keta*).

Wildlife

Wildlife depends on diverse plant communities for cover, denning, rearing, foraging, and shelter from predators. The urban and industrial land uses that make up most of the study area include

considerable barriers to wildlife migration and limited areas of usable habitat. However, riparian corridors, wetlands, parks, and other remaining open spaces do provide some wildlife habitat for bird, mammal, and fish species common in the Puget Sound Region. Due to the highly developed nature of the study area, mammal species are likely to include species tolerant of human activity such as opossums, Norway rats, eastern cottontail rabbits, eastern gray squirrels, deer mice, feral cats, muskrats, racoons, and perhaps coyotes and black-tailed deer. Areas adjacent to the study area including the Portage Creek Wildlife Reserve have a sufficient number of habitat types that support a greater diversity of mammal, bird, reptile, and insect communities.

3.1.2 Impacts

Thresholds of Significance

Impacts described in the following sections are broad evaluations based on the design details available at the time of analysis; each future planned action will be subject to Arlington municipal regulations and will need to demonstrate consistency with applicable critical area and water quality regulations.

The thresholds of significance utilized in this impact analysis include:

- Erosion that could not be contained on future development sites.
- Exposure of people to risk of injury or substantial damage to structures and infrastructure due to the creation or acceleration of a geologic hazard.
- The potential to reduce groundwater recharge or impact aquifer water quality due to mismanaged or poorly designed mitigation measures.
- The potential for degradation or loss of wetland, stream, or fish and wildlife habitat, or inconsistency with current regulations protecting critical area functions and values or shoreline ecological functions.
- Likelihood of jeopardizing a plant or animal population that is not currently vulnerable in Arlington and is a priority habitat or species.

Impacts Common to All Alternatives

Critical Aquifer Recharge Areas: As discussed in the Land Use section (Section 3.4), about 14% percent of the study area is currently vacant and could convert to industrial uses allowed in the No Action Alternative (i.e. under the current Comprehensive Plan and Zoning Code) or Action Alternatives' based on the AMMIC Subarea Plan. This could add impervious area, reduce groundwater recharge, and increase the risk of contaminants entering the City's aquifer. The

aquifer that provides water for the City's airport well field is located under the Arlington Airport within the study area. The depth of the shallow aquifer is approximately 50 feet; however, the deep aquifer is 150 feet and most uses should not affect the water quality if best management practices are used. Wetlands and other vegetation communities in the study area and any wildlife using the area could also be affected. City critical area regulations, stormwater regulations, and grading standards would apply to reduce potential impacts.

Water Quality – Stormwater: Under all alternatives development and redevelopment projects have the potential to generate stormwater pollution during construction. City code requires all projects to implement Temporary Erosion and Sediment Control (TESC) stormwater management best management practices during construction that will minimize these impacts.

Under all alternatives, the anticipated increases in employees could result in additional traffic in the Study Area, which could contribute pollutants to stormwater generated in the roadway. However, this impact is expected to be offset by the stormwater quality improvements resulting from treatment facilities that are required by regulations during redevelopment. The surface water runoff volume from the site is expected to increase under all the alternatives because the proposed development will increase the total area of impervious surfaces. However, City stormwater code requires new development of the scale proposed to install stormwater facilities, typically through the use of infiltration or LID facilities, that control flow rates and treat stormwater pollutants prior to discharge to receiving water bodies. Any areas that are redeveloped would also be subject to these requirements, which would result in an overall improvement (relative to existing conditions) for older developments that do not currently have modern stormwater management facilities.

Wetlands, Riparian Areas, and Wildlife: Under all alternatives, the undeveloped, shovel-ready 125-acre parcel at the Airport Business Park site immediately west of the Arlington Municipal Airport would be developed and the removal of existing vegetation and replacement with impervious surfaces and structures would occur. The reduction of upland vegetation would have a direct impact on urban wildlife and habitat areas. However, there are no habitats or species documented as WDFW Priority Habitats or species (WDFW 2018a), or as habitats for species of local importance.

Under all action alternatives, all category II wetlands associated with Edgecomb Creek would be disturbed and a portion of Edgecomb Creek would be relocated from its current alignment into a more natural channel with a riparian corridor that would provide better fish and wildlife habitat. A portion of the City of Arlington mapped Category III wetland in the northeast corner of the site and three NWI mapped wetlands would also be disturbed under all action alternatives. Riparian areas associated with Portage Creek may also be affected as a result of construction activities. Impacts to Wetlands, Edgecomb Creek, and Portage Creek, if any were to occur, would be subject to the avoidance, minimization, and mitigation requirements set forth in federal and state laws and in the City's CAO. These regulatory requirements are sufficient to

reduce potential impacts on stream habitat such that residual impacts would be less than significant.

Under all action alternatives, there would be more people and pets using natural areas near Portage and Edgecomb Creeks over a 24-hour period, which could potentially disturb wildlife and vegetation. If users follow designated paths, the additional human and pet use in or abutting sensitive areas could be managed. Appropriate open space design could be implemented to avoid and minimize the impacts of increased natural area use.

No Action Alternative

Under the No Action Alternative, development would continue under the current Comprehensive Plan designation and Zoning for the study area; impacts are anticipated to be similar to "Impacts Common to All." No Planned Action would be adopted to facilitate environmental review of new development. While the AMMIC Subarea Plan has been adopted, implementation would not change with zoning or capital investments. Compared to the Action Alternatives, redevelopment and development may not be as well coordinated, such as with the Edgecomb Creek relocation.

Under the No Action Alternative, job growth geography will be the same as both Action Alternatives but will occur at lower intensity (6 jobs per acre) compared to Action Alternatives 1 and 2 though regulations governing building coverage, impervious areas, and landscaping/screening would remain the same; for example, zoning allows 100% lot coverage in commercial and industrial zones though screening (AMC Chapter 20.76) and protection of critical areas (Chapter 20.93) would override. The No Action Alternative would allow for net growth rounded to 4,824 jobs with no changes to housing and assumes current employment density and sectoral distribution with the existing 4,969 jobs maintained and increased.

Action Alternative 1

Alternative 1 is based on the vision for job growth, geographical distribution, and sector mix of the AMMIC Subarea Plan. Compared to the No Action Alternative, under Action Alternative 1 higher density employment is anticipated on sites identified as opportunity sites in the Subarea Plan and lower density development (at existing employment density) is anticipated on the remaining sites with development capacity. The greatest increases in employment are anticipated on undeveloped 125-acre parcel at the Airport Business Park site immediately west of the Arlington Municipal Airport and in the underdeveloped parcels south of 172nd Street NE. Along with diverse industrial development, future development under this alternative is anticipated to include a small amount of new residential development that is compatible with the industrial land use mix of the center.

Slightly smaller increases are anticipated on the site north of the airport at 47th Ave NE, on the parcel at the intersection of 67th Ave NE and 199th St NE, on the site east of 59th Ave and south of 172nd Avenue NE, and on the site east of the airport and west of 67th Ave NE. Employment uses would be designed to take advantage of the area's natural features, including a relocated Edgecomb Creek.

Under Alternative Action 1, employment would increase by 6,625, or 1,801 jobs more than the No Action Alternative and 2,219 less than Alternative 2. The change in the share of different zoning districts would not change applicable lot coverage standards. While there are more jobs anticipated in this alternative these are not likely to increase building space since the employment sectors envisioned in this alternative, such as advanced manufacturing, house more employees per square feet than existing sectors such as warehousing. ,The increases in residential development and employees compared to the No Action Alternative could result in additional traffic and impervious surfaces in the Study Area which could contribute additional pollutants to stormwater generated in the roadway.

Under Action Alternatives 1 and 2, there would be more people and pets using natural areas near Portage and Edgecomb Creeks over a 24-hour period, which could potentially disturb wildlife and vegetation. If users follow designated paths, the additional human and pet use in or abutting sensitive areas could be managed. Appropriate open space design could be implemented to avoid and minimize the impacts of increased natural area use.

Action Alternative 2

Potential impacts on the natural environment under Action Alternative 2 would be similar to the Action Alternative 1 except that there would be a higher growth scenario for employment within the center. Compared to the No Action Alternative and Action Alternative 1, Alternative 2 has the greatest total employment and would retain and increase jobs. It would not add any new dwellings compared to the No Action Alternative and Alternative Action 1. Employment increases are anticipated across the center on all sites with development capacity. The greatest increases in employment are anticipated on undeveloped, shovel-ready 125-acre parcel at the Airport Business Park site immediately west of the Arlington Municipal Airport and the site north of the airport at 47th Ave NE. Slightly smaller increases of employment are anticipated on the parcel at the intersection of 67th Ave NE and 199th St NE, on the site east of 59th Ave and south of 172nd Avenue NE, and on the site east of the airport and west of 67th Ave NE. Similar to Alternative 1, employment uses would be designed to take advantage of the area's natural features, including a relocated Edgecomb Creek.

Action Alternative 2 supports net increases of employment of 8,844 jobs. Greater increases in employees could result in more traffic and impervious surfaces in the CIC compared to the No Action Alternative and Action Alternative 1; while lot coverage standards are similar under all

alternatives, more building space could be constructed over the long-term to house the greatest amount of jobs envisioned in existing employment sectors

3.1.3 Mitigation Measures

Incorporated Plan Features

All alternatives are expected to attract development within the study area and within critical areas and/or buffers. The City of Arlington will comply with applicable federal, state, and local environmental regulations and apply reasonable mitigation measure to reduce significant adverse impacts. Potential measures to mitigate adverse impacts of specific projects within the Study Area as well as avoidance and minimization measures that would be part of the project will be refined through final design and permitting. During redevelopment or new development under all alternatives, and particularly Alternatives 1 and 2 that propose to amend the Comprehensive Plan and development regulations to implement the Subarea Plan, opportunities exist to strategically reduce impervious surfaces, employ low impact development techniques, and restore native vegetation to improve the conditions of the natural environment in these spaces.

The relocation of Edgecomb Creek away from the ditches and into a more naturally sinuous channel with a riparian corridor would benefit wildlife and stream habitat and provide an opportunity to integrate the stream with stormwater management. Creek relocation would also correct several culverts that pose a partial barrier to fish passage (WDFW 2018b). Removing or retrofitting those culverts to provide complete fish passage to all life stages of fish during all flows would improve salmonid habitat in the study area.

Compared to the No Action Alternative, under Alternatives 1 and 2, the relocation of Edgecomb Creek would be coordinated with subarea development and redevelopment plans. The completion and coordination of the creek relocation with the Action Alternatives would ensure wetland and stream advanced mitigation is incorporated into the selected Action Alternatives to address critical areas impacts associated with some of the proposed development in the CIC.

During final design and permitting, the City of Arlington will first try to avoid and minimize impacts on wetlands through design measures and best management practices. Where impacts are unavoidable, the City will mitigate them in accordance with applicable federal regulations, local critical areas ordinances and permit requirements. The City is committed to no net loss of wetland and stream functions.

Regulations and Commitments

Development and redevelopment projects within the study area that have the potential to impact environmentally sensitive natural resources or surface and groundwater will require compliance with federal, state, and local regulations. Mitigation sequencing to avoid, minimize, and mitigate environmental impacts is typically required for all applicable permitting reviews and authorizations Exhibit 28Exhibit 28 provides a regulatory permit matrix for action requiring local, state, and federal authorizations. Appropriate mitigation measures specific to proposed development and redevelopment projects will be proposed through final design and permitting. This may include preservation, enhancement, and restoration of wetland and streams and associated buffers.

Exhibit 28. Regulatory Permit Matrix

Jurisdictional Agency	Regulations/Authorizations
City of Arlington	Pre-application submittal conference SEPA Determination (No Action Alternative) Planned Action Consistency Determination (Action Alternatives) Critical Areas review City of Arlington Stormwater Code Compliance
Washington State Department of Ecology	CWA Section 401 Water Quality Certification NPDES Construction Stormwater General Permit Coastal Zone Management Act Consistency Certification
Washington Department of Fish and Wildlife	Hydraulic Project Approval (HPA)
U.S. Army Corps of Engineers	CWA Section 404 Clean Water Act CWA Section 10 Rivers and Harbors Act Requires Compliance with: Section 7 of the Endangered Species Act Section 106 of the Historic Preservation Act Magnuson-Stevens Act

Critical Areas Regulations

The City's Critical Areas regulations (AMC 20.93) are applicable for the protection of wetlands, fish and wildlife conservation areas, geologically hazardous and frequently flooded areas, critical aquifer recharge areas, and designated buffers to protect critical areas.

Washington State

The Washington Department of Fish and Wildlife (WDFW) administers the Hydraulic Project Approval (HPA) program under the state Hydraulic Code 0WAC 220-110), which was specifically designed to protect fish. An HPA is required for projects that will use, divert, obstruct, or change the natural flow or bed of the salt waters or fresh waters of the state, and will apply project elements with in-water or overwater work.

Federal

Federal regulations including the Clean Water Act Section 404 and Section 10 of the Rivers and Harbors Act, as administered by the U.S. Army of Corps of Engineers are applicable to any proposed alterations to Waters of the US. Compliance with Section 7 of the Endangered Species Act and Section 106 of the Historic Preservation Act are additionally required for federal permits. The Magnuson-Stevens fishery Conservation and Management Act provides protection for Essential Fish Habitat. The Marine Mammal Act is applicable for the protection of species in marine waters. Projects require federal authorization will typically require 6 to 18 months for final review.

Other Proposed Mitigation Measures

There is potential to require street standards with green infrastructure on new connections to improve stormwater management and increase ecological benefits associated with development. This would be implemented either through advanced infrastructure implementation or through street frontage improvements as development occurs. The City could set a maximum impervious area through new zones that together with stormwater standards encourage pervious pavement, biofiltration, full mature growth of native trees and shrubs, or other methods to address water quality, groundwater recharge, and ecological function.

3.1.4 Significant Unavoidable Adverse Impacts

Under all of the proposed alternatives, any redevelopment or new development will require compliance with all applicable regulations to avoid, minimize, or mitigate any impacts to critical areas including wetlands, streams, buffers, and critical aquifer recharge areas. Redevelopment or new development will also need to meet stormwater requirements to protect surface and groundwater from increased flow or water quality impacts. Therefore, no significant unavoidable adverse impacts are anticipated on the natural environment under any of the proposed alternatives.

3.2 Cultural Resources

This section addresses consistency of the alternatives with. state regulations pertaining to the identification and protection of cultural resources (e.g., RCW 27.44, RCW 27.53), and compliance with the Washington State Environmental Policy Act (SEPA). The Archaeological Sites and Resources Act (RCW 27.53) prohibits knowingly disturbing archaeological sites without a permit from the Washington State Department of Archaeology and Historic Preservation (DAHP), and the Indian Graves and Records Act (RCW 27.44) prohibits knowingly disturbing Native American or historic graves. Under SEPA, agencies must consider the environmental consequences of a proposal, including impacts to cultural resources, before taking action.

The Affected Environment reviews existing context and identifies any previously recorded cultural resources in the project area. This section also evaluates the potential for previously recorded and as-yet unrecorded archaeological sites and historic buildings to be disturbed by development based on future conditions that consider the level of growth and land use change described in Chapter 2 for the alternatives.

Assessment methods included a review of previous ethnographic, historical, and archaeological investigations in the local area, a records search at on DAHP's Washington Information System for Architectural and Archaeological Records Data (WISAARD) (DAHP 2020a) for known sites in the immediate area, a review of relevant background literature and maps (including General Land Office [GLO], United States Geological Service [USGS], and county atlases), preliminary field investigations, and the preparation of this report. CRC contacted cultural resource staff of the Snohomish Tribe, Stillaguamish Indian Tribe, and Tulalip Tribes. This correspondence was not intended to be or replace formal government-to-government consultation. Any additional information made available to the City during the EIS process will be included in the Final EIS. This assessment utilized research design that considered previous studies, the magnitude and nature of the undertaking, the nature and extent of potential effects on historic properties, and the likely nature and location of historic properties within the project, as well as other applicable laws, standards, and guidelines (per 36 CFR 800.4(b)(1)) (DAHP 2020b).

3.2.1 Affected Environment

Environmental Context

Overview

The project is within the *Tsuga heterophylla* (Western Hemlock) vegetation zone in the Willamette-Puget Lowland physiographic province characterized by the wide "trough" between the Coast and Cascade Ranges formed during the advance and retreat of Pleistocene epoch glaciers (Franklin and Dyrness 1973; McKee 1972). The project is located approximately 2.1 km (1.31 miles) south of the confluence of the North and South Forks of the Stillaguamish River, approximately 14.15 km (8.79 miles) west of Port Susan, and approximately 13.5 km (8.4 miles) north of the mouth of the Snohomish River.

The project location encompasses 2,291 acres within the City of Arlington. Starting on the Burlington North Railroad approximately 275 m (900 ft) north of Portage Creek, the project extends to the south and west to include:

- the industrial zone between the Burlington Northern Railroad to the west, Prairie Creek to the north, and the uplands to the east and south;
- the residential and industrial zone bounded by 204th St NE to the north, 67th Ave NE to the east, the Arlington Municipal Airport to the west, and the Arlington City limits to the south;
- the Arlington Municipal Airport;
- the agricultural zone south of the Airport and within the City Limits; and
- a residential plot bounded by the marshes of Portage Creek to the north, 35th Ave to the west, 188th St NE to the south, and 3919 188th St NE to the east.

It is located within multiple local drainage systems including the extended Portage Creek drainage to the north of the project, which drains directly into the Stillaguamish River, and the Quilceda Creek drainage to the south of the project, whose outlet is at the mouth of the Snohomish River to the south. Elevation within the project location is relatively flat, ranging from 110 ft above sea level near Portage Creek to 160 feet above sea level near the eastern uplands. The project is situated on the glacial plain between Portage Creek and the uplands and tends to be relatively flat, with obvious grading in locations such as the airport runways and individual properties.

Geomorphology

The landscape of northwest Washington is a product of crustal deformation initiated by the Cascadia subduction zone; successive glacial scouring and deposition most recently during the Pleistocene; and landslides, erosion and deposition, and human activity during the Holocene (Troost and Booth 2008). During the Late Pleistocene or last glacial period (110,000 to 12,000

years BP), the Cordilleran ice sheet covered much of the American northwest and scoured the landscape during advance and retreat episodes initiated by localized climate fluctuations. The most recent glaciation was the Vashon Stade of the Fraser glaciation during which the Puget Lobe entered northwest Washington around 17,000 years BP (Thorson 1980). This final episode scoured the landscape producing moraine features and topographic lows prior to its recession. The northern Puget Lowland topography is generally defined by alluvial valleys and north-northwest trending upland troughs and hills (Dethier et al. 1995).

The Puget Lobe reached the vicinity of present-day Seattle by about 14,500 years BP achieving its maximum extent near Olympia by 14,000 years BP (Booth et al. 2003). The onset of climatic warming caused the ice sheets to retreat to the north and began the transition into the Holocene. The Puget Lobe retreated past Seattle by 13,600 years BP (Booth et al. 2003). As the glacier receded during this more temperate period, meltwater became impounded behind the ice forming a series of proglacial lakes that eventually merged into Lake Russell, which extended roughly from the southern margin of present-day Whidbey Island to Olympia impounding low lying sections of the Puget Sound and adjacent river valleys (Bretz 1913; Waitt and Thorson 1983). Glacial Lake Russell merged with Lake Bretz (Minard and Booth 1988; Thorson 1981) before draining via the Strait of Juan de Fuca. The retreat of the glacier and draining of recessional meltwater resulted in the deposition of glacial till, outwash, glaciolacustrine, glaciomarine, and ice contact sediment in the Puget Lowland (Booth 1994; Booth et al. 2003). The project lies in an outwash plain composed of glacial recessional outwash with evidence of glacio-marine sediments deposited during the Everson marine incursion at the end of the Fraser glaciation (Dethier et al. 1995; Hannum 2018).

While sedimentation was widespread and voluminous during the Pleistocene, deposition during the Holocene has been more restricted occurring in river valleys and at the base of steep slopes (Booth et al. 2003). The uplands of the Puget Lowland are largely characterized by glacial till deposits that have been exposed since the end of the Pleistocene epoch. Deposition in these areas during the Holocene has been minimal and generally limited to the build-up of organic matter on the forest floor.

Mapped Surface Geologic Unit

The geology mapped in the project location consists of Pleistocene continental glacial drift (Qgd) (WA DNR 2020). The unit was further defined by Minard (1985) as the Marysville Sand Member of the Vashon Drift Recessional Outwash (Qvrm). Qvrm sediments originated from south flowing meltwater which filled the valley. Deposits can be described as mostly well-drained, stratified to massive outwash sand, with some gravel, and some areas of silt and clay. The sediments are used locally as fill and local soil variations include peat deposits, nonglacial sediments, and modified land (Minard 1985; WA DNR 2020). Conversely, Pessl et al. (1989) define the deposits as Qvrm, Recessional-Marine deposits from the Vashon Stade composed of "fossil-bearing stony silt, sand, and clay with associated layers, lenses, and pods of other diatoms and

medium- to well- sorted, massive to laminated sand, silt, and clay." Deposits are estimated to be 1 to 10 m (3 to 33 ft) thick. However, in sum, both sources conclude the surface geology is of glacial origin dating to the end of the Vashon Stade.

Mapped Soil Units

The soils mapped in the project location consist of approximately 11 described soil units (Exhibit 29 and Exhibit 30). The project is largely mapped as soils derived from glacial outwash or glacial till. Areas associated with the Portage Creek drainage system in the northern quarter or the Quilceda Creek drainage in the southern quarter of the project are composed of soil units derived from alluvium. Sediments throughout the project generally consist of sand to sandy loam with local variations in gravel content. Other variations include deposits of peat, silty clay, and ashy sandy loam. Approximately 83 percent of the project is mapped as well drained with the water table 80 inches or more below the ground surface. The remaining acreage (approximately 17 percent of the project) is mapped as poorly drained to very poorly drained with the water table 0 to 36 inches below the ground surface (USDA NRCS 2020).

Exhibit 29. Locations of mapped soil units comprising ten acres or more study area

Mapped Soil Unit	Percent of Project	Location within Study Area	Parent Material	General Stratigraphic Description
Lynnwood loamy sand, 0 to 3 percent slopes	55.1 %	Centrally, including airport grounds and industrial properties to the east	Glacial outwash formed in outwash plains	Loamy sand to sand Water table > 80 inches below surface (in b. s.)
Everett very gravelly sandy loam, 0 to 8 percent slopes	25.1 %	In the northern quarter of the project, in association with the Portage Creek floodplain	Sandy and gravely glacial outwash	Very gravelly sandy loam to extremely cobbly coarse sand Water table > 80 in b. s.
Custer fine sandy loam	8.5 %	South of SR 531	Glacial outwash	Fine sandy loam to sand Water table 0 to 12 in b. s.
Norma loam	8.2 %	South of SR 531 and in other drainage systems	Alluvium	Ashy loam to sandy loam Water table 0 in b. s.
Tokul gravelly medial loams, 0 to 8 percent slopes and 15 to 30 percent slopes	1 %	East of the termination of 191st Place NE and in property between the relict railroad tracks and 67th Ave NE	Volcanic ash mixed with loess over glacial till	Gravelly medial loam to cemented material Water table 18 to 36 in b. s.

Mapped Soil Unit	Percent of Project	Location within Study Area	Parent Material	General Stratigraphic Description
Mukilteo muck	<1 %	East of 68th Dr. NE	Herbaceous organic material	Muck to peat to fine sandy loam Water table 0 to 12 in b. s.
Bellingham silty clay loam	<1 %	East of the termination of 191st Place NE	Alluvium over lacustrine deposits	Silty clay loam to silty clay Water table 0 to 12 in b. s.

Source: USDA NRCS 2020

Exhibit 30. Locations of mapped soil units comprising less than ten acres each of the study area

Mapped Soil Unit	Percent of Project	Location within Project	Parent Material	General Sediment Description
Pits	.3 %	Present in property at 199th St NE	--	--
Everett gravelly sandy loam, 8 to 15 percent slopes	.1 %	Present in property between the relict railroad tracks and 67th Ave NE	Sandy and gravely glacial outwash	Very gravelly sandy loam to extremely cobbly coarse sand Water table > 80 in b.s.
Alderwood-Everett gravelly sandy loams	< .1 %	Present at 3729 188th St NE in a drainage route for Portage Creek tributary	Mix of two units: Alderwood – basal till; and Everett – glacial outwash	Alderwood: gravelly ashy sandy loam to gravelly sandy loam Water table 18 to 36 in b.s. Everett: gravelly ashy sandy loam to extremely gravelly sand Water table > 80 in b.s.

Source: USDA NRCS 2020

Ethnographic Context

Traditional Territory

The project is within the traditional lands of the Stillaguamish Tribe of Indians of the Southern Coast Salish tribes. Stillaguamish territory encompassed the Stillaguamish River drainage, including both the North and South Forks of the Stillaguamish River, Pilchuck Creek, and areas between the Skagit and Snohomish Rivers. The Stillaguamish were speakers of Northern Lushootseed and maintained close relationships with neighboring tribes such as the Skagit, Snohomish, and Sauk-Suiattles. Originally named the Stoluck-wa-mish River Tribe in the 1855 Treaty of Point Elliot, the tribe is represented by the Stillaguamish Tribe of Indians and the Tulalip Tribes (Ruby et al. 2010; Stillaguamish Tribe of Indians 2019; Suttles and Lane 1990). The Tulalip Tribes are the federally recognized successors in interest to the Snohomish, Snoqualmie, Skykomish, and other allied tribes and bands signatory to the 1855 Treaty of Point Elliott (Tulalip Tribes 2020).

Precontact settlements were often located on major waterways, river confluences, heads of bays, or inlets, and people practiced a seasonal subsistence economy that included hunting, fishing, and plant food horticulture. In the winter, people lived at permanent village settlements in plank houses constructed from cedar (Bruseth 1926). Summer months were spent hunting, fishing, and gathering at specialized, temporary camps located near food resources. In estuarine and marine environments in the region, there was an abundance of plant and animal resources available. A combination of fish, shellfish, marine mammals, waterfowl, game, roots, and berries served as rich, diverse, and relatively reliable resource base (Blukis Onat 1987; Suttles and Lane 1990). Prairie locations surrounding Arlington, including Kent's Prairie to the northeast of the project, offered a wide range of plant resources for sustenance and craft (Miss and Campbell 1991). Plants found locally included wild onion, edible roots, bulbs and tubers, as well as various grass, sedge, and reed species. Upland prairie locations were also environments for deer and elk that could be hunted.

Ethnographic Place Names

Early ethnographers documented locations of villages and names of resource areas, water bodies, and other cultural or geographic landscape features from local informants. Knowledge of these features contributes to the broader archaeological context of the project location and the nature of the archaeology that may be encountered during this assessment.

As discussed by Schumacher (2009), at least 26 Stillaguamish villages, campsites, fishing, clamming, and potlatch sites have been identified in historic records, including permanent villages at present-day Arlington, Stanwood, and others around the mouth of the Stillaguamish River (Haeberlin and Gunther 1930; Indian Claims Commission 1974; Smith 1941; Tweddell 1974). At the junction of the North and South Forks of the Stillaguamish River was one of four main Stillaguamish villages, which by about 1850 "had two large houses...and several hundred

people" (Indian Claims Commission 1974). This village was referred to as *Skabalko* and was widely known as a popular meeting and trading location (Bruseth 1926). Most permanent settlements were located along the North Fork of the Stillaguamish River, but others have been identified archaeologically along the South Fork of the Stillaguamish (Miss and Campbell 1991).

Information provided by Stillaguamish cultural resources personnel (Berger and Gardner 2019:9) indicates a Stillaguamish longhouse once stood on the north edge of the marshlands at the head of Quilceda Creek, in the vicinity of the southern part of the study area, providing context for the wide terrestrial range used to procure resources and shelter. A map provided by Sally Snyder for the Stillaguamish case to the Indian Claims Commission depicted three cultural locations in the study area vicinity, including one, *bá'quab*, to the south of the study area at the termination of the Quilceda Creek drainage (Indian Claims Commission 1974:586-687, Map 4). Additional information provided by Nels Bruseth for the same case indicated Kent's Prairie, just northeast of the study area, was used for gathering root or bulb crops and that a trail led from it to Quilceda Creek (Indian Claims Commission 1974:595).

To the south, Tweddell (1974) and Waterman (2001) recorded several place names associated with the Snohomish Tribes, including those related to Quilceda Creek. According to Waterman (2001:337) the Creek was known as *tuxqwota'itsdEb*, meaning "sturgeon place" and Tweddell (1974:145) indicated the creek was well-known as a place to procure silver salmon and five villages were named along the lower reaches of Quilceda Creek (Tweddell 1974:162-166).

Historical Context

Spanish explorers first visited the Northwest Coast in 1774 followed by British Royal Navy Captain George Vancouver and Lieutenant Peter Puget, who first explored the Puget Sound area, in 1792 (Marino 1990). By 1833, the Hudson's Bay Company established a presence in the Puget Sound region and stimulated development and economic intrigue in the region. After the United States government gained full control of the Puget Sound region in 1846, many settlers claimed land under the Donation Land Claim Act of 1850 which promoted homestead settlement in the Oregon Territory allowing individuals to claim 320 acres of land and married couples to claim 640 acres with the provision that they would cultivate the land for four consecutive years. The Washington Territory was organized in 1853 with Isaac I. Stevens appointed as the governor and ex officio superintendent of Indian affairs (Marino 1990). By the mid-1850s, Euro-American settlement in the region had drastically affected Native American people and their traditions. The United States government and local Tribal groups entered into a series of treaties. These treaties stated that signatory Tribes would cede their traditional lands to the United States government and settle within designated reservations. Signatory Tribes would retain rights of resource gathering in their usual and accustomed territory. The relocation of Native American peoples to reservations opened wide swaths of land for Euro-American settlement throughout the region. This in conjunction with the enactment of the Homestead Act of 1862, which

afforded United States citizens the opportunity to claim 160 acres of surveyed government land, helped hasten the settlement of the American west and the Puget Sound region.

The history of Arlington has been detailed in numerous sources (e.g. Arlington 2020a, b, c; Oakley 2007; Olsen 1993; Ruby et al. 2010). A brief summary follows. The first Euro-American to explore the area was a prospector, Samuel Hancock, travelling the Stillaguamish River in 1850. Overland travel was made possible in 1856 when the U.S. Army cleared a trail north from Snohomish, crossing the Stillaguamish River just below the forks. Settlers began filing claims in the Arlington area in the 1880s and by 1887 two business were opened in the vicinity. Two towns were platted in the vicinity in 1890, Haller City and Arlington, with Haller City on the banks of the Stillaguamish River and Arlington occupying the uplands. A stiff rivalry grew between the towns in the pursuit of local dominance. However, when the Seattle, Lake Shore, & Eastern Railroad constructed their train depot in Arlington in 1890, it gave Arlington the greater economic gain, and by 1895 most business, aside from mills, had relocated to Arlington. The two towns incorporated as Arlington in 1903.

Arlington began as a logging and agriculture-based economy with travel facilitated by railways and established wagon roads. In 1905 the town was connected to a wider network of communities through state roads heading north and a rail line heading east to Darrington. Economic assistance was provided during the Great Depression when local mills closed. A Civilian Conservation Corps camp opened in Darrington in 1933, providing jobs and projects to the surrounding area, including Arlington. Projects completed included the construction of sidewalks for Arlington in 1933 and the placement of outhouses on farms. Funding from the Civil Works Administration and the Works Progress Administration allowed for the Arlington Airport to be constructed in the mid-1930s. The airport was temporarily leased by the U.S. Navy for training and auxiliary support from 1940 to the end of World War II, when it was placed in municipal control.

While logging, aviation, and agriculture continue to be important industries in the Arlington area, modern Arlington is also a growing bedroom community. The completion of Interstate 5 in 1969 allowed for greater population mobility, allowing workers to look further afield for housing. By 1980, Arlington was home to workers from as far away as Seattle and would experience an increase over 450 percent in population in the following 20 years.

Historical Records Search

Review of historical maps and aerial imagery provide an understanding of the historic and modern land use, and ownership of the project and surrounding area. The General Land Office (GLO) conducted early cadastral surveys to define or re-establish the boundaries and subdivisions of Federal Lands of the United States so that land patents could be issued transferring the title of the land from the Federal government to individuals. The GLO produced

a map in 1875 for Township 31 North, Range 5 East, including the project location (Exhibit 3.2-3). The survey illustrated numerous drainages, creeks, prairies, and marshes in the project vicinity. No cultural features such as trails, homesteads, or Indian villages were depicted in the study area location (USSG 1875). Land patents on file at the Bureau of Land Management (2020) indicate Alexander Robb filed the first land patent within the project location in April of 1882 (BLM Serial/Accession Nr. WAOAA 068768; Authority: April 24, 1820: Sale-Cash Entry [3 Stat. 566]; total 160 acres). By 1894 all lands within the project location had been distributed through land patents to 21 individuals and the State of Washington, with the majority obtained through cash purchases (Exhibit 31 and Exhibit 32.)

Exhibit 31. Portion of cadastral survey of Township 31 North, Range 05 East, Willamette Meridian. 1875

Source: USSG 1875

Exhibit 32. Land patents issued within the study area

Name	Date	Section Nr.	Aliquots within project	BLM Serial Nr., Authority, and total acres
David Hake[1]	6/1/1882	11	SW¼SW¼	WAOAA 068771; Sale-Cash Entry; 160
Oliver P. Cummings	8/31/1889	11	SE¼SW¼	WASAA 068836; Sale-Cash Entry; 160
Lewis Clark	9/5/1890	14	N½N½	WASAA 068874; Homestead Entry Original; 160
Matthew Birckenmeier	8/4/1891	14	S½NW¼ NE¼SW¼	WASAA 068949; Homestead Entry Original; 160
Willard F Sly	8/12/1891	14	W½SW¼ SE¼SW¼	WAOAA 068953; Sale-Cash Entry; 160
Alexander Robb	4/20/1882	15	S½N½	WAOAA 068768; Sale-Cash Entry; 160
Lewis D. W. Shelton	6/1/1882	15	N½SW¼ SW¼SW¼ NW¼SE¼	WAOAA 068770; Sale-Cash Entry; 160
David Hake[1]	6/1/1882	15	NE¼NE¼	WAOAA 068771; Sale-Cash Entry; 160
Joachim Kroger	5/5/1890	15	SE¼SW¼ SW¼SE¼	WASAA 068867; Sale-Cash Entry; 160
Peter Funk[2]	11/23/1891	15	E½SE¼	WASAA 068992; Sale-Cash Entry; 160
Lewis A. Larimore	8/24/1891	21	N½N½	WASAA 068955; Sale-Cash Entry; 160
Moses M. Walker	11/23/1891	21	S½N½	WASAA 069004; Sale-Cash Entry; 160
Christ Meyer	12/20/1892	21	SE¼	WASAA 069050; Sale-Cash Entry; 160
Joachim Kroger	5/5/1890	22	W½NE¼	WASAA 068867; Sale-Cash Entry; 160
Albert Nelson	6/18/1890	22	N½S½	WASAA 068870; Sale-Cash Entry; 160
John Ostrand	9/18/1890	22	S½S½	WASAA 068893; Sale-Cash Entry; 160
Peter Funk[2]	11/23/1891	22	E½NE½	WASAA 068992; Sale-Cash Entry; 160
John A. Gerow	11/23/1891	22	NW¼	WASAA 068994; Sale-Cash Entry; 160
Cosme Pacheco	1/28/1888	27	S½NE¼	WAOAA 068793; Sale-Cash Entry; 160

Name	Date	Section Nr.	Aliquots within project	BLM Serial Nr., Authority, and total acres
Abraham T. Lewis & Ellenor Thomas	10/13/1891	27	S½NW¼	WASAA 068966; Homestead Entry Original; 160
Carl W. Ostrand	11/23/1891	27	N½N½	WASAA 068997; Sale-Cash Entry; 160
Thomas D. Davis	10/13/1891	28	S½NE¼	WASAA 068968; Homestead Entry Original; 160
Christian Christianson	**7/9/1894**	**28**	**N½NE¼**	**WASAA 069078; Homestead Entry Original; 80**

Note: project location with descriptions limited to lands within the project. 1, 2 – refer to individuals with land patents in multiple sections within the project location. BLM 2020

An 1898 land classification map for western Washington depicted the project as generally within an "area from which timber has been cut," with portions of Sections 16 and 21 in a "timbered area," and a portion of Section 27 in a "burnt area" (USGS 1898). Historic land classification sheets, county atlases, and topographic maps provide information regarding landownership and use during the early 1900s, beginning in 1910 (Historic MapWorks 2020; USGS 2019). Most land claimed by 1894 within the project location was patented as 160-acre tracts. By 1910, most of the original homesteads had been divided and property was typically held in lots of 80 acres or less with the exception of:

- Matthew Birkenmeier (Birckenmeier), in portions of Sections 11, 14, and 15, with a total of 1,061.7 acres;
- The Hild Ranch Company in the north half of Section 28 with 240 acres;
- School land in the southeast corner of Section 16 with 160 acres; and
- The Sill Brothers Land Company in the northwest corner of Section 15 with 120 acres (Anderson 1910).

Topographic maps and county atlases from the early twentieth century depict a series of railroads and wagon roads throughout the area, with three railroads, the Northern Pacific Railway, the Marysville and Northern Railway, and an off-shoot of the Great Northern Railroad, crossing the project location in a north to south alignment. Structures mapped within the project location at the time tended to be located along the Seattle and Vancouver Line of the Northern Pacific Railroad, which ran north to south along the eastern boundary of Section 22, and the associated local road located on the section line of the same (Exhibit 3.2-5; Anderson 1910; USGS 1911). An approximately 10-acre cemetery was noted in the northeast corner of Section 15 as early as 1910 (Anderson 1910). The project location was bordered to the northwest by the South Slough (modern Portage Creek and associated drainage channels), which drained into the Stillaguamish River to the north.

Exhibit 33. Portion of the Mount Vernon, WA quadrangle annotated with study area (red) and modern road names. 1911

Source: USGS 1911

Subsequent atlases depicted a growing population and changes in land use. In 1910 the project location was within property owned in 51 separate holdings with most property in 20-acre lots or larger. By 1936, the project was divided into 76 separate holdings with many of the larger properties having been subdivided and/or changed hands. Of the large holdings noted in 1910, only Matthew Birckenmeier still retained a majority of his property, with most other property owners selling off (e.g. the Sill Brothers) or subdividing within the family (e.g. the Hild family). Similarly, mapped structures and road infrastructure reflected the more condensed population as seen in the completion of Highway 99 and other major roads through the area and the addition of several structures in close proximity to each other along the new roadways (Exhibit 3.2-6; Metsker 1936; USGS 1941).

The addition of the Arlington Airport, first mapped in 1941 as a landing field in Section 15 and extended to the modern-day layout by 1956, caused the removal of previously mapped structures in the vicinity while consolidating ownership and land usage of approximately 1,140 acres (Boswell and Heideman 2011). By the time Interstate 5 was completed in 1969,

construction and settlement patterns had shifted to the vicinities of Smokey Point Blvd, previously noted as Route 99 or Pacific Highway, and north of the airport, near Portage Creek, where population and construction continued to increase through 1995 (Exhibit 3.2-7; Kroll 1943; USGS 1956a, b, c).

Exhibit 34.Portion of the Marysville, Washington quadrangle annotated with study area (red) and modern road names. 1959

Source: USGS 1941

Exhibit 35.Portion of the Arlington, Washington quadrangle annotated with study area (red) and modern road names. 1969

Source: USGS 1956a

Sanborn Fire Insurance maps were consulted for potential information on historical activities in the vicinity. Maps were available for Arlington between 1905 and 1940, but did not extend to project location (ProQuest 2020). Historic aerial imagery is available for the project location beginning in 1954 (NETR 2020). Historic aerial imagery in 1954 depicted the project location as an

airport filling most of the land, surrounded by agricultural parcels. By 1981 land outside the airport property was under development for residential or commercial use, with only the land south of the airport remaining agricultural. Imagery from 2006 resembles that of 2020, with dense residential growth to the north and west of the airport, continued commercial development to the east, and static agricultural land use to the south.

Cultural Resources Database Review

Washington Information System for Architectural and Archaeological Records Data (WISAARD)

A review of the WISAARD database maintained by the Washington State Department of Archaeology and Historic Preservation (DAHP) identified previous cultural resource studies, recorded precontact and historic sites, and recorded built environment, which helps gauge the potential and likely nature of cultural resources present within the project vicinity (DAHP 2020a). Approximately 15 cultural resources surveys have been completed within the study area in association with: airport infrastructure improvements (Shantry 2010), proposed electrical and telecommunication facilities (Kassa 2016; Schumacher 2009), commercial and private developments (Blake 2017; Iversen and Hurst 2018; Osiensky and Iversen 2019; Stipe 2011), historic railroad alterations (Ozbun et al. 2005), Prairie Creek drainage improvements (Iversen 2014; Wilson et al. 2013), and road improvement projects (Boggs 2011; Chambers 2010; Goetz Stutzman 1995; Iversen and Steingraber 2016; Robinson 1999) (). Many of these projects were associated with improvements to properties that had been graded or paved in the past, which limited surface and subsurface investigations. Of those which were able to complete subsurface survey, two were performed in the Arlington Airport vicinity and one was completed in the northeast corner of the project, along Prairie Creek.

Exhibit 36. Satellite image of Arlington, WA annotated with study area boundaries (red) and locations of previously completed cultural resource surveys (white). 2018

Source: Google 2020

Both Kassa (2016) and Shantry (2010) completed subsurface testing near the Arlington Airport, observing disturbed and intact glacial sediments. Kassa (2016:11-12) tested property in the southeast quarter of Section 22, Township 31 North, Range 05 East, using shovel tests to depths of 110 centimeters. Test units revealed an initial sediment layer, likely disturbed from agricultural developments, above disturbed to intact glacial outwash deposits. Shantry (2010:18) completed dozens of shovel and auger tests in preparation for a new road on the southwest edge of the airport property. Test probes were excavated to a depth of 100 to 259 centimeters revealing sands of increasing coarseness with depth, which were identified as recessional glacial outwash deposits. Disturbance was observed in association with a logging railroad grade which crossed the project location.

Wilson et al. (2013) surveyed a culvert replacement and drainage improvements project associated with Prairie Creek at the northeast corner of the project location. While some areas were impassable with hand tools, one shovel and auger probe was completed to depths of over 2.5 meters (8 feet). Observed sediments were described as fill materials above alluvial fine sandy loam and silty fine sands above glacial outwash (Wilson et al. 2013:21-22).

DAHP also has record of three archaeological sites, historic register-listed property, one cemetery, and approximately 67 historic inventory properties within the study area. Each is addressed below.

Three archaeological sites have been identified within the project location: 45SN26, 45SN709, 45SN720. One additional site, 45SN486, was identified within one mile of the project boundary. 45SN26, previously known as the Myrick-Anderson site, is located between the Burlington Northern Railroad and 67th Avenue NE. It was identified as a precontact lithic scatter approximately 500 yards (N-S) by 100 yards (E-W) through a local informant who had collected materials from the site, which included choppers, scrapers, large bipoints and fragments, and one "McNary serrated point" (Myrick and Kidd 1961). The recorder notes that the site was historically in close proximity to a creek (Myrick and Kidd 1961). It was recorded as a surface scatter and no subsurface testing was conducted. While the recorder indicated a belief the site was mainly a surface deposit, additional testing was recommended for the east side of 67th Avenue adjacent to the site (Myrick and Kidd 1961). A site visit was conducted in 1991 but the surface was obscured by grading and/or fill materials (75 percent of the site) or thick grasses (Obermayr 1991). No determination has been made for this site concerning its eligibility for listing on historic registers.

Site 45SN709 is identified as an historic residential structure with an historic modified tree component. Located 57 m (187 ft) east of the Bill Quake Memorial Park, the site is composed of the gravelly concrete foundational remains of a 1934 residence as well as associated outbuildings and historic debris. The historic modified tree consists of an immature tree growing from a stump with a 6 to 8 inch metal gear near the top of the trunk and two wooden boards nailed to the base (Osiensky 2019). The home was vacated in 1970 and the buildings were

removed in the mid-1980s. No determination has been made for this site concerning its eligibility for listing on historic registers.

Site 45SN720 was recorded as an historic isolate located west of the Burlington Northern Railroad tracks and south of 180th St NE. The recorder further defined the site as the foundational remains and associated deposited materials of a razed historic era building. Associated historic materials included amethyst glass, molded ceramics, nails, and the remains of an emerald green bottle glass container. The recorder dated the structure to the 1940s to 50s with the associated debris extending the dates to the 1930s to 50s (Macrae 2019). The site was subsequently determined not eligible for the National Register of Historic Places (NRHP).

One precontact isolate, a basalt thumbnail scraper, was recorded as site 45SN486, approximately .76 km (.47 miles) east of the northeast quarter of the project. The scraper was observed in the upper 20 centimeters of a shovel probe excavated during a cultural resources survey for a proposed PSE transmission line. The initial stratigraphy indicated a thin layer of imported gravels above native sediments. Geographically, the site is within 300 m (986 ft) of Portage Creek (Carrilho 2009; Piper and Smith 2009). This is similar to other known sites in the area, which tend to be focused in close proximity to precontact and historic waterways such as Portage Creek, Quilceda Creek, and the South Fork of the Stillaguamish River (DAHP 2020a).

Only one register-listed property is recorded within the study area. The Naval Auxiliary Air Station, Arlington, also known as the Arlington Municipal Airport, was recommended eligible for the NRHP in 2011 under Criterion A: Property is associated with historically significant events, and Criterion C: Property embodies the characteristics of a type, a period or the work of a master. While construction and use of a landing strip on the property began in 1934, mainly funded by public programs such as the Civil Works Administration and the Washington Emergency Relief Agency, it was the Airport's association with the U.S. Navy during World War II that was chief in the recommendation for listing on the NRHP. The navy officially took over the use and maintenance of the Airport property in 1940, condemning and expanding into the property to the south in the following years. A new cross-runway and additional structures such as offices, barracks, a dispensary, and other support facilities were constructed over the course of the next few years. To make room, the navy sold off many of the original frame structures and barns left on the property after the expansion. Purchased structures were then removed from the property. The navy moved the airport to caretaker status at the end of the war before deactivating it the following year and ultimately sold the property to the City of Arlington in 1959 (Boswell and Heideman 2011).

The Arlington Municipal Cemetery is located at 20310 67th Avenue NE, west of the northeast corner of the study area. Plotted in 1903 as the Harwood Cemetery, the original cemetery property was approximately 10 acres in the extreme northeast corner of Section 15 of Township 31 North, Range 05 East. County atlases indicate the property was expanded to approximately 30 acres between 1952 and 1975 (Snohomish County 2020). The property was run privately by a

non-profit organization until 1999 when the City of Arlington took ownership. As of 2009, approximately 2 acres are still undeveloped. At one point the graves from the Old Pioneer Cemetery were moved to Lot 4 of this cemetery (DAHP 2020c).

A review of DAHP (2020a) records indicates 67 properties within the project location have been added to the Historic Property Inventory (HPI). Of these, seven have been determined eligible, four have not had a determination made, and ten have been determined not eligible for listing on historic registers (Exhibit 3.2-9). The eligibility, age, and general information was restricted for one HPI. At least three structures were inventoried twice. Three of the structures are related to the early establishment of communities in Arlington and the Edgecomb, area to the south, dating from 1909 to 1924. A single barn from circa 1940 was inventoried within the project location. The remaining 18 structures date to the early 1940s and are related to the U.S. Navy's development and use of the Naval Auxiliary Air Station.

Exhibit 37. Historic structures previously inventoried and field verified within the study area.

Structure Name	DAHP Property No.	Address	Built Date(s)	Historic Use	Historic Register Status
Ekroth Barn	706273	17821 59th Ave NE	1940	Agricultural / Subsistence - Farmstead	Determined Eligible
Bore Sighting Range	48242	Arlington Municipal Airport	1944	Defense - Air Facility	Determined Eligible
Runway/Taxi	48241	Arlington Municipal Airport	1942	Defense - Air Facility	Determined Eligible
Warm-up Apron	48240	Arlington Municipal Airport	1942	Defense - Air Facility	Determined Eligible
Class C Overhaul Building	48239	Arlington Municipal Airport	1945	Defense - Air Facility	Determined Eligible
Hangar	48237	Arlington Municipal Airport	1944	Defense - Air Facility	Determined Eligible
Fire Station	48233	Arlington Municipal Airport	1944	Defense - Air Facility	Determined Eligible
Kraetz Stump House/ Stillaguamish Pioneer Park Stump House *	114196 & 18589	20722 67th Ave	1909	Domestic- Single Family House	Determined Not Eligible

Structure Name	DAHP Property No.	Address	Built Date(s)	Historic Use	Historic Register Status
Armory and Instrument Building	48238	Arlington Municipal Airport	1945	Defense - Air Facility	Determined Not Eligible
Married Officers Quarters 43	48235	Arlington Municipal Airport	1945	Domestic-Single Family House	Determined Not Eligible
Married Officers Quarters 45	48236	Arlington Municipal Airport	1945	Domestic-Single Family House	Determined Not Eligible
Married Officers Quarters 46	48234	Arlington Municipal Airport	1945	Domestic-Single Family House	Determined Not Eligible
Paint Storage Building	48232	Arlington Municipal Airport	1945	Government-Public Works	Determined Not Eligible
Lumber Storage Building	48231	Arlington Municipal Airport	1945	Government-Public Works	Determined Not Eligible
Repair Shop	48230	Arlington Municipal Airport	1945	Government-Public Works	Determined Not Eligible
Public Works Building*	48245 & 48229	Arlington Municipal Airport	1945	Government-Public Works	Determined Not Eligible
--		Arlington Municipal Airport	--	--	Information Restricted
Naval Auxiliary Air Station	50930	18204 59th Dr NE	1943	Defense - Air Facility	Not Determined
Small Arms Range*	48259 & 48243	Arlington Municipal Airport	1944	Defense - Air Facility	Not Determined
Stillaguamish Pioneer Hall	18587	20722 Armar Rd	1924	Social – Community Hall	Not Determined
Farrell's General Merchandise	**18584**	**6631 172nd St NE**	**c. 1910**	**Commerce/Trade**	**Not Determined**

*- denotes property added to the inventory twice. DAHP 2020b

Forty-three properties were added to the HPI as part of DAHP's 2011 HPI Upload Project, which involved the addition of available information from the County Assessor's building records to WISAARD (Exhibit 3.2-10; ACI et al. 2011). None of the uploaded data was field verified at the time, nor were eligibility assessments conducted. Thirteen of the structures are related to

commerce and industry and were built between 1924 and 1969. One structure, built in 1960, relates to air traffic activities. The remaining structures are listed as houses constructed between 1915 and 1969.

Exhibit 38.Historic structures added to the inventory as part of the 2011 HPI Upload Project

Address	DAHP Property No.	Built Date(s)	Historic Use
19819 67th Ave NE	269318	1953	Commerce/Trade - Warehouse
5530 Cemetery Rd	269305	1953	Commerce/Trade - Warehouse
17825 59th Ave NE	269290	1969	Industry/Processing/Extraction - Manufacturing Facility
19117 63rd Ave NE	269268	1968	Industry/Processing/Extraction - Manufacturing Facility
16900 51st Ave NE, Marysville	269246	1968	Industry/Processing/Extraction - Manufacturing Facility
6520 188th St NE	269227	1964	Commerce/Trade - Professional
Near 172nd St NE and 67th Ave NE, Snohomish County	269220	1964	Industry/Processing/Extraction
At 192nd St NE and 61st Ave NE, Snohomish County	269219	1965	Commerce/Trade - Warehouse
Within the Arlington Municipal Airport complex	269218	1960	Transportation - Air-Related
Within the Arlington Municipal Airport complex	269217	1943	Industry/Processing/Extraction
20714 Armar Rd	269214	1924	Industry/Processing/Extraction
18130 67th Ave NE	269205	1969	Industry/Processing/Extraction
20015 67th Ave NE	269199	1968	Industry/Processing/Extraction
19604 67th Ave NE	269194	1961	--
6320 188th Ave NE	269029	1939	Domestic- Single Family House
19603 67th Ave N	266198	1966	Domestic- Single Family House

Address	DAHP Property No.	Built Date(s)	Historic Use
3719 188th St NE	266193	1969	Domestic- Single Family House
Cemetery Rd	260812	1963	Domestic- Single Family House
20020 67th Ave NE	229452	1955	Domestic- Multiple Family House
18926 66th Ave NE,	229448	1942	Domestic- Single Family House
16612 51st Ave NE	229440	1959	Domestic- Single Family House
6404 188th Ave NE	229435	1942	Domestic- Single Family House
6119 172nd St NE	229433	1952	Domestic- Single Family House
5822 Cemetery Rd	229385	1943	Domestic- Single Family House
18026 67th Ave NE	229375	1958	Domestic- Single Family House
5120 170th Pl NE	229358	1968	Domestic- Single Family House
16928 51st Ave NE	229352	1969	Domestic- Single Family House
17000 52nd Ave NE	229309	1968	Domestic- Single Family House
3729 188th St NE	229137	1959	Domestic- Single Family House
3733 188th St NE	229131	1930	Domestic- Single Family House
16512 51st Ave NE, Marysville	229080	1939	Domestic- Single Family House
3725 188th St NE	229076	1934	Domestic- Single Family House
16408 51st Ave NE, Marysville	228909	1945	Domestic- Single Family House
20104 67th Ave NE	228879	1960	Domestic- Single Family House
3505 188th Ave NE	228857	1926	Domestic- Single Family House

Address	DAHP Property No.	Built Date(s)	Historic Use
67th Ave NE	221787	1949	Domestic- Single Family House
6803 188th St NE	218629	1955	Domestic- Single Family House
16422 51st Ave NE	218599	1920	Domestic- Single Family House
18118 67th Ave NE	215726	1915	Domestic- Single Family House
18110 67th Ave NE	214102	1930	Domestic- Single Family House
5802 Cemetery Rd	213846	1955	Domestic- Single Family House
17700 67th Ave NE	211133	1934	Domestic- Single Family House
20224 67th Ave NE	**211130**	**1959**	**Domestic- Single Family House**

Note: Structures were not field verified at the time of the upload and therefore have not had a determination made concerning listing on historic registers. Addresses are in Arlington unless otherwise noted. Sources: ACI et al. 2011; DAHP 2020b

Snohomish County Register of Historic Places

The Snohomish County Register of Historic Places does not list any landmarks or registered properties within one mile of the project, or within the city limits of Arlington (Snohomish County Historic Preservation Commission 2020).

Archaeological Predictive Models

DAHP Predictive Model

The DAHP statewide predictive model uses environmental data about the locations of known archaeological sites to identify where previously unknown sites are more likely to be found. The model correlates locations of known archaeological data to environmental data "to determine the probability that, under a particular set of environmental conditions, another location would be expected to contain an archaeological site" (Kauhi and Markert 2009:2-3). Environmental data categories included in the model are elevation, slope, aspect, distance to water, geology, soils, and landforms. According to the model, portions of the project are ranked as "Survey Highly Advised: Very High Risk," "Survey Highly Advised: High Risk," and "Survey Recommended: Moderate Risk." As mapped, risk of encountering archaeological sites is greatest in areas with

access to fresh water and wetland resources such as along Portage Creek and the marshland at the head of Quilceda Creek, and in the land between 188th St NE and 18th St NE. Areas of moderate risk include land along 172nd St NE, Airport Blvd, and in the vicinity of the Burlington Northern Railroad between the Arlington Municipal Cemetery and Arlington Valley Road, and at the extreme northern tip of the project. The remaining land is considered "High Risk" for archaeological materials or deposits.

Potential for Previously Unrecorded Cultural Resources

This assessment considers the implications of the predictive model coupled with an understanding of geomorphological context, local settlement patterns, and post-depositional processes to characterize the potential for archaeological deposits to be encountered. Mapped soils in the project location are derived from Pleistocene era glacial sediments with localized alluvial deposits. Due to the paucity of deposition during the Holocene, archaeological material and deposits would be identified at or near surface of native soils. Historic era logging and clearing, agricultural activities, and road and airport development likely disturbed most near surface materials, limiting the likelihood of preserved archaeological deposits.

Ethnographic and historic sources indicate the sustained use of natural open areas, such as Kent's Prairie, and active waterways such as Portage and Quilceda Creeks. Additionally, historic maps indicate a preponderance of structures, railroads, and roads to be placed along section and quarter section lines. Historic records showed a transitioning land use which included the active salvaging and/or removal of structures from within the Arlington Municipal Airport. Archaeological sites and materials have been identified within the study area and in the project vicinity, supporting the long history of human presence on the landscape. This history, supported by predictive models, suggests most archaeological resources will be localized to the east side of the project and along section and quarter-section lines within the project.

Manifestations of the precontact and ethnohistoric record that may be present within the project locations could include evidence of activities such as procurement and processing of plant, animal, and/or mineral resources, overland travel, or temporary camps, as well as ceremonial or religious activities that may be represented by an array of deposits or materials such as fire-modified rock, lithic or bone tools or implements, basketry, or lithic waste flake scatters that likely resulted from human activity around the periphery of more permanent settlements in the vicinity. Historic-period archaeological materials may be associated with historic-era logging, domestic activities, recreational activities, domestic, agricultural, and commercial structures or structural remains, and/or transportation development and could consist of a variety of materials, including railroad grades or materials, foundation remains, outbuilding deposits, lost or discarded tools or debris, domestic debris, remains of domesticated animals, and/or sanitary cans or other food waste materials.

Field Methodology and Investigations

Date(s) of Survey

June 1st through June 8th, 2020

Field Personnel

CRC archaeologist Jessica Gardner conducted field investigations. Notes are on file at CRC.

Weather and Surface Visibility

Weather conditions were partly cloudy to sunny. Surface visibility of mineral soils within the areas surveyed was generally poor at 0 to 10% visible due to vegetation.

Area Surveyed

The pedestrian survey and subsurface testing covered approximately 159 acres of the 2,285-acre study area (7 percent).

Locations of Limited Pedestrian Survey and Subsurface Testing

Portions of Snohomish County parcels 31052100400100, 31052100400106, 31052200300100, 31052100202000, 31051600400900, 31051500300100, as well as all of Parcels 31051500202400 and 31051400304200, were surveyed for this investigation. Surveyed landscapes were chosen based on access and degree of prior disturbance. Only parcels owned by the city were surveyed. The survey also avoided landscapes which were obviously disturbed or impenetrable to hand tools (e.g., paved surfaces) to maintain focus on areas with the greatest probability for intact deposits.

Field Methodology

Field methodology consisted of limited surface survey and subsurface testing via hand excavated shovel test probes (STPs) in select locations within the study area. Locations within the proposed planned action area were chosen for testing that had a higher probability for archaeological resources, that if present, would be physically impacted by development. The probes were 30 to 40 centimeters in diameter, were manually excavated with a shovel, and all sediments were passed through ¼-inch hardware mesh to screen for artifacts. Target depth for shovel probes was 100 cm depending on depth to intact, unweathered glacial sediments that are understood to be culturally-sterile.

Results

Pedestrian survey and shovel probes were conducted on eight parcels (Exhibit 3.2-11). Of the eight parcels surveyed, three are maintained as grasslands, four are maintained as woodlands, and one is actively being covered in several feet of fill debris. Surface visibility was poor for each

parcel with vegetation varying from thick grasses to a dense and varying understory including stinging nettle, salal, wild blackberry varieties, Oregon grape, and various ferns. Due to the thick vegetation, a surface survey was conducted opportunistically between shovel probes, focusing on exposed dirt.

Exhibit 39. Satellite image of study area annotated with shovel probe locations. 2018

Source: Google 2020

Parcel 31051500202400, located on the north edge of the project on Cemetery Road, is generally flat with the central area covered in gravel (Exhibit 40). The lot is used to store city sanitation supplies. A mound is located on the northeast corner with an approximate 24 ft by 60 ft pit in the center, likely left after the removal of a house (Exhibit 41). The mound is approached from the west by a gravel drive on the north edge. A single light pole was located to the north of the pit. The surface is predominantly covered in grasses, with minor soil exposures revealing a high quantity of gravels, indicating disturbed or imported deposits. Historic aerial images depicted a house in this location in 1954. The structure was removed after 2011 (NETR 2020).

Exhibit 40. Satellite image of Parcel 31051500202400 annotated with shovel probe and house demolition locations. 2018

Source: Google 2020

Exhibit 41. Overview of 24 ft by 60 ft irregular pit left in mound after removal of house in Parcel 31051500202400. Taken from northwest end of pit, view to the southeast

Source: CRC 2020.

Parcel 31051500300100 is located on Cemetery Road and includes part of the Arlington Municipal Airport grounds and the Airport trail system. The survey was located along the trail system and avoided portions maintained as an active airfield (Exhibit 42). A surface survey identified a steep slope leading down to the trail is likely made up of imported and compacted fill materials, based on the active fill zone at the central western edge of the parcel (Exhibit 43). The northwest corner is maintained as a fenced and locked deep quarry pond. Due to quarry work, imported fill materials, and trail maintenance, a majority of the parcel is of a disturbed context.

Exhibit 42. Satellite image of surveyed portion of Parcel 31051500300100 annotated with survey boundary, shovel probe location and disturbances

Google 2020

Exhibit 43. Overview of slope built with fill debris. Taken from the top of the south edge of the slope, view to the north

Source: CRC 2020.

Parcel 31051600400900 is located northwest of the Arlington Municipal Airport grounds and is a relatively flat grasslands surrounded by trees. The landscape has been altered through the installation of a series of imported gravel trails and asphalt roads providing access to the airport grounds to the south and east and a private facility to the north (Exhibit 44).

Exhibit 44. Satellite image of parcel 31051600400900 annotated with shovel probe locations. 2018

Google 2020

A parkland trail system runs through Parcels 31052100400100, 31052100400106, and 31052100202000, located on the southwest side of Airport Boulevard and the Arlington Municipal Airport (Exhibit 45). The land surface within the woodlands was very uneven with evidence of animal burrows, likely being rabbit warrens, and stump removal throughout. The woodlands within parcel 31052100202000, located on the western edge of the project location, have a relatively thick understory with several older cedar and pine trees. A petroleum pipeline runs through the parcel in a northwest to southeast orientation. The remaining woodland parcels in the southeast have a much shorter and less dense understory with predominantly young trees, indicating the woods were likely cleared from the parcels in the last twenty years.

Exhibit 45. Satellite image of surveyed portions of parcels 31052100400100, 31052100400106, and 31052100202000 annotated with shovel probe locations, Petroleum pipeline (yellow) and sewer lines (green). 2018

Google 2020

The inspected portion of parcel 31052200300100 is located on a flat grassy lot between the airport grounds and 172nd Street NE with evidence of buried sewer and power utilities (Exhibit 46).

Exhibit 46. Satellite image of surveyed portion of parcel 31052200300100 annotated with shovel probe locations. 2018

Google 2020

Parcel 31051400304200 is located along the south side of Arlington Valley Road and covers the side of a ridge rising above wetlands and glacial plains (Exhibit 47). It includes an intermittent creek channel which flows down the ridge toward Portage Creek to the north. The creek has steep banks with a road cut running parallel on the west side before veering to the north (Exhibit 48). A flood swale runs between the road and the creek north from the point where the road separates from the creek route. The swale shows evidence of landscape alterations including excavation and stabilization through imported quarry stones. The road cut is compacted with imported gravels and late twentieth-century debris, such as a car and a refrigerator shell which can be seen in the brush on the shoulders. Historic aerial images indicate the road was constructed between 1969 and 1980 and ceased to be maintained between 1990 and 2006 (NETR 2020). Additional disturbances to the parcel include small and large push piles throughout the lower elevations.

Exhibit 47. Satellite image of surveyed portion of parcel 3105140030420 annotated with shovel probe locations, approximate creek route (blue), road cut (brown), and drainage swale (purple). 2018

Google 2020

Exhibit 48. Overview of north end of road cut leading into parcel 31051400304200, view to the south-southwest

Source: CRC 2020.

Sixty-two potential probes were plotted in a pre-survey 90 m to 135 m grid based on estimated probability of intact cultural deposits. A total of 41 shovel probes was excavated (Exhibit 49). The potential probes not excavated were generally in locations of disturbance or in locations which further client communications indicated were within areas recently surveyed. Shovel probes ranged in depth from 33 to 101 centimeters below the surface. A typical soil profile generally matched mapped soil units for the area and can be described as a disturbed layer of topsoil (dark brown to black organic sandy loam) over disturbed or intact weathered glacial (brown to yellowish brown fine to medium grained sand), above unweathered glacial deposits (brown to pale yellow medium to coarse grained sand, 0 to 40 percent gravels)(Exhibit 50). Six of the 41 probes contained modern or temporally non-diagnostic cultural materials between 0 and 38 centimeters below the surface, with the majority between 0 and 15 centimeters below the surface. Materials located between 15 and 38 centimeters were associated with disturbed

subsoils. Items were generally non-diagnostic or modern plate or container glass shards. All shovel probes were backfilled after documentation. No archaeological materials or features were observed through subsurface investigations.

Exhibit 49. List of shovel probe locations and descriptions

Probe #	Probe Location (WGS84 Zone 10, UTM coordinates, +/- 3 meters)	Stratigraphic Description (depths are centimeters below surface [cmbs])	Cultural Materials Found
1	562868.00 m E 5336278.00 m N	0-9 – **Topsoil** – Very dark brown sandy loam with ~30% angular to rounded gravels. 9-38 – **Imported gravels in disturbed context** – Brown sandy silt to silty sand, 30-40% angular to rounded gravels, very firm. Terminated due to compacted gravels.	0-38 - red ceramic/brick fragments
2	562867.00 m E 5336193.00 m N	0-12 – **Topsoil** – Dark brown fine grained sand, 10-20% small gravels, subangular to rounded, slightly firm, moist, rootlets to 3 cm. 12-25 – **Disturbed Weathered Glacial** – Brown fine to medium grained sandy silt/silty sand, 20 to 30% gravels, subangular to rounded, slightly firm, moist, decomposing wood/root debris. 25-45 – **Weathered Glacial** – Dark yellowish brown fine to medium grained sand with traces of silt, soft, 5 to 10 % gravels, subangular to rounded. 45-70 – **Weathered Glacial** – Yellowish brown fine to medium grained sand with trace silts, soft, 5-10% gravels, subangular to rounded. 70-95 – **Glacial** – Multilithic light yellowish brown to dark brown medium to coarse grained sand, ~40% gravels, subangular to rounded. 95-100 – **Glacial** – Light yellowish brown medium to coarse grained sand with ~40% small to medium gravels, subangular to rounded, soft.	0-20 - 1 piece thin plastic

Probe #	Probe Location (WGS84 Zone 10, UTM coordinates, +/- 3 meters)	Stratigraphic Description (depths are centimeters below surface [cmbs])	Cultural Materials Found
3	562765.00 m E 5336279.00 m N	0-12 – **Topsoil** – Dark brown fine grained sand 12-33 – **Weathered Glacial** – Brown fine to medium grained sandy silt/silty sand 33-47 – **Weathered Glacial** – Yellowish brown fine to medium grained sand with trace silts, soft 47-72 – **Glacial** – Light yellowish brown medium to coarse grained sand with ~40% small to medium gravels, subangular to rounded, firm Terminated in glacial.	None
4	562773.00 m E 5336205.00 m N	0-60 – **Disturbed Topsoil and subsoils** – Dark brown fine to coarse grained with some silt, ~50% subangular to rounded gravels and cobbles, very firm. Terminated due to compaction. Evidence of push piles to west.	0-3 cm - 4 small shards pane glass, 1 small shard backed glass, modern/non-diagnostic
5	562425.00 m E 5335921.00 m N	Skipped due to disturbance – quarry pond	N/A
6	562434.00 m E 5335790.00 m N	Skipped due to disturbance – airport fill zone	N/A
7	562405.27 m E 5335694.87 m N	0-10 – **Topsoil** – Dark brown fine grained sand, roots. 10-45 – **Weathered Glacial** – Brown fine to medium grained sandy silt/silty sand, roots. Terminated due to excessive roots.	None
8	562115.00 m E 5335606.00 m N	0-33 – **Topsoil** – Dark brown sandy loam with 30% angular to rounded gravels and cobbles. 33 – **Imported materials** – Dark gray medium to coarse grained sand and gravels, very hard. Terminated due to hard compaction.	None

Probe #	Probe Location (WGS84 Zone 10, UTM coordinates, +/- 3 meters)	Stratigraphic Description (depths are centimeters below surface [cmbs])	Cultural Materials Found
9	561988.00 m E 5335543.00 m N	0-48 – **Disturbed Weathered Glacial** – Dark yellowish brown silty sand 30-40% gravels. 48-90 – **Weathered Glacial** – Dark yellowish brown fine to medium grained sand with traces of silt, soft 90-100 – **Weathered Glacial** – yellowish brown fine to medium grained sand with trace silts, soft	None
10	562120.00 m E 5335471.00 m N	0-26 – **Topsoil** – Dark brown fine grained sand 26-38 – **Imported materials** – Dark gray medium to coarse grained sand and gravels, hard. 38-39 – **Weathered Glacial** – Brown fine to medium grained sandy silt/silty sand 39-59 – **Weathered Glacial** – Yellowish brown fine to medium grained sand with trace silts, soft 59-70 – **Glacial** – Light yellowish brown medium to coarse grained sand with ~40% small to medium gravels, subangular to rounded, hard/dense. Terminated due to dense/compacted gravels.	None
11	561982.00 m E 5335405.00 m N	0-3 – **Topsoil** – Dark brown fine grained sand, disturbed. 3-15 – **Disturbed Weathered Glacial** – Brown fine to medium grained sandy silt/silty sand. 15-20 – **Disturbed Weathered Glacial** – Brown fine to medium grained sandy silt/silty sand. 20-37 – **Disturbed Weathered Glacial** – Mix of brown fine to medium grained sandy silt/silty sand and light yellowish brown medium to coarse grained sand with ~40% small to medium gravels, subangular to rounded, soft. 37-75 –**Glacial** – Light yellowish brown medium to coarse grained sand with ~40% small to medium gravels, subangular to rounded, soft. Terminated in intact glacial.	0-15 - 1 small plate glass shard (modern). 15-Landscaping plastic sheeting. 15-30 - 1 small plated glass shard, thick.
12	562122.00 m E 5335335.00 m N	Skipped due to disturbance – existing structure	N/A

Probe #	Probe Location (WGS84 Zone 10, UTM coordinates, +/- 3 meters)	Stratigraphic Description (depths are centimeters below surface [cmbs])	Cultural Materials Found
13	561990.00 m E 5335267.00 m N	0-3 – **Imported gravels** – Dark brown loamy sand with ~50% chipped gravels and ~10% rootlets. Terminated in compacted chipped gravels and fines. Placed as shovel scrape to establish extent of disturbance/road bed.	None
14	561020.00 m E 5334823.00 m N	Skipped due to disturbance – sewer line, and proximity to previous study	N/A
15	561020.00 m E 5334684.00 m N	0-10 – **Topsoil** – Dark brown fine grained sand 10-30 – **Weathered Glacial** – Brown fine to medium grained sandy silt/silty sand 30-70 – **Weathered Glacial** – Dark yellowish brown fine to medium grained sand with traces of silt, soft 70-100 – **Weathered Glacial** – Yellowish brown fine to medium grained sand with trace silts, soft	None
16	561022.00 m E 5334546.00 m N	0-3 – **Topsoil** – Dark brown fine grained sand 3-30 – **Weathered Glacial** – Brown fine to medium grained sandy silt/silty sand 30-50 – **Weathered Glacial** – Dark yellowish brown fine to medium grained sand with traces of silt, soft 50-100 – **Weathered Glacial** – Yellowish brown fine to medium grained sand with trace silts, soft	None

Probe #	Probe Location (WGS84 Zone 10, UTM coordinates, +/- 3 meters)	Stratigraphic Description (depths are centimeters below surface [cmbs])	Cultural Materials Found
17	561023.00 m E 5334410.00 m N	0-10 – **Topsoil** – Dark brown fine grained sand, humic. 10-35 – **Weathered Glacial** – Brown fine to medium grained silty sand, roots throughout. 35-55 – **Weathered Glacial** – Dark yellowish brown fine to medium grained sand with traces of silt, soft 55-65 – **Weathered Glacial** – Yellowish brown fine to medium grained sand with trace silts, soft 65-78 – **Weathered Glacial** – Dark yellowish brown fine to medium grained sand with traces of silt, soft Terminated due to roots and narrowing caused by roots.	None
18	561158.00 m E 5334751.00 m N	Skipped due to proximity to previous study	N/A
19	561156.00 m E 5334620.00 m N	Skipped due to homeless camp	N/A
20	561160.00 m E 5334481.00 m N	Skipped due to disturbance – propane pipeline	N/A
21	561293.00 m E 5334415.00 m N	0-9 – **Topsoil** – Dark brown fine grained sand 9-23 – **Weathered Glacial** – Brown fine to medium grained sandy silt/silty sand 23-55 – **Weathered Glacial** – Dark yellowish brown fine to medium grained sand with traces of silt, soft 55-100 – **Weathered Glacial** – Yellowish brown fine to medium grained sand with trace silts, soft	None

Probe #	Probe Location (WGS84 Zone 10, UTM coordinates, +/- 3 meters)	Stratigraphic Description (depths are centimeters below surface [cmbs])	Cultural Materials Found
22	561293.00 m E 5334548.00 m N	0-10 – **Topsoil** – Dark brown fine grained sand, roots. 10-27 – **Weathered Glacial** – Brown fine to medium grained sandy silt/silty sand, roots. 27-60 – **Weathered Glacial** – Dark yellowish brown fine to medium grained sand with traces of silt, soft, roots. 60-90 – **Weathered Glacial** – Yellowish brown fine to medium grained sand with trace silts, soft Terminated due to narrowing caused by roots.	None
23	561427.00 m E 5334473.00 m N	0-16 – **Topsoil** –Dark brown fine grained sand, slightly firm to firm. 16-31 – **Weathered Glacial** – Brown fine to medium grained sandy silt/silty sand, slightly firm to firm. 31-60 – **Weathered Glacial** – Dark yellowish brown fine to medium grained sand with traces of silt, slightly firm to firm. 60-87 – **Weathered Glacial** – Yellowish brown fine to medium grained sand with trace silts, soft, slightly firm to firm. 87-100 – **Glacial** – Multi-lithic light yellowish brown to dark brown medium to coarse grained sand, ~40% gravels, subangular to rounded, no rootlets	None
24	561606.00 m E 5334316.00 m N	0-15 – **Topsoil** – Dark brown fine grained sand, 20-30% roots. 15-50 – **Weathered Glacial** – Brown fine to medium grained sandy silt/silty sand, 20-30% roots. 50-75 – **Weathered Glacial** – Dark yellowish brown fine to medium grained sand with traces of silt, soft, 20-30% roots. 75-90 – **Weathered Glacial** – Yellowish brown fine to medium grained sand with trace silts, soft Terminated due to narrowing caused by roots.	None

Probe #	Probe Location (WGS84 Zone 10, UTM coordinates, +/- 3 meters)	Stratigraphic Description (depths are centimeters below surface [cmbs])	Cultural Materials Found
25	561664.00 m E 5334228.00 m N	0-15 – **Topsoil** –Dark brown fine grained sand 15-56 – **Weathered Glacial** – Brown fine to medium grained sandy silt/silty sand 56-79 – **Weathered Glacial** – Dark yellowish brown fine to medium grained sand with traces of silt, soft 79-100 – **Weathered Glacial** – Yellowish brown fine to medium grained sand with trace silts, soft	None
26	561603.00 m E 5334138.00 m N	0-22 – **Topsoil** – Dark brown fine grained sand 22-40 – **Weathered Glacial** – Brown fine to medium grained sandy silt/silty sand 40-70 – **Weathered Glacial** – Dark yellowish brown fine to medium grained sand with traces of silt, soft 70-95 – **Weathered Glacial** – Yellowish brown fine to medium grained sand with trace silts, soft 95-100 – **Glacial** – Multilithic light yellowish brown to dark brown medium to coarse grained sand, ~40% gravels, subangular to rounded, no rootlets.	None
27	561668.00 m E 5334046.00 m N	0-15 – **Topsoil** – Dark brown fine grained sand, 30-40% roots. 15-35 – **Weathered Glacial** – brown fine to medium grained sandy silt/silty sand, 30-40% roots. 35-44 – **Weathered Glacial** – Dark yellowish brown fine to medium grained sand with traces of silt, soft, 30-40% roots. Terminated due to roots.	0-15 - 3 clear glass container shared, non-diagnostic.

Probe #	Probe Location (WGS84 Zone 10, UTM coordinates, +/- 3 meters)	Stratigraphic Description (depths are centimeters below surface [cmbs])	Cultural Materials Found
28	561609.00 m E 5333957.00 m N	0-13 – **Topsoil** – Dark brown fine grained sand 13-43 – **Weathered Glacial** – Brown fine to medium grained sandy silt/silty sand 43-67 – **Weathered Glacial** – Dark yellowish brown fine to medium grained sand with traces of silt, soft 67-95 – **Weathered Glacial** – Yellowish brown fine to medium grained sand with trace silts, soft 95-100 – **Glacial** – Multilithic light yellowish brown to dark brown medium to coarse grained sand, ~40% gravels, subangular to rounded, no rootlets.	None
29	561675.00 m E 5333864.00 m N	0-10 – **Topsoil** – Dark brown fine grained sand 10-40 – **Weathered Glacial** – Brown fine to medium grained sandy silt/silty sand 40-53 – **Weathered Glacial** – Dark yellowish brown fine to medium grained sand with traces of silt, soft 53-94 – **Weathered Glacial** – Yellowish brown fine to medium grained sand with trace silts, soft 94-100 – **Glacial** – Multilithic light yellowish brown to dark brown medium to coarse grained sand, ~40% gravels, subangular to rounded, no rootlets.	None
30	561611.00 m E 5333774.00 m N	Skipped due to disturbance – proximity to water line	N/A
31	561749.00 m E 5333769.00 m N	Skipped due to disturbance – proximity to water line	N/A
32	561816.00 m E 5333905.00 m N	0-16 – **Topsoil** – Dark brown loamy sand with organics 16-64 – **Weathered Glacial** – Dark yellowish brown coarse grained sand with ~20% rounded to subangular gravels, lenses of medium to coarse grained sand with trace silts, possibly from bioturbation. 64-100 – **Glacial** – Multi-lithic brown (range of 8/1-3/1) coarse grained sand with ~30% gravels and cobbles	None

Probe #	Probe Location (WGS84 Zone 10, UTM coordinates, +/- 3 meters)	Stratigraphic Description (depths are centimeters below surface [cmbs])	Cultural Materials Found
33	561747.00 m E 5334039.00 m N	0-15 – **Topsoil** – Dark brown loamy sand with organics 15-87 **– Weathered Glacial –** Dark yellowish brown coarse grained sand with ~20% rounded to subangular gravels 87-100 – **Glacial** – Multi-lithic brown (range of 8/1-3/1) coarse grained sand with ~30% gravels and cobbles	None
34	561822.00 m E 5334182.00 m N	0-10 – **Topsoil** – Dark brown fine grained sand, 10-13 – **Lens of ash**, south side. 10-47 – **Weathered Glacial** – Brown fine to medium grained sandy silt/silty sand 47-87 – **Weathered Glacial** – Dark yellowish brown fine to medium grained sand with traces of silt, soft 87-100 – **Weathered Glacial** – Yellowish brown fine to medium grained sand with trace silts, soft	None
35	561910.00 m E 5334183.00 m N	0-13 – **Topsoil** – Dark brown fine grained sand, ~5% gravels. 13-28 – **Weathered Glacial** – Brown fine to medium grained sandy silt/silty sand, ~5% gravels. 28-47 – **Weathered Glacial** – Dark yellowish brown fine to medium grained sand with traces of silt, soft, 5% gravels. 47-100 – **Weathered Glacial** – Yellowish brown fine to medium grained sand with trace silts, soft, 5% gravels	None
36	561971.00 m E 5334091.00 m N	0-10 – **Topsoil** – Dark brown loamy sand with organics 10-25 – **Weathered Glacial** – Dark yellowish brown medium to coarse grained sand with some silt. 25-57 – **Weathered Glacial** – Dark yellowish brown coarse grained sand with ~20% rounded to subangular gravels 57-80 – **Glacial** – Multi-lithic brown (range of 8/1-3/1) coarse grained sand with ~30% gravels and cobbles	None

Probe #	Probe Location (WGS84 Zone 10, UTM coordinates, +/- 3 meters)	Stratigraphic Description (depths are centimeters below surface [cmbs])	Cultural Materials Found
37	561908.00 m E 5334002.00 m N	0-14 – **Topsoil** – Dark brown loamy sand with organics 14-35 – **Weathered Glacial** – Dark yellowish brown medium to coarse grained sand, 0-5% gravels, gradual boundary. 35-80 – **Weathered Glacial** – Yellowish brown medium to coarse grained sand, 0-5% gravels, gradual boundary. 80-95 – **Weathered Glacial** – Brown medium to coarse grained sand, multi lithic, gradual boundary. 95-100 – **Weathered Glacial** – Brown medium to coarse grained sand, multi-lithic, ~10% gravels	None
38	561974.00 m E 5333910.00 m N	0-5 – **Topsoil** – Dark brown loamy sand with organics 5-13 **– Disturbed Weathered Glacial -** dark yellowish brown medium to coarse grained sand with ~5% rounded to subangular gravels 13-18 – **Relict Topsoil –** Black organicy medium to coarse grained sand with some rootlets. 18-43 – **Weathered glacial –** Dark yellowish brown medium to coarse grained sand with ~5% rounded to subangular gravels. 43-80 – **Weathered Glacial** – Yellowish brown medium to coarse grained sand. 80-100 – **Glacial –** Multi-lithic brown (range of 8/1-3/1) coarse grained sand with ~10% gravels and cobbles.	None
39	561913.00 m E 5333820.00 m N	0-20 – **Topsoil** – Dark brown sandy loam with rootlets to 10 cm. Abrupt boundary. 20-90 **- Disturbed Weathered Glacial** – Dark yellowish brown coarse grained sand with ~20% rounded to subangular gravels with lenses of dark yellowish brown medium grained sand with some silt. 90-101 – **Potentially Intact Glacial** – Multi-lithic brown (range of 8/1-3/1) coarse grained sand with ~30% gravels and cobbles	None
40	561976.00 m E 5333733.00 m N	Skipped due to disturbance location in roadway/pathway and within previous survey	N/A
41	562108.00 m E 5333741.00 m N	Skipped, unit is within area of previous study	N/A

Probe #	Probe Location (WGS84 Zone 10, UTM coordinates, +/- 3 meters)	Stratigraphic Description (depths are centimeters below surface [cmbs])	Cultural Materials Found
42	562102.00 m E 5333866.00 m N	0-8– **Topsoil** – Dark brown loamy sand with organics, some rootlets. 8-18 – **Disturbed Weathered Glacial** – Dark yellowish brown coarse grained sand with ~5% gravels. 18-20 – **Relict Topsoil** – Black organicy medium to coarse grained sand with some rootlets. 20-67 – **Weathered Glacial** – Dark yellowish brown coarse grained sand with ~5% gravels. 67-101 – **Glacial** – Multi-lithic brown (range of 8/1-3/1) coarse grained sand with ~5% gravels.	None
43	562104.00 m E 5333999.00 m N	0-19 – **Topsoil** – Dark brown loamy sand with organics 19-52 – **Weathered Glacial** – Dark yellowish brown coarse grained sand with ~20% rounded to subangular gravels 57-75 – **Glacial** – Multi-lithic brown (range of 8/1-3/1) coarse grained sand with ~30% gravels and cobbles	None
44	562235.00 m E 5333926.00 m N	0-10 – **Topsoil** – Dark brown loamy sand with organics, ~5% gravels and ~30% roots. 10-66 – **Weathered Glacial** – Dark yellowish brown coarse grained sand with ~20% rounded to subangular gravels. 66-95 – **Glacial** – Multi-lithic brown (range of 10 YR 8/1-3/1) coarse grained sand with ~30% gravels and cobbles. Terminated in intact glacial.	None
45	N/A	Number not used	N/A
46	562239.00 m E 5333792.00 m N	Skipped, unit is within area of previous study	N/A
47	561654.00 m E 5333684.00 m N	Skipped, unit is within area of previous study	N/A
48	561603.00 m E 5333595.00 m N	Skipped, unit is within area of previous study	N/A

Probe #	Probe Location (WGS84 Zone 10, UTM coordinates, +/- 3 meters)	Stratigraphic Description (depths are centimeters below surface [cmbs])	Cultural Materials Found
49	561980.00 m E 5333644.00 m N	Skipped, unit is within area of previous study	N/A
50	562072.00 m E 5333589.00 m N	Skipped, unit is within area of previous study	N/A
51	562157.00 m E 5333645.00 m N	Skipped, unit is within area of previous study	N/A
52	562252.00 m E 5333591.00 m N	Skipped, unit is within area of previous study	N/A
53	562336.00 m E 5333647.00 m N	Skipped due to disturbance – proximity to pathways and within previous survey	N/A
54	562436.00 m E 5333588.00 m N	0-15 – **Topsoil** – Dark grayish brown loam, 15-23 – **Disturbed Weathered Glacial** – Brown fine to medium grained sandy silt/silty sand 23-35 – **Disturbed Topsoil** – Dark grayish brown loam. 36-75 – **Disturbed Weathered Glacial** – Alternative lenses of brown fine to medium grained sandy silt/silty sand, dark yellowish brown fine to medium grained sand with traces of silt, soft, and multi-lithic light yellowish brown to dark brown medium to coarse grained sand disturbed. 75-92 – **Glacial** – Light yellowish brown medium to coarse grained sand with ~40% small to medium gravels, subangular to rounded, soft. Terminated due to narrowing caused by gravels.	0-15 - Brown bottle glass shard, shoulder, non-diagnostic.

Probe #	Probe Location (WGS84 Zone 10, UTM coordinates, +/- 3 meters)	Stratigraphic Description (depths are centimeters below surface [cmbs])	Cultural Materials Found
55	562518.00 m E 5333647.00 m N	0-32 – **Topsoil** – Dark brown fine grained sand 32-42 – **Disturbed Weathered Glacial** – Brown fine to medium grained sandy silt/silty sand 42-51 – **Disturbed Weathered Glacial** – Yellowish brown fine to medium grained sand with trace silts, soft 51-70 – **Weathered Glacial** – Dark yellowish brown fine to medium grained sand with traces of silt, soft 70-85 – **Weathered Glacial** – Yellowish brown fine to medium grained sand with trace silts, soft 85-100 – **Glacial** – Multi-lithic light yellowish brown to dark brown medium to coarse grained sand	None
56	564606.59 m E 5335924.97 m N	0-23 – **Topsoil** – Black sandy loam, soft to slightly-firm. 23-49 – **Disturbed Weathered Glacial and Topsoil** – Dark Brown fine to medium grained silty sand with 20-30% gravels to cobbles, firm to very firm. 49-70 – **Disturbed Weathered Glacial** – very dark brown fine to coarse grained silty sand, with ~10% gravels, soft to slightly firm. Terminated due to cobble in wall limiting access to base.	None
57	564532.58 m E 5335894.12 m N	0-90 – **Weathered Glacial** – Yellowish brown fine to medium grained sandy silt to silty sand with 30-40% subangular to rounded gravels. Terminated due to cobble at base.	None

Probe #	Probe Location (WGS84 Zone 10, UTM coordinates, +/- 3 meters)	Stratigraphic Description (depths are centimeters below surface [cmbs])	Cultural Materials Found
58	564455.22 m E 5335831.00 m N	0-3 – **Topsoil** – Dark brown sandy silt. 3-27 – **Disturbed Weathered Glacial** – Dark yellowish brown silty sand-sandy silt, slightly firm, moist. 27-30 – **Relict Topsoil** – Black silty sand with organics, saturated. 30-32 – **Weathered Glacial** – Brown fine to medium grained sand with some silt, hard. Water table at 26 cmbs. Terminated due to water table and compaction.	None
59	564405.00 m E 5335757.00 m N	0-30 – **Topsoil** – Very dark brown silt loam, 20% roots. 30-70 – **Alluvium** – Gray fine grained sand with some silt, firm to very firm. Terminated due to compaction and narrowing due to roots.	None
60	564355.00 m E 5335680.00 m N	0-16 – **Topsoil** – Very dark brown loamy sand, some rootlets, soft. 16-80 – **Disturbed Weathered Glacial** – Dark yellowish brown fine to medium grained sand, mottled with dark grayish brown fine grained sand, soft. 80-100 – **Weathered Glacial** – dark brown medium to coarse grained sand with rounded to subangular small to large (.5-6 cm) gravels, firm.	None
61	564492.00 m E 5335747.00 m N	Skipped as inaccessible – southeast of creek with steep banks.	N/A

Probe #	Probe Location (WGS84 Zone 10, UTM coordinates, +/- 3 meters)	Stratigraphic Description (depths are centimeters below surface [cmbs])	Cultural Materials Found
62	564442.00 m E 5335662.00 m N	0-10 – **Topsoil** – Dark brown to black organic loam. 10-16 – **Imported** – Gray subrounded to angular gravels and fines, hard compaction. Terminated due to compaction. Original location was on trail. A 4 cm deep shovel scrape revealed compacted imported gravels. Shifted location to vegetated area hoping to avoid disturbed area.	None

Exhibit 50. Representative image of typical soil profile. Profile image of Probe 24. 2018

A brief investigation revealed the Kraetz Stump House, Stillaguamish Pioneer Hall, Ekroth Barn, and the housing foundations for 45SN709 have all been removed from their documented locations and will not be impacted by this project.

3.2.2 Impacts

Thresholds of Significance

Proposed alterations within the CIC may have an impact on many aspects of recorded cultural landscape and may require further considerations when work will include a cultural resource of significance. For the purposes of this project, a cultural resource of significance will include any historic property which has been deemed eligible for addition to an historical register, including the NRHP, the Washington Heritage Register (WHR), or county and city level registers. In general, all archaeological sites are considered resources of significance and should be avoided or mitigated appropriately. Exceptions to this include select historic era archaeological sites which have been deemed ineligible for listing on an historic register based on NRHP criteria for significance.

Based on NRHP assessment criteria developed by the National Park Service (NPS 2002:2), historical significance is conveyed by properties that:

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

According to NRHP guidelines, the "essential physical features" of a property must be intact for it to convey its significance, and the resource must retain its integrity, or "the ability of a property to convey its significance" (NPS 2002:44). The seven aspects of integrity are:

1. Location (the place where the historic property was constructed or the place where the historic event occurred);
2. Design (the combination of elements that create the form, plan, space, structure, and style of a property);
3. Setting (the physical environment of a historic property);
4. Materials (the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property);

5. Workmanship (the physical evidence of the crafts of a particular culture or people during any given period of history or prehistory);
6. Feeling (a property's expression of the aesthetic or historic sense of a particular period of time); and
7. Association (the direct link between an important historic event or person and a historic property).

Criteria used for assessment of potential eligibility for the Washington Heritage Register (WHR) are similar to NRHP criteria (DAHP 2019). Criteria to qualify include:

- The resource should have documented historical significance at the local or state level;
- The resource should have a high to medium level of integrity; and
- The resource must be at least 50 years old. If newer, the resource should have documented exceptional significance.

Impacts Common to All Alternatives

Proposed work has the potential to impact known archaeological sites and historic properties of significance. The following two archeological sites and two historic properties are recorded within the proposed study area (Exhibit 51). Development under any of the studied alternatives could presumably result in removal of these resources. Site 45SN720 has been determined not eligible for the NRHP; disturbance to this site would not generate significant impacts. Disturbances to the remaining three resources, including any archaeological test excavations, would require further consultation with DAHP.

Exhibit 51. Cultural resources which meet the threshold of significance.

Cultural Resource	Type	Register Status	Section
Arlington Municipal Airport – Bore Sighting Range	Historic Property	Determined eligible	16
Arlington Municipal Airport – Small Arms Range	Historic Property	Determined eligible	21
45SN26	Pre-Contact Lithic Scatter	No determination made	22
45SN720	**Historic Isolate**	**Determined not eligible**	**22**

Source: DAHP 2020b

Surface and subsurface investigations indicated substantial surface disturbances throughout the surveyed parcels with disturbance sources varying from repeated clear-cutting of the forest, changes to creek flow and flooding, road cut and construction, utilities installation, and fill zones.

The negative shadow of an early to mid-twentieth century house was observed in parcel 31051500202400. The structure appears to have been removed recently and no intact features were observed. A road cut observed in parcel 31051400304200 was of late-twentieth century construction and does not meet the threshold of significance. No previously unrecorded archaeological sites or historic properties were identified through this survey. However, due to the limited nature of the survey, it remains possible for as-yet unknown potentially significant archaeological or historic sites to be present within the project. It is therefore recommended that DAHP be consulted to determine need for cultural resources surveys for any specific development actions under the proposal.

No Action Alternative

There is no difference in impact between each of the alternatives. See Impacts Common to All Alternatives.

Action Alternative 1

There is no difference in impact between each of the alternatives. See Impacts Common to All Alternatives.

Action Alternative 2

There is no difference in impact between each of the alternatives. See Impacts Common to All Alternatives.

3.2.3 Mitigation Measures

Incorporated Plan Features

Regulations and Commitments

Under the Archaeological Sites and Resources Act (RCW 27.53) and the Indian Graves and Records Act (RCW 27.44), a permit from DAHP is required to conduct activities that may alter an archaeological site containing prehistoric objects. This includes importing fill, compaction, use of heavy machinery, tree removal, construction, and any other activities that would change or impact the site. Such a permit would be needed for development in the location of site 45SN26.

Other Proposed Mitigation Measures

Regarding cultural resources, mitigation refers to the outcome of the consultation process when a significant impact to cultural resources is identified. In such situations, mitigation is used to moderate impacts. The following measures could be implemented to help avoid and manage significant impacts to recorded and as-yet unrecorded cultural resources within the Arlington MIC:

- Consult DAHP to determine need for cultural resources surveys for any specific development actions under the proposal. The preliminary field investigations conducted in this study were based on a conceptual design and provide a general history of the study area and limited insight into the subsurface conditions within tested areas that may be developed under the proposal.
- Continue coordination of cultural resource avoidance and mitigation programs for future project-level development through formal government-to-government consultation with the Snohomish Tribe, Stillaguamish Indian Tribe, and Tulalip Tribes. Tribes often are able to provide additional information regarding cultural resources not documented in published literature which can help direct cultural resources investigations and support compliance assessments to ensure that cultural resources are not significantly impacted by development activities.
- Consider partnering with existing businesses or agencies with a strong interest in history, and which likely maintain good historical records of the project location.

Should any potentially significant archaeological or historic sites be encountered in development under the proposal and it is not possible to avoid them, impacts would be generated. These impacts could potentially be minimized through development and implementation of mitigation measures appropriate to the nature and extent of discovered sites. Mitigation measures may include one or more of the following:

- Limiting the magnitude of the proposed work;
- Modifying proposed development through redesign or reorientation to minimize or avoid further impacts to resources;
- Rehabilitation, restoration, or repair of affected resources;
- Preserving and maintaining operations for any involved significant historic structures;
- Archaeological monitoring, testing, or data recovery excavations;
- Documentation of historic elements of the built environment through photographs, drawings and narrative, at the appropriate level based upon Department of Archaeology and Historic Preservation standards (DAHP 2020a).

The City can require an inadvertent discovery protocol in in the Planned Action Ordinance. See Appendix A.

3.2.4 Significant Unavoidable Adverse Impacts

No significant unavoidable impacts to cultural resources are anticipated to be generated by this proposal. With the implementation of a protocol for review of projects, it should be possible to prevent any significant unavoidable impacts. Should any potentially significant archaeological or historic sites be discovered and it is not possible to avoid them, impacts would be generated. Mitigation for such impacts, such as damage assessment and site treatment, would need to be addressed under appropriate state and federal laws through government-to-government consultation with affected tribes.

3.3 Transportation

This chapter provides an understanding of current transportation conditions and the potential transportation-related impacts of the development alternatives for the Arlington portion of the Cascade Industrial Center (CIC).

3.3.1 Affected Environment

This section describes existing transportation conditions within the Arlington CIC and key facilities near the CIC. Characteristics are provided for the non-motorized facilities, transit, traffic volumes, and traffic operations in the study area. The study area includes the SR 531 (172nd Street NE) corridor from the I-5 interchange to SR 9 as well as the following study intersections:

1. 67th Avenue NE/188th Street NE
2. I-5 SB Ramps/SR 531 (172nd Street NE)
3. I-5 NB Ramps/SR 531 (172nd Street NE)
4. Smokey Point Blvd/SR 531 (172nd Street NE)
5. 40th Avenue NE/SR 531 (172nd Street NE)
6. 43rd Avenue NE/SR 531 (172nd Street NE)
7. 51st Avenue NE/SR 531 (172nd Street NE)
8. 59th Avenue NE/SR 531 (172nd Street NE)
9. 67th Avenue NE/SR 531 (172nd Street NE)
10. SR 9/SR 531 (172nd Street NE)
11. Smokey Point Blvd/156th Street NE
12. Smokey Point Blvd/152nd Street NE

Non-Motorized Facilities

Exhibit 52 shows the key pedestrian and bike facilities in the vicinity of the CIC. Within the CIC, sidewalks are provided along Smokey Point Blvd except between 173rd Street NE and SR 530. Sidewalks are present on 51st Avenue NE/Airport Blvd north of SR 531. Bike lanes are also provided along 51st Avenue NE/Airport Blvd north of SR 531.

Two multi-use trails serve the CIC including the Centennial Trail and Airport Trail. The Centennial Trail runs along the eastern side of the CIC and is approximately 23 miles long connecting the Cities of Snohomish, Lake Stevens, and Arlington. The path is a 10-foot wide paved trail used for walking, bicycling, hiking, and horseback riding. The Airport Trail is an unimproved walking path which runs around the Arlington Airport.

The Arlington portion of the CIC is well connected with sidewalks and bicycle facilities. In addition, planned future roadway improvements would provide additional connectivity. The network of sidewalks, bike facilities and multimodal trails access to and from as well as within the CIC encourages trip making via walking and biking for commuter or other purposes.

Exhibit 52. Existing Non-Motorized Facilities

Source: BERK, Transpo Group 2020

Transit

Exhibit 53 illustrates the transit service to and from the CIC. The Arlington CIC is served by 7 transit routes, all operated by Community Transit. All 7 routes serve the Smokey Point Transit Center, as the routes' northern or southernmost terminus.

Routes 201 and 202 travel north-south between the Lynnwood transit Center and the Smokey Point Transit Center. The routes run Monday-Sunday, with approximately 10- to 15-minute headways in the peak periods.

Route 209 travels north-south between the Lake Stevens Transit Center and the Smokey Point Transit Center. Route 209 runs Monday-Sunday, with slightly reduced Saturday and Sunday service, but operates with approximately 30-minute headways in the peak direction.

Route 220 travels between the Smokey Point Transit Center and downtown Arlington. Route 220 operates with limited weekday service making 10 round trips and operates more frequent service on weekends with hourly headways on Saturday and Sunday.

Route 227 travels north-south between downtown Arlington and the Seaway Transit Center off Seaway Blvd by the Boeing site in Everett. This route is a commuter route with three trips to Boeing in the morning and two trips from Boeing to Arlington in the afternoon. This route does not run on weekends.

Route 230 travels east-west between the Smokey Point Transit Center and downtown Darrington. This route is also a commuter route and travels each direction once in the morning and once in the afternoon during the week. Route 230 does not run on the weekend.

Route 240 travels between downtown Stanwood and the Smokey Point Transit Center. Route 240 operates with approximately 90-minute headways during the weekdays and 60-minute headways on the weekends (both Saturday and Sunday).

There are three park and ride facilities located near or along the periphery of the CIC. The Arlington Park and Ride is located west of SR 9, north of W 4th Street. There is also a park and ride facility in Marysville located north of SR 531 and west of I-5. In addition, the Smokey Point Transit center is located north of SR 531 and west of Smokey Point Blvd in Arlington. This transit center provides access to the 7 Community Transit routes described above. Community transit has long-range plans to provide Swift bus rapid transit service along Smokey Point Blvd with potential stops at the I-5/156th new interchange and Smokey Point Transit Center.

Exhibit 53. Existing Transit Facilities

Source: Community Transit, BERK, Transpo Group 2020

Exhibit 54 summarizes the average weekday PM peak period (4 to 6 p.m.) ridership from January 2020 for the 7 Community Transit routes serving the CIC.

Exhibit 54. Average Weekday PM Peak Period Ridership by Route per Bus

Source: Community Transit, Transpo, 2020

Routes 201 and 202 carry the most riders with between 20 and 35 riders per bus per direction. The other transit routes carry less than 10 passengers per bus during the weekday PM peak period.

Exhibit 55 shows the bus travel time for each route during the weekday PM peak period by direction. The travel time summary includes how much of the bus travel time is related to dwell time at stops and the amount of run time (or time the vehicle is driving).

Exhibit 55. Average Weekday PM Peak Period Travel Time by Route

Source: Community Transit, Transpo, 2020

Routes 201 and 202 have the longest weekday PM peak period travel times with an 82-88-minute travel time between the Lynwood Transit Center and Smokey Point Transit Center. While these are not the longest routes in number of miles, they operate along more congested corridors and have more boardings than the other routes.

Route 201 and 202 also have the largest dwell times because the routes carry the most passengers, so they spend more time loading and unloading during the trip. Longer dwell times can mean the bus is spending too much time loading/unloading and can slow the route down; however, no standards or metrics are currently utilized. Generally, given the passengers served and number of bus stops along these routes the dwell times are reasonable.

Roadway Network

The AMMIC is served by several major highways and a number of arterial and local streets. The key roadways are described below.

Interstate 5 (I-5) borders the west side of the AMMIC in North Marysville, connecting between Marysville to the south and Mount Vernon to the north. It is a six-lane freeway with a posted speed limit of 70 mph north of 172nd Street NE (SR 531) and 60 mph to the south. Existing access to the AMMIC is primarily via the ramps at SR 531/172nd Street NE.

State Route 9 (SR 9) runs north/south east of the AMMIC connecting between Lake McMurray to the north and Snohomish to the south. It is a two-lane facility with a posted speed limit of 55 mph. Access to the AMMIC from SR 9 is provided via an at-grade intersection with SR 531/172nd Street NE. There are no sidewalks, bicycle facilities, or parking along SR 9.

172nd Street NE (SR 531) runs east/west connecting I-5 to the west and SR 9 to the east, bisecting the AMMIC. It is primarily a five-lane facility between I-5 and 43rd Avenue NE and a two-lane roadway between 43rd Avenue NE and SR 9 with a posted speed limit of 35 mph. No parking is allowed; however, bike lanes and sidewalks are provided between I-5 and 43rd Avenue NE.

Smokey Point Boulevard runs north/south along the western side of the AMMIC. It is classified as a principal arterial by the City of Marysville with a posted speed limit of 35-40 mph. In the study area the roadway typically has a five-lane cross section with four travel lanes and a central two-way left-turn lane. North of SR 531/172nd Street NE, Smokey Point Boulevard narrows to two lanes. There is no parking allowed along Smokey Point Boulevard and sidewalks are provided along both sides of the roads. No bicycle facilities are provided.

40th Avenue NE north/south roadway which currently primarily functions as access to commercial facilities south of SR 531 (172nd Street NE). A signal is currently being installed at the 40th Street NE/SR 531 (172nd Street NE) intersections. Sidewalks are currently provided along 40th Avenue NE.

43rd Avenue NE runs north/south and is classified as a minor arterial by the City of Marysville. It is a two-lane roadway in the study area with a posted speed limit of 35 miles per hour. Sidewalks are provided and parking is allowed along parts of the roadway. No bicycle facilities are provided.

51st Avenue NE/Airport Boulevard is a north/south roadway that runs through the center of the study area and west of the airport in Arlington. It is classified as an arterial north of SR 531 and as a collector south of SR 531 by the City of Arlington. The City of Marysville classifies 51st Avenue NE as a principal arterial south of SR 531. South of SR 531 the roadway has a posted speed limit of 40 mph and a two-lane cross section with minimal sidewalk and no bicycle facilities. North of SR 531, the posted speed limit is 35 mph with a three-lane cross section. Sidewalks are provided along the east side of the roadway and bicycle lanes are provided along both sides. The Airport trail, a multi-use path, runs along the west side of 51st Ave NE. No parking is allowed on the street.

59th Avenue NE is classified as an arterial roadway north of SR 531 (1752nd Street NE) dead

ending south of SR 531 (172 Street NE). North of SR 531 (1752nd Street NE) the roadway has a two-lane cross section with no sidewalks or bike facilities and a posted speed limit of 35 mph. South of SR 531 (1752nd Street NE) the roadway is a three-lane section with a central two-way left turn lane. Sidewalks are provided along both sides of the roadway.

67th Avenue NE is a classified as an arterial by the City of Arlington running north/south along the eastern portion of the AMMIC. The roadway generally has a posted speed limit of 35 mph and a predominately three-lane cross section. Sidewalks are provided along the east side of the roadway and no parking is allowed. The centennial Trail runs along the west side of 67th Avenue NE, providing bicycle and additional pedestrian facilities.

156th Street NE is a two-lane roadway with a posted speed limit of 35 miles per hour east of Smokey Point Boulevard and 25 miles per hour west of Smokey Point Boulevard. It is classified as a principal arterial by the City of Marysville and runs east/west. No bicycle facilities are provided and parking is limited, but sidewalks are provided along the roadway in the study area.

152nd Street NE is classified as Minor Arterial by the City of Marysville and runs east/west. It has a two-lane cross section and a posted speed limit of 35 miles per hour. No bicycle or parking is provided along the roadway, and sidewalks are minimal.

Freight Network

As a manufacturing and industrial center, the study area is rooted in freight traffic. There are a number of employers in the area generating truck traffic, as well as two railroads both operated by the Burlington Northern & Santa Fe (BNSF) Railroad. One BNSF line runs near the I-5 corridor and carries both freight and passenger rail traffic. Passenger rail is operated by Amtrak. This line runs from Eugene, Oregon to Vancouver, B.C. with the closest passenger stations in Everett and Stanwood. The second BNSF line is located on the east side of the study area boundary and runs from the City of Arlington connecting with the I-5 mainline track at approximately 116th Street NE in Marysville.

Most rail crossings are at-grade in the study area. These at-grade crossings include west of the 67th Avenue NE/SR 531 (172nd Street NE) intersection, along 152nd Street NE east of 51st Avenue NE, west of the Smokey Point Boulevard/136th Street NE intersection, and along 51st Avenue NE south of 144th Avenue NE. At-grade crossings impact the roadway system within the study area and access to the study area from both Arlington and Marysville. The presence of trains delays freight movement and increases congestion and safety issues at the crossings. There is a planned improvement to provide a grade separate interchange at I-5 and 156th Street NE, which would improve freight and vehicle access to the study area.

The Washington State Freight and Goods Transportation System (FGTS) is used to classify state highways, county roads, and city streets according to average annual gross truck tonnage they

carry as directed by RCW 47.05.021. The FGTS establishes funding eligibility for the Freight Mobility Strategic Investment Board (FMSIB) grants and supports designations of HSS (Highways of Statewide Significance) corridors, pavement upgrades, traffic congestion management, and other state investment decisions. The FGTS classifies roadways using five freight tonnage classifications, T-1 through T-5. Routes classified as T-1 or T-2 are considered strategic freight corridors and are given priority for receiving FMSIB funding. The classifications are as follows:

- **T-1:** Over 10,000,000 annual gross tonnage (over approximately 800 trucks per day).
- **T-2:** 4,000,000 to 10,000,000 annual gross tonnage (approximately 320 to 800 trucks per day).
- **T-3:** 300,000 to 4,000,000 annual gross tonnage (approximately 24 to 320 trucks per day).
- **T-4:** 100,000 to 300,000 annual gross tonnage (approximately 8 to 24 trucks per day).
- **T-5:** Over 20,000 gross tonnage in a 60-day period. Exhibit 56 shows roadways within the CIC classified as T-1, T-2, and T-3. The roadways with the highest classification, and heaviest amount of truck traffic, are I-5, SR 531, 67th Avenue NE, and Smokey Point Boulevard.

Exhibit 56. Existing Freight Corridors

Source: BERK, Transpo Group 2020

Traffic Volumes

The following study intersections were identified for review based on potential transportation impacts of the CIC Alternatives:

1. 67th Avenue NE/188th Street NE
2. I-5 SB Ramps/SR 531 (172nd Street NE)
3. I-5 NB Ramps/SR 531 (172nd Street NE)
4. Smokey Point Blvd/SR 531 (172nd Street NE)
5. 40th Avenue NE/SR 531 (172nd Street NE)
6. 43rd Avenue NE/SR 531 (172nd Street NE)
7. 51st Avenue NE/SR 531 (172nd Street NE)
8. 59th Avenue NE/SR 531 (172nd Street NE)
9. 67th Avenue NE/SR 531 (172nd Street NE)
10. SR 9/SR 531 (172nd Street NE)
11. Smokey Point Blvd/156th Street NE
12. Smokey Point Blvd/152nd Street NE

Existing weekday PM peak hour traffic volumes were obtained from the Washington Department of Transportation (WSDOT) or collected in January 2020. The weekday PM peak hour (one hour between 4 and 6 p.m.) is typically used for evaluating transportation system needs as it represents the highest travel activity experienced during the day. Traffic counts collected before 2020 were grown at an average annual growth rate of 1 percent to establish existing 2020 conditions. This growth rate was based on an evaluation of historic counts and data available in the area. Existing traffic counts are provided in Appendix C with PM peak hour turning movement counts summarized in Appendix D.

The highest observed weekday PM peak hour traffic volumes were along SR 531 (172nd Street NE) near the I-5 Interchange and Smokey Point Boulevard. Weekday PM peak hour traffic volumes along SR 531 decrease in the eastbound and westbound directions along the corridor moving east from the I-5 interchange toward SR 9. Volumes north of SR 531 (172nd Street NE) at 188th Street NE were less than 550 vehicles in either direction during the weekday PM peak hour. Volumes along Smokey Point Boulevard at 152nd and 156th Streets NE ranged between 675 and 915 vehicles in the southbound direction and 715 and 855 vehicles in the northbound direction during the weekday PM peak hour. Higher volumes along SR 531 (172nd Street NE) are consistent with the State Route functional class designation whereas lesser volumes along Smokey Point Boulevard and 67th Avenue NE are representative of the classification as arterials.

Traffic Operations

Performance measures were identified for determining traffic operations including intersection delay-based level of service (LOS) at the 12 study intersections and corridor travel times and vehicle queuing along SR 531.

Intersection LOS

For signalized locations, LOS is measured in average delay per vehicle and is reported for the intersections as a whole. At side-street stop-controlled intersections LOS is measured in average delay per vehicle during the peak hour of traffic and is reported for the worst operating approach of the intersection. Traffic operations for an intersection can be described alphabetically with a range of levels of service (LOS A through F), with LOS A indicating free-flowing traffic and LOS F indicating extreme congestion and long vehicle delays. Appendix E contains a detailed explanation of LOS criteria and definitions.

Based on coordination with WSDOT staff, SimTraffic was used to evaluate the intersection delay at WSDOT intersections. SimTraffic does not assign a LOS letter grade to describe intersection operations; however, the *Highway Capacity Manual (HCM), 6th Edition* parameters were used to provide the LOS. Sidra 8 and the WSDOT October 2019 Sidra parameters were used to evaluate operations at roundabout controlled intersection.

City of Arlington study intersections traffic operations were evaluated based on the procedures identified in the *Highway Capacity Manual (HCM), 6th Edition* and using the *Synchro 10* software program. The HCM 2000 method was used at intersections where parameters such as signal timing or phasing prohibited the use of HCM 6th Edition. Signal timing splits and offsets were optimized for all future conditions.

Exhibit 57 summarizes the study intersections existing operations. The adopted standard at all of the study intersections is LOS D with the exception of the two Smokey Point Blvd intersections which are in Marysville and have a LOS E standard. Detailed LOS worksheets are provided in Appendix F.

Exhibit 57. Existing Weekday PM Peak Hour Intersection LOS Summary

Intersection	Jurisdiction	LOS Standard	Traffic Control	LOS[1]	Delay[2]	WM[3]
1. 67th Avenue NE/188th Street NE	Arlington	D	Two-Way Stop	E	49	EBL
2. I-5 SB Ramps/SR 531 (172nd Street NE)	WSDOT	D	Signal	B	13	-
3. I-5 NB Ramps/SR 531 (172nd Street NE)	WSDOT	D	Signal	D	38	-

Intersection	Jurisdiction	LOS Standard	Traffic Control	LOS[1]	Delay[2]	WM[3]
4. Smokey Point Blvd/SR 531 (172nd Street NE)	WSDOT	D	Signal	F	103	-
5. 40th Avenue NE/SR 531 (172nd Street NE)	WSDOT	D	Signal	A	9	-
6. 43rd Avenue NE/SR 531 (172nd Street NE)	WSDOT	D	Signal	C	33	-
7. 51st Avenue NE/SR 531 (172nd Street NE)	WSDOT	D	Signal	E	77	-
8. 59th Avenue NE/SR 531 (172nd Street NE)	WSDOT	D	Signal	E	55	-
9. 67th Avenue NE/SR 531 (172nd Street NE)	WSDOT	D	Signal	C	32	-
10. SR 9/SR 531 (172nd Street NE)	WSDOT	D	Round-about	A	8	EB
11. Smokey Point Blvd/156th Street NE[4]	Marysville	E	Signal	B	15	-
12. Smokey Point Blvd/152nd Street NE	Marysville	E	Signal	B	17	-

Source: Transpo Group, 2020.
1. Level of Service (A – F) as defined by the Highway Capacity Manual (TRB, 6th Edition)
2. Average delay per vehicle in seconds
3. Worst movement reported for unsignalized two-way stop-controlled intersections. NB = Northbound, SB = Southbound, WB = Westbound.
4. Evaluated based on HCM 2000.

A majority of intersections operate at LOS D or better, meeting the current LOS standards, with the exception of the following four intersections:

- 67th Avenue NE/188th Street NE (LOS E)
- Smokey Point Blvd/SR 531 (172nd Street NE) (LOS F)
- 51st Avenue NE/SR 531 (172nd Street NE) (LOS E)
- 59th Avenue NE/SR 531 (172nd Street NE) (LOS E)

SR 531 Travel Time

Corridor travel times were evaluated along SR 531 (172nd Street NE) from west of the I-5 SR Ramps to SR 9 using SimTraffic. Due to traffic conditions during COVID-19 new traffic queue and travel time data could not be collected along SR 531 to calibrate the travel time model. The SimTraffic microsimulation model was calibrated to the traffic operation condition on a typical weekday based on Google Map Traffic. Google Map Traffic uses historical location data to determine the congestion patterns and vehicle queue on the network by time of the day. Google provides a historical display of congestion patterns using colors representing free-flow condition (Green) to stop-and-go condition (dark-red). This congestion pattern shows where the bottleneck formed along the SR 531 corridor, and how far the congestion backed up between intersections. Transpo adjusted the SimTraffic settings to be consistent with the vehicle

queuing/congestion patterns from the Google Traffic Map historical data.

In the eastbound direction, existing travel times are approximately 16 minutes over the 4-mile SR 531 corridor with an average arterial speed of approximately 18 mph. In the westbound direction, the travel time is approximately 12 minutes over the 4-mile SR 531 corridor resulting in an average arterial speed of approximately 20 mph. Individual segment travel times and speeds are provided in Appendix D. Overall, the SR 531 corridor is congested during the weekday PM peak hour with travel speeds below approximately 17 mph below the posted speed limit of 35 mph.

SR 531 Intersection Queuing

Vehicle Queuing along SR 531 is summarized in Exhibit 58. Vehicle queues were evaluated based on SimTraffic. Detailed queuing worksheets are provided in Appendix F. The summary provides 95th percentile queue lengths, which is the maximum queue length that would only be exceeded 5 percent of the time. Typically, 95th percentile queues are used to design lane lengths. Average vehicle queues would be less than the presented 95th percentile queues.

Exhibit 58. Existing SR 531 Intersection Queuing Summary

Intersection	95th Percentile Queue Lengths[1]	Intersection Maximum Reported 95th Percentile Queue[2]	Queues Exceeding Available Storage
2. I-5 SB Ramps/SR 531 (172nd Street NE)	Less than 375 feet	WB Through: 375 feet	-
3. I-5 NB Ramps/SR 531 (172nd Street NE)	Less than 450 feet except NB	NB Through-Left: 1,775 feet NB Right: 1,425 feet	WB Right
4. Smokey Point Blvd/SR 531 (172nd Street NE)	Less than 600 feet except NB	NB Through: 2,500 feet	NB and SB Left SB Right
5. 40th Avenue NE/SR 531 (172nd Street NE)	Less than 275 feet	EB Through: 275 feet	-
6. 43rd Avenue NE/SR 531 (172nd Street NE)	Less than 250 feet except EB through	EB Through: 600 feet	-
7. 51st Avenue NE/SR 531 (172nd Street NE)	Less than 675 feet except EB through-right	EB Through-Right: 2,200 feet	EB, WB, and NB left
8. 59th Avenue NE/SR 531 (172nd Street NE)	Less than 775 feet except EB through-right	WB Through-Right: 1,225	SB through-right

Intersection	95th Percentile Queue Lengths[1]	Intersection Maximum Reported 95th Percentile Queue[2]	Queues Exceeding Available Storage
9. 67th Avenue NE/SR 531 (172nd Street NE)	Less than 425 feet except for the SB through-right	SB Through-Right: 525 feet	WB, NB, and SB left
10. SR 9/SR 531 (172nd Street NE)[3]	Less than 75 feet	NB Through-Right: 75 feet	-

Source: Transpo Group, 2020.
Notes: WB = westbound; EB = eastbound, SB = southbound; NB = northbound.
- Queuing based on 95th percentile queue lengths from SimTraffic Queuing and Blocking report unless otherwise noted.
- Queue lengths rounded up to the nearest 25 feet.

5. Queuing based Sidra 8.

The longest queue lengths are along SR 531 intersections at the Smokey Point Blvd and 51st Avenue NE. The vehicle queuing is consistent with the findings of the travel time analysis showing conditions are congested.

Traffic Safety

Exhibit 59 summarizes the most recent 5-year collision history at the study intersections and roadway segments based on data obtained from the WSDOT. The data was reviewed to understand if there are any existing traffic safety issues within the study area.

Exhibit 59. Five Year Collision Summary – 2015 to 2019

Location	Traffic Control	2015	2016	2017	2018	2019	Total	Annual Average	Collisions per MEV[1]
Intersections									
1. 67th Ave NE/188th St	Two-Way Stop	2	4	4	2	2	14	2.8	0.68
2. I-5 SB	Signal	7	14	9	11	10	51	10.2	0.72
3. I-5 NB	Signal	13	25	11	13	11	73	14.6	0.90
4. Smokey Point	Signal	41	56	38	41	29	205	41.0	2.51
5. 40th Ave NE/SR 531	Signal[2]	3	0	1	5	1	10	2.0	0.25
6. 43rd Ave	Signal	5	11	8	9	4	37	7.4	0.89
7. 51st Ave	Signal	7	7	19	11	10	54	10.8	1.29

Location	Traffic Control	2015	2016	2017	2018	2019	Total	Annual Average	Collisions per MEV[1]
8. 59th	Signal	10	5	2	4	5	26	5.2	0.73
9. 67th Ave	Signal	10	10	6	7	8	41	8.2	1.15
10. SR 9/SR	Roundabout	2	9	6	6	1	24	4.8	0.77
11. Smokey Pt Blvd	Signal	3	2	2	5	1	13	2.6	0.39
12. Smokey Pt Blvd/	Signal	1	4	3	7	7	22	4.4	0.59
Roadway Segment									
SR 531 between I-5 Ramps	-	3	2	1	3	2	11	2.2	-
SR 531: I-5 NB Ramp to Smokey Pt Blvd	-	9	1	8	9	4	31	6.2	-
SR 531: Smokey Pt Blvd to 40th Avenue NE	-	8	9	17	14	20	68	13.6	-
SR 531: 40th Ave to 43rd Ave NE		6	4	7	5	6	28	5.6	-
SR 531: 43rd Ave NE to 51st Ave NE	-	15	15	9	10	11	60	12.0	-
SR 531: 51st Ave NE to 59th Ave NE	-	11	8	5	3	8	35	7.0	-
SR 531: 59th Ave NE to 67th Ave NE		6	8	13	6	5	38	7.6	-
SR 531: 67th Ave NE to SR 9	-	5	8	6	2	7	28	5.6	-
67th Ave NE: SR 531 to 188th St		2	2	3	1	1	9	1.8	-

Location	Traffic Control	2015	2016	2017	2018	2019	Total	Annual Average	Collisions per MEV[1]
Smokey Pt Blvd: 152nd St NE to 156th St NE	-	2	0	1	1	1	5	1.0	-
Smokey Pt Blvd: 156th St NE to SR 531	-	12	18	19	28	25	102	20.4	-

Under 23 U.S. Code § 409 and 23 U.S. Code § 148, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

1. Collisions per million entering vehicles
2. A traffic signal is currently being installed at the intersections. Historic collisions data reflects a side-street stop-controlled intersection.

Study intersections with a collision rate greater than one collision per million entering vehicles (MEV) should be considered for further review to determine if a safety issue may exist. As shown on Exhibit 59, the following three study intersections have collisions per MEVs greater than one:

- Smokey Point Blvd/SR 531 (172nd Street NE)
- 51st Avenue NE/SR 531 (172nd Street NE)
- 67th Avenue NE/SR 531 (172nd Street NE)

At the Smokey Point Blvd/SR 531 and 67th Avenue NE/SR 531 the most common type of collision reported was rear-end. Rear-end collisions are common with stop-and-go conditions and areas with high traffic congestion. Approach turn was the most common type of collision reported at the 51st Avenue NE/SR 531 intersection. The approach turn collision type is common at intersections with permissive left turn phasing like 51st Avenue NE/SR 531. As described previously in the review of traffic operations, conditions along SR 531 are congested. WSDOT does have planned improvements along this corridor which address the traffic operations and resulting traffic safety issues.

Similar to the intersections, the majority of the collisions along the roadway segments occur along SR 531 where the highest level of traffic occurs. Of the individual segments, the highest number of collisions was reported along Smokey Point Boulevard between 156th Street NE and 172nd Street NE. Along SR 531 the most common type of collision reported was rear-end followed by angle and approach turn. As noted above, rear-end collisions are common with stop-and-go conditions and congested corridors.

Of the reported collisions over the 5-year period the majority resulted in property damage only.

Additionally, 16 pedestrian/bicyclist collisions were reported at intersections and 12 were reported along roadway segments, no fatalities were reported. As part of the SR 531 transportation project, WSDOT would improve pedestrian and bicycle facilities including provision of a multiuse trail on both sides of SR 531 between 43rd Avenue NE and 67th Avenue NE.

3.3.2 Impacts

The transportation impacts of the No Action and Action Alternatives are described in this section.

Thresholds of Significance

The study intersections are in the Arlington, WSDOT, and Marysville jurisdictions where the alternatives would have the primary transportation impacts. The LOS standards for the study area are described as follows:

City of Arlington LOS Standards. The City of Arlington has adopted LOS D for arterials and collectors. In addition, the LOS D standard applies to local roads that primarily serve its central business district or industrial areas. The City of Arlington further recognizes and adopts the most current LOS standard along state highways.

WSDOT. LOS D for highways of statewide significance (HSS) facilities in urban areas.

City of Marysville LOS Standards. The City of Marysville has adopted a LOS E "mitigated" for signalized intersections and intersections of two arterials along Smokey Point Blvd (LOS E "mitigated" means that the congestion should be mitigated through improvements, transit, ridesharing, or other travel modes when the intersection falls below LOS E). The LOS E mitigated standard applies to the Smokey Point Blvd/156th Street NE and Smokey Point Blvd/152nd Street NE study intersections in the study area.

Impacts Common to All Alternatives

The following conditions and impacts are common to all alternatives, including the No Action Alternative.

Planned Improvements

Several transportation improvement projects are currently planned in and around the study area to increase capacity, reduce conflicts with the railroad, and improve connectivity. As the area develops arterial, collector, and local roads would be provided to establish a quarter-mile grid

road network, where possible. These projects are shown on Exhibit 60. Key projects for the CIC are discussed below.

I-5 Interchange at 156th Street NE

This project is part of the Connecting Washington funding package and includes construction of a new I-5 interchange at 156th Street NE. This new interchange relieves some of the traffic pressures at 172nd Street NE, which is currently the main interchange to access the CIC. The I-5/156th Street interchange would not be constrained by the rail line so freight traffic will not be impacted by the rail traffic.

Specific to the study intersections, this project will result in capacity improvements at the Smokey Point Blvd/156th Street NE intersection. The channelization for the analysis includes 2 general purpose lanes in all directions, dual northbound and southbound left-turn lanes, and southbound and eastbound right turn lanes. Dedicated east and westbound left turn lanes are currently provided at the intersection and were assumed to be maintained in the future.

156th/152nd Street Connector

The City of Marysville is planning to extend 156th Street NE east of I-5 from Smokey Point Blvd to 51st Avenue NE/152nd Street NE. A- 4/5 lane arterial would be constructed including sidewalks and a multi-use trail.

Exhibit 60. Planned Improvements

Source: BERK, Transpo Group 2020

188th Street NE Improvements

This project would improve 188th Street NE to a three-lane section between 59th Avenue NE and 67th Avenue NE, as well as install a traffic signal at the 67th Avenue and 188th Street NE intersection. A 12-foot multi-use path will be constructed with the project and connect to the centennial trail.

51st Avenue NE Widening (SR 531 to Arlington-Marysville Border)

The City of Arlington is planning to widen 51st Avenue NE to a five-lane section between SR-531 and the border with the City of Marysville.

SR 531 Rehabilitation & 40th Avenue NE Signalization

This project would include roadway and corridor improvements on SR 531 (172nd Street NE) from 43rd Avenue NE to Smokey Point Blvd, eliminate left turn pockets, install medians, and includes construction of a north leg. Improvements to the pedestrian and bicycle facilities would also be completed.

The following improvements are planned in the vicinity of the CIC; however, they do not change the configuration of the study intersections and SR 531 corridor but may influence travel patterns to and from the CIC.

- **43rd Street NE Extension -** This project would extend 43rd Street NE from south of SR 531 to 152nd Street NE. The roadway would be 2-3 lanes, with sidewalks, bike lanes, and a multi-use trail.
- **Smokey Point Blvd Improvements -** This project would reconstruct Smokey Point Blvd from SR 531 to 188th Street from a two-lane roadway to a five-lane roadway. It would also construct restricted access and medians to improve safety. A 12-foot multi use trail would also be constructed along the roadway.
- **152nd Street NE Widening (Smokey Point Blvd to 47th Avenue NE) -** This project would widen the existing two-lane roadway to a three-lane roadway with curb, gutter, sidewalks and bicycle lanes.

In addition to the projects described above, WSDOT has identified improvements along SR 531 between 43rd Avenue NE and 67th Avenue NE and 67th Avenue NE and SR 9. These transportation projects are not included in the current State Transportation Improvement Project (STIP); therefore, they were not assumed as part of the baseline evaluation of the alternatives. The SR 531 improvements between 43rd Avenue NE and 67th Avenue NE are funded through Connected Washington and were anticipated to be completed by 2024. The SR 531 improvements include widening the roadway form a two- to a four-lane roadway with intersection improvements and/or installations of roundabouts at major intersections. In addition, non-motorized improvements would be made along the corridor including a multi-use trail along

both sides of SR 531 between 43rd Avenue NE and 67th Avenue NE. Since these are not on the STIP, the funding is uncertain and the improvements were not assumed in the baseline alternatives analyses.

Non-Motorized Facilities

The future non-motorized system within the study area is consistent across alternatives. The planned improvement section above describes non-motorized improvements that would occur as new roadways are constructed. The Arlington portion of the study area is well connected with sidewalks and bicycle facilities. In addition, future roadway improvements would provide additional connectivity. The network of sidewalks, bike facilities and multimodal trails access to and from as well as within the study area encourages trip making via walking and biking for commuter or other purposes.

Traffic Safety

Traffic generated by the alternatives results in a proportionate increase in the probability of collisions. Increases in rail traffic would result in additional conflicts between vehicular, non-motorized and rail traffic. It is unlikely that the project traffic would significantly change safety issues in the study area. With growth in traffic in the study area, it would likely become progressively more challenging for side-street traffic at unsignalized intersections to enter the traffic stream.

Traffic Forecasts

Future (2040) weekday PM peak hour traffic forecasts were developed consistently for Alternatives using the City of Arlington travel demand model. The Arlington Travel Demand Model has a base year of 2010 and a future year of 2040. The land use (outside of the study area) and transportation system assumptions are the same for all Alternatives. The CIC land use was adjusted within the City's travel demand model for each Alternative. The City's travel demand model is used for the CIC trip generation, distribution and assignment to the study area. Future 2040 forecasts are developed by adding intersection volume growth identified between the models existing and future years. Adjustments are made to the 2040 background traffic volumes for balancing. This methodology is an industry standard practice for post-processing raw travel demand model results into forecast traffic volumes. Because existing conditions were established for 2020, growth in traffic volumes were reduced by 33 percent to remove 10 years (2010 to 2020) of growth from the model volumes. Forecast traffic volumes for all Alternatives are provided in Appendix D.

No Action Alternative

The No Action Alternative transportation impacts are described in this section. The No Action

Alternative is the baseline condition against which the Action Alternatives are compared.

Transit

To understand the operations of transit in the study area in 2040 forecasts were developed to estimate ridership and transit travel speeds. The following assumptions were made to develop the transit forecasts:

- Routes in 2040 are assumed to be the same as existing 2020 (pre-COVID) service
- Ridership will grow 1 percent annually per year from 2020 to 2040 per route. Ridership has decreased in recent years on many of the Community Transit routes in this area. Additionally, while the near-term impacts of COVID-19 on transit ridership are unknown, ridership is generally expected to continue decreasing in the near future. It is assumed that a 1 percent annual increase over 20 years is conservative.
- Dwell times are expected to increase 2.5 seconds for every boarding and alighting.
- Transit Run Times (the travel time from the start and end of the route, not including dwell times) is expected to increase 5 percent for 'rural routes' where only minor changes in traffic volumes are expected (includes Community Transit Routes 209, 220, 230, and 240)
- Transit Run Times are expected to increase 10 percent for 'mainline routes' where moderate changes in traffic volumes are expected in the next 20 years. Mainline routes includes Community Transit Routes 201/202, and 227.

Based on these assumptions, the weekday PM peak transit ridership for 2040 No Action is summarized in Exhibit 61.

Exhibit 61. 2040 No Action Average Weekday PM Peak Period Ridership by Route per Bus

Source: Transpo 2020

Routes 201 and 202 are anticipated to continue to have the most weekday PM peak hour ridership with up to 41 boardings per bus anticipated for route 202 in the northbound direction.

Minimal ridership is still anticipated on the remaining routes.

Based on these assumptions, the 2040 No Action transit operations are summarized in Exhibit 62.

Exhibit 62. 2040 No Action Average Weekday PM Peak Period Travel Time by Route

Source: Transpo, 2020.

Routes 201 and 202 are forecast to continue to have the longest weekday PM peak period travel times with a 90 to 96-minute travel time between the Lynwood Transit Center and Smokey Point Transit Center.

Trip Generation

No Action Alternative trip generation within the Arlington CIC is based on the land use and jobs projections consistent with the Arlington Comprehensive Plan. Trip generation was determined for the No Action Alternative using the Arlington travel demand model. Exhibit 63 provides a summary of the forecast No Action Alternative weekday PM peak hour trip generation.

Exhibit 63. 2040 CIC No Action Weekday PM Peak Hour Trip Generation

Alternative	In	Out	Total
2040 No Action	1,687	4,557	6,244

Source: Transpo Group, 2020.

A total of 6,244 weekday PM peak hour trips are anticipated to be generated under No Action Alternative.

The No Action traffic volume forecasts for this analysis are based on the City of Arlington travel demand model. The City's travel demand model was used to determine the trip distribution and assignment of the No Action CIC trips. The general travel patterns identified by the travel demand model are depicted in Appendix ZZ. The general distribution of the CIC traffic is anticipated to be:

- 8 percent to/from the north via I-5
- 9 percent to/from the north via SR 9
- 3 percent to/from the northwest
- 15 percent to/from the south via I-5
- 60 percent to/from the south via local roads
- 5 percent to/from the south via SR 9

Traffic Operations

As discussed previously, traffic operations were evaluated based on intersection delay, SR 531 travel times and vehicle queuing for intersections along SR 531. Signal timing splits and offsets were optimized for future 2040 operations.

Exhibit 64 provides a summary of the intersection operations. Detailed LOS worksheets are provided in Appendix F.

Exhibit 64. 2040 No Action Weekday PM Peak Hour Intersection LOS Summary

Intersection	Jurisdiction	LOS Standard	Traffic Control	LOS[1]	Delay[2]	WM[3]
1. 67th Avenue NE/188th Street NE	Arlington	D	Two-Way Stop	F	>180	EBL

Intersection	Jurisdiction	LOS Standard	Traffic Control	LOS[1]	Delay[2]	WM[3]
2. I-5 SB Ramps/SR 531 (172nd Street NE)	WSDOT	D	Signal	D	54	-
3. I-5 NB Ramps/SR 531 (172nd Street NE)	WSDOT	D	Signal	F	93	-
4. Smokey Point Blvd/SR 531 (172nd Street NE)	WSDOT	D	Signal	F	142	-
5. 40th Avenue NE/SR 531 (172nd Street NE)	WSDOT	D	Signal	D	42	NBL
6. 43rd Avenue NE/SR 531 (172nd Street NE)	WSDOT	D	Signal	D	45	-
7. 51st Avenue NE/SR 531 (172nd Street NE)	WSDOT	D	Signal	F	>180	-
8. 59th Avenue NE/SR 531 (172nd Street NE)	WSDOT	D	Signal	F	>180	-
9. 67th Avenue NE/SR 531 (172nd Street NE)	WSDOT	D	Signal	F	113	-
10. SR 9/SR 531 (172nd Street NE)	WSDOT	D	Round-about	B	14	SB
11. Smokey Point Blvd/156th Street NE[4]	Marysville	E	Signal	E	65	-
12. Smokey Point Blvd/152nd Street NE	Marysville	E	Signal	C	22	-

Source: Transpo Group, 2020.
- Level of Service (A – F) as defined by the Highway Capacity Manual (TRB, 6th Edition)

1. Average delay per vehicle in seconds
2. Worst movement reported for unsignalized two-way stop-controlled intersections. NB = Northbound, SB = Southbound, WB = Westbound.
3. Evaluated utilizing HCM 6th edition, not HCM 2000 as under existing conditions because signal timing splits were optimized under future condition, eliminating the minimum green time error encountered under existing conditions.

As shown in Exhibit 64, over half of the intersections are forecast to operate at LOS F and a majority of the poor operations are anticipated along SR 531. The affected environment showed that poor operations are already experienced along SR 531 with several intersections operating below LOS standards, long queues and slow travel speeds during the weekday PM peak hour. The anticipated increase in traffic volumes with the No Action Alternative (including background growth in the study area) exacerbates the already congested conditions. The congestion in the study area is already a known issue. As described previously, there are two planned improvements to widen SR 531 between 43rd Avenue NE and 67th Avenue NE. The analysis shows there is a need for these improvements even with the No Action Alternative and these are further explored in the discussion of mitigation measures.

The forecast No Action Alternative SR 531 eastbound travel time is 33 minutes with an average speed of approximately 10 mph. In the westbound direction, the SR 531 travel time is approximately 20 minutes with an average speed of approximately 13 miles per hour. Generally, the longest delays are east of 43rd Avenue NE where the roadway narrows from four lanes to two lanes. Individual segment travel times and speeds are provided in Appendix G. As described previously, the results indicate congestion at study intersection and along SR 531 as a

result of planned growth with the No Action Alternative. Operations also indicate that the planned improvements to widen SR 531 between 43rd Avenue NE and 67th Avenue NE are needed.

Exhibit 65 provides a summary of the forecast vehicle queuing under No Action Alternative. Detailed worksheets are provided in Appendix F.

Exhibit 65. 2040 No Action SR 531 Intersection Queuing Summary

Intersection	95th Percentile Queue Lengths[1]	Intersection Maximum Reported 95th Percentile Queue[2]	Queues Exceeding Available Storage
2. I-5 SB Ramps/SR 531 (172nd Street NE)	Less than 825 feet except the SB left	SB Left: 1,050 feet	EB and SB right
3. I-5 NB Ramps/SR 531 (172nd Street NE)	Between 400 to 1,625 feet	NB Right: 1,625 feet	EB left and WB right
4. Smokey Point Blvd/SR 531 (172nd Street NE)	East/West queues less than 575 feet North/South queues less than 2,950	NB Through: 2,950 feet	WB and SB right, NB and SB left
5. 40th Avenue NE/SR 531 (172nd Street NE)	Between 75 and 450 feet	EB Through: 450 feet	EB, WB, NB, and SB left
6. 43rd Avenue NE/SR 531 (172nd Street NE)	Between 50 and 725 feet	WB Through: 725 feet	EB and WB left
7. 51st Avenue NE/SR 531 (172nd Street NE)	Up to 3,775 feet for Through movements Up to 450 feet for turning movements	NB Through: 3,775 feet	EB, NB, and SB left NB Right
8. 59th Avenue NE/SR 531 (172nd Street NE)	Up to 3,675 feet	SB Left: 3,675 feet	EB, WB, NB left SB through-right
9. 67th Avenue NE/SR 531 (172nd Street NE)	Up to 2,450 feet for through movement Up to 275 feet for turning movements	SB Through-Right: 2,450 feet	WB, NB, and SB left
10. SR 9/SR 531 (172nd Street NE)[3]	Less than 300 feet	SB Through-Left: 300 feet	-

Source: Transpo Group, 2020.
Notes: WB = westbound; EB = eastbound, SB = southbound; NB = northbound.

- Queuing based on 95th percentile queue lengths from SimTraffic Queuing and Blocking report unless otherwise noted.
- Queue lengths rounded up to the nearest 25 feet.

4. Queuing based Sidra 8.

Queue lengths are anticipated to increase over existing conditions. Exhibit 65 shows 95th percentile queues over 1,000 feet on at least one approach at several study intersections including:

- I-5 SB Ramps/SR 531 (172nd Street NE)
- I-5 NB Ramps/SR 531 (172nd Street NE)
- Smokey Point Blvd/SR 531 (172nd Street NE)
- 51st Avenue NE/SR 531 (172nd Street NE)
- 59th Avenue NE/SR 531 (172nd Street NE)
- 67th Avenue NE/SR 531 (172nd Street NE)

The majority of the queues are projected to extend beyond turn-lane storage facilities. The finding of poor operations and congested conditions is consistent with the LOS and travel time analysis.

In addition to the summary information presented above, the I-5 interchange was reviewed to determine if there would be impacts to the mainline operations with vehicle queues extending beyond the off-ramp storage. The I-5 SB off-ramp has a vehicle storage of approximately 1,690-feet. The I-5 NB off-ramp storage is approximately 1,800 feet with two-lanes. The traffic operations analysis shows that projected No Action I-5 off-ramp vehicle queues would be accommodated within available storage and would not impact the I-5 mainline traffic. Detailed vehicle queuing is provided in Appendix D.

Action Alternative 1

Action Alternative 1 supports net increases of employment of 1,801 jobs and 516 dwellings compared to the No Action Alternative. Exhibit 66 provides a summary of the weekday PM peak hour trip generation and the net increase over the No Action Alternative for Alternative 1.

Exhibit 66. 2040 Action & Action Alternative 1 Weekday PM Peak Hour Trip Generation

Alternative	In	Out	Total
2040 No Action	1,687	4,557	6,244
2040 Action Alternative 1	2,088	5,334	7,422
Net New Trips	**401**	**777**	**1,178**

Source: Transpo Group, 2020.

Action Alternative 1 is anticipated to generate approximately 1,178 net new weekday PM peak hour vehicle trips compared to the No Action Alternative. The general travel patterns for

Alternative 1 are anticipated to be similar to the No Action Alternative and are shown in Appendix D.

Action Alternative 2 is anticipated to generate approximately 1,100 more weekday PM peak hour trips compared to Action Alternative 1. Action Alternative 1 transit, traffic volume and traffic operations impacts would be greater than or similar to those described for the No Action Alternative. The Alternative 1 transportation impacts would be less than those described in the following section for Alternative 2. The evaluation of the No Action Alternatives and Action Alternative 2 provides bookends for the level of transportation impacts anticipated with the alternatives. Given the similar transportation impacts of all the alternatives, section 3.3.3 Mitigation Measures shows similar measures are recommended for all Alternatives.

Action Alternative 2

Action Alternative 2 transportation impacts are described in this section. Impacts of Action Alternative 2 are identified by comparing against the No Action Alternative.

Transit

Alternative 2 ridership and transit travel speed forecasts were developed to determine the level of impact on transit. The transit forecasts were developed using the same assumptions as the No Action Alternative plus the following to account specifically for additional transit trips with Alternative 2:

- 5 percent of Alternative 2 trips would be made by transit (Alternative 2 forecasts 2,274 new weekday PM peak hour trips, which equates to 114 new weekday PM peak transit trips)
- Alternative 2 transit trips were allocated to routes based on existing transit ridership i.e. routes that currently serve more riders will serve more future riders.
- Additional increase in transit run times would be proportional to the number of new trips forecasted in Alternative 2 compared to the No Action Alternative, which equates to an approximate 27 percent increase in trips between 2020 and 2040 with Alternative 2. This ratio was applied to the forecasted No Action Alternative increase in travel times.
    - For 'rural routes' (209, 220, 230 and 240) transit run times will increase an additional 1.3 percent (26.7 percent x 5 percent = 1.3 percent increase in transit travel time from No Action to Alternative 2)
    - For 'mainline routes' (201/202, 227) transit run times will increase an additional 2.7 percent (26.7 percent x 10 percent = 2.7 percent increase in transit travel times from No Action to Alternative 2)

Based on these assumptions, the weekday PM peak transit ridership for 2040 Alternative 2 is summarized in Exhibit 67 and compared to the No Action Alternative.

Exhibit 67. 2040 No Action and Alternative 2 Average Weekday PM Peak Period Ridership by Route per Bus

Source: Transpo, 2020.

As shown, boardings for route 201 is forecast to grow by 18 and route 202 is forecast to grow by 21 riders per bus during the weekday PM peak hour with Alternative 2 compared to the No Action Alternative. The remaining routes would see an increase of 2 to 3 boardings with Alternative 2 compared to the No Action Alternative.

Based on these assumptions, the Alternative 2 transit operations are summarized below in Exhibit 68.

Exhibit 68. 2040 Alternative 2 Average Weekday PM Peak Period Travel Time by Route

Source: Transpo, 2020.

Routes 201 and 202 are forecast to continue to have the longest weekday PM peak period travel times with a 90 to 96-minute travel time between the Lynwood Transit Center and Smokey Point Transit Center with Alternative 2. Alternative 2 is forecast to increase transit travel time by approximately 2 to 3 minutes compared to the No Action Alternative. Over the course of the route this 2 to 3-minute increase in travel time would likely go unnoticed by riders.

Trip Generation

Action Alternative 2 would result in an increase in employment of approximately 4,000 jobs with no changes to dwellings compared to the No Action Alternative. Exhibit 69 provides a summary of Alternative 2 anticipated weekday PM peak hour trip generation and the net increase over the No Action Alternative.

Exhibit 69. 2040 CIC No Action & Action Alternative 2 Weekday PM Peak Hour Trip Generation

Alternative	In	Out	Total
2040 No Action	1,687	4,557	6,244
2040 Action Alternative 2	2,317	6,201	8,518
Net New Trips	**630**	**1,644**	**2,274**

Source: Transpo Group, 2020.

Action Alternative 2 is anticipated to generate approximately 2,274 net new weekday PM peak hour vehicle trips compared to the No Action Alternative.

Trips associated with Action Alternative 2 were distributed assigned to the network based on the City of Arlington travel demand model. Appendix ZZ provides a summary of the general trip distribution of the CIC trips within the study area. It is anticipated that trip distribution would be consistent for all Alternatives.

Traffic Operations

Traffic operations were evaluated based on intersection delay, SR 531 travel times and vehicle queuing for intersections along SR 531. Signal timing splits and offsets were optimized under future Action Alterative 2 conditions.

Exhibit 70 provides a comparison of the intersection operations between the No Action Alternative and Action Alternative 2 scenarios. Detailed LOS worksheets are provided in Appendix F.

Exhibit 70. 2040 No Action Alternative & Action Alternative 2 Weekday PM Peak Hour LOS Comparison

Intersection	LOS Standard	No Action			Alternative 2			Change in Delay
		LOS[1]	Delay[2]	WM[3]	LOS	Delay	WM	
1. 67th Avenue NE/188th Street NE	D	F	306	EBL	F	455	EBL	+149
2. I-5 SB Ramps/SR 531 (172nd Street NE)	D	D	54	-	D	44	-	-10
3. I-5 NB Ramps/SR 531 (172nd Street NE)	D	F	93	-	F	86	-	-7
4. Smokey Point Blvd/SR 531 (172nd Street NE)	D	F	142	-	F	147	-	5

Intersection	LOS Standard	No Action			Alternative 2			Change in Delay
		LOS[1]	Delay[2]	WM[3]	LOS	Delay	WM	
5. 40th Avenue NE/SR 531 (172nd Street NE)	D	D	42	NBL	C	30	NBL	-12
6. 43rd Avenue NE/SR 531 (172nd Street NE)	D	D	45	-	D	38	-	-7
7. 51st Avenue NE/SR 531 (172nd Street NE)	D	F	231	-	F	228	-	-3
8. 59th Avenue NE/SR 531 (172nd Street NE)	D	F	261	-	F	240	-	-21
9. 67th Avenue NE/SR 531 (172nd Street NE)	D	F	113	-	F	156	-	43
10. SR 9/SR 531 (172nd Street NE)	D	B	14	SB	B	15	EB	1
11. Smokey Point Blvd/156th Street NE	E	E	65	-	E	69	-	4
12. Smokey Point Blvd/152nd Street NE	E	C	22	-	C	23	-	1

Source: Transpo Group, 2020.
- Level of Service (A – F) as defined by the Highway Capacity Manual (TRB, 6th Edition)
5. Average delay per vehicle in seconds
6. Worst movement reported for unsignalized two-way stop-controlled intersections. NB = Northbound, SB = Southbound, WB = Westbound.

As shown in Exhibit 70, with Action Alternative 2, 6 study intersections would continue to meet the LOS standard during the weekday PM peak hour. The remaining 6 study intersections would operate at LOS F during the weekday PM peak hour for both the No Action and Action Alternative 2 conditions. Although intersection delay is shown to decrease slightly at three of the intersections operating at LOS F, the results are likely due to congested conditions along the corridor and the inability to process all of the future traffic demands. The travel time analysis presented below shows that there would be impacts to the SR 531 corridor as a result of Action Alternative 2. The intersection operations analysis highlights impacts of the Action Alternative 2 at the following intersections:

- 67th Avenue NE/188th Street NE
- Smokey Point Blvd/SR 531 (172nd Street NE)
- 67th Avenue NE/SR 531 (172nd Street NE)

Overall, the poor operations and congested conditions discussed as part of the No Action Alternative would continue with Action Alternative 2. Potential mitigations measures are identified in section 3.3.3 Mitigation Measures.

Exhibit 71 provides a comparison between the SR 531 corridor travel times and speeds for the No Action Alternative and Action Alternative 2. Detailed travel time worksheets are provided in Appendix F.

Exhibit 71. 2040 No Action Alternative & Action Alternative 2 Weekday PM Peak Hour SR 531 Operations

		No Action		Alternative 2			
Direction	Distance	Travel Time (min)	Arterial Speed (mph)	Travel Time (min)	Arterial Speed (mph)	Change in Travel Time (min)	Change in Arterial Speed (mph)
Eastbound	4.6 miles	33	10	29	12	-4	+2
Westbound	3.9 Miles	20	13	23	11	+3	-2

Source: Transpo Group, 2020.

As shown in Exhibit 72, in the westbound direction along SR 531, travel times are anticipated to increase by approximately 3 minutes with Alternative 2 compared to the No Action Alternative. Similar to the intersections operations analysis, a slight decrease in travel times is shown for the SR 531 eastbound when comparing the No Action Alternative to Action Alternative 2. The change in travel time is relatively small and overall the SR 531 remains congested with poor operations along the corridor for both the No Action and Alternative 2 conditions.

Exhibit 72 provides a queuing summary of forecast 2040 Action Alternative 2 conditions. Detailed queuing worksheets are provided in Appendix F.

Exhibit 72. 2040 Action Alternative 2 SR 531 Intersection Queuing Summary

Intersection	95th Percentile Queue Lengths[1]	Intersection Maximum Reported 95th Percentile Queue[2]	Queues Exceeding Available Storage
2. I-5 SB Ramps/SR 531 (172nd Street NE)	95th percentile queue lengths are less than approximately 800 feet except the SB left	SB Left: 1,050 feet	EB and SB right
3. I-5 NB Ramps/SR 531 (172nd Street NE)	Queue lengths range from 425 to 1,650 feet	NB Right: 1,625 feet	EB left WB right

Intersection	95th Percentile Queue Lengths[1]	Intersection Maximum Reported 95th Percentile Queue[2]	Queues Exceeding Available Storage
4. Smokey Point Blvd/SR 531 (172nd Street NE)	East/West queues less than 575 feet North/South queues approximately 2,425 feet	SB Through: 2,425 feet	WB and SB right NB and SB left
5. 40th Avenue NE/SR 531 (172nd Street NE)	Between 75 and 450 feet	EB Through: 450 feet	EB, WB, NB, and SB left
6. 43rd Avenue NE/SR 531 (172nd Street NE)	Between 75 and 550 feet	WB Through: 550 feet	EB and WB left
7. 51st Avenue NE/SR 531 (172nd Street NE)	Through queues up to 3,775 feet with turning movement queues up to 475 feet	NB Through: 3,775 feet	EB, NB, and SB left NB right
8. 59th Avenue NE/SR 531 (172nd Street NE)	Queues up to 3,425 feet	SB Left: 3,425 feet	EB, WB, and NB left SB through-right
9. 67th Avenue NE/SR 531 (172nd Street NE)	Through-right queues up to 3,500 feet. Left/right turning queues up to 300 feet	SB Through-Right: 3,500 feet	WB, NB, and SB left
10. SR 9/SR 531 (172nd Street NE)[3]	Less than 350 feet	EB Through-Left: 350 feet	-

Source: Transpo Group, 2020.
Notes: WB = westbound; EB = eastbound, SB = southbound; NB = northbound.
- Queuing based on 95th percentile queue lengths from SimTraffic Queuing and Blocking report unless otherwise noted.
- Queue lengths rounded up to the nearest 25 feet.

7. Queuing based Sidra 8.

The anticipated vehicle queues for Action Alternative 2 is generally consistent with the No Action Alternative. Decreases in the longest queues are anticipated at the Smokey Point Blvd/SR 531 (172nd Street NE) and 43rd Avenue NE/SR 531 (172nd Street NE) intersections. Increases in the longest queue lengths are anticipated at the 67th Avenue NE/SR 531 (172nd Street NE) and SR 9/SR 531 (172nd Street NE) intersections.

Vehicle queuing at the I-5 northbound and southbound off ramps is anticipated to be approximately 1,625 feet and 1,050 feet, respectively. Similar to the No Action Alternative, the Alternative 2 vehicle queues are anticipated to be accommodated without backing onto the I-5 mainline.

Overall, the evaluation of traffic operations for the Action Alternative 2 shows poor operations

would continue along SR 531 similar to existing and No Action Alternative conditions.

3.3.3 Mitigation Measures

This section presents mitigation measures that would offset or reduce potential transportation impacts of the alternatives. The impacts of the action alternatives are similar, which results in similar mitigation measures. Mitigation measures include physical improvements to intersections and roadways to facilitate vehicular traffic as well as measures to reduce the overall reliance on the auto mode.

Intersection and Roadway Improvements

Based on the identified impacts under the Action Alternatives, intersection and/or roadway improvements are recommended along the SR 531 corridor and at the 67th Avenue NE/188th Street NE intersection.

SR 531 Corridor Improvements

WSDOT has identified improvements along SR 531 between 43rd Avenue NE and 67th Avenue NE and 67th Avenue NE and SR 9; however, the funding is uncertain at this time, so these improvements were not assumed as part of the baseline analysis. The project includes widening SR 531 from 2 to 4-lanes with intersection improvements and/or installation of roundabouts at major intersections. Additionally, as part of the planned improvements, multiuse paths would be constructed along SR 531. Implementation of multiuse paths allows for alternative transportation modes like walking and biking, reducing reliance on SOVs to help reduce traffic volumes in the study area.

An analysis was conducted for the No Action Alternative and Alternative 2 to provide an understanding of how improvements to SR 531 could mitigate the impacts of the CIC project. Widening along SR 531 would shift travel patterns in the study area travel demand; therefore, future forecasts with the improvements were completed for the Action Alternative 2 using the same method as described for the impacts analysis. The analysis assumes maintain traffic signal control at the study intersections; however, roundabout control could be provided. Specific improvements at intersections will require a detailed intersection control evaluation (ICE) as part of the WSDOT design process. The analysis also assumes signal timing improvements along SR 531 between 43rd Street NE and 67th Avenue NE including changes to the cycle lengths and coordination with optimized cycle lengths and offsets. The future forecasts show higher volumes along SR 531 between 43rd Street NE and SR 9 when compared to the unmitigated conditions due to the shift in traffic volume with additional capacity along this corridor. A summary of intersection volumes with mitigation is provided in Appendix D.

67th Avenue NE/NE 188th Street Intersection Improvements

The Action Alternatives would impact the 67th Avenue NE/188th Street NE intersection. It is recommended that a traffic signal be installed at this intersection when Manual of Uniform Traffic Control Devices (MUTCD) signal warrants are meant.

-5/SR 531 Interchange and Smokey Point Blvd/SR 531

The Action Alternatives would impact the I-5/SR 531 interchange and the Smokey Point Blvd/SR 531 intersection. These intersections already operate poorly and are a known bottleneck in the City. Both the I-5 interchange and the Smokey Point Blvd/SR 531 intersections are built out and adding capacity would require major improvements. The City of Arlington and WSDOT have no planned improvements identified at these locations. As part of a current development application traffic study, the City of Arlington is requiring that a more detailed review be conducted at the I-5/SR 531 interchange and the Smokey Point Blvd/SR 531 intersection. If improvements are identified, the City of Arlington could seek a proportional cost share from future CIC development. In addition to capacity improvement, consideration could be given to intelligent transportation systems (ITS) such as adaptive signal control (ASC) systems along SR 531 (172nd Street NE) between the I-5 ramps and 67th Avenue NE. Improvements to signal timing would allow for better progression and travel times along the corridor.

SR 531 Synchro/SimTraffic analysis files were provided by WSDOT as a basis of the analysis of Alternative 2 2040 traffic conditions with mitigation. WSDOT is currently evaluating specific corridor and intersection improvements such as traffic signals and roundabouts along SR 531 between 43rd Avenue NE and 67th Avenue NE. It is anticipated that with the widening and intersection improvements along SR 531 between 43rd Avenue NE and 67th Avenue NE both signals and roundabouts will improve operations over the current and projected future condition. This analysis assumes traffic signals at key intersections along SR 531 (172nd Street NE) based on the Synchro/Simtraffic files provided by the WSDOT. The intent of this analysis is to show that corridor improvements would mitigate the Alternative 2 impacts; more detailed operations analysis at the intersections and along the corridor would be evaluated as part of the study completed to determine the ultimate design of the planned improvements.

The analysis of the Alternative 2 mitigated conditions assumes SR 531 widening and intersection improvements (traffic signals and turn lanes) between 43rd Avenue NE and SR 9 as well as a traffic signal at the 67th Avenue NE/188th Street NE intersection. No improvements are assumed at the I-5/SR 531 interchange and the Smokey Point Blvd/SR 531 intersection. In addition, this Alternative 2 mitigated conditions analysis does not assume any reduction in vehicle traffic volumes with implementation of transportation demand management strategies or increases in transit. Intersection operations and travel time results for unmitigated and mitigated conditions are shown in Exhibit 73 and Exhibit 74 with detailed analysis worksheets provided in Appendix F. Traffic operations are shown for Alternative 2 representing the highest traffic levels projected at

the study intersections. Similar mitigation would be needed with the other Alternatives.

Exhibit 73. Action Alternative 2 With and Without Mitigation Weekday PM Peak Hour LOS Summary

Intersection	Without Mitigation			With Mitigation			Change in Delay
	LOS[1]	Delay[2]	WM[3]	LOS	Delay	WM	
1. 67th Avenue NE/188th Street NE	F	455	EBL	B	20	-	-435
2. I-5 SB Ramps/SR 531 (172nd Street NE)[4]	D	47	-	E	74	-	27
3. I-5 NB Ramps/SR 531 (172nd Street NE)[4]	F	84	-	F	104	-	20
4. Smokey Point Blvd/SR 531 (172nd Street NE)[4]	F	118	-	F	174	-	56
5. 40th Avenue NE/SR 531 (172nd Street NE)	C	31	-	C	24	-	-7
6. 43rd Avenue NE/SR 531 (172nd Street NE)	D	38	-	C	31	-	-7
7. 51st Avenue NE/SR 531 (172nd Street NE)	F	206	-	C	35	-	-171
8. 59th Avenue NE/SR 531 (172nd Street NE)	F	246	-	F	160	-	-86
9. 67th Avenue NE/SR 531 (172nd Street NE)	F	163	-	E	56	-	-107
10. SR 9/SR 531 (172nd Street NE)[4]	B	15	EB	C	25	NB	10
11. Smokey Point Blvd/156th Street NE	E	69	-	E	69	-	0
12. Smokey Point Blvd/152nd Street NE	C	23	-	C	23	-	0

Source: Transpo Group, 2020.

- Level of Service (A – F) as defined by the Highway Capacity Manual (TRB, 6th Edition)

1. Average delay per vehicle in seconds
2. Worst movement reported for unsignalized two-way stop-controlled intersections. NB = Northbound, SB = Southbound, WB = Westbound.
3. There are no planned capacity improvements at theses intersections. With shifts in traffic anticipated as a result of the widening of SR 531 between 43rd Avenue NE and 67th Avenue NE, traffic volumes would increase at these intersections resulting in additional delay.

As shown in Exhibit 73, with implementation of a traffic signal the 67th Avenue NE/188th Street NE intersection would operate at LOS B during the weekday PM peak hour. The SR 531 improvements would result in an increase in delay at the I-5 Ramp and Smokey Point Blvd intersections that are already anticipated to operate at LOS F during the weekday PM peak hour. The increase in delay at the I-5 Ramp and Smokey Point Blvd intersections is due traffic volumes increasing as vehicle travel patterns shift with the improvements and additional capacity along other portions of the SR 531 corridor. As noted previously, there are no improvements planned at the I-5 Ramp and Smokey Point Blvd intersections with the SR 531 project and this area would continue to be a bottleneck for the study area; however, the City is

working with a current development project to evaluate potential improvements. With the widening of SR 531 (172nd Street NE), delay would decrease at the following intersections:

- 40th Avenue NE/SR 531 (172nd Street NE)
- 43rd Avenue NE/SR 531 (172nd Street NE)
- 51st Avenue NE/SR 531 (172nd Street NE)
- 59th Avenue NE/SR 531 (172nd Street NE)
- 67th Avenue NE/SR 531 (172nd Street NE)

As shown in Exhibit 73, additional mitigation measures would be needed beyond the SR 531 widening and the 67th Avenue NE/188th Street NE intersection to support the CIC proposal.

Exhibit 74 summarizes the travel times along SR 531 with and without mitigation.

Exhibit 74. 2040 Action Alternative 2 With and Without Mitigation Weekday PM Peak Hour Arterial Operations

	Without Mitigation		With Mitigation	
Direction	Travel Time (min)	Arterial Speed (mph)	Travel Time (min)	Arterial Speed (mph)
Eastbound	29	12	35	8
Westbound	23	11	16	15

Source: Transpo Group, 2020.

Exhibit 74 shows with the widening of SR 531 and anticipated shifts in traffic volumes travel times would improve in the westbound direction but increase in the eastbound direction.

Consistent with the intersection LOS analysis, the corridor analysis shows that additional improvements would be needed beyond the SR 531 widening and the 67th Avenue NE/188th Street NE intersection to support the CIC proposal. It is recommended to strategies to reduce auto demand be considered since additional physical improvements will be costly and many of the intersections have already been built out.

Proportional Cost Share

There is no current project at the 67th Avenue NE/188th Street NE intersection, I-5/SR 531 interchange and the Smokey Point Blvd/SR 531 (172nd Street NE) intersection and funding is uncertain for the widening SR 531. Poor operations are anticipated in the study area with or without Alternatives 1 and 2. In order to mitigate the impacts of the Action Alternatives, it is recommended that developments within the study area contribute a percent proportionate

share of identified transportation improvement projects. Exhibit 75 shows the pro-rata share of Action Alterative 2 at the study intersections.

Exhibit 75. Pro-Rata Project Share Action Alternative 2

Intersection	2040 No Action Intersection Vehicle Volumes	2040 Action Alternative 2 Intersection Vehicle Volumes	Project Trips[1]	Percent Pro-Rata Share[2]
1. 67th Avenue NE/188th Street NE	1,650	1,770	120	6.8%
2. I-5 SB Ramps/SR 531 (172nd Street NE)	4,985	4,995	10	0.2%
3. I-5 NB Ramps/SR 531 (172nd Street NE)	5,420	5,430	10	0.2%
4. Smokey Point Blvd/SR 531 (172nd Street NE)	5,245	5,260	15	0.3%
5. 40th Avenue NE/SR 531 (172nd Street NE)	2,780	2,800	20	0.7%
6. 43rd Avenue NE/SR 531 (172nd Street NE)	2,535	2,605	70	2.7%
7. 51st Avenue NE/SR 531 (172nd Street NE)	2,800	2,870	70	2.4%
8. 59th Avenue NE/SR 531 (172nd Street NE)	3,015	3,125	110	3.5%
9. 67th Avenue NE/SR 531 (172nd Street NE)	2,895	2,955	60	2.0%
10. SR 9/SR 531 (172nd Street NE)	2,805	2,825	20	0.7%
11. Smokey Point Blvd/156th Street NE	4,630	4,665	35	0.8%
12. Smokey Point Blvd/152nd Street NE	3,125	3,185	60	1.9%

Source: Transpo Group, 2020
1. 2040 Action Alternative 2 intersection vehicle volumes – 2040 No Action intersection vehicle volumes
2. Project trips / 2040 Action Alternative intersection vehicle volumes.

The pro-rata share of Alternative 2 related volumes at study intersections range between less than 1 percent to 7 percent. The highest project share is at the 67th Avenue NE/188th Street NE which serves as a primary access to the northeast portion of the CIC area.

The cost of potential improvements was reviewed to provide an understanding of potential proportional cost share for CIC development projects. Exhibit shows the SR 531 corridor and 67th Avenue NE/188th Street NE intersection improvement costs and the CIC development share.

Exhibit 76. Summary of Mitigation and Action Alternative Pro-Rata Cost

Location	Improvement	Estimated Total Cost (Million $)[1]	2040 No Action Intersection Vehicle Volumes[2]	2040 Action Alternative 2 Intersection Vehicle Volumes[2]	Project Trips[3]	Percent Pro-Rata Share[4]	Pro-Rata Cost (Million $)[5]
SR 531 between 43rd Avenue NE and 67th Avenue NE	Widening SR 531 from 2 to 4-lanes with intersection improvements at major intersections. Multiuse paths constructed along SR 531	$39.3	14,025	14,355	330	2.3%	$0.904
SR 531 between 67th Avenue NE and SR 9		$45.0	5,700	5,780	80	1.4%	$0.630
67th Avenue NE/188th Street NE	Installation of traffic signal and railroad crossing improvements	$3.1	1,650	1,770	120	6.8%	$0.211
Total		**$87.4**					**$1.745**

Source: Transpo Group, 2020

SR 531 43rd Avenue NE to 67th Avenue NE project cost based on WSDOT published as of September 25, 2020 https://wsdot.wa.gov/projects/sr531/43rd-ave-67th-ave/home. SR 531 67th Avenue NE to SR 9 project cost based on City of Arlington Six-Year Transportation Improvement Program 2019-2024. Intersection improvement cost 67th Avenue NE/188th Street NE based on estimates prepared by Transpo Group.

2. Volumes for SR 531 are total entering volumes for the major intersections.
3. 2040 Action Alternative 2 intersection vehicle volumes – 2040 No Action intersection vehicle volumes
4. Project trips / 2040 Action Alternative intersection vehicle volumes.
5. Percent Pro-Rata Share x Estimated Total Cost

The total proportional share of the Alternative 2 mitigation improvement cost could be charge using a per trip fee. Considering the total cost of the CIC Alternative 2 development share of $1.745 million and 2,247 net new trips, the fee per trip would be $767.37.

Incorporated Plan Features

All alternatives would include frontage improvements following City and State design standards including sidewalk, curb, and gutter.

Regulations and Commitments

The following regulations and standards address transportation:

- The following regulations and standards:
  - AMC Chapter 10.80 - Commute Trip Reduction
  - AMC Chapter 20.56 - Streets and Sidewalks
  - Chapter 20.90 - Concurrency and Impact Fees
  - Arlington Engineering Standards
  - AMC Chapter 20.44.098 – Electric Vehicle Infrastructure

Transportation Impact Fees

Mitigation will be collected in the form of transportation impact fees. The City of Arlington has a traffic impact fee program. Impact fees will be determined at a project level when permit applications are filed.

Transportation Demand Management

Transportation Demand Management (TDM) should be considered to mitigate the impacts of the alternatives. TDM works to move people out of single occupant vehicles (SOVs) to more sustainable modes like walking, biking, and transit. The Arlington Marysville MIC Subarea Plan incorporates transportation demand management policies. The following provides a description of goal (AMMIC T-8) and associated policies related to transportation demand management and reduction of single occupancy vehicles.

AMMIC-T-8: An integrated system of public transportation alternatives and demand management programs provide mobility alternatives, reduce single occupant vehicles and expand the general capacity of arterials and collector streets in the AMMIC.

AMMIC-T-8.1: Continue to coordinate with all agencies and neighboring jurisdictions involved with public transportation, whether they be bus, HOV lanes, light rail, heavy rail, ride sharing, vanpooling, or other forms, to identify what is of best use to the AMMIC and participate in those ventures and proposals which are of general and/or specific benefit to the AMMIC. [PT-6.1]

AMMIC-T-8.2: Continue to work with Community Transit to support and enhance a multimodal transportation system including future bus rapid transit (BRT) by ensuring that the AMMIC transportation plans and facilities are consistent with public transit plans and programs.

AMMIC-T-8.3: Collaborate with Community Transit to expand and enhance bus transit service between the AMMIC and local and regional areas of high-density residential development.

AMMIC-T-8.4: Encourage developers to consider public transportation in transportation plans

submitted as part of development permit approval consideration. New developments should encourage van and carpooling, public transit use, and other alternatives to reduce single-occupancy vehicular travel. [PT-6.4]

AMMIC-T-8.5: Support construction of improved first-and-last mile connections with local and regional transit service. Work to provide transit stops and shelters along arterials and/ or facilitate vanshare activities through curb space management on-street or within off-street parking within the AMMIC.

AMMIC-T-8.6: Work to provide bike lockers and facilities at key transit connections.

AMMIC-T-8.7: Support and coordinate with Community Transit and WSDOT on the development of an expanded regional park-and-ride system to support use of alternative transportation modes in the AMMIC. Seek to provide tax credits or other incentives for allowing public parking on private property.

AMMIC-T-8.8: Promote programs that reduce travel demands on the transportation system through the following strategies:

- Encourage the use of HOV programs—buses, carpools, and vanpools—through both private programs and under the direction of Community Transit;
- Promote flexible work schedules allowing the use of transit, carpools, or vanpools;
- Promote reduced employee travel during the daily peak travel periods through flexible work schedules and programs to allow employees to telework part or full time;
- Encourage major employers to develop carpools, commuter routes, and provide company incentives if carpools are used [PT-6.5];
- Encourage employers to provide transportation demand management (TDM) measures in the workplace through such programs as preferential parking for HOVs, improved access for transit vehicles, and employee incentives for using HOVs;
- Develop commute trip mode split goals for the site and conduct regular surveys to monitor progress [T 1.3]; and
- Implement the provisions of the State Commute Trip Reduction Act.

As part of the alternatives mitigation, it is recommended that businesses be required to implement transportation demand management plans. Community Transit also has planned enhancements including a Swift line that would improve service in the study area and help encourage transit use. Planned roadway improvements and frontage improvements would provide enhancements to the sidewalk network and with roadway improvements that include the provision of sidewalks and bike lanes. Alternative 1 also provides additional workforce housing within the CIC, which would allow for employees to live closer to work and help reduce trips as well as make the use of alternative mode more viable.

Other Proposed Mitigation Measures

The City and/or WSDOT could identify other capital improvement projects to increase the capacity at impacted intersections and along roadways in the study area. Additionally, consideration could be given to programs like intelligent transportation systems (ITS) such as adaptive signal control (ASC) systems to improve traffic operations of the street system within the study area. Implementation of such strategies could result in an overall improvement of 10 to 15 percent, which could result in reduced delays and potentially improve LOS. ITS improvements or other capacity could be incorporated with other already planned improvements and/or could be required as part of developer contributions or frontage improvements.

As described previously, consideration of ITS or ASC could be implemented along SR 531 (172nd Street NE) between the I-5 ramps and 67th Avenue NE. Improvements to signal timing would allow for better progression and travel times along the corridor.

Consideration could also be given to changes to the jurisdiction's LOS policy. Increasing capacity at intersections and along the roadway system may improve LOS for vehicles; however, it could create impacts for other modes. The City and/or WSDOT may desire to revisit LOS policies to have a more multimodal LOS that gives priority to other modes and considers connectivity of the pedestrian and bicycle network and/or minimizing barriers for non-auto modes.

3.3.4 Significant Unavoidable Adverse Impacts

The Action Alternatives would allow for additional growth in the study area beyond what would occur with the No Action Alternative. With implementation of the proposed mitigation measures, there would be no significant and unavoidable impacts related solely to the proposed Action Alternatives.

Several intersections operate at LOS F during the weekday PM peak hour along SR 531 with or without the Action Alternatives. These intersections would also have poor operations with mitigation under both the No Action and Action Alternatives conditions. The SR 531 impacts are considered a cumulative significant and unavoidable adverse impact that would occur with or without the action alternatives.

There may be secondary impacts related to widening the SR 531 corridor as part of the proposed mitigation for the action alternatives. Providing the corridor improvements is anticipated to shift traffic volumes and delays may increase at some locations along SR 531. Reducing reliance on auto travel within the study area would help reduce secondary impacts.

3.4 Land Use and Aesthetics

This section addresses consistency of the alternatives with City and regional plans and policies. The Affected Environment reviews the Arlington-Marysville Subarea Plan vision and policies, Arlington's Comprehensive Plan policies as well as Puget Sound Regional Council's (PSRC's) centers growth strategy and Snohomish County Countywide Policies. Alternatives are compared to these strategies and policies.

This section also addresses physical land use patterns within and surrounding the Study Area, considering changes in the types of industrial, and manufacturing uses. Existing land use pattern and aesthetic conditions are based on field reconnaissance, imagery review, and Snohomish County and City of Arlington parcel data. Future conditions consider the level of growth and land use change described in Chapter 2 for the alternatives.

3.4.1 Affected Environment

Existing Policies and Regulations

Arlington Plans

Arlington Comprehensive Plan

The City of Arlington's Comprehensive Plan is the community's vision for Arlington over 20 years, 2015-2035. The Comprehensive Plan's land use strategy accommodates Arlington's growth targets and establishes a mix of uses that will serve current and future populations. Its general goal is to "ensure that the character and location of land uses optimize the economic benefit, enjoyment by residents, and protection of natural resources" through implementing growth management policy, economic devleopment strategy, neighborhood conservation, and environmental preservation.

The Element also strategizes to achieve the City's goal for formal designation of the Study Area as a Manufacturing Industrial Center. The City hopes to incorporate an additional 2,421 housing units by 2035 and for employment to reach 20,884. Current employment in the area is estimated at 5,586 jobs. Much of the employment growth is expected to stem from the airport zone and aerospace industry. Arlington expresses its plans of rthe Arlington/Marysville Manufacturing Industrial Center (AMMIC) by limiting non-supportive uses within the Study Area. This includes retail, residential, and unrelated office uses. Encouraged uses will be industrial and advanced technology.

In addition, the Plan identifies policies for the subarea and zones relevant to the AMMIC. These

include the following:

> *PL-1.9 Business Park: The Business Park designation is intended to promote office, high technology research and development, and related uses in a master-planned, park-like setting.*
>
> *PL-1.10 Light Industrial: This designation is intended to allow those types of industrial, wholesale, or service uses that have minimal impacts on surrounding properties. This is accomplished by having all activities done in completely enclosed structures. Due to the proximity of this zone to the Arlington Airport, care should be taken to ensure that uses are compatible with it, and that they will not impact airborne aircraft because of the height of structures, smoke, glare, lights which shine upwards, radio interferences from transmissions, nor any water impoundments or sanitary landfills which would create potential hazards from waterfowl to airborne aircraft.*
>
> *PL-1.11 General Industrial: This land use designation is intended to allow a full range of industrial, wholesale, or service uses that traditionally may have impacts to surrounding properties, as they involve a great deal of activity and storage outside the building; large doors are open; and there may be more noise, light, heat, smoke, dust, and odors detected beyond the property lines than in other zones.*
>
> *PL-1.12 Aviation Flightline: – This designation is intended to allow only aviation related uses proximate to airport runways and taxiways. Aviation related uses include any uses related to supporting aviation that require direct taxi-way access as a necessary part of their business operations, such as aviation services, manufacturing of aviation-related goods, general services whose primary customers would be those engaged in aviation-related activities (e.g., restaurants primarily catering to pilots, employees, or passengers), or other uses that are clearly related to aviation.*

The Plan also outlines policies specifically geared toward industrial land use, with the goal of supporting a high jobs-to-households ratio. These policies include:

> *PL-12.1: Industrial land uses should be located in the vicinity of Arlington Airport in order to take advantage of existing and anticipated transportation systems.*
>
> *PL-12.5: The City should pursue the designation of the Arlington-Marysville Manufacturing Industrial Center (AMMIC) in the Snohomish County Countywide Planning Policies and regional designation by Puget Sound Regional Council (PSRC).*[1]
>
> *PL-12.6: The City should support the development and growth of the Arlington-Marysville AMMIC by supporting a concentrated manufacturing and industrial base and by planning for future growth and infrastructure improvements.*

[1] The AMMIC was designated as a regional MIC in 2018

PL-12.7: The City should develop appropriate zoning, design review and landscaping regulations so that manufacturing uses within the Arlington portion of the AMMIC are buffered from adjacent or abutting residential uses.

PL-12.8: The City should ensure that at least 80% of the property within the AMMIC is planned and zoned for industrial and manufacturing uses. Compatible non-industrial uses shall be as allowed under PSRC certification and be conditioned to mitigate for potential conflicts with current and future industrial uses.

Arlington Marysville MIC Subarea Plan

The outlined vision in the Subarea Plan is that the AMMIC is an industrial employment center with the majority of land used for job-rich industrial uses. Commercial uses are restricted to those who provide services to industrial businesses and employees and residential uses are not allowed.

Growth targets for development in the entire AMMIC straddling both Arlington and Marysville is an additional 20,000 jobs by 2040. This plan outlines a growth strategy which includes transportation improvements both for the street network and trail systems, the identification of opportunity sites for focused infrastructure improvements south of the airport site, green infrastructure development for stormwater management, and a potential realignment of Edgecomb Creek.

AMMIC-LU-1: Land within the MIC is designated for industrial use in sufficient quantity to ensure the economic growth and vitality of Marysville and Snohomish County.

AMMIC-LU-2: Growth in the AMMIC complements existing character and development pattern.

AMMIC-LU-3: Industrial activity in the AMMIC does not adversely impact adjacent uses and neighborhoods.

AMMIC-LU-4: Development in the AMMIC is attractive as well as efficient, exhibiting high quality architectural and landscape design.

AMMIC-LU-5: Site development in the AMMIC incorporates natural features, open spaces, stormwater drainage facilities and, where applicable, restored stream corridors as landscape and amenity features and incorporate these natural systems as part of the MIC ' s design identity.

AMMIC-LU-6: Roadways, walkways, trails and other public circulation features accommodate all appropriate transportation modes and are attractively landscaped in a way that reinforces the AMMIC ' s identity and design character.

Airport Master Plan

Arlington Municipal Airport, owned and operated by the City of Arlington, is an important part of

the national system of airports, as well as a key component of the transportation infrastructure that serves the City of Arlington, Snohomish County, and the northern portion of the Seattle-Tacoma Metropolitan Area.

Exhibit 77: National Plan of Integrated Airports System Airports

Source: PSRC Regional Aviation Baseline Study, 2020

The airport's transportation facilities, and aviation-related businesses and facilities, is a significant regional economic asset. The average annual operations numbers are approximately 60,000 per year across a range of aircraft. The Arlington Airport Master Plan was last updated in 2012 and will updated again in 2023 or 2024 depending on funding.

Growth Management Act

Arlington's strategy for growth is consistent with the Growth Management Act (GMA), which restricts urban growth to urban areas to prevent sprawl. This is represented in the following GMA goals:

> *(1) Urban growth. Encourage development in urban areas where adequate public facilities and services exist or can be provided in an efficient manner.*
>
> *(2) Reduce sprawl. Reduce the inappropriate conversion of undeveloped land into sprawling, low-density development.*
>
> (3) *Transportation. Encourage efficient multimodal transportation systems that are based on regional priorities and coordinated with county and city comprehensive plans.*
>
> *(4) Housing. Encourage the availability of affordable housing to all economic segments of the population of this state, promote a variety of residential densities and housing types, and encourage preservation of existing housing stock.*
>
> *(5) Economic development. Encourage economic development throughout the state that is consistent with adopted comprehensive plans, promote economic opportunity for all citizens of this state, especially for unemployed and for disadvantaged persons, promote the retention and expansion of existing businesses and recruitment of new businesses, recognize regional differences impacting economic development opportunities, and encourage growth in areas experiencing insufficient economic growth, all within the capacities of the state's natural resources, public services, and public facilities.*
>
> *(7) Permits. Applications for both state and local government permits should be processed in a timely and fair manner to ensure predictability.*
>
> *(9) Open space and recreation. Retain open space, enhance recreational opportunities, conserve fish and wildlife habitat, increase access to natural resource lands and water, and develop parks and recreation facilities.*

Source: RCW 36.70A.020

PSRC Vision 2050 and Snohomish County Countywide Policies

Both the Puget Sound Regional Council's (PSRC's) Multi-County Planning Policies (MCPPs) and the Snohomish County Countywide Planning Policies (CWPPs) direct cities toward a centers strategy, in which urban growth is concentrated in designated regional and local centers,

consistent with Arlington's land use strategy. Regional centers, such as the Arlington CIC, are designated in the MCPPs, but local centers are also recognized as important to regional growth.

PSRC is currently updating its regional plan that extends the time horizon for regional planning. A draft version of the VISION 2050 plan was provided to the public in July 2019, detailing how the four-county region would work to accommodate 5.8 million people and 3.4 million jobs by the year 2050. This document is currently under review, and a final version is expected to be approved in 2020.

Multicounty Planning Policies support the development of industrial centers, described as "existing employment areas with intensive, concentrated manufacturing and industrial land uses that cannot be easily mixed with other activities," (p.27).

> *MPP-RC-7: Give funding priority—both for transportation infrastructure and for economic development – to support designated regional growth centers and manufacturing/industrial centers, consistent with the regional vision. Regional funds are prioritized to regional centers.*
>
> *MPP-RGS-10: Focus a significant share of employment growth in designated regional manufacturing/industrial centers.*

In the Snohomish County Comprehensive Plan, establishing Urban Growth Areas (UGAs) and Centers for concentration of growth is the established strategy for efficiency of providing public services and reduced conversion of unused land to low-density, sprawled development types. There are four types of Centers in Snohomish County, including Manufacturing and Industrial Centers (MIC) such as the Arlington/Marysville MIC.

> *Objective LU 1.A Establish UGAs with sufficient capacity to accommodate the majority of the county's projected population, employment, and housing growth over the next 20 years.*
>
> *Objective LU 2.C Encourage intensification and revitalization of existing and planned commercial and industrial areas.*
>
> *Whenever possible, it is the county's intent to support the efforts of the cities to preserve, enhance, or develop centers within their city limits.*

Land Use Patterns

Current Land Use Patterns

Land use in the Study Area is predominantly industrial, with the airport and other industrial uses comprising 50% of the total acreage. Commercial and Services combine to represent 27% of land use, and 14% is vacant – some of which is undevelopable. Ten percent (10%) of Study Area

land is used for residential, agricultural, or open space uses.

Exhibit 78: Acreage by Land Use Category, Arlington MIC, 2020.

Assessor Land Use Category	Parcel Acres	Parcel Acres (% Total)
Ag-Open Space CU	107	5%
Airport	728	34%
Commercial	435	20%
Manufacturing/Industrial	320	15%
Public/Civic	1	0%
Residential	118	5%
Right of Way	3	0%
Services	161	7%
Vacant	297	14%
Total	**2,170**	**100%**

Sources: Snohomish County Assessor, 2019; BERK, 2020.

Exhibit 79: Current Land Use, 2020

Sources: Snohomish County Assessor, 2020; BERK, 2020.

Exhibit 80: Looking East Across Arlington Municipal Airport.

Image Source: City of Arlington, 2020.

The Arlington Municipal Airport is central to the Study Area. A variety of services offered include flight training, scenic charter flights, aerial photography, and airplane maintenance. There are five runways and four taxiways.

The airport is also surrounded by a variety of land uses allocated to agriculture/open space. Undeveloped agricultural lands are within the City of Marysville classified under the Open Space Taxation Act of Washington. Residential land uses are primarily located adjacent to airport property along the northern and western boundaries, with a small area located south of the airport. A large area of residential land use is also located east of 67th Avenue NE, and extends both north and south of 172nd St/SR531 NE. The majority of industrial development within the vicinity of the airport is concentrated east, located west of 67th Avenue NE and continuing northeasterly towards the Arlington Central Business District (CBD). Existing industrial development located within the northern portion of the airport. The majority of commercial, office, and business park development is located south and west of the airport and concentrated along 172nd St/SR531 NE, near the Interstate 5 (I-5) interchange.

The Arlington Airport is unique in that it has sufficient area to accommodate both aviation and non-aviation development area. Exhibit 81 shows specific development areas within the airport. Approximately 130 businesses are located on airport property that lease land and/or facilities from the City of Arlington. Approximately 25% of these businesses involve aviation or aviation-related uses associated with the airport. The remaining businesses consist primarily of nonaviation uses located within the Arlington Airport Industrial Park. The industrial park consists of approximately 102 acres and is located east of 59th Avenue NE, within the northeast quadrant of the airport.

Exhibit 81: Arlington Municipal Airport Layout.

Image Source: City of Arlington, 2020.

Paths, mobility, and connectivity

Evaluation and assessment of mobility throughout the Study Area.

Mobility in the Study Area is primarily auto-oriented with roads connecting between industrial and commercial centers. Two major trails, Airport and Centennial, provide access and recreation for pedestrians and cyclists.

- Airport Trail: A 6-mile pedestrian trail surrounds the airport.
- Centennial Trail: A cycling trail runs north-south alongside 67th Avenue NE through the Study Area. The trail extends 23 miles connecting to Lake Stevens and Snohomish to the south and north to Pilchuck.

Exhibit 82. Centennial Trail

Centennial Trail, Source: City of Arlington

Land Use Designation and Zoning Districts

Current zoning within the Study Area includes (in order of acreage) General Commercial, Aviation Flightline, Light Industrial, Business Park, General Industrial, Highway Commercial, and Public/Semi-public zones. See Exhibit 83 and Exhibit 85. General Industrial, Aviation Flightline, and Light Industrial combine to comprise 80% of the acreage in the Study Area. Zones have maximum building heights of 45-50'. This is echoed in the low-rise building style throughout this district.

The Arlington Airport is zoned Aviation Flightline strictly for airport operations and uses directly related to aviation operations on site. A 236-acre area north of the Airport is zoned for Light Industrial. The Light Industrial district is intended to be a business park-like setting, compared to the General Industrial district which allows more resource-based manufacturing. The Arlington Airport's Business Park zone comprises 166 acres and is designed to accommodate office, hi-tech, research and development and related uses in a master-planned layout.

Exhibit 83: Study Area Acres by Zone, Study Area, 2020.

Zone	Acres	% Total
General Industrial	861.86	38%
Aviation Flightline	737.02	32%
Light Industrial	236.68	10%
Business Park	165.57	7%
General Commercial	165.23	7%
Highway Commercial	88.42	4%
Public/Semi-Public	35.98	2%
TOTAL:	**2,290.78**	**100%**

Sources: City of Arlington, 2020; BERK, 2020.

Exhibit 84: Development Standards by Zone, Study Area, 2020.

Zone	Min Lot Size	Setback Requirements (Non-Arterial)	Setback Requirements (Arterial)	Setback Requirements (Lot Line)	Height Limits	Max Lot Coverage
General Industrial	10,000 SF	25'	25'	5'	50'	100%

Zone	Min Lot Size	Setback Requirements (Non-Arterial)	Setback Requirements (Arterial)	Setback Requirements (Lot Line)	Height Limits	Max Lot Coverage
Aviation Flightline	10,000 SF	25'	25'	5'	50'	100%
Light Industrial	10,000 SF	25'	25'	5'	50'	100%
Business Park	10,000 SF	25'	25'	5'	50'	100%
General Commercial	-	25' for bldg. >10,000 SF; 10' for bldg. <10,000 SF	25' for bldg. >10,000 SF; 10' for bldg. <10,000 SF	5'	45'	100%
Highway Commercial	-	25' for bldg. >10,000 SF; 10' for bldg. <10,000 SF	25' for bldg. >10,000 SF; 10' for bldg. <10,000 SF	5'	50'	100%
Public/Semi-public	Same as predominately surrounding zone					

Sources: Municipal Code of Arlington Table 20.48-5, 2020; BERK, 2020.

Exhibit 85: Current Zoning Map, 2020

Sources: City of Arlington, 2020; BERK, 2020.

In addition to the base zoning, the area within and around the airport are within a special zoning overlay called the Arlington Airport Protection District (APD). The APD is a zoning overlay that modifies the density and land use requirements of underlying zoning districts. The APD was adopted in the Arlington Municipal Code based on state regulations that require cities to enact development regulations to discourage siting of incompatible land uses and densities adjacent to general aviation airports to reduce hazards to lives and properties and ensure a safe flying environment.

The APD zoning overlay consists of four Subdistricts (A, B, C & D). Subdistrict A is further subdivided into five Airport Safety Zones. Each Subdistrict and Airport Safety Zone modifies the underlying zone's allowable density and land uses.

The following notable regulations apply to Subdistricts A, B, C, and D:

- No land uses that could cause electronic interference.
- No buildings or structures that produce fly ash, dust, vapor, gases, or other forms of emissions that could affect visibility.

Subdistrict A includes 5 protection and safety zones related to airplane takeoff and landing and has the most zoning restrictions. Subdistrict B restricts any special functions under the airport traffic pattern. Special function uses are based on the relative inability of individuals occupying such a space to move out of harm's way. Structures that fit this criteria include schools, hospitals, nursing homes, and sports stadiums. Subdistricts C and D have the fewest limitations. Development of some industrial and manufacturing facilities are potentially challenged by the restriction on particulate emissions in all Subdistricts.

Exhibit 86. of APD Districts & Development Standards, 2020

Zone	Standards
Subdistrict A	▪ Structures, devices, or other objects that make it difficult for pilots to identify airport lights, or otherwise impair visibility are prohibited. ▪ No bulk above ground storage greater than 6,000 gallons of flammable or hazardous substance. ▪ Except for aeronautical events, no permanent (e.g. housing) or temporary (e.g. festivals) public assembly of people. ▪ Special functions prohibited under airport traffic pattern.
Runway Protection Zone	▪ No use, building, or other structure permitted. Accessory activities, such as off-street parking or low-growing landscaping, are permitted. ▪ No high intensity uses permitted. ▪ No emergency services stations or operations.
Inner Safety Zone	▪ No high intensity uses permitted. ▪ No emergency services stations or operations. ▪ Maximum Residential Density: 1 du/10 acres ▪ Maximum Nonresidential Intensity[1]: 25
Inner Turning Zone	▪ No high intensity uses permitted. ▪ No emergency services stations or operations. ▪ Maximum Residential Density: 1 du/5 acres ▪ Maximum Nonresidential Intensity[1]: 60
Outer Safety Zone	▪ Maximum Residential Density: 1 du/5 acres ▪ Maximum Nonresidential Intensity[1]: 60
Sideline Safety Zone	▪ Maximum Residential Density: 1 du/5 acres ▪ Maximum Nonresidential Intensity[1]: 80
Subdistrict B	▪ Special functions prohibited under airport traffic pattern.
Subdistrict C	▪ No unique restrictions
Subdistrict D	▪ No unique restrictions

[1]Average number of people per gross acre.
Source: City of Arlington, 2020

Employment Patterns and Growth

The population of Arlington is estimated at currently 20,600 as of June 2020. The Arlington Comprehensive Plan estimates a 2035 population of 24,937.

Job growth in the Study Area has grown by almost 50% 2010-2018, compared to 24% for Snohomish County overall. See Exhibit 87. The most growth, by number of jobs, has been in the Construction/Resources and Manufacturing sectors.

Exhibit 87. Job Growth by Sector for Study Area, 2010-2018.

Sources: PSRC, 2018; BERK, 2020.

In 2018, the Study Area captured 10% of Snohomish County's Manufacturing and Wholesale Trade/Transportation/Utilities (WTU) employment, and 2% of overall employment. Forecasts for employment growth in Snohomish County, according to PSRC's 2017 Land Use Vision, anticipates overall employment growth of 48% from 2015-2040 and 11% growth in Manufacturing/WTU sectors. Assuming consistent capture rates, this forecasts employment of 8,825 in Manufacturing and WTU sectors and total employment of 9,179 by 2040 for the Study Area, an increase from the 2018 estimates of 3,095 and 4,969 respectively.

Exhibit 88. Snohomish County Employment Forecasts, 2015-2040.

Sources: PSRC Land Use Vision, 2017; BERK, 2020.

Buildable Lands Capacity

The Snohomish County Buildable Lands Report, released in 2012 and adopted in 2013, analyzed land parcels countywide for development capacity. The analysis combined individual parcels into "Economic Units" to more accurately describe land uses within parcels, across parcels, and parcel assembly opportunities when multiple, commonly owned parcels lie side by side. The analysis deducted critical areas (including a small proportional deduction for unmapped critical areas), easements, and capital facilities from its final inventory of developable land. The analysis found capacity for 10,502 additional jobs in the CIC. Snohomish County, in consultation with its cities through the Snohomish County Tomorrow process, developed and adopted growth targets for the City of Arlington amounting to growth of 6,971 additional residents, 2,725 additional housing units, and 12,170 additional jobs by the year 2035. OFM projections are for a population in excess of 26,000 residents, and 10,000 homes by 2040.

Neighborhood Character

The Study Area is characterized by low-rise commercial and industrial development, vacant lots, and outdoor storage areas. The airport is the central feature of the Study Area, with long runways connected in a triangular pattern. It is buffered by open space and related industry buildings to enhance the site's safety, noise, and aesthetics.

The character of the Study Area does not naturally lend itself to residential development, as the

building scale favors larger format supply-side businesses rather than pedestrian-focused infrastructure or retail shopping experiences. The presence of the airport, and the spatial patterns associated with its functional needs, is another aspect of neighborhood character that limits the attractiveness of the area as a walkable node for residential or mixed-use development.

Exhibit 89: Looking east across 67th Ave, south of 204th St NE looking toward Highway 9

Northeastern zone of Study Area, Image: Google Maps

Exhibit 90: Looking east from 59th Avenue between 188th and 172nd St NE

Transition from Airfield to General Industrial area, Image: Google Maps

Exhibit 91: Looking South from Airfield across 172nd St NE

Transition from Airfield to Commercial areas and beyond, Image: Google Maps

Edges and Adjacent Neighborhoods

The southeastern edge of the Study Area is formed by 67th Ave NE. The neighborhood east of this boundary consists of residential development.

The southeastern edge of the Study Area is formed by 67th Ave NE. The southern border of the Study Area aligns with the city of Marysville border.

Exhibit 92: Southeastern Edge

Image: Google Maps

Exhibit 93: Southern Boundary of Study Area

Image: Google Maps

Area along the northern boundary includes both Arlington and portions of the Arlington UGA. The Portage Creek Wildlife Reserve is a large park/open space in the northwest corner and most other surrounding development is single family residential.

Exhibit 94: Northern boundary of Study Area

Redevelopment Potential

Assessed value per square foot of land is one metric used to identify parcels that may be likely to redevelop. Parcels where the assessed value per square foot is low, such as parcels with older, low value buildings, and vacant parcels, may be under-utilized. Some of these under-utilized parcels may be likely to redevelop under given market conditions and based on property owner interests. In some cases, parcels that are not under-utilized may also redevelop based on property owner interests or other changes. Within the Study Area, assessed value per SF ranges as high as $95/SF, although most parcels fall below $25/SF. Highest value parcels are shown in gold in Exhibit 95. These parcels are distributed across the eastern half of the Study Area and often cluster together around road intersections.

Other factors play into which sites are ready for redevelopment such as site attributes, zoning allowances, market conditions, owner preferences, etc.

Exhibit 95: Assessed Value per SF in Study Area, by parcel

Sources: Snohomish County Assessor, 2020; BERK, 2020.

3.4.2 Impacts

Thresholds of Significance

For the purposes of this EIS, the thresholds of significance are:

- Inconsistency with current plans and policies.
- Differences in activity levels at boundaries of uses likely to result in incompatibilities.
- Change to land use patterns or development intensities that preclude reasonable transitions between areas of less intensive zoning and more intensive zoning.

Impacts Common to All Alternatives

All studied alternatives include some amount of redevelopment. As redevelopment occurs within the Study Area, there is the potential for localized land use compatibility impacts to occur where newer development is of greater height and intensity than existing development. These compatibility impacts, if they occur, are temporary and will be resolved over time. The extent of these conflicts varies by alternative and can be reduced by the application of existing or new development and design standards.

Land Use Plans and Policies

There are no common impacts to land use plans and policies. See each alternative for more information.

Land Use Within the Cascade Employment Center

New growth is expected to occur under all the alternatives, although the amount of growth and composition of the mix of land uses will vary by alternative. Activity levels would increase across the Study Area with new businesses, and employees. Alternative 1 will also see a small addition of residents to the study area.

Exhibit 96 shows the projected growth in building space and land use mix under each of the alternatives.

Exhibit 96. Alternative Comparison of Total and Net Growth

	Existing	No Action	Net Change*	Alternative 1	Net Change*	Alternative 2	Net Change*
Population	890	890	0	2,273	1,383	890	0
Dwellings	332	332	0	848	516	332	0
Jobs	4,969	9,793	4,824	11,594	6,625	13,813	8,844

*Net change compared to existing.
Source; PSRC 2020; Transpo Group 2020; BERK, 2020.

The majority of growth through 2040 is anticipated to occur on vacant, partially used and redevelopable sites as identified through the buildable lands analysis in 2012. With the exception of two parcels just south of 172nd Street in the western portion of the study area and a few smaller parcels east of the airports, these sites are also in the lower range of $1-$5 assessed value as shown on Exhibit 95

Land Use Surrounding the Study Area

Land use compatibility impacts are unlikely to occur to the south, southwest or north of the Study Area. In the south, 172nd Street is a physical barrier between the Study Area and areas to the south including across the city boundary in Marysville. Past the barrier of the street, undeveloped land buffer development in the Study Area from development in Marysville. In the southwest trees and open space buffer residential neighborhoods are buffered from the airfield and development. In the north, the Portage Creek Wildlife Reserve and existing development act as physical barriers separating the Study Area from areas further north. There are slight differences in impacts regarding development in the northern portion among the alternatives and this is covered under individual alternatives below.

Changes in land use in the Study Area will be supported by the development of additional street connections, a relocated Edgecomb Creek, and improvements to 172nd Street (as part of the Connecting Washington project). In general, these improvements provide important amenity and transportation resources to support the land use in all studied alternatives. Collectively these resources provide access to transportation connections and recreation amenities for future employees and residents to commute to and from and circulate within the Study Area. The increased connectivity and support for non-motorized circulation minimizes the use of land for auto-related uses such as employee parking. Well designed, activated, and located public spaces provide multiple benefits such as places to recreate, gathering spaces, access to nature, a visual break from surrounding development, and environmental benefits. Together, these

additions increase opportunities for people to circulate within the area and reduce the impact of additional development. Additional information about the impacts of transportation in the Study Area can be found in Chapter 3. Transportation.

No Action Alternative

Land Use Plans and Policies

The No Action Alternative would not amend current Arlington plans or regulations to reflect changed conditions with the adoption of the Subarea Plan. No Planned Action would be adopted to facilitate environmental review of new development or redevelopment. The No Action Alternative would continue the current land use designations and zoning districts of General Commercial, Aviation Flightline, Light Industrial, Business Park, General Industrial, Highway Commercial.

The No Action Alternative would continue to meet GMA goals by identifying the CIC as a manufacturing industrial center which can focus growth and avoid sprawl in the region. However, with no further investments the area may take longer to redevelop as envisioned in the Subarea Plan. In 2018, the Study Area captured 10% of Snohomish County's Manufacturing and Wholesale Trade/Transportation/Utilities (WTU) employment, and 2% of overall employment. The No Action Alternative assumes roughly similar capture rates, with the Study Area growing to roughly 9,800 jobs by 2040. This is lower than the 12,170 adopted job target for 2035. The No Action Alternative is also unlikely to assist the City in meeting its increased VISION 2050 growth allocations for the 2017-2050 period given its relative lower development capacity.

Land Use Patterns Within the Cascade Industrial Center

The No Action Alternative is the least intensive land use alternative. It applies future growth to existing conditions using the policies and zoning that are in place today. As a result, future land use under the No Action Alternative is consistent with Arlington's current Comprehensive Plan, zoning (Exhibit 85) and development regulations (Exhibit 84).

No additional dwelling units or population is anticipated. Under the No Action Alternative current employment at about 4,969 jobs is maintained and increased by 1,962 jobs; however, there are no incentives or investments planned.

As the area grows, the mix of land uses under the No Action Alternative will remain similar to the existing condition, with manufacturing, construction/resources and warehousing, transportation and utilities sector uses. Based on the City's non-motorized transportation plan improvements to SR 531 and better connectivity could increase the likelihood of the redevelopment of land uses in a few areas. There is likely to be some redevelopment on under-utilized sites in the Study Area, but industrial development in sectors envisioned in the subarea plan is not anticipated.

Improvement to SR 531 to the addition of non-motorized paths per the City's non-motorized transportation plan will create a stronger non-motorized connection between the study area and surrounding areas, which could lead to increased activity on this corridor.

Building forms would also remain similar to the low-rise industrial building forms that exist today. Redevelopment of some areas may result in larger buildings where new construction maximizes development on parcels that are currently underutilized according to existing zoning. This is most likely to occur on underutilized or vacant parcels, especially west and northwest pf the airport.

With a mix of land uses and building form similar to existing conditions, there are unlikely to be issues with land use incompatibility within the center.

Land Use Patterns Abutting the Study Area

General Industrial, Aviation Flightline, and Light Industrial combine to comprise 80% of the zoned acreage in the Study Area. According to the Land Use Code, maximum heights for these zones are in the 45-50 feet range. While heights of 45-50 feet are allowed, development of this scale is not likely for industrial buildings in the manufacturing, warehousing, transportation, utilities, and construction sectors. These sectors tend to have large industrial users with buildings such as warehouses and logistics facilities, that need large sites with single level buildings in the 35-40' height ranges. Some buildings that maximize the allowed heights are possible on some sites such as the city-owned vacant parcels.

Action Alternative 1

Comprehensive Plan and Zoning: The current Comprehensive Plan envisions the CIC as an industrial environment characterized by the clustering of industrial activities. Non-supportive uses such as residential, retail, and unrelated office uses are limited within the Study Area. Under Alternative 1, the CIC would continue to be a node for industrial uses. Sectors identified as desired sectors from the Subarea Plan would be encouraged.

The current Land Use Element includes policies that support the CIC as an industrial center. Alternative 1 is consistent with policy language in the Land Use Element and the AMMIC Subarea Plan that prioritizes job-rich industrial uses for the area. Supportive uses such as a limited amount of housing, such as for the center's workforce, and commercial uses and services for employees and businesses are anticipated. In addition, training and workforce development uses are anticipated to support the development of a vibrant industrial center.

The current Comprehensive Plan specifies a land use designation with heights and intensities which are consistent with the heights and intensities anticipated under Alternative 1. Existing zoning has maximum heights in the 45-50' range. Intensification of manufacturing, food processing and maritime uses are anticipated to use greater use of technology / automation.

Building forms under Alternative 1 are however anticipated to fit within existing regulations for heights and densities.

Development under Alternative 1 would be consistent with the AMMIC Subarea Plan. It would include adjustments to the zoning code to allow workforce housing, increase Light Industrial and Business Park zoning and decrease General Commercial and Highway Commercial zoning. Policy adjustments in the Comprehensive Plan would include modifications to the Capital Facilities Element.

Alternative 1 would also adopt a Planned Action Ordinance to help facilitate environmental review of new development and redevelopment.

Alternative 1 would further GMA goals by concentrating industrial activity and employment activity in the Study Area which can focus growth and avoid sprawl in the region. As noted above, in 2018, the Study Area captured 10% of Snohomish County's Manufacturing and Wholesale Trade/Transportation/Utilities (WTU) employment, and 2% of overall employment. Alternative 1 assumes higher capture rates, given the addition of workforce development facilities, a planned action ordinance, and other investments, with the Study Area growing to roughly 11, 595 jobs by 2040. This is close to the 12,170 adopted job target for 2035. Alternative 1 could assist the City in meeting its increased VISION 2050 growth allocations for the 2017-2050 period with its greater growth in employment growth above the No Action Alternative.

Airport Uses and Standards: Alterative 1 would continue existing zoning and regulations at the Arlington Municipal Airport.

Land Use Patterns Within the Study Area

Alternative 1 represents the medium growth alternative. While remaining industrial/manufacturing uses, a different set of land uses are mixed and distributed differently compared to Alternative 2 or the No Action Alternative. This alternative is aligned with the job growth, geographical distribution, and sector mix vision of the AMMIC Subarea Plan. Based on this, land uses across aerospace, robotics, advanced manufacturing, food processing, maritime, wood products and mass timber manufacturing are anticipated to dominate the study area. Given the need for workforce supports, residential development would be newly established in the area west of 51st Ave NE, south of the National Foods site and north of the Emerald Springs RV park site. Educational and training facilities would be newly established on the Airport Business Park parcels west of the airport offering workforce development, or reskilling opportunities, relevant to manufacturing clusters in the study area. This will include creating a center of excellence, within the Airport Business Park, that will address and provide advanced training facilities for the industry clusters that are prevalent in the CIC. This will ensure that industries will have a continual supply of trained employees to fulfill their employment needs. Edgecomb Creek would be relocated and industrial development with employee serving amenities such as trails or small recreation areas would develop on sites adjacent to the

creek.

Building heights may reach as high as 50 feet under Alternative 1, but mostly in concentrated areas of infill development on the eastern portion of the Study Area, and on vacant, partially used or developable parcels along the southern edge of the study area. Areas adjacent to the residential areas on the northwest and eastern edges are anticipated to be less likely to redevelop.

Alternative 1 supports net increases of jobs rounded to 6,625 jobs. While employment-oriented development would be a focus on vacant, partially used or redevelopable parcels, this alternative allows a small amount of housing to support the industrial workforce. The study area would see only a small increase of 516 dwellings and 1,383 population, rounded. This alternative would increase residential dwellings to nearly three times that of the No Action Alternative and existing conditions. The slight increase in housing units is likely to bring a small amount of additional weekend and evening activity into the Study Area.

Additional street and non-motorized connections as envisioned in the subarea plan would help meet the anticipated increase in employees. New street connections would improve the connections to transit, as well as improve circulation.

Land Use Patterns Abutting the Study Area

Compatibility conflicts could occur due to changes in the mix of land use and changes related to the increased intensity and height of new development. Building height increases on the northwest side of the Study Area, west of 47th Ave NE could place future buildings of up to 50 feet in this area. However, these maximum heights are not likely since much of the land is also restricted by FAA regulations around use and intensity. Within the Study Area there is limited potential for land use conflicts under Alternative 1 since new development is not anticipated to be of greater height or intensity compared to existing development. However, careful attention in the creation of industrial development-specific design standards could limit any potential land use compatibility conflicts between the Study Area and in adjacent areas.

Action Alternative 2

Land Use Plans and Policies

Comprehensive Plan and Zoning: Similar to Alternative 1, Alternative 2 would be consistent with current Comprehensive Plan policies that envision the CIC as an industrial environment characterized by the clustering of industrial activities. Non-supportive uses such as residential, retail, and unrelated office uses are limited within the Study Area. Under Alternative 2, the CIC would continue to be a node for industrial uses. Sectors identified as desired sectors from the Subarea Plan would be encouraged.

The current Land Use Element includes policies that support the CIC as an industrial center. Similar to Alternative 1, Alternative 2 is consistent with policy language in the Land Use Element and the AMMIC Subarea Plan that prioritizes job-rich industrial uses for the area. While supportive uses such as commercial uses and services for employees and businesses are anticipated, this alternative does not anticipate housing or educational uses.

The current Comprehensive Plan specifies a land use designation with heights and intensities which are consistent with the heights and intensities anticipated under Alternative 2. Existing zoning has maximum heights in the 45-50' range. Building forms under Alternative 2 are anticipated to be similar to the No Action Alternative fit within these regulations.

Without specific investments in supportive facilities, development under Alternative 2 is less likely to be consistent with the AMMIC Subarea Plan's desired industry sectors. The land use mix is more likely to be similar to the No Action Alternative and based on market conditions and trends. Policy adjustments in the Comprehensive Plan would include modifications to the Capital Facilities Element but no changes to zoning are anticipated.

Similar to Alternative 1, Alternative 2 would also adopt a Planned Action Ordinance to help facilitate environmental review of new development and redevelopment.

Alternative 2 would further GMA goals by concentrating industrial activity and employment activity in the Study Area which can focus growth and avoid sprawl in the region. Alternative 2 assumes higher and aggressive capture rates, given the planned action ordinance, and other investments, with the Study Area growing to roughly 13, 815 jobs by 2040. This is higher than the 12,170 adopted job target for 2035. The alternative could assist the City in meeting its increased VISION 2050 growth allocations for the 2017-2050 period with its greater growth in employment growth above the No Action Alternative.

Land Use Patterns within the Cascade Industrial Center

Alternative 2 is the high growth alternative. It would maintain the existing mix of industrial/manufacturing uses with job growth concentrated in manufacturing, construction/resources and warehousing, transportation and utilities sectors. See Exhibit 87

Similar to Alternative 1 and the No Action Alternative, building heights may reach as high as 50 feet under Alternative 2 but mostly in concentrated areas of infill development on the eastern portion of the Study Area, and on vacant, partially used, or developable parcels along the southern edge of the study area. Areas adjacent to the residential areas on the northwest and eastern edges are anticipated to be less likely to redevelop.

Alternative 2 supports net increases of jobs rounded to jobs. Employment-oriented development would be a focus on vacant, partially used or redevelopable parcels, and this alternative does not anticipate the addition of any housing to the area. The study area would maintain its existing 332 dwellings and 890 population, rounded. This alternative would increase jobs to nearly three

times that of the No Action Alternative and existing conditions.

Additional street and non-motorized connections as envisioned in the subarea plan would help meet the anticipated increase in employees. New street connections would improve the connections to transit, as well as improve circulation.

Land Use Patterns Abutting the Study Area

Compatibility conflicts could occur due to changes in the mix of land use and changes related to the increased intensity and height of new development. Building height increases on the northwest side of the Study Area, west of 47th Ave NE could place future buildings of up to 50 feet in this area. However, these maximum heights are not likely since much of the land is also restricted by FAA regulations. Within the Study Area there is limited potential for land use conflicts under Alternative 2 since new development is not anticipated to be of greater height or intensity compared to existing development. However, careful attention in the creation of industrial development-specific design standards could limit any potential land use compatibility conflicts between the Study Area and in adjacent areas.

3.4.3 Mitigation Measures

Incorporated Plan Features

The Arlington Comprehensive Plan designates the CIC as a regional MIC. The Comprehensive Plan includes policies and plans for improvements to support the development of the land use under the No Action Alternative. The Subarea Plan includes a vision for the CIC and supports industrial development in job-rich sectors including advanced manufacturing, food processing, aerospace, maritime and wood products manufacturing.

Increases in land use intensity and changes to the land use mix under Alternatives 1 and 2 could be mitigated through improved design guidelines and specific development code changes envisioned as part of the implementation of Subarea Plan. The Action Alternatives promotes improved amenities such as the relocation of Edgecomb Creek. In addition, improvements to non-motorized transportation connections supports new development and helps to soften potential impacts of more intensive land use.

Regulations and Commitments

Arlington's Municipal Code contains regulations that help to ensure land use compatibility. A summary of these regulations, which would mitigate impacts associated with the alternatives, is presented below.

Development Regulations. Title 20 contains Arlington's Land Use Code, which establishes zoning and development regulations. These development regulations contain provisions governing the design of buildings, site planning, and provisions to minimize land use incompatibilities. Existing General Commercial, Aviation Flightline, Light Industrial, Business Park, General Industrial, Highway Commercial, zoning districts contain provisions relating to building form and design, such as standards related to height, scale, density, setbacks, screening, parking, landscaping, etc. Regulations are in place to address such issues related to the implementation of the No Action Alternative.

Arlington Design Standards (Chapter 20.46 AMC). Citywide design standards address primary design features, including building massing, orientation, transparency, and secondary design features including roof modulation, façade materials, weather protection and public amenities. These regulation and standards work to promote land use compatibility. These rules would be in place under the No Action Alternative.

Airport Master plan standards address land uses, building heights and location, and public access.

Historic/Cultural: See Chapter 3 for existing rules and regulations that apply to historic and cultural resources.

Other Proposed Mitigation Measures

Land Use Plan Consistency

Manufacturing Industrial Centers are intended to take the majority of the city's projected industrial employment growth. Minor changes to the Comprehensive Plan would be incorporated into the implementation of Alternatives 1 and 2 to ensure full consistency between the Comprehensive Plan and the Study Area policies and zoning. Zoning and development regulation changes associated with Alternatives 1 would be incorporated into the AMC to ensure consistency.

Design Standards

The Action Alternatives 1 and 2 will also include the adoption of design standards specific to industrial areas and development types. It is anticipated that design regulations developed to implement the Action Alternatives would include standards related to: integration of the natural environment, building design, circulation and streetscapes, public spaces, industrial building features, site planning, parking, lighting, screening, and signage.

3.4.4 Significant Unavoidable Adverse Impacts

Under all studied alternatives, additional growth and development will occur in the Study Area, leading to potential increases in height and bulk of buildings and increased land use intensity. This transition is unavoidable but is not considered significant or adverse within an urban area designated as a regional Manufacturing Industrial Center in the Comprehensive Plan.

Future growth is likely to create temporary or localized land use compatibility issues as development occurs. The potential impacts related to these changes may differ in intensity and location in each of the alternatives. However, with existing and revised development regulations, zoning requirements, and design standards, no significant adverse impacts are anticipated.

The Action Alternatives 1 and 2 are consistent with the policy direction of the Comprehensive Plan. Alternative 1 is consistent with the vision and policy direction of the Subarea Plan. However, updates to some policies and maps in the Comprehensive Plan will be needed under the Action Alternatives to ensure full consistency.

With applicable laws described in mitigation measures, no significant unavoidable adverse impacts to cultural resources are anticipated.

3.5 Utilities and Public Services

This section describes the public services and existing utilities in the Study Area. Existing utilities include water, wastewater, and stormwater utilities in the Study Area and the expected impacts resulting from each alternative.

3.5.1 Affected Environment

Stormwater

The Public Works Department in the City of Arlington is responsible for the operation and maintenance of the City's stormwater collection and conveyance system within the Study Area. See Exhibit 3-1 and Exhibit 3-1. Stormwater is captured by catch basins distributed across the city and conveyed through a network of open ditches, pipes, catch basins, culverts, and several different types of stormwater management facilities.

Exhibit 97. Stormwater Infrastructure in the Study Area

STORMWATER ASSET	FEATURE COUNT
Pipe (LF)	21,800
Catch Basins	660
Stormwater Facilities	33

Source: City of Arlington GIS data (Arlington 2018)

Exhibit 98. Stormwater Infrastructure Map

Source: City of Arlington 2012; Herrera 2020

The northern portion of the Study Area drains towards the Stillaguamish River while the rest drains towards Quilceda Creek via ditches, Hayho Creek, Westphal Creek, and Edgecomb Creek. Many capital projects have been completed in the area in the last 10 years to prepare for increased development, including culvert replacement projects to address flooding and fish passage concerns. Additional capital improvement program (CIP) projects through 2035 include monitoring projects and planning for and constructing additional regional stormwater management facilities (Arlington 2010). The City has identified some potential regional facility locations within the Study Area in areas where on-site stormwater management is difficult due to shallow groundwater tables or poor soils, particularly in the southern portion of the Study Area. More work is needed to define the stormwater management needs associated with redevelopment and the City may consider those needs during the upcoming Stormwater Comprehensive Plan update.

Drinking Water

Potable water is provided by Arlington and Marysville to the Study Area. The City of Marysville provides water service for the Smokey Point Neighborhood within the southwest corner of the Study Area. The City of Arlington services the remaining portion of the Study Area. See Exhibit 3-3 and 3-4.

Exhibit 99. Water Infrastructure in the Study Area

Drinking Water Asset	Feature Count	
Owner	City of Arlington	City of Marysville
Pipe (LF)	135,900	9,000
Pumps	0	0
Hydrants	304	24

Source: City of Arlington GIS data (Arlington 2018)

Exhibit 100. Water Infrastructure Map

Source: City of Arlington 2012; Herrera 2020

The Arlington portion's water is supplied by groundwater from two wellfields (Arlington 2019). The City has sufficient water supply and secured wholesale supplies to meet demand beyond 2035, and the City is pursuing additional water rights to meet long term demands. The system was recently extended for the Airport Business Park. Planned improvements in the Study Area through 2035 include extension of the system into the undeveloped area of the Arlington portion south of 172nd Street, as well as system upgrades to serve redevelopment.

Wastewater

The City of Arlington provides wastewater services to the majority of the Study Area, including a collection and conveyance system and treatment facility. The City of Marysville provides wastewater service for the Smokey Point Neighborhood within the southwest corner of the Study Area.

The wastewater infrastructure within the Study Area is listed in Exhibit 3-3.

Exhibit 101. Wastewater Infrastructure in the Study Area

Wastewater Asset	Feature Count	
Owner	City of Arlington	City of Marysville
Force Main (LF)	25,900	0
Gravity Main (LF)	44,500	7,000
Lift Stations	4	0
Manholes	350	19

Source: City of Arlington GIS data (Arlington 2018)

Exhibit 102. Wastewater Infrastructure Map

Source: City of Arlington 2012; Herrera 2020

Wastewater flowing out of the Study Area flows to a single water reclamation facility (WRF), which discharges to the Stillaguamish River. Expansion of the membrane bioreactor (MBR) component of the WRF is planned by 2035 and the City has accounted for Study Area growth in evaluating its wastewater system requirements. The City recently expanded its wastewater service area to include the portion Arlington portion that is south of 172nd Street and east of 51st Avenue.

Overall, the existing system has been extended through the developed areas of the Arlington portion and Lift Station 2 was upgraded in 2017 to serve increased demand related to existing and future development. Capacity improvements are scheduled for four other lift stations over the next 20 years and other conveyance improvements will be needed to accommodate increased demand related to redevelopment. Capital projects from 2017 to 2035 include extension of the system into the undeveloped parcels of the Arlington portion south of 172nd Street, operational improvements, refurbishment of existing facilities, and flow monitoring projects (Arlington 2017).

Police

The City of Arlington's Police Department (APD) provides public law enforcement services to the city 24 hours a day in response to calls from the area's 911 operations. APD is "is committed to providing excellent service and reducing crime and disorder" along with providing related services such as crime prevention, community engagement, and more.

The Department has 35 FTEs with 30 officers, 1 limited commission, and 4 civilian personnel. The APD has two part-time contracted employees (a Domestic Violence Coordinator and a Law Enforcement Embedded Social Worker).

There are 03 patrol "beat" areas in the city, with the CIC located within the Central beat. The department operates one police station during regular business hours located at 110 E 3rd Street, which is North of the study area. APD maintains working relationships with other service providers, including the county's sheriff' office and the City of Marysville.

Arlington's Police Department must uphold local, state, and federal standards. The City of Arlington's 2017 Comprehensive Plan describes some local public services and measures of potential impacts. The City's adopted Level of Service (LOS) standards are shown in Exhibit 103.

Exhibit 103. City of Arlington's Level of Service Standards for Police Services

Service Performance Standard	Goal
Crime Rate Per 1,000 Population	34.6
Crime Clearance Rate %	20
Emergency Response Time in Minutes	3
Events per Officer per Year	1,000

Sources: City of Arlington Comprehensive Plan, 2017; WA OFM, 2020, BERK Consulting, 2020.

Fire Protection and Emergency Medical Services

The City of Arlington's Fire Department (AFD) provides fire protection and emergency medical services (EMS) services to the city 24 hours a day in response to calls from the area's 911 operations. The AFD is "committed to the saving of lives and preservation of property" through their operations and services. AFD services include fire prevention, fire response and suppression, emergency management, life-saving EMS, and public education.

The department's physical address is 6231 188th Street Northeast and it also currently responds from three fire stations, including Station 47 that serves the study area. AFD maintains working relationships with other service provides as well as contracting services to other jurisdictions. Current partnerships include including Snoqualmie County Fire Districts. Overall, the City of Arlington is about half of the population served by the AFD.

Arlington's Fire Department must uphold local, state, and federal standards. The City of Arlington's 2017 Comprehensive Plan describes some local public services and measures of potential impacts. The City has adopted standards for fire services in four categories – water supply, personnel, response time, and facilities. Some information about these service standards are shown in Exhibit 104 (the City's 2017 Comprehensive plan has additional information and discussion).

Exhibit 104. City of Arlington's Level of Service Standards for Fire/EMS Services

Service Standard Category	Criteria
Water Supply	Meet the criteria mandated by the Department of Health as well as City policies and design criteria
Personnel	Employees
Response Time	Calls within a five-minute response time.
Facilities	Facilities that can fit standard inventory and necessary square footage to maintain total inventory.

Sources: City of Arlington Comprehensive Plan, 2017; BERK Consulting, 2020.

In addition to adopted LOS standards, this EIS evaluates impacts through effective level of service standards, which commonly can be full time equivalent fire fighters or EMS aid responders per 1,000 population or employment. Based on expected growth under different alternatives, effective LOS standards may be used to evaluate the impacts of potential growth. Effective LOS standards are shown in Exhibit 105. Because the AFD serves a larger geographic area than the city, population sizes for the entire service area are used.

Exhibit 105. Arlington Fire Department Level of Service Standards for Fire/EMS Services

Effective LOS Standard 2018	Observed LOS
Firefighters/EMTs per 1,000 Population (2018)	1.00
Firefighters/EMTs per 1,000 Dwelling Units (2018)	1.37
Firefighters/EMTs per 1,000 Jobs	0.14

Sources: City of Arlington Fire Department Annual Report, 208, OFM, 2020; BERK Consulting, 2020.

Parks and Recreation

The City of Arlington Parks and Recreation Department provides public space, parks, open spaces, facilities, and programming services within the city. Their mission is "to enhance the quality of life for the community through parks and recreation." Parks and Recreation operations are primary located within city administration offices. A voluntary Parks, Arts, & Recreation Commission acts as advisors on related policy issues, while P&R also works with other partners organizations such as schools.

The Study Area includes the Bill Quaker Memorial pal and the Waldo E Evans Memorial Park. The City of Arlington has built or coordinated the construction of several trails over the past decade. The most notable is the City's portion of the Centennial Trail. The City's section of the trail runs from 172nd Street NE along 67th Avenue NE north to Haller Park. There is also a 5.5-mile trail circumnavigating the Airport.

Exhibit 106. Inventory of Existing Park & Recreation Facilities

Facility Type/Name	Size
Community Parks	
Bill Quake Memorial Park	13 acres
Waldo E Evans Memorial Park	6 acres
City Trails	

Facility Type/Name	Size
Centennial Trail (City Portion) Airport/Industrial, CBD	2.7 miles
Airport Trail	6.5 miles
188th Street Connector Trail	.5 miles
Indoor Recreation Facilities	
Arlington Boys & Girls Club	

Sources: City of Arlington Comprehensive Plan, 2017; BERK Consulting, 2020.

The Parks and Recreation department follows local policy standards and guidelines as may also incorporate national administration standards/practices. The City of Arlington's 2017 Comprehensive Plan describes some local public services and measures of potential impacts. The city has adopted Levels of Service Standards for Parks but not open spaces. The land use code does however have requirements for preserving usable open space in each major residential plat. The City's adopted LOS standards are based on park facility types is shown in Exhibit 107. Parks, open space, and recreational opportunities may also be provided by other partners within and out of Arlington.

Exhibit 107. City of Arlington's Level of Service Standards for Parks

Facility Type	Adopted LOS (unit/1,000)
Community Parks	3.9
Neighborhood/Mini-Parks	1.7
Trails	1.4

Sources: City of Arlington Comprehensive Plan, 2017; BERK Consulting, 2020.

Public Schools

The study area is served by Arlington Public Schools (APS) district for educational services. Their mission is to educate "all students, preparing and inspiring them to graduate and seek their full potential as lifelong learners." The district has about 6,000 students enrolled and has eight schools and one learning center.

In response to an ongoing public health emergency, in March 2020 schools were ordered to close and transition to online learning. As of June 2020, the State has issued a proclamation related to schools re-opening for the 2020-21 school year. It is possible APS may maintain school

closure for at least some of the next school year. District information notes some of the changing services its public-school system is offering and details about adjusting educational services in response to public health declarations.

The City of Arlington has not formally adopted level of service standards for the Arlington Public Schools (APS) district. A common effective level of service standard is a student to teacher ratio, which can be used to measure and compare standards across jurisdictions. The Office of the Superintendent of Public Instruction (OSPI) oversees public K-12 education in Washington State and sets policy for the District.

Impacts on public schools may be evaluated impacts through effective level of service standards, which commonly can be student to teacher ratios. APS effective level of service standards is shown in Exhibit 108. The Arlington Public Schools has a ratio of 18.6 students per teacher. Typically, lower student to teacher ratios are preferred are lower grades or students who may have additional educational needs.

Exhibit 108. Arlington Public Schools Effective Level of Service Standards

School	Students	Teachers	Ratio	Address
Arlington School District	5,969	321	18.6	315 N French Ave, Arlington
Elementary	2,607	157	16.6	Four campuses
Middle School	1,313	68	19.3	Two campuses
High School	1,857	97	19.1	Two campuses
Eagle Creek Elementary	720	41	17.6	1216 E 5th, Arlington
Kent Prairie Elementary	727	45	16.2	8110 207th St NE, Arlington
Pioneer Elementary	578	34	17.0	8213 Eaglefield Dr, Arlington
Presidents Elementary	582	37	15.7	505 E 3rd, Arlington
Haller Middle School	642	31	20.7	600 E 1st, Arlington
Post Middle School	671	37	18.1	1220 E 5th St, Arlington
Arlington High School	1,718	82	21.0	18821 Crown Ridge Blvd, Arlington
Weston High School	139	15	9.3	4407 172nd St NE, Arlington
Arlington Open Doors	48	2	24.0	4407 172nd ST NE, Arlington
Arlington Special Educ School	68	n/a		315 N French Ave, Arlington
Stillaguamish Valley Learning Center	73	6	12.2	1215 E 5th, Arlington

Sources: OSPI, 2020; BERK Consulting, 2020.

3.5.2 Impacts

Thresholds of Significance

Utilities were analyzed by considering how the proposed alternatives, including changes in population, dwelling units, and jobs would affect water demand, wastewater generation, and the quantity of stormwater runoff. Stormwater quality is discussed in the Natural Environment section.

For the purposes of this EIS, alternatives would be considered to result in significant impacts on utilities if there are:

- Inconsistencies with utility system planned growth and capital plans.

Impacts on public services and utilities would be significant under one or more of the following thresholds:

- Negatively affect the response times for police and/or fire and emergency medical services.
- Increased demand for special emergency services beyond current operational capabilities of service providers.
- Reduce access to park and open space facilities.
- Result in increases in students and lack of facilities.

Impacts Common to All Alternatives

The No Action Alternative does not alter existing population, while the Action Alternatives increase jobs by between 4,824 and 8,844 jobs and increase population by between 0 and 1,383. Impacts common to all alternatives are increased demand for drinking water, increased wastewater generation, and changes in surfaces that generate the need for additional stormwater infrastructure. All studied alternatives would have an increase in employment and could increase demand for services.

Most infrastructure is in place and the City has begun planning for service in the underdeveloped portion of the Study Area, south of 172nd Street NE. Some infrastructure will need to be upgraded as redevelopment occurs and the City has begun planning for this.

Stormwater

The City is currently updating its Stormwater Comprehensive Plan and evaluating the need to provide increased infrastructure in the Study Area and the potential for regional stormwater facilities. Though the number of new dwellings and jobs vary across the alternatives, all the alternatives will create large amounts of new and replaced impervious surfaces. Projects that

create these surfaces will need to meet the requirements of Arlington Municipal Code (AMC) Chapter 13.28 which requires compliance with the Washington Department of Ecology Stormwater Management Manual for Western Washington, which requires low impact development BMPs, flow control, and water quality treatment.

Redevelopment projects have the potential to generate stormwater pollution during construction. City code requires all projects to implement Temporary Erosion and Sediment Control (TESC) stormwater management best management practices during construction that will minimize these impacts.

Drinking Water

The 2015 Water System Plan accounts for job growth of up to 12,000 jobs in the Study Area by 2035. The Plan found that the City has sufficient water supply from its water treatment plant, groundwater wellfields and wholesale water supply to meet the existing demand and fire flow requirements. The City also has sufficient water rights to meet the 20-year and nearly the 50-year demand requirement. Though each of the alternatives will increase water demand through industrial and residential use, all the alternatives are well within the demand anticipated by the utilities current plans and water connection fees would help offset the cost for system expansion.

The 2015 Water System Plan (Amended in 2017) accounts for an increase in maximum daily demand (MDD) of over four million gallons per day (mgd), or 57 percent of the MMD in 2015. None of the alternatives is expected to increase MDD by more than 25 percent of this planned value; therefore, none of the alternatives are expected to have a significant impact on the utilities planned growth or capital plans. See Exhibit 109.

Exhibit 109. Growth of Maximum Daily Water Demand Among Alternatives

	No Action	Alternative 1	Alternative 2
Increase in Population	0	1,383	0
Increase in Jobs	4,824	6,625	8,844
Increase in Water Demand MDD (gallons per day)	506,520	820,100	928,620

Assumptions: 90 gallons per day per person (Arlington 2019) and 105 gallons per day per person (WDOH 2019)
Source: City of Arlington GIS data (Arlington 2018)

Existing water storage is adequate through 2025, but additional storage will be required prior to 2035 for redundancy and for future storage requirements related to growth. A 1.0-million-gallon reservoir is proposed to provide water storage to the City's 520 Zone and to resolve the

projected 20-year system-wide storage deficiency. The existing Airport Well needs to be abandoned or relocated related to a well casing collapse, aging structure, and general safety issues, and a booster pump station is needed to improve back-up and fire flow supply to the 710 Zone and the proposed 615 Zone (currently 540 Zone). If the booster pump station and additional supply wells are delayed, the reservoir would need to be built sooner. The Study area falls within Zone 342, so the alternatives do not directly impact these upgrades.

Redevelopment under all alternatives would need to comply with City code, and in some cases, this would require upgrades to service connections, water mains, or other system modifications to provide adequate fire flow. The City plans to increase source capacity at the Haller and Airport Wellfields and construct a booster pump station to supply fire flows, which will allow the City to meet demand requirements beyond 2050 (Arlington 2019), and the City is increasing water conveyance capacity from 8 inch pipes to 12 inch pipes during routine replacement project, including projects in the Study Area (J. Kelly, pers. comm.). This citywide fire flow analysis used general fire flow requirements of 1,000 gallons per minute (gpm) for two hours, though fire flow requirements vary by land use category from 1,000 for low density residential up to 3,500 gpm for industrial land uses and schools.

Under all alternatives, different types of development in the study area may require greater fire flow than the 1,000 gpm used for the citywide analysis. AMC Chapter 13.04.180 requires development and redevelopment in the Study Area to meet fire flow and other fire protection requirements.

Wastewater

The Comprehensive Wastewater Plan (CWP) accounts for large amounts of growth in the Study Area, including over 15 million square feet of commercial and industrial facilities contributing to the wastewater system. Each of the alternatives includes large increases in employment but none of the alternatives include growth that are significantly different from the assumptions of the CWP.

Current flows to the WRF are currently well below the plant's permit limit of 2.67 million gallons per day (mgd) for the maximum month average influent flow (MMF). The City's Comprehensive Wastewater Plan predicts that this capacity will be exceeded by 2035. The City will need to implement membrane upgrades at the WRF, which is already included in the City's Capital Improvement Plan (Arlington 2017). This is expected to begin in 2023. While the expected increase in wastewater generation is 2.18 MGD, the impact of development in the study area is expected to account for 11% of this flow, which is not expected to have a significant impact on the city-wide capacity. See Exhibit 3-5.

Exhibit 110. Growth of Wastewater Generation Among Alternatives

	No Action	Alternative 1	Alternative 2
Increase in Population	0	1,383	0
Increase in Jobs	4,824	6,625	8,844
Increase in Water Demand (gallons per day)	106,000	254,000	195,000

Assumptions; 78 gallons per day per person, 22 gallons per day per employee (Arlington 2017).

Police

Research across police departments by the ICMA Center for Public Safety Management (CPSM) shows that workload, deployment, and response times are better indicators for the demand for police services and the supply of police resources. Each alternative would increase employee population but increases in industrial jobs is anticipated to have little impact on the city's adopted LOS standards for police services. While the population within the CIC is anticipated to increase under Alternative 1 this increase is small enough that significant impacts to crime rate, crime clearance rate, response time, or events per officer that would constitute the need to examine police staffing levels is not anticipated.

Fire Protection and Emergency Medical Services

The City's Fire LOS is based on response times of 5 minutes. The Fire Department measures that periodically. However, an understanding of response times in the CIC is not separately measured. Per the evaluation in the Transportation chapter the current intersection operations meet the City's standards.

Another means of measuring the demand on services is based on incident calls. Each alternative would increase calls for service using data from the to varying degrees. See Exhibit 111.

Exhibit 111. Fire Calls for Service by Alternative

	No Action	Alternative 1	Alternative 2
Net Population Increase	0	1,383	0
Calls per Capita: .25	0	346	0

Source: City of Arlington 2020; BERK, 2020.

Additional employment in the area would increase daytime population and potentially increase call volumes as well. The City is in the process of constructing a new, two story fire station (Station 48). This new station is located at the corner of 51st Avenue N.E. (Airport Boulevard) and 43rd Avenue NE Arlington in the vicinity of the CIC which will likely ensure response times are within the adopted LOS. The new facility is being constructed with commercial and industrial grade infrastructure for water supply as well.

Parks and Recreation

The potential impacts on the city's adopted level of services for parks and trails are shown in Exhibit 112. This analysis finds all things equal that under effective standards: a district deficit may be created of 5.4 acres of community parks based on expected population growth under Alternative 1.

Exhibit 112. Potential Impacts on Parks Services

Effective LOS Standard	Adopted LOS	No Action	Alt 1	Alt 2
		2040 Potential Impacts by Alternative		
Community Parks	3.9 acres per 1,000		-5.4	
Neighborhood/Mini-parks	1.7 acres per 1,000		-2.4	
Trails	1.4 miles per 1,000		-1.9	

Sources: City of Arlington Comprehensive Plan, 2017; BERK Consulting, 2020.

Public Schools

Effective LOS observed can be used to analyze impacts of growth under the study's alternatives. Potential for impacts on educational services are shown in Exhibit 113. According to the school district an estimated student-to-population ratio of 17.28% is projected for 2035. Based on this, Alternative 2 is expected to generate 238 students.

Exhibit 113. Student Generation Rate

	No Action	Alt 1	Alt 2
	2040 Potential Impacts by Alternative		
Net change in population	n/a	1,383	n/a
Student Generation: Student to Population Ratio = 0.172		238	

Sources: OSPI, 2020; BERK Consulting, 2020.

No Action Alternative

The No Action Alternative includes no expected increases in population and the lowest number of new jobs (4,824). Impacts are not expected to be any different from what is described above.

Police & Fire/Emergency Services

Growth under the No Action Alternative would cumulatively contribute demand for officers but would produce the lowest growth and lowest demand for police services. The No Action Alternative would produce the lowest calls for service.

Schools

The No Action Alternative would produce no additional dwellings.

Parks

Under the No Action Alternative, the small residential population would have access to the small W.E. Evans Park.

Action Alternative 1

Police & Fire/Emergency Services

Alternative 1 include a population increase of 1,383 and 6,625 new jobs. As described under Impacts Common to All, Alternative 1 has the greatest housing and population and the greatest impact to police, fire, and parks service demands based on levels of service. However, employee increases may also increase demand such as for fire inspections and police calls for service and Alternative 1 is in the range of expected employment increases.

Alternative 1 also includes multimodal transportation investments that may reduce the number of vehicles being driven to the Study Area, which has the potential to reduce the amount of stormwater pollution being generated by vehicles, which could reduce the burden on the stormwater utility to conduct stormwater facility maintenance.

Schools

Alternative 1 would produce the most dwellings and the greatest student generation. It is anticipated that the capacity of current schools could accommodate the students over the planning period as the growth would occur over a long-term. If permanent capacity becomes a concern, the School District could realign attendance boundaries or provide temporary portables or other demand management measures.

Parks

Under Alternative 1, the small residential population would have access to the small W.E. Evans Park. Edgecomb Creek relocation concepts have been developed and the potential for open space in coordination with construction of the new stream corridor will be evaluated and is likely to be more coordinated with development under Alternatives 1.

Action Alternative 2

Alternative 2 includes the largest increase in jobs among the alternatives; 8,844 more jobs than existing conditions. Utility and service impacts associated with these additional jobs are not expected to be any different from Impacts Common to All Alternatives.

Alternative 2 also includes multimodal transportation investments that may reduce the number of vehicles being driven to the Study Area, which has the potential to reduce the amount of stormwater pollution being generated by vehicles, which could reduce the burden on the stormwater utility to conduct stormwater facility maintenance.

Schools

Alternative 2 would produce no additional dwellings.

Parks

Under Alternative 2, the small residential population would have access to the small W.E. Evans Park. No additional residents are expected under this alternative, however, Edgecomb Creek relocation concepts have been developed and the potential for open space in coordination with construction of the new stream corridor will be evaluated and is likely to be more coordinated with development under Alternatives 1 and 2.

3.5.3 Mitigation Measures

Incorporated Plan Features

Edgecomb Creek relocation concepts have been developed and the potential for regional stormwater management facilities in coordination with construction of the new stream corridor will be evaluated and is likely to be more coordinated with development under Alternatives 1 and 2 than under the No Action Alternative.

Regulations and Commitments

The City's municipal code includes requirements that would apply to new development and redevelopment for all three alternatives, including requirements to improve the conveyance system if necessary, to meet engineering and safety standards for water and wastewater, as well as requirements to treat stormwater runoff from pollutant generating impervious surfaces.

Water

When evaluating new construction, Arlington Public Works and Utilities Department personnel determine the ability of the water system to meet fire flow requirements at that location with a minimum of 20 psi residual pressure throughout the distribution system. If the water system cannot provide the required fire flow for the specific project, the developer is required to revise building construction and/or make the necessary improvements to the distribution system to meet the project's fire flow requirements as established by the City Fire Chief. The available fire flow will be determined by the City's engineering staff using the water system hydraulic model.

AMC Chapter13.08. includes provisions for service connections and mains to be upgraded by developers during redevelopment if required to meet engineering design and construction standards. Chapter 13.08. also includes provisions for installation of pumps if required to achieve adequate pressure during peak demands.

Wastewater

AMC Chapter 13.36 includes provisions for wastewater service connections and extensions when existing connections are inadequate or sewer mains are not present along the frontage of a property.

Stormwater

AMC Chapter 13.28 includes provisions that require redevelopment to meet stormwater management requirements of the Stormwater Management Manual for Western Washington, which requires low impact development BMPs, flow control, and water quality treatment. Under all the alternatives these requirements are expected to result in a net improvement in the quality of stormwater that is discharged to the Stillaguamish River and Quilceda Creek via ditches, Hayho Creek, Westphal Creek, Portage Creek, Prairie Creek and Edgecomb Creek.

The following regulations address public services:

- Title 15 Fire – Includes requirements for fire suppression.
- Comprehensive Plan – Addresses levels of service and capital improvements for fire, police, and parks. This is updated every eight years with the Comprehensive Plan.
- Parks and Recreation Masterplan– Establishes a plan for 2016-2023 including capital projects.

- Arlington School District Levy 2020 – Addresses Capital Replacement projects to ensure proper function of current schools.

Other Proposed Mitigation Measures

- The City could incentivize or require participation in regional stormwater when concepts are developed to help spur development and water quality and stormwater management.
- The City could employ crime prevention through environmental design standards through its industrial design guidelines.

Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts are anticipated for the water, wastewater, and stormwater utilities under any of the alternatives. The City has developed comprehensive plans for all three utilities and these plans are updated regularly to reflect system needs. The capital project needs to support redevelopment of the Study Area are similar in scale to projects that the utilities execute on a regular basis. The costs of these improvements would be partially offset by connection charges and rates for service.

No significant unavoidable adverse impacts are anticipated for fire, police, schools, and parks and recreation under any of the alternatives. With regular capital facility planning and implementation of mitigation measures no significant unavoidable adverse impacts are anticipated.

4.0 Acronyms and References

4.1 Acronyms

ADA	Americans with Disabilities Act
AMC	Arlington Municipal Code
CAO	Critical Areas Ordinance
CIP	Capital Improvement Program
CTR	Commute Trip Reduction
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
GHG	Greenhouse Gas
GMA	Growth Management Act
gpm	Gallons per Minute
HCM	Highway Capacity Manual
LF	Linear Feet
LOS	Level of Service
MDD	Maximum Daily Demand
MEV	Million Entering Vehicles
mgd	million gallons per day
MPH	Miles per Hour
MVMT	Million Vehicle Miles Traveled
NFIP	National Flood Insurance Program
NWI	National Wetlands Inventory
PSCAA	Puget Sound Clean Air Agency
PSRC	Puget Sound Regional Council
RCW	Revised Code of Washington
SMP	Shoreline Master Program
SOV	Single Occupancy Vehicle
SR	State Route
TMDL	Total Maximum Daily Load

VMT	Vehicle Miles Traveled
WRIA	Water Resource Inventory Area
WSDOT	Washington State Department of Transportation

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A Inadvertent Discovery Plan

Protocols for Discovery of Archaeological Resources

In the event that archaeological resources are encountered during project implementation, the following actions will be taken:

In the find location, all ground disturbing activity will stop. The find location will be secured from any additional impacts and the supervisor will be informed.

The project proponent will immediately contact the agencies with jurisdiction over the lands where the discovery is located, if appropriate. The appropriate agency archaeologist or the proponent's contracting archaeologist will determine the size of the work stoppage zone or discovery location in order to sufficiently protect the resource until further decisions can be made regarding the work site.

The project proponent will consult with DAHP regarding the evaluation of the discovery and the appropriate protection measures, if applicable. Once the consultation has been completed, and if the site is determined to be NRHP-eligible, the project proponent will request written concurrence from the agency or tribe(s) that the protection and mitigation measures have been fulfilled. Upon notification of concurrence from the appropriate parties, the project proponent will proceed with the project.

Within six months after completion of the above steps, the project proponent will prepare a final written report of the discovery. The report will include a description of the contents of the discovery, a summary of consultation, and a description of the treatment or mitigation measures.

Protocols for Discovery of Human Remains

If human remains are found within the project location, the project proponent, its contractors or permit-holders, the following actions will be taken, consistent with Washington State RCWs 68.50.645, 27.44.055, and 68.60.055:

If ground-disturbing activities encounter human skeletal remains during the course of construction then all activity will cease that may cause further disturbance to those remains. The area of the find will be secured and protected from further disturbance. The project proponent will prepare a plan for securing and protecting exposed human remains and retain consultants to perform these services. The finding of human skeletal remains will be reported to the county medical examiner/coroner and local law enforcement in the most expeditious manner possible. The remains will not be touched, moved, or further disturbed. The county medical examiner/coroner will assume jurisdiction over the human skeletal remains and make a determination of whether those remains are forensic or non-forensic. If the county medical

examiner/coroner determines the remains are non-forensic, then they will report that finding to DAHP, which will then take jurisdiction over the remains. DAHP will notify any appropriate cemeteries and all affected tribes of the find. The State Physical Anthropologist will make a determination of whether the remains are Indian or Non-Indian and report that finding to any appropriate cemeteries and the affected tribes. DAHP will then handle all consultation with the affected parties as to the future preservation, excavation, and disposition of the remains.

Contact Information

Snohomish Tribe
11014 19th Avenue SE, Suite 8, Everett, WA 98208-5121
Primary Contact: The Honorable Michael Evans, Chairman, Phone: 425-671-1387

Stillaguamish Tribe of Indians
3310 Smokey Point Drive
PO Box 277, Arlington, WA 98223-0277
Primary Contact: Kerry Lyste, THPO, Cultural Resources, Phone: 360-652-7362 ext. 226

Tulalip Tribes
6410 23rd Avenue NE, Tulalip, WA 98271
Primary Contact: Richard Young, Cultural Resources, Phone: 360-716-2652 Cell: 425-239-0182

Washington Department of Archaeology and Historic Preservation
PO Box 48343, Olympia, WA 98504-8343
Lead Representative: Allyson Brooks, State Historic Preservation Officer, office: 360-586-3066
Primary Contact: Stephanie Jolivette, Local Government Archaeologist, Office: (360) 586-3088, Cell: (360) 628-2755
Primary Contact for Human Remains: Guy Tasa, State Physical Anthropologist, office: 360-586-3534, cell: 360-790-1633

Snohomish County Medical Examiner's Office
9509 29th Ave. West, Everett, WA 98204
Primary Contact: J. Matthew Lacy, Chief Medical Examiner, 425-438-6200

Snohomish County Sheriff's Office
3000 Rockefeller Avenue MS 606, Everett, WA 98201

Primary Contact: Adam Fortney, Sheriff, (425) 388-3393

B Planned Action Ordinance

ORDINANCE NO._____

AN ORDINANCE of the City Council of the City of Arlington, Washington, establishing a planned action for the Cascade Industrial Center pursuant to the State Environmental Policy Act

WHEREAS, the State Environmental Policy Act (SEPA) and implementing rules provide for the integration of environmental review with land use planning and project review through designation of "Planned Actions" by jurisdictions planning under the Growth Management Act (GMA); and

WHEREAS, the City has adopted a Comprehensive Plan complying with the GMA; and

WHEREAS, to guide the Cascade Industrial Center's growth and redevelopment, the City has engaged in extensive subarea planning and adopted AMMIC Subarea Plan, retitled as the Cascade Industrial Center subsequent to adoption; and

WHEREAS, the City desires to designate a Planned Action for the Cascade Industrial Center; and

WHEREAS, designation of a Planned Action expedites the permitting process for subsequent, implementing projects whose impacts have been previously addressed in a Planned Action environmental impact statement (EIS), and thereby encourages desired growth and economic development; and

WHEREAS, the Cascade Industrial Center Planned Action EIS identifies impacts and mitigation measures associated with planned development in the Cascade Industrial Center; and

WHEREAS, the City has adopted development regulations and ordinances which will help protect the environment; and

WHEREAS, the City's SEPA Rules, set forth in AMC 20.98.020 provide for Planned Actions within the City; and

WHEREAS, the City as lead agency provided public comment opportunities through an EIS scoping period from October 1 to October 30, 2020; and

THE CITY COUNCIL OF THE CITY OF ARLINGTON, WASHINGTON, DOES HEREBY ORDAIN AS FOLLOWS:

SECTION 1. *Recitals*. The recitals set forth in this ordinance are hereby incorporated as if fully set forth herein.

SECTION 2. *Purpose*. The City Council declares that the purpose of this ordinance is to:

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A. Combine environmental analysis, land use plans, development regulations, City codes and ordinances together with the mitigation measures in the Cascade Industrial Center Planned Action EIS to mitigate environmental impacts and process planned action development applications in the Planned Action Area;

B. Designate the Cascade Industrial Center as a Planned Action Area for purposes of environmental review and permitting of subsequent, implementing projects pursuant to SEPA, RCW 43.21C.440;

C. Determine that the EIS prepared for the Cascade Industrial Center meets the requirements of a Planned Action EIS pursuant to SEPA;

D. Establish criteria and procedures, consistent with state law, that will determine whether subsequent projects within the Planned Action Area qualify as Planned Actions;

E. Provide the public with information about Planned Actions and how the City will process implementing projects within the Planned Action Area;

F. Streamline and expedite the land use permit review process by relying on the EIS completed for the Planned Action; and

G. Apply the City's development regulations together with the mitigation measures described in the EIS and this Ordinance to address the impacts of future development contemplated by this Ordinance.

SECTION 3. *Findings*. The City Council finds as follows:

A. The City is subject to the requirements of the GMA (RCW 36.70A), and is applying the Planned Action to a UGA [Urban Growth Area]; and

B. The City has adopted a Comprehensive Plan complying with the GMA; and

C. The City is adopting capital facility plan amendments to implement said Plan; and

D. An EIS has been prepared for the Planned Action Area, and the City Council finds that the EIS adequately identifies and addresses the probable significant environmental impacts associated with the type and amount of development planned to occur in the designated Planned Action Area; and

E. The mitigation measures identified in the Cascade Industrial Center Planned Action EIS and attached to this ordinance as Exhibit B, incorporated herein by reference, together with adopted City development regulations, will adequately mitigate significant impacts from development within the Planned Action Area; and

F. The AMMIC Subarea Plan (retitled the Cascade Industrial Center) and Cascade Industrial Center Planned Action EIS identify the location, type and amount of development that is contemplated by the Planned Action; and

G. Future projects that are implemented consistent with the Planned Action will protect the environment, benefit the public and enhance economic development; and

H. The City provided several opportunities for meaningful public involvement in the Cascade Industrial Center Subarea Plan and Planned Action EIS;

I. Essential public facilities defined in RCW 47.06.140 are excluded from the Planned Action and not eligible for review or permitting as Planned Actions unless they are accessory to or part of a project that otherwise qualifies as a planned action; and

J. The Planned Action applies to a defined area that is smaller than the overall City boundaries and smaller than overall County designated UGAs; and

K. Public services and facilities are adequate to serve the proposed Planned Action, with implementation of Subarea Plan and mitigation measures identified in the EIS.

SECTION 4. Procedures and Criteria for Evaluating and Determining Planned Action Projects within Planned Action Area.

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A. Planned Action Area. This Planned Action designation shall apply to the area shown in **Exhibit A**, incorporated herein by reference.

B. Environmental Document. A Planned Action determination for a site-specific project application within the Planned Action Area shall be based on the environmental analysis contained in the Draft EIS issued by the City on October 1, 2020 and the Final EIS published on Month, Year. The Draft and Final EIS documents shall comprise the Cascade Industrial Center Planned Action EIS for the Planned Action Area. The mitigation measures contained in **Exhibit B,** attached to this Ordinance and incorporated herein by reference, are based upon the findings of the Planned Action EIS and shall, along with adopted City regulations, provide the framework that the City will use to apply appropriate conditions on qualifying Planned Action projects within the Planned Action Area.

C. Planned Action Designated. Land uses and activities described in the Planned Action EIS, subject to the thresholds described in Subsection 4(D) and the mitigation measures contained in **Exhibit B**, are designated Planned Actions or Planned Action Projects pursuant to RCW 43.21C.440. A development application for a site-specific Planned Action project located within Planned Action Area shall be designated a Planned Action if it completes the modified SEPA Checklist in **Exhibit B** and meets the criteria set forth in Subsection 4(D) of this Ordinance and all other applicable laws, codes, development regulations and standards of the City are met.

D. Planned Action Qualifications. The following thresholds shall be used to determine if a site-specific development proposed within the Planned Action Area was contemplated as a Planned Action and has had its environmental impacts evaluated in the Planned Action EIS:

(1) Qualifying Land Uses.

(a) Planned Action Categories: The following general categories/types of land uses are defined in the AMMIC Subarea Plan (now retitled the Cascade Industrial Center) and are considered Planned Actions:

i. Industrial/Manufacturing: The general industrial (GI) and light industrial (LI) uses primarily to accommodate enterprises engaged in the manufacturing, processing, creating, repairing, renovating, painting, cleaning, or assembling of goods, merchandise, or equipment. Aerospace, robotics, advanced manufacturing, food processing, maritime, wood products and mass timber manufacturing are desired sectors identified in the subarea plan. Workforce development uses and limited amounts of workforce housing tied to these sectors are also allowed. The performance standards set forth in Part I of Chapter 20.44 place limitations on the characteristics of uses located in these districts. The light industrial district is distinguished from the general industrial district in that the light industrial district is intended to be a cleaner, more business park-like area, whereas the general industrial district allows more resource-based manufacturing, and has a greater tolerance of the nuisances that typically accompany such manufacturing. Furthermore, the limitations in the light industrial district are more restrictive than those in the general industrial district.

ii. Aviation-related uses: Aviation Flightline uses proximate to airport runways and taxiways. Aviation related uses include any uses related to supporting aviation that require direct taxiway access as a necessary part of their business operations, such as aviation services, manufacturing of aviation-related goods, general services whose primary customers would be those engaged in aviation-related activities (e.g., restaurants primarily catering to pilots, employees, or passengers), or other uses that are clearly related to aviation.

iii. Commercial: Industrial serving commercial uses including retail, office, and services consistent with zone requirements.

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iv. Open Space, Recreation: Active and passive parks, recreation, and open space facilities consistent with zone requirements, including fish and wildlife habitat enhancements considered in the AMMIC Subarea Plan or associated EIS.

(b) Planned Action Uses: A land use shall be considered a Planned Action Land Use when:

i. it is within the Planned Action Area as shown in Exhibit A;

ii. it is within one or more of the land use categories described in subsection 1(a) above; and

iii. it is listed in development regulations applicable to the zoning classifications applied to properties within the Planned Action Area.

A Planned Action may be a single Planned Action use or a combination of Planned Action uses together in a mixed use development. Planned Action uses include accessory uses.

(c) Public Services: The following public services, infrastructure and utilities are also Planned Actions: Multi-modal transportation improvements, water and sewer improvements, and stormwater improvements, considered in capital plans associated with the AMMIC Subarea Plan (now retitled Cascade Industrial Center).

i. Applicants for public services, infrastructure and utilities projects shall demonstrate consistency with the AMMIC Subarea Plan (now retitled Cascade Industrial Center), Arlington Shoreline Master Program, and Arlington Critical Areas Ordinance.

ii. Essential public facilities defined in RCW 47.06.140 are excluded from the Planned Action and not eligible for review or permitting as Planned Actions unless they are accessory to or part of a project that otherwise qualifies as a planned action.

(2) Development Thresholds:

(a) Land Use: The following amounts of various new land uses are contemplated by the Planned Action:

Table D2a-1. Alternative Comparison of Total and Net Growth

*	Existing	No Action	Net Change*	Alternative 1	Net Change*	Alternative 2	Net Change*
Population	890	890	0	2,273	1,383	890	0
Dwellings	332	332	0	848	516	332	0
Jobs	4,969	9,793	4,824	11,594	6,625	13,813	8,844

**Net change compared to existing. Source; PSRC 2020; Transpo Group 2020; BERK, 2020.*

(b) Shifting development amounts between land uses in Subsection 4(D)(2)(a) may be permitted when the total build-out is less than the aggregate amount of development reviewed in the EIS; the traffic trips for the preferred alternative are not exceeded; and, the development impacts identified in the Planned Action EIS and are mitigated consistent with Exhibit B.

(c) Further environmental review may be required pursuant to WAC 197-11-172, if any individual Planned Action or combination of Planned Actions exceed the development thresholds specified in this Ordinance and/or alter the assumptions and analysis in the Planned Action EIS.

(3) Transportation Thresholds:

(a) Trip Ranges & Thresholds. The maximum number of PM peak hour trips anticipated in the Planned Action Area and reviewed in the EIS is as follows:

Table D3a-1. PM Peak Hour Vehicle Trips Generated, All Alternatives

Alternative	PM Peak Hour Vehicle Trips	Net Change in Trip Generation Compared to No Action Alternative
No Action Alternative	6,244	—
Alternative 1	7,422	1,178
Alternative 2	8,518	2,274

Source: Transpo Group, 2020.

(b) Concurrency. All Planned Actions shall meet the transportation concurrency requirements and the level of service (LOS) thresholds established in the Arlington Comprehensive Plan and AMC Chapter 20.56.

(c) Traffic Impact and Mitigation. The responsible City official shall require documentation by Planned Action Project applicants demonstrating that the total trips identified in Subsection 4.D(3)(a) are not exceeded, that the project meets the concurrency standards of Subsection 3.D(3)(b), and that the project has mitigated impacts consistent with **Exhibit B**. Planned action applicants shall provide the following documentation at a minimum unless otherwise required to address standards of AMC 20.04.120 and AMC 20.56,:

(i) Trip generation and total trips in relation to the trip bank in Subsection 3.D(3)(a) and (d).

(ii) Site-specific access design and consistency with City standards.

(iii) Implementation of required frontage improvements per Exhibit B-3 and applicable City engineering standards.

(iv) Share of cost on areawide mitigation per Exhibit B-3.

(d) Discretion. The City Engineer or his/her designee shall have discretion to determine incremental and total trip generation, consistent with the Institute of Traffic Engineers (ITE) Trip Generation Manual (latest edition) or an alternative manual accepted by the City Engineer at his or her sole discretion, for each project permit application proposed under this Planned Action.

(4) Elements of the Environment and Degree of Impacts. A proposed project that would result in a significant change in the type or degree of adverse impacts to any element(s) of the environment analyzed in the Planned Action EIS, would not qualify as a Planned Action.

(5) Changed Conditions. Should environmental conditions change significantly from those analyzed in the Planned Action EIS, the City's SEPA Responsible Official may determine

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that the Planned Action designation is no longer applicable until supplemental environmental review is conducted.

(6) Substantive Authority. Pursuant to SEPA Substantive Authority at AMC 20.98.200 and Comprehensive Plan Policies, impacts shall be mitigated through the measures included in **Exhibit B**.

E. Planned Action Review Criteria.

(1) The City's SEPA Responsible Official may designate as "planned actions", pursuant to RCW 43.21C.030, applications that meet all of the following conditions:

(a) The proposal is located within the Planned Action area identified in **Exhibit A** of this ordinance;

(b) The proposed uses and activities are consistent with those described in the Planned Action EIS and Subsection 4(D) of this ordinance;

(c) The proposal is within the Planned Action thresholds and other criteria of Subsection 4(D) of this ordinance;

(d) The proposal is consistent with the City of Arlington Comprehensive Plan and the AMMIC Subarea Plan (now retitled Cascade Industrial Center);

(e) The proposal's significant adverse environmental impacts have been identified in the Planned Action EIS;

(f) The proposal's significant impacts have been mitigated by application of the measures identified in **Exhibit B**, and other applicable City regulations, together with any modifications or variances or special permits that may be required;

(g) The proposal complies with all applicable local, state and/or federal laws and regulations, and the SEPA Responsible Official determines that these constitute adequate mitigation; and

(h) The proposal is not an essential public facility as defined by RCW 36.70A.200(1), unless the essential public facility is accessory to or part of a development that is designated as a planned action under this ordinance.

(2) The City shall base its decision on review of a Planned Action SEPA checklist (Exhibit B), or an alternative form approved by state law, and review of the application and supporting documentation.

(3) A proposal that meets the criteria of this section shall be considered to qualify and be designated as a planned action, consistent with the requirements of RCW 43.21C.030, WAC 197-11-164 et seq., and this ordinance.

F. Effect of Planned Action.

(1) Designation as a Planned Action Project by the SEPA Responsible Official means that a qualifying proposal has been reviewed in accordance with this Ordinance and found to be consistent with the development parameters and thresholds established herein, and with the environmental analysis contained in the Planned Action EIS.

(2) Upon determination by the City's SEPA Responsible Official that the proposal meets the criteria of Subsection 4(D) and qualifies as a planned action, the proposal shall not require a SEPA threshold determination, preparation of an EIS, or be subject to further review pursuant to SEPA.

G. Planned Action Permit Process. Applications for planned actions shall be reviewed pursuant to the following process:

(1) Development applications shall meet all applicable requirements of the Arlington Municipal Code (AMC). Applications for planned actions shall be made on forms provided by the City and shall include the Planned Action SEPA checklist (Exhibit B).

(2) The City's SEPA Responsible Official shall determine whether the application is complete as provided in AMC Chapter 20.98.

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(3) If the application is for a project within the Planned Action Area defined in Exhibit A, the application will be reviewed to determine if it is consistent with the criteria of this ordinance and thereby qualifies as a Planned Action project.

(a) The decision of the City's SEPA Responsible Official regarding qualification of a project as a Planned Action is an administrative decision. The SEPA Responsible Official shall notify the applicant of his/her decision. Notice of the determination on zoning permit decisions per AMC 20.16.100 involving a planned action shall also be mailed or otherwise verifiably delivered to federally recognized tribal governments and to agencies with jurisdiction over the planned action project, pursuant to RCW 43.21C.440.

(b) If the project is determined to qualify as a Planned Action, it shall proceed in accordance with the applicable permit review procedures specified in AMC Chapter 20.16, except that no SEPA threshold determination, EIS or additional SEPA review shall be required.

(c) Notice of the application for a planned action project shall be consistent with Chapter 20.98 AMC.

(4) If notice is otherwise required for the underlying permit, the notice shall state that the project has qualified as a Planned Action. If notice is not otherwise required for the underlying permit, no special notice is required by this ordinance. See Subsection 4(G)(3)(a) regarding notice of the zoning permit decision.

(5) To provide additional certainty about applicable requirements, the City or applicant may request consideration and execution of a development agreement for a Planned Action project, consistent with RCW 36.70B.170 et seq.

(6) If a project is determined to not qualify as a Planned Action, the SEPA Responsible Official shall so notify the applicant and prescribe a SEPA review procedure consistent with the City's SEPA regulations and the requirements of state law. The notice shall describe the elements of the application that result in failure to qualify as a Planned Action.

(7) Projects that fail to qualify as Planned Actions may incorporate or otherwise use relevant elements of the Planned Action EIS, as well as other relevant SEPA documents, to meet their SEPA requirements. The SEPA Responsible Official may limit the scope of SEPA review for the non-qualifying project to those issues and environmental impacts not previously addressed in the Planned Action EIS.

SECTION 5. *Monitoring and Review.*

A. The City should monitor the progress of development in the designated Planned Action area as deemed appropriate to ensure that it is consistent with the assumptions of this ordinance and the Planned Action EIS regarding the type and amount of development and associated impacts, and with the mitigation measures and improvements planned for the Planned Action Area.

B. This Planned Action Ordinance shall be reviewed by the SEPA Responsible Official no later than five years from its effective date. The review shall determine the continuing relevance of the Planned Action assumptions and findings with respect to environmental conditions in the Planned Action area, the impacts of development, and required mitigation measures. The SEPA Responsible Official shall also consider the implementation of Public Agency Actions and Commitments in Exhibit C. Based upon this review, the City may propose amendments to this ordinance and/or may supplement or revise the Planned Action EIS.

SECTION 6. *Conflict.* In the event of a conflict between this Ordinance or any mitigation measures imposed thereto, and any Ordinance or regulation of the City, the provisions of this Ordinance shall control, except that the provision of any International Building Code shall supersede.

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SECTION 7. *Severability*. If any one or more sections, subsections, or sentences of this Ordinance are held to be unconstitutional or invalid such decision shall not affect the validity of the remaining portions of this Ordinance and the same shall remain in full force and effect.

SECTION 8. *Effective Date*. This ordinance shall take effect and be in force ten (10) days from and after its passage, approval and publication as provided by law.

PASSED by the City Council the_____ day of _____, 2020

_____
Jessica Stickles, Mayor pro tem

Approved this _____ day of _____, 2020

_____
Barb Tolbert, Mayor

ATTEST:

_____
Wendy Van Der Meersche, City Clerk

APPROVED AS TO FORM:

_____
Steve Peiffle, City Attorney

PUBLISHED the_____ day of _____, 2020
EFFECTIVE the _____day of _____, 2020

ORDINANCE NO. _____

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Exhibit A: Cascade Industrial Center Planned Action Area

Source: City of Arlington, 2020; BERK, 2020.

Exhibit B. SEPA Checklist and Mitigation Measures

Exhibit B: Example Environmental Checklist and Required Mitigation Document

INTRODUCTION

The State Environmental Policy Act (SEPA) requires environmental review for project and non-project proposals that are likely to have adverse impacts upon the environment. In order to meet SEPA requirements, the City of Arlington issued the Cascade Industrial Center Planned Action Draft Environmental Impact Statement (EIS) on October 1, 2020, and the Final EIS was issued on Month XX, 2020. The Draft and the Final EIS together are referenced herein as the "EIS". The EIS has identified significant beneficial and adverse impacts that are anticipated to occur with the future development of the Planned Action Area, together with a number of possible measures to mitigate those significant adverse impacts.

On Month XX, 2020, the City of Arlington adopted Ordinance No. ____ establishing a planned action designation for the Cascade Industrial Center studied as Planned Action in the EIS (see **Exhibit A**). SEPA Rules indicates review of a project proposed as a planned action is intended to be simpler and more focused than for other projects (WAC 197-11-172). In addition, SEPA allows an agency to utilize a modified checklist form that is designated within the planned action ordinance (see RCW 43.21c.440). This **Exhibit B-1** provides a modified checklist form adopted in the Cascade Industrial Center Planned Action Ordinance.

MITIGATION DOCUMENT

A Mitigation Document is provided in **Exhibit B-2**, and also summarized in the environmental checklist. **Exhibit B-2** establishes specific mitigation measures, based upon significant adverse impacts identified in the EIS. The mitigation measures shall apply to future development proposals which are consistent with the Planned Action scenarios reviewed in the EIS, and which are located within the Cascade Industrial Center Planned Action Area (see **Exhibit A**). In addition, **Exhibit B-3** provides details of transportation mitigation requirements.

APPLICABLE PLANS AND REGULATIONS

The EIS identifies specific regulations that act as mitigation measures. These are summarized in **Exhibit B-4** by EIS topic, and are advisory to applicants. All applicable federal, state, and local regulations shall apply to Planned Actions, including the regulations that are adopted with the Preferred Alternative. Planned Action applicants shall comply with all adopted regulations where applicable including those listed in the EIS and those not included in the EIS.

INSTRUCTIONS TO APPLICANTS

This environmental checklist asks you to describe some basic information about your proposal. The City of Arlington will use this checklist to determine whether the project is consistent with the analysis in the Cascade Industrial Center Planned Action EIS and qualifies as a planned action or would otherwise require additional environmental review under SEPA. Answer the questions briefly, with the most precise information known, or give the best description you can. You must answer each question accurately and carefully, to the best of your knowledge. The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The City may ask you to explain your answers or provide additional information. In most cases, you should be able to answer the questions from your own project plans and the Planned Action EIS without the need to hire experts.

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EXHIBIT B-1 MODIFIED SEPA CHECKLIST

A. Proposal Description

Date:			
Applicant:			
Property Owner:			
Property Address	Street:	City, State, Zip Code:	
Parcel Information	Assessor Parcel Number:	Property Size in Acres:	
Give a brief, complete description of your proposal.			
Property Zoning	District Name:	Building Type:	
Permits Requested (list all that apply)	Land Use: Building:	Engineering: Other:	
	All Applications Deemed Complete? Yes __ No __ Explain:		
	Are there pending governmental approvals of other proposals directly affecting the property covered by your proposal? Yes __ No __ Explain:		
Existing Land Use	Describe Existing Uses on the Site:		
Proposed Land Use – Check and Circle All That Apply	Industrial/Manufacturing Aviation Flightline	Commercial Open Space, Recreation Other	
Non-residential Uses: Building Square Feet	Existing:	Proposed:	
	Employment in Ordinance: XXX	Job Remainder as of _____20__ _____ square feet	
Dwellings	# Existing Dwellings: #____ Dwelling Type _____ #____ Dwelling Type _____	# Proposed Dwellings Units: #____ Type _____ #____ Type _____	Proposed Density (du/ac):
	Dwelling Threshold Total in Ordinance: XXX	Dwelling Bank Remainder as of _____20__ _____dwellings	

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Building Height	Existing Stories: Existing Height in feet	Proposed Stories: Proposed Height in feet:	
Parking Spaces	Existing:	Proposed:	
Impervious Surfaces	Existing Square Feet:	Proposed Square Feet:	
PM Peak Hour Weekday Vehicle Trips	Existing Estimated Trips Total:	Future Estimated Trips Total:	Net New Trips:
	Source of Trip Rate: ITE Manual ___ Other ____	Transportation Impacts Determined Consistent with AMC 20.04.120 and Chapter 20.56. Yes ____ No ____	
Proposed timing or schedule (including phasing).			
Describe plans for future additions, expansion, or further activity related to this proposal.			
List any available or pending environmental information directly related to this proposal.			

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B. Environmental Checklist and Mitigation Measures

NATURAL ENVIRONMENT CHECKLIST AND MITIGATION MEASURES

Geology/Soils Checklist and Mitigation Measures

1. Description of Conditions A. General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other _____ B. What is the steepest slope on the site (approximate percent slope)? _____ C. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? _____	**Staff Comments:**
2. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.	
3. Has any part of the site been classified as a "geologically hazardous" area? (Check all that apply) ◻ Landslide Hazards ◻ Erosion Hazards ◻ Seismic Hazards ◻ Liquefaction Hazards ◻ Other: _____ Describe:	
4. Proposed Measures to control impacts including **Exhibit B-2 and B-4** regarding Mitigation Document and Applicable Regulations and Advisory Notes, respectively**:** ◻ Temporary erosion and sediment controls ◻ Compliance with grading and fill standards ◻ Compliance with Critical Area Regulations Explain:	

Water Resources/Stormwater Checklist and Mitigation Measures

5. Will the proposal require or result in (check all that apply and describe below): ◻ any work over, in, or adjacent to (within 200 feet) of Edgecomb Creek or Portage Creek? ◻ fill and dredge material that would be placed in or removed from surface water or wetlands? ◻ surface water withdrawals or diversions? ◻ discharges of waste materials to surface waters? ◻ groundwater withdrawal or discharge? ◻ waste materials entering ground or surface waters?	**Staff Comments:**
6. Describe the source of runoff (including stormwater) and method of collection, treatment, and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.	
7. Is the area designated a critical aquifer recharge area? If so, please describe:	
8. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?	

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Water Resources/Stormwater Checklist and Mitigation Measures

9. **What measures are proposed to reduce or control water resources/stormwater impacts?** Proposed Measures to control impacts including **Exhibit B-2 and B-4** regarding Mitigation Document and Applicable Regulations and Advisory Notes, respectively (check all that apply): ◻ Compliance with construction-related stormwater requirements, including temporary erosion and sediment control, and development and implementation of a stormwater pollution and spill prevention plan. ◻ Determination of necessary permanent, long-term water quality treatment requirements. ◻ Low Impact Development (LID) techniques employed, consistent with AMC 13.28? ◻ Adequate erosion protection at outfalls. ◻ Other: Explain:	

Plants and Animals Checklist and Mitigation Measures

10. Check or circle types of vegetation found on the site: ◻ Deciduous tree: Alder, maple, aspen, other _____ ◻ Evergreen tree: Fir, cedar, pine, other ◻ Shrubs ◻ Grass ◻ Pasture ◻ Crop or grain ◻ Wet soil plants: Cattail, buttercup, bullrush, skunk cabbage, other ◻ Water plants: Water lily, eelgrass, milfoil, other _____ Other types of vegetation: _____	**Staff Comments:**
11. Are there wetlands on the property? Please describe their acreage and classification.	
12. Is there riparian habitat on the property?	
13. What kind and amount of vegetation will be removed or altered?	
14. List threatened or endangered species known to be on or near the site	
15. Are there plants or habitats subject to Critical Areas and/or Shoreline Master Program?	
16. Is the proposal consistent with critical area regulations, shoreline regulations, and requirements of the AMMIC Subarea Plan (now retitled Cascade Industrial Center)? Please describe.	
17. Proposed landscaping, use of native plants, buffers, or other measures to preserve or enhance vegetation on the site, if any:	

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Plants and Animals Checklist and Mitigation Measures

18. Proposed Measures to control impacts including **Exhibit B-2 and B-4** regarding Mitigation Document and Applicable Regulations and Notes, respectively (check all that apply): ◻ Compliance with Critical Areas Ordinance ◻ Compliance with Shoreline Master Program ◻ Implementation of on-site or street frontage green infrastructure ◻ Implementation of Chapter 20.76 - Screening and Trees ◻ Other: Explain:	

CULTURAL RESOURCES CHECKLIST AND MITIGATION MEASURES

Cultural Resources Checklist and Mitigation Measures

19. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national or state preservation registers? If so, specifically describe.	**Staff Comments:**
20. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.	
21. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national or state preservation registers? If so, specifically describe.	
22. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.	
Proposed Measures to control impacts including **Exhibit B-2 and B-4** regarding Mitigation Document and Applicable Regulations and Notes, respectively (check all that apply): ◻ Compliance with AMMIC (now renamed Cascade Industrial Center) Subarea Plan. ◻ Compliance with other applicable land use and shoreline policies and development regulations. ◻ Tribal, federal, or state consultations for cultural or eligible historic resources. ◻ Evaluation per Exhibit B-2 and implementation of associated recommended conditions. ◻ Inadvertent discovery plan. ◻ Other Explain:	

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TRANSPORTATION CHECKLIST AND GREENHOUSE GAS MITIGATION MEASURES

Transportation Checklist and Mitigation Measures

23. Identify public streets and highways serving the site and describe proposed access to the existing street system. Show on site plans, if any.	**Staff Comments:**
24. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?	
25. How many parking spaces would the completed project have? How many would the project eliminate?	
26. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).	
27. How many PM peak hour vehicular trips per day would be generated by the completed project?	
28. Is the land use addressed by the EIS Greenhouse Gas Analysis?	
29. Proposed Measures to control impacts including **Exhibit B-2, Exhibit B-3, and B-4 regarding** Mitigation Document, Additional Mitigation Requirements and Procedures, and Applicable Regulations and Notes, respectively **(check all that apply):** ☐ Evaluate and mitigate roadways consistent with Planned Action Ordinance Section 4.D(3). ☐ Commute Trip Reduction (AMC Chapter 10.80) ☐ Transportation Demand Management (TDM) Programs ☐ Street frontage standards ☐ Impact fee and SEPA mitigation fee for fair share of capital improvements ☐ Other: Explain:	

LAND USE AND AESTHETICS CHECKLIST AND MITIGATION MEASURES

Land Use and Aesthetics Checklist and Mitigation Measures

30. What is the current use of the site and adjacent properties?	**Staff Comments:**
31. Describe any structures on the site. Will any structures be demolished? If so, what type, dwelling units, square feet?	
32. What is the current zoning classification of the site?	
33. What is the current Comprehensive Plan designation and zoning classification of adjacent sites?	
34. If applicable, what is the current shoreline master program designation of the site?	

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Land Use and Aesthetics Checklist and Mitigation Measures	
35. What is the planned use of the site? List type of use, number of dwelling units and building square feet.	
36. Approximately how many people would reside or work in the completed project?	
37. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.	
38. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.	
39. Approximately how many people would the completed project displace?	
40. What is the tallest height of any proposed structure(s)?	
41. Would any views in the immediate vicinity be altered or obstructed?	
42. Would the proposal produce light or glare? What time of day would it mainly occur?	
43. Could light or glare from the finished project be a safety hazard or interfere with views?	
44. What existing offsite sources of light or glare may affect your proposal?	
45. Would shade or shadow affect public parks, recreation, open space, or gathering spaces?	
Proposed Measures to control impacts including **Exhibit B-2 and B-4 regarding** Mitigation Document and Applicable Regulations and Notes, respectively (check all that apply): ☐ Compliance with AMMIC Subarea Plan. ☐ Compliance with other applicable land use and shoreline policies and development regulations. ☐ Other Explain:	

UTILITIES AND PUBLIC SERVICES CHECKLIST AND MITIGATION MEASURES

Public Services and Utilities Checklist	
46. Water Supply: Would the project result in an increased need for water supply or fire flow pressure? Can City levels of service be met?	**Staff Comments:**
47. Wastewater: Would the project result in an increased need for wastewater services? Can City levels of service be met?	

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Public Services and Utilities Checklist	
48. Police Protection: Would the project increase demand for police services? Can City levels of service be met?	
49. Fire and Emergency Services: Would the project increase demand for fire and/or emergency services? Can levels of services be met?	
50. Schools: Would the project result in an increase in demand for school services? Can levels of services be met? Is an impact fee required?	
51. Parks and Recreation: Would the project require an increase in demand for parks and recreation? Can levels of services be met?	
52. Other Public Services and Utilities: Would the project require an increase in demand for other services and utilities? Can levels of services be met?	
53. Proposed Measures to control impacts including **Exhibit B-1 and B-4 regarding** Mitigation Required for Development Applications and **Exhibit B-3** Applicable Regulations **(check all that apply):** ☐ Capital Facility Plan has been considered, and development provides its fair share of the cost of improvements consistent with applicable local government plans and codes. ☐ Law enforcement agency has been consulted, and development reflects applicable code requirements. ☐ Fire protection agency has been consulted, and development complies with Uniform Fire Code. ☐ School impact fee, if applicable. ☐ Parks impact fee, if applicable. ☐ Developer has coordinated with City to ensure that sewer lines, water lines, or stormwater facilities will be extended to provide service to proposed development site where required. ☐ General facility charges have been determined to ensure cumulative impacts to utilities are addressed. ☐ Other Measures to reduce or control public services and utilities impacts: Explain:	

C. Applicant Signature

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

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Signature:	
Date:	

D. Review Criteria

REVIEW CRITERIA

The City's SEPA Responsible Official may designate "planned actions" consistent with criteria in Ordinance No. _____ Subsection 4.E.

Criteria	Discussion
(a) the proposal is located within the Planned Action area identified in Exhibit A of this Ordinance;	
(b) the proposed uses and densities are consistent with those described in the Planned Action EIS and Section 4.D of this Ordinance;	
(c) the proposal is within the Planned Action thresholds and other criteria of Section 4.D of this Ordinance;	
(d) the proposal is consistent with the City of Arlington Comprehensive Plan and the AMMIC Subarea Plan;	
(e) the proposal's significant adverse environmental impacts have been identified in the Planned Action EIS;	
(f) the proposal's significant impacts have been mitigated by application of the measures identified in Exhibit B, and other applicable City regulations, together with any modifications or variances or special permits that may be required;	
(g) the proposal complies with all applicable local, state and/or federal laws and regulations, and the SEPA Responsible Official determines that these constitute adequate mitigation;	
(h) the proposal is not an essential public facility as defined by RCW 36.70A.200(1), unless the essential public facility is accessory to or part of a development that is designated as a planned action under this ordinance.	

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DETERMINATION CRITERIA

Applications for planned actions shall be reviewed pursuant to the process in Ordinance No. ____ Section 4.G.

Requirement	Discussion
Applications for planned actions were made on forms provided by the City including this Cascade Industrial Center Environmental Checklist and Mitigation Document.	
The application has been deemed complete in accordance with BMC Chapter 20.02.	
The proposal is located within Planned Action Area pursuant to Exhibit A of this Ordinance	
The proposed use(s) are listed in Section 4D of the Ordinance and qualify as a Planned Action.	

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E. SEPA Responsible Official Determination

A. Qualifies as a Planned Action: The application is consistent with the criteria of Ordinance_____ and thereby qualifies as a Planned Action project.
It shall proceed in accordance with the applicable permit review procedures specified in _____, except that no SEPA threshold determination, EIS or additional SEPA review shall be required.
Notice shall be made pursuant to AMC Chapter 20.98. as part of notice of the underlying permits and shall include the results of the Planned Action determination. If notice is not otherwise required for the underlying permit, no special notice is required. See Section 4.G(3)(a) regarding notice of the zoning permit decision.
The review process for the underlying permit shall be as provided in AMC Chapter 20.16.
NOTE: If it is determined during subsequent detailed permit review that a project does not qualify as a planned action, this determination shall be amended.

Signature	
Date:	

B. Does not Qualify as Planned Action: The application is not consistent with the criteria of Ordinance _____, and does not qualify as a Planned Action project for the following reasons:

Projects that fail to qualify as Planned Actions may incorporate or otherwise use relevant elements of the Planned Action EIS, as well as other relevant SEPA documents, to meet their SEPA requirements. The SEPA Responsible Official may limit the scope of SEPA review for the non-qualifying project to those issues and environmental impacts not previously addressed in the Planned Action EIS.

SEPA Process Prescribed:

C. Responsible Official Signature

Signature:	
Date:	

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EXHIBIT B-2 MITIGATION DOCUMENT

A Mitigation Document is provided in this Exhibit B-1 to establish specific mitigation measures based upon significant adverse impacts identified in the Planned Action EIS. The mitigation measures in this Exhibit B-1 shall apply to Planned Action Project applications that are consistent with the Alternative range reviewed in the Planned Action EIS and which are located within the Planned Action Area (see Exhibit A).

Where a mitigation measure includes the words "shall" or "will," inclusion of that measure in Planned Action Project application plans is mandatory in order to qualify as a Planned Action Project. Where "should" or "would" appear, the mitigation measure may be considered by the project applicant as a source of additional mitigation, as feasible or necessary, to ensure that a project qualifies as a Planned Action Project. Unless stated specifically otherwise, the mitigation measures that require preparation of plans, conduct of studies, construction of improvements, conduct of maintenance activities, etc., are the responsibility of the applicant or designee to fund and/or perform.

The City's SEPA Responsible Official's authorized designee shall determine consistency with this mitigation document.

Natural Environment

1. Planned Actions shall be consistent with subarea plan dimensional and development standards including maximum impervious coverages.
2. Planned Actions shall be consistent with the relocation of Edgecomb Creek and associated habitat improvements.
3. Planned Actions shall implement required street frontages identified in the Arlington Complete Streets Program, including landscaping and green infrastructure.
4. Planned Actions may incorporate green stormwater retrofits that provide water quality benefits beyond standard requirements by code.

Cultural Resources

5. Within shoreline jurisdiction, Planned Actions must be consistent with cultural resources policies and regulations.
6. Planned Action notices shall be sent to DAHP and tribes (Snohomish Tribe, Stillaguamish Indian Tribe, and Tulalip Tribes) for each application consistent with Section G of the ordinance.
7. If DAHP predictive model maps location as high to very high probability (Map B-1.1):
    a. If cultural resources survey not previously completed, conduct cultural resources survey including subsurface testing where feasible and documentation of historic (i.e. 50 years old or older) built environment in advance of construction. Survey report will include inadvertent discovery plan (IDP).
    b. If cultural resources survey of the location completed more than 10 years ago, an updated report including IDP may be needed.
    c. If cultural resources survey of the location completed within past 10 years, prepare an IDP.
8. If DAHP predictive model maps location as low to moderate probability (Map B-1.1):
    a. If cultural resources survey not previously completed, conduct cultural resources desktop review and field reconnaissance including documentation of historic (i.e. 50 years old or older) built environment in advance of construction. Report will include inadvertent discovery plan (IDP).
    b. If cultural resources review completed for the location more than 10 years ago, an updated desktop review including IDP may be needed.
    c. If cultural resources survey of the location completed within past 10 years, prepare an IDP.
9. Where required under Mitigation Measures 7 and 8, Planned Actions shall prepare Inadvertent Discovery Plans as a condition of project approval.
10. The City may condition Planned Actions according to the results of required reviews under Mitigation Measures 7 and 8.

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Map B-1.1 Cultural Resources Probability Department of Archaeology and Historic Preservation

Land Use and Aesthetics

11. Planned Actions shall be consistent with the AMC development standards and guidelines for the CIC.
12. Planned Actions shall implement design standards specific to industrial areas and development types.

Transportation

13. See Exhibit B-3.

Public Services

14. Planned Actions shall demonstrate consistency with crime prevention through environmental design principles through compliance with CIC development standards and guidelines.
15. Planned Actions shall pay applicable impact fees per Chapter 20.90 for parks and schools.
16. A Planned Action shall provide the common and private open space required per dwelling in the Arlington Municipal Code.

Utilities

17. Planned Actions shall meet City standards for adequate water and sewer service, pay applicable general facility charges, and incorporate water and sewer infrastructure improvements in street frontage improvements as appropriate.
18. Planned Action shall implement the required stormwater manual and implement necessary stormwater improvements. If a regional stormwater facility is approved by the City, an applicant may request or the City may condition development to

pay a fee based on the area of new and replaced impervious surface subject to the applicable stormwater management manual in place at the time of application.

EXHIBIT B-3 ADDITIONAL MITIGATION REQUIREMENTS & PROCEDURES

Transportation

Frontage Improvements

A. When a property redevelops and applies for permits, frontage improvements (or in-lieu contributions) and right-of-way dedications if needed are required by the Arlington Municipal Code (AMC 20.56.170).

B. If right-of-way (or an easement) is needed, it also must be dedicated to the City by the Planned Action Application property owner.

C. Planned Action applicants may request and the City may consider a fee-in-lieu for some or all of the frontage improvements that are the responsibility of the property owner consistent with criteria in AMC 20.56.170 and agreements pursuant to RCW 82.02.020 or other instrument deemed acceptable to the City and applicant.

Mitigation Fees

D. Areawide Improvements: Implementation of improvements identified in Table B.3-1 shall occur through a SEPA fair share fee program such that new development contributes its share of the cost for these projects.

E. Cost Basis: Unless amended, or replaced with a transportation impact fee, mitigation fees consistent with the proportionate share of costs shall be applied to planned action applications. This fee shall be payable in addition to the impact fee in AMC Chapter 20.90 until such time as the improvements in Table B.3-1 are incorporated into the City's impact fee basis.

F. A Planned Action's trips calculated per Section 4.D(3)(d) will be used to determine a development's demand and mitigation payment.

G. Mitigation Fee Payable at Permit Issuance: The mitigation fee shall be payable at the time of building permit issuance.

H. The Planned Action Share Transportation Fees will be incorporated into the City master fee schedule. Fees shall be subject to biennial review to affirm the cost basis including a construction cost index or an equivalent as determined by the City.

I. Should the State of Washington develop capital improvements that are scheduled in addition to the listed mitigation in Table B.3-1, the City may collect a fair share cost of such improvements to the extent the improvements add capacity to address growth.

Transportation Demand Management

J. Each Planned Action shall demonstrate consistency with requirements for Commute Trip Reduction (AMC Chapter 10.80). The City may condition Planned Actions to provide for transportation demand management measures to assist in meeting City levels of service and concurrency.

K. Each Planned Action shall provide for electric vehicle infrastructure (AMC Chapter 20.44.098).

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Table B.3-1. Summary of Mitigation and Action Alternative Pro-Rata Cost

Location	Improvement	Estimated Total Cost (Million $)[1]	2040 No Action Intersection Vehicle Volumes[2]	2040 Action Alternative 2 Intersection Vehicle Volumes[2]	Project Trips[3]	Percent Pro-Rata Share[4]	Pro-Rata Cost (Million $)[5]
SR 531 between 43rd Avenue NE and 67th Avenue NE	Widening SR 531 from 2 to 4-lanes with intersection improvements at major intersections. Multiuse paths constructed along SR 531	$39.3	14,025	14,355	330	2.3%	$0.904
SR 531 between 67th Avenue NE and SR 9		$45.0	5,700	5,780	80	1.4%	$0.630
67th Avenue NE/188th Street NE	Installation of traffic signal and railroad crossing improvements	$3.1	1,650	1,770	120	6.8%	$0.211
Total		**$87.4**					**$1.745**

Source: Transpo Group, 2020

1. *SR 531 43rd Avenue NE to 67th Avenue NE project cost based on WSDOT published as of September 25, 2020 https://wsdot.wa.gov/projects/sr531/43rd-ave-67th-ave/home. SR 531 67th Avenue NE to SR 9 project cost based on City of Arlington Six-Year Transportation Improvement Program 2019-2024. Intersection improvement cost 67th Avenue NE/188th Street NE based on estimates prepared by Transpo Group.*
2. *Volumes for SR 531 are total entering volumes for the major intersections.*
3. *2040 Action Alternative 2 intersection vehicle volumes – 2040 No Action intersection vehicle volumes*
4. *Project trips / 2040 Action Alternative intersection vehicle volumes.*
5. *5. Percent Pro-Rata Share x Estimated Total Cost*

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EXHIBIT B-4 APPLICABLE REGULATIONS AND ADVISORY NOTES

In addition to the AMMIC Subarea Plan goals and policies and the Arlington Land Use Code development regulations, the following regulations may apply. All applicable local, state, and federal requirements shall be met regardless of whether they are highlighted in this Exhibit or not.

Natural Environment

Development and redevelopment projects within the study area that have the potential to impact environmentally sensitive natural resources will require compliance with federal, state, and local regulations. Mitigation sequencing to avoid, minimize, and mitigate environmental impacts is typically required for all applicable permitting reviews and authorizations. The table below provides a regulatory permit matrix for actions requiring local, state, and federal authorizations. Appropriate mitigation

measures specific to project alternatives will need to be proposed when alternatives are farther along in the planning process. This may include preservation, enhancement, and restoration of wetland and marine shoreline buffer.

Table B.4-1. Environmental Regulations

Jurisdictional Agency	Regulations/Authorizations
City of Arlington	Pre-application submittal conference SEPA Determination (No Action Alternative) Planned Action Consistency Determination (Action Alternatives) Critical Areas review City of Arlington Stormwater Code Compliance
Washington State Department of Ecology	CWA Section 401 Water Quality Certification NPDES Construction Stormwater General Permit Coastal Zone Management Act Consistency Certification
Washington Department of Fish and Wildlife	Hydraulic Project Approval (HPA)
U.S. Army Corps of Engineers	CWA Section 404 Clean Water Act CWA Section 10 Rivers and Harbors Act Requires Compliance with: Section 7 of the Endangered Species Act Section 106 of the Historic Preservation Act Magnuson-Stevens Act

Sources: City of Arlington Municipal Code; Herrera 2020.

Land Use and Aesthetics

Arlington's Municipal Code contains regulations that help to ensure land use compatibility.

- Title 20 Land Use Code.
- Arlington Design Standards (Chapter 20.46 AMC).
- Arlington Shoreline Master Program (SMP).
- Airport Master Plan: contains regulations applicable to Flightline zone areas.

Cultural Resources

In terms of historic and cultural resources the following local, state, and federal laws or rules apply:

- Arlington's SMP includes policies and regulations that would require appropriate cultural review by tribal and other agencies.
- State funded capital projects require Governor's Executive Order 0505 review. Implementation of the Executive Order requires all state agencies implementing or assisting capital projects using funds appropriated in the State's biennial Capital Budget to consider how future proposed projects may impact significant cultural and historic places.
- Section 106 of the National Historic Preservation Act requires that each federal agency identify and assess the effects its actions may have on historic buildings.

Transportation

The following regulations address transportation:

- Travel Demand Management (TDM): Washington State Commute Trip Reduction (CTR) law requires employers with 100 or more employees and located in high-population counties to implement TDM programs.
- Arlington Complete Streets Program
- Arlington Transportation Improvement Program and Capital Improvement Program
- The following regulations and standards:
  - AMC Chapter 10.80 - Commute Trip Reduction
  - AMC Chapter 20.56 - Streets and Sidewalks
  - Chapter 20.90 - Concurrency and Impact Fees
  - Arlington Engineering Standards
  - AMC Chapter 20.44.098 – Electric Vehicle Infrastructure

Public Services

The following regulations address public services:

- Comprehensive Plan – Addresses levels of service and capital improvements for fire, police, and parks. This is updated every eight years with the Comprehensive Plan.
- Title 15 Fire – Includes requirements for fire suppression.
- Parks and Recreation Master Plan– Establishes a plan for 2016-2023 including capital projects.
- Arlington School District Levy 2020 – Addresses Capital Replacement projects to ensure proper function of current schools.

Utilities

Water

When evaluating new construction, Arlington Public Works and Utilities Department personnel determine the ability of the water system to meet fire flow requirements at that location with a minimum of 20 psi residual pressure throughout the distribution system. If the water system cannot provide the required fire flow for the specific project, the developer is required to revise building construction and/or make the necessary improvements to the distribution system to meet the project's fire flow requirements as established by the City Fire Chief. The available fire flow will be determined by the City's engineering staff using the water system hydraulic model.

AMC Chapter13.08. includes provisions for service connections and mains to be upgraded by developers during redevelopment if required to meet engineering design and construction standards. Chapter 13.08. also includes provisions for installation of pumps if required to achieve adequate pressure during peak demands.

Wastewater

AMC Chapter 13.36 includes provisions for wastewater service connections and extensions when existing connections are inadequate or sewer mains are not present along the frontage of a property.

Stormwater

AMC Chapter 13.28 includes provisions that require redevelopment to meet stormwater management requirements of the Stormwater Management Manual for Western Washington, which requires low impact development BMPs, flow control, and water quality treatment. Under all the alternatives these requirements are expected to result in a net improvement in the quality

DRAFT

of stormwater that is discharged to the Stillaguamish River and Quilceda Creek via ditches, Hayho Creek, Westphal Creek, Portage Creek, Prairie Creek and Edgecomb Creek.

DRAFT

C Traffic Counts

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

Location: 1 67TH AVE NE & 188TH ST NE PM
Date: Tuesday, January 7, 2020
Peak Hour: 04:00 PM - 05:00 PM

Peak Hour

Motorized Vehicles

Heavy Vehicles

Pedestrians/Bicycles in Crosswalk

	HV%	PHF
EB	3.0%	0.68
WB	26.3%	0.59
NB	6.3%	0.90
SB	1.9%	0.81
All	4.1%	0.85

Traffic Counts - Motorized Vehicles

Interval Start Time	188TH ST NE Eastbound				188TH ST NE Westbound				67TH AVE NE Northbound				67TH AVE NE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	29	0	43	0	1	0	3	0	10	95	6	0	5	124	16	332	1,123
4:15 PM	0	24	1	15	0	3	0	5	0	12	92	6	0	3	92	21	274	1,012
4:30 PM	0	34	0	53	0	1	0	3	0	8	72	4	0	2	100	11	288	929
4:45 PM	0	20	1	15	0	1	0	2	0	14	78	1	0	1	79	17	229	838
5:00 PM	0	19	0	12	0	2	0	2	0	3	85	4	0	5	74	15	221	777
5:15 PM	0	15	0	12	0	0	0	0	0	4	67	3	0	3	73	14	191	
5:30 PM	0	16	0	14	0	3	1	4	0	5	77	9	0	2	62	4	197	
5:45 PM	0	6	2	11	0	2	1	2	0	7	68	2	0	1	60	6	168	
Count Total	0	163	4	175	0	13	2	21	0	63	634	35	0	22	664	104	1,900	
Peak Hour	0	107	2	126	0	6	0	13	0	44	337	17	0	11	395	65	1,123	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	3	5	1	1	10	4:00 PM	0	0	3	0	3
4:15 PM	1	7	3	3	14	4:15 PM	0	1	2	0	3
4:30 PM	2	5	0	2	9	4:30 PM	0	0	0	0	0
4:45 PM	1	8	1	3	13	4:45 PM	0	0	0	0	0
5:00 PM	0	6	0	5	11	5:00 PM	0	0	2	0	2
5:15 PM	0	5	0	2	7	5:15 PM	0	0	0	0	0
5:30 PM	0	2	0	2	4	5:30 PM	0	0	0	0	0
5:45 PM	0	3	0	2	5	5:45 PM	0	0	0	0	0
Count Total	7	41	5	20	73	Count Total	0	1	7	0	8
Peak Hour	7	25	5	9	46	Peak Hour	0	1	5	0	6

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

Location: 2 SMOKEY POINT BLVD & 156TH ST NE PM
Date: Tuesday, January 7, 2020
Peak Hour: 04:00 PM - 05:00 PM

Peak Hour

Motorized Vehicles

Heavy Vehicles

Pedestrians/Bicycles in Crosswalk

	HV%	PHF
EB	0.4%	0.87
WB	0.0%	0.84
NB	0.9%	0.90
SB	2.1%	0.90
All	1.2%	0.96

Traffic Counts - Motorized Vehicles

Interval Start Time	156TH ST NE Eastbound				156TH ST NE Westbound				SMOKEY POINT BLVD Northbound				SMOKEY POINT BLVD Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	7	0	62	0	8	1	7	0	38	168	1	0	1	177	10	480	1,849
4:15 PM	0	15	2	62	0	3	2	9	0	60	148	2	0	3	141	15	462	1,833
4:30 PM	0	8	0	60	0	1	2	7	0	50	183	1	0	2	151	10	475	1,771
4:45 PM	0	2	0	56	0	4	1	9	0	37	158	1	0	3	155	6	432	1,660
5:00 PM	0	3	1	46	0	3	0	8	0	43	148	0	0	6	189	17	464	1,551
5:15 PM	0	4	0	61	0	10	5	5	0	54	104	0	0	6	143	8	400	
5:30 PM	0	5	2	54	0	3	1	3	0	37	113	1	0	2	129	14	364	
5:45 PM	0	5	0	49	0	8	0	6	0	28	108	2	0	2	106	9	323	
Count Total	0	49	5	450	0	40	12	54	0	347	1,130	8	0	25	1,191	89	3,400	
Peak Hour	0	32	2	240	0	16	6	32	0	185	657	5	0	9	624	41	1,849	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	2	0	3	5	4:00 PM	0	0	0	0	0
4:15 PM	1	2	0	4	7	4:15 PM	0	0	0	0	0
4:30 PM	0	1	0	3	4	4:30 PM	0	0	0	0	0
4:45 PM	0	3	0	4	7	4:45 PM	0	0	0	0	0
5:00 PM	0	3	0	5	8	5:00 PM	0	0	0	0	0
5:15 PM	0	3	0	4	7	5:15 PM	0	0	0	0	0
5:30 PM	0	1	0	5	6	5:30 PM	0	0	0	0	0
5:45 PM	0	4	0	1	5	5:45 PM	0	0	0	0	0
Count Total	1	19	0	29	49	Count Total	0	0	0	0	0
Peak Hour	1	8	0	14	23	Peak Hour	0	0	0	0	0

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

Location: 3 SMOKEY POINT BLVD & 152ND ST NE PM
Date: Tuesday, January 7, 2020
Peak Hour: 04:00 PM - 05:00 PM

Peak Hour

Motorized Vehicles

Heavy Vehicles

Pedestrians/Bicycles in Crosswalk

	HV%	PHF
EB	0.0%	0.64
WB	1.1%	0.90
NB	2.1%	0.88
SB	1.6%	0.95
All	1.7%	0.96

Traffic Counts - Motorized Vehicles

Interval Start Time	152ND ST NE Eastbound				152ND ST NE Westbound				SMOKEY POINT BLVD Northbound				SMOKEY POINT BLVD Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	7	0	2	0	34	2	58	0	2	142	38	0	56	183	1	525	2,030
4:15 PM	0	1	0	6	0	28	1	60	0	1	150	34	0	78	149	0	508	2,019
4:30 PM	0	1	2	1	0	24	0	73	0	1	168	43	0	66	150	1	530	1,995
4:45 PM	0	1	1	1	0	16	0	52	0	0	142	25	0	68	160	1	467	1,907
5:00 PM	0	4	1	1	0	20	1	46	0	2	161	28	0	87	159	4	514	1,796
5:15 PM	0	5	2	1	0	21	0	42	0	1	146	31	0	76	155	4	484	
5:30 PM	0	1	2	0	0	23	0	45	0	0	150	24	0	53	144	0	442	
5:45 PM	0	2	0	0	0	22	0	31	0	1	118	20	0	52	110	0	356	
Count Total	0	22	8	12	0	188	4	407	0	8	1,177	243	0	536	1,210	11	3,826	
Peak Hour	0	10	3	10	0	102	3	243	0	4	602	140	0	268	642	3	2,030	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	5	0	3	8	4:00 PM	0	0	0	0	0
4:15 PM	0	2	3	4	9	4:15 PM	0	0	0	0	0
4:30 PM	0	5	0	5	10	4:30 PM	0	0	0	0	0
4:45 PM	0	4	1	3	8	4:45 PM	0	0	0	0	0
5:00 PM	1	2	1	3	7	5:00 PM	0	0	0	0	0
5:15 PM	0	6	2	2	10	5:15 PM	0	0	0	0	0
5:30 PM	0	6	0	6	12	5:30 PM	0	0	0	0	0
5:45 PM	0	2	3	1	6	5:45 PM	0	0	0	0	0
Count Total	1	32	10	27	70	Count Total	0	0	0	0	0
Peak Hour	0	16	4	15	35	Peak Hour	0	0	0	0	0

I-5mp206.08_SR531_SB_Ramps_2019-0409 - TMC
Tue Apr 9, 2019
Full Length (12 AM-12 AM (+1))
All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 643268, Location: 48.152284, -122.191081, Site Code: 00520608SB_0419

WASHINGTON STATE DEPT. OF TRANSPORTATION
Northwest Region - Traffic Studies

Provided by: Washington State DOT
15700 Dayton Ave North, MS-120, P.O. Box 330310,
Seattle, WA, 98133, US

Tue Apr 9, 2019
24 h TMC

48°F Drizzle

Lat: 48.152284 N
Long: 122.191081 W

Peak Hour Factor

Scope	Time	Count	PHF
AM	Tue Apr 9, 2019 10:00 AM	2,831	0.903
Midday	Tue Apr 9, 2019 12:00 PM	3,457	0.975
PM	Tue Apr 9, 2019 4:30 PM	3,849	0.956

I-5mp206.08_SR531_SB_Ramps_2019-0409 - TMC
Tue Apr 9, 2019
Full Length (12 AM-12 AM (+1))
All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 643268, Location: 48.152284, -122.191081, Site Code: 00520608SB_0419

WASHINGTON STATE DEPT. OF TRANSPORTATION
Northwest Region - Traffic Studies

Provided by: Washington State DOT
15700 Dayton Ave North, MS-120, P.O. Box 330310,
Seattle, WA, 98133, US

Leg	I-5 SB Ramps						SR 531 (172nd St NE)							I-5 SB ON Ramp		SR 531 (172nd St NE)						
Direction	Southbound						Westbound							Northbound		Eastbound						
Time	R	T	L	U	App	Ped*	HR	R	T	L	U	App	Ped*	App	Ped*	R	T	L	U	App	Ped*	Int
2019-04-09 12:00AM	5	0	2	0	**7**	0	9	0	24	0	0	**33**	0	**0**	0	3	16	0	0	**19**	0	**59**
12:15AM	4	0	6	0	**10**	0	5	0	33	0	0	**38**	0	**0**	1	6	4	0	0	**10**	0	**58**
12:30AM	5	0	5	0	**10**	0	10	0	17	0	0	**27**	0	**0**	1	4	5	0	0	**9**	0	**46**
12:45AM	2	0	2	0	**4**	0	7	0	14	0	0	**21**	0	**0**	0	10	8	0	0	**18**	0	**43**
Hourly Total	16	0	15	0	**31**	0	31	0	88	0	0	**119**	0	**0**	2	23	33	0	0	**56**	0	**206**
1:00AM	5	0	2	0	**7**	0	9	0	8	0	0	**17**	0	**0**	1	4	5	0	0	**9**	0	**33**
1:15AM	3	0	3	0	**6**	0	9	0	15	0	0	**24**	0	**0**	0	3	5	0	0	**8**	0	**38**
1:30AM	2	0	3	0	**5**	0	3	1	14	0	0	**18**	0	**0**	0	5	4	0	0	**9**	0	**32**
1:45AM	2	0	5	0	**7**	0	7	0	20	0	0	**27**	0	**0**	0	4	6	0	0	**10**	0	**44**
Hourly Total	12	0	13	0	**25**	0	28	1	57	0	0	**86**	0	**0**	1	16	20	0	0	**36**	0	**147**
2:00AM	3	0	6	0	**9**	0	5	0	9	0	0	**14**	0	**0**	0	5	5	0	0	**10**	0	**33**
2:15AM	2	0	7	0	**9**	0	18	0	5	0	0	**23**	0	**0**	1	9	4	0	0	**13**	0	**45**
2:30AM	3	1	4	0	**8**	0	25	0	4	0	0	**29**	0	**0**	0	7	5	0	0	**12**	0	**49**
2:45AM	1	0	5	0	**6**	0	17	0	6	0	0	**23**	0	**0**	0	7	2	0	0	**9**	0	**38**
Hourly Total	9	1	22	0	**32**	0	65	0	24	0	0	**89**	0	**0**	1	28	16	0	0	**44**	0	**165**
3:00AM	1	0	5	0	**6**	0	19	0	9	0	0	**28**	0	**0**	0	8	1	0	0	**9**	0	**43**
3:15AM	1	0	11	0	**12**	0	27	0	3	0	0	**30**	0	**0**	0	12	5	0	0	**17**	0	**59**
3:30AM	8	0	13	0	**21**	0	42	0	9	0	0	**51**	0	**0**	0	18	7	0	0	**25**	0	**97**
3:45AM	1	0	23	0	**24**	0	49	0	10	0	0	**59**	0	**0**	0	37	14	0	0	**51**	0	**134**
Hourly Total	11	0	52	0	**63**	0	137	0	31	0	0	**168**	0	**0**	0	75	27	0	0	**102**	0	**333**
4:00AM	3	0	12	0	**15**	0	79	0	9	0	0	**88**	0	**0**	0	54	13	0	0	**67**	0	**170**
4:15AM	6	0	19	0	**25**	0	125	0	8	0	0	**133**	0	**0**	0	71	15	0	0	**86**	2	**244**
4:30AM	10	0	35	0	**45**	0	128	2	20	0	0	**150**	0	**0**	0	66	21	0	0	**87**	0	**282**
4:45AM	11	0	63	0	**74**	1	129	1	25	0	0	**155**	0	**0**	2	68	25	0	0	**93**	1	**322**
Hourly Total	30	0	129	0	**159**	1	461	3	62	0	0	**526**	0	**0**	2	259	74	0	0	**333**	3	**1018**
5:00AM	13	0	29	0	**42**	0	124	0	17	0	0	**141**	0	**0**	0	114	24	0	0	**138**	0	**321**
5:15AM	15	0	54	0	**69**	0	141	4	19	0	0	**164**	0	**0**	2	96	33	0	0	**129**	0	**362**
5:30AM	12	0	84	0	**96**	0	117	0	20	0	0	**137**	0	**0**	0	105	45	0	0	**150**	0	**383**
5:45AM	23	0	110	0	**133**	0	150	2	39	0	0	**191**	0	**0**	1	80	69	0	0	**149**	0	**473**
Hourly Total	63	0	277	0	**340**	0	532	6	95	0	0	**633**	0	**0**	3	395	171	0	0	**566**	0	**1539**
6:00AM	24	0	52	0	**76**	0	167	3	38	0	0	**208**	0	**0**	0	102	61	0	0	**163**	0	**447**
6:15AM	22	0	62	0	**84**	0	177	1	56	0	0	**234**	0	**0**	0	122	77	0	0	**199**	0	**517**
6:30AM	45	1	91	0	**137**	0	144	3	74	0	0	**221**	0	**0**	1	110	71	0	0	**181**	0	**539**
6:45AM	40	0	96	0	**136**	2	139	3	106	0	0	**248**	0	**0**	2	110	75	0	0	**185**	0	**569**
Hourly Total	131	1	301	0	**433**	2	627	10	274	0	0	**911**	0	**0**	3	444	284	0	0	**728**	0	**2072**
7:00AM	29	1	65	0	**95**	2	171	2	114	0	0	**287**	0	**0**	3	99	96	0	0	**195**	0	**577**
7:15AM	50	0	84	0	**134**	0	155	3	117	0	0	**275**	0	**0**	0	112	137	0	0	**249**	0	**658**
7:30AM	39	0	127	0	**166**	0	147	3	91	0	0	**241**	1	**0**	2	88	124	0	0	**212**	0	**619**
7:45AM	47	0	145	0	**192**	0	120	3	127	0	0	**250**	0	**0**	2	67	97	0	0	**164**	0	**606**
Hourly Total	165	1	421	0	**587**	2	593	11	449	0	0	**1053**	1	**0**	7	366	454	0	0	**820**	0	**2460**
8:00AM	44	1	69	0	**114**	0	117	0	136	0	0	**253**	0	**0**	0	89	97	0	0	**186**	0	**553**
8:15AM	42	0	83	0	**125**	0	116	1	119	0	0	**236**	0	**0**	0	104	123	0	0	**227**	0	**588**
8:30AM	45	0	81	0	**126**	1	98	3	118	0	0	**219**	0	**0**	0	96	137	0	0	**233**	0	**578**
8:45AM	48	0	81	0	**129**	1	90	1	121	0	0	**212**	0	**0**	1	95	137	0	0	**232**	0	**573**
Hourly Total	179	1	314	0	**494**	2	421	5	494	0	0	**920**	0	**0**	1	384	494	0	0	**878**	0	**2292**
9:00AM	52	1	74	0	**127**	0	102	0	144	0	0	**246**	0	**0**	0	72	118	0	0	**190**	0	**563**
9:15AM	57	0	60	0	**117**	1	120	2	187	0	0	**309**	0	**0**	2	82	124	0	0	**206**	0	**632**
9:30AM	53	0	76	0	**129**	2	103	2	201	0	0	**306**	0	**0**	0	91	135	0	0	**226**	0	**661**
9:45AM	66	0	68	0	**134**	3	110	0	200	0	0	**310**	0	**0**	3	86	139	0	0	**225**	0	**669**
Hourly Total	228	1	278	0	**507**	6	435	4	732	0	0	**1171**	0	**0**	5	331	516	0	0	**847**	0	**2525**
10:00AM	57	0	56	0	**113**	3	86	1	195	0	0	**282**	0	**0**	0	85	165	0	0	**250**	0	**645**
10:15AM	51	2	83	0	**136**	1	100	1	200	0	0	**301**	0	**0**	1	88	139	0	0	**227**	1	**664**
10:30AM	73	1	68	0	**142**	3	93	3	223	0	0	**319**	0	**0**	0	102	175	0	0	**277**	0	**738**
10:45AM	56	0	72	0	**128**	1	108	0	244	0	0	**352**	0	**0**	0	96	208	0	0	**304**	0	**784**
Hourly Total	237	3	279	0	**519**	8	387	5	862	0	0	**1254**	0	**0**	1	371	687	0	0	**1058**	1	**2831**
11:00AM	72	0	70	0	**142**	0	119	0	234	0	0	**353**	0	**0**	6	101	199	0	0	**300**	0	**795**
11:15AM	71	0	68	0	**139**	0	121	1	238	0	0	**360**	0	**0**	3	99	207	0	0	**306**	1	**805**

Leg	I-5 SB Ramps						SR 531 (172nd St NE)							I-5 SB ON Ramp		SR 531 (172nd St NE)						
Direction	Southbound						Westbound							Northbound		Eastbound						
Time	R	T	L	U	App	Ped*	HR	R	T	L	U	App	Ped*	App	Ped*	R	T	L	U	App	Ped*	Int
11:30AM	61	0	61	0	**122**	0	130	0	271	0	0	**401**	0	**0**	0	139	189	0	0	**328**	2	**851**
11:45AM	76	0	75	0	**151**	0	118	1	272	0	0	**391**	0	**0**	1	96	208	0	0	**304**	0	**846**
Hourly Total	280	0	274	0	**554**	0	488	2	1015	0	0	**1505**	0	**0**	10	435	803	0	0	**1238**	3	**3297**
12:00PM	61	1	73	0	**135**	2	110	1	278	0	0	**389**	0	**0**	1	97	211	0	0	**308**	1	**832**
12:15PM	90	0	65	0	**155**	0	114	1	280	0	0	**395**	0	**0**	0	122	214	0	0	**336**	0	**886**
12:30PM	64	0	67	0	**131**	1	126	1	258	0	0	**385**	0	**0**	0	111	227	0	0	**338**	0	**854**
12:45PM	68	1	69	0	**138**	2	131	0	266	0	0	**397**	0	**0**	2	101	249	0	0	**350**	0	**885**
Hourly Total	283	2	274	0	**559**	5	481	3	1082	0	0	**1566**	0	**0**	3	431	901	0	0	**1332**	1	**3457**
1:00PM	66	0	49	0	**115**	1	113	0	258	0	0	**371**	0	**0**	4	119	202	0	0	**321**	0	**807**
1:15PM	80	0	62	0	**142**	0	129	0	267	0	0	**396**	0	**0**	1	106	224	0	0	**330**	0	**868**
1:30PM	68	0	61	0	**129**	0	130	3	250	0	0	**383**	0	**0**	1	114	227	0	0	**341**	0	**853**
1:45PM	60	1	61	0	**122**	0	103	0	272	0	0	**375**	0	**0**	3	118	212	0	0	**330**	1	**827**
Hourly Total	274	1	233	0	**508**	1	475	3	1047	0	0	**1525**	0	**0**	9	457	865	0	0	**1322**	1	**3355**
2:00PM	63	0	65	0	**128**	2	110	4	259	0	0	**373**	0	**0**	3	122	228	0	0	**350**	1	**851**
2:15PM	60	1	51	0	**112**	0	126	0	310	0	0	**436**	0	**0**	1	132	245	0	0	**377**	0	**925**
2:30PM	64	1	62	0	**127**	1	125	5	318	0	0	**448**	0	**0**	4	128	220	0	0	**348**	0	**923**
2:45PM	84	1	63	0	**148**	6	112	3	322	0	0	**437**	0	**0**	4	105	221	0	0	**326**	0	**911**
Hourly Total	271	3	241	0	**515**	9	473	12	1209	0	0	**1694**	0	**0**	12	487	914	0	0	**1401**	1	**3610**
3:00PM	45	0	58	0	**103**	3	117	0	321	0	0	**438**	0	**0**	3	122	239	0	0	**361**	1	**902**
3:15PM	59	2	63	0	**124**	1	96	3	310	0	0	**409**	0	**0**	2	103	258	0	0	**361**	0	**894**
3:30PM	53	0	55	0	**108**	13	132	3	303	0	0	**438**	0	**0**	4	113	246	0	0	**359**	0	**905**
3:45PM	80	1	82	0	**163**	8	117	0	335	0	0	**452**	0	**0**	0	105	213	0	0	**318**	0	**933**
Hourly Total	237	3	258	0	**498**	25	462	6	1269	0	0	**1737**	0	**0**	9	443	956	0	0	**1399**	1	**3634**
4:00PM	76	0	53	0	**129**	12	136	4	313	0	0	**453**	1	**0**	2	111	250	0	0	**361**	0	**943**
4:15PM	74	0	63	0	**137**	4	110	4	333	0	0	**447**	0	**0**	7	97	240	0	0	**337**	0	**921**
4:30PM	70	0	70	0	**140**	4	147	1	351	0	0	**499**	0	**0**	1	104	230	0	0	**334**	0	**973**
4:45PM	63	0	72	0	**135**	1	92	2	316	0	0	**410**	0	**0**	1	103	237	0	0	**340**	1	**885**
Hourly Total	283	0	258	0	**541**	21	485	11	1313	0	0	**1809**	1	**0**	11	415	957	0	0	**1372**	1	**3722**
5:00PM	76	0	74	0	**150**	2	131	3	339	0	0	**473**	0	**0**	1	116	245	0	0	**361**	0	**984**
5:15PM	77	1	71	0	**149**	1	132	2	377	0	0	**511**	0	**0**	1	111	236	0	0	**347**	0	**1007**
5:30PM	56	0	80	0	**136**	0	140	5	289	0	0	**434**	0	**0**	1	81	215	0	0	**296**	1	**866**
5:45PM	63	0	79	0	**142**	4	84	0	334	0	0	**418**	0	**0**	2	75	191	0	0	**266**	2	**826**
Hourly Total	272	1	304	0	**577**	7	487	10	1339	0	0	**1836**	0	**0**	5	383	887	0	0	**1270**	3	**3683**
6:00PM	63	0	50	0	**113**	0	100	0	324	0	0	**424**	0	**0**	4	94	219	0	0	**313**	0	**850**
6:15PM	62	0	53	0	**115**	0	97	1	304	0	0	**402**	0	**0**	2	89	203	0	0	**292**	1	**809**
6:30PM	54	0	44	0	**98**	0	104	0	307	0	0	**411**	0	**0**	6	91	199	0	0	**290**	0	**799**
6:45PM	34	0	48	0	**82**	1	72	0	267	0	0	**339**	0	**0**	2	93	213	0	0	**306**	1	**727**
Hourly Total	213	0	195	0	**408**	1	373	1	1202	0	0	**1576**	0	**0**	14	367	834	0	0	**1201**	2	**3185**
7:00PM	44	1	24	0	**69**	2	71	1	215	0	0	**287**	1	**0**	0	86	197	0	0	**283**	1	**639**
7:15PM	37	0	28	0	**65**	1	72	1	222	0	0	**295**	0	**0**	3	88	155	0	0	**243**	0	**603**
7:30PM	35	0	39	0	**74**	1	75	0	195	0	0	**270**	0	**0**	1	85	161	0	0	**246**	0	**590**
7:45PM	20	0	19	0	**39**	0	52	0	187	0	0	**239**	0	**0**	2	58	142	0	0	**200**	0	**478**
Hourly Total	136	1	110	0	**247**	4	270	2	819	0	0	**1091**	1	**0**	6	317	655	0	0	**972**	1	**2310**
8:00PM	41	0	25	0	**66**	4	64	0	163	0	0	**227**	0	**0**	2	59	155	0	0	**214**	2	**507**
8:15PM	32	0	31	0	**63**	2	53	1	144	0	0	**198**	0	**0**	4	53	110	0	0	**163**	1	**424**
8:30PM	23	0	29	0	**52**	3	44	0	139	0	0	**183**	0	**0**	0	61	122	0	0	**183**	3	**418**
8:45PM	18	0	22	0	**40**	0	44	0	134	0	0	**178**	0	**0**	2	49	96	0	0	**145**	0	**363**
Hourly Total	114	0	107	0	**221**	9	205	1	580	0	0	**786**	0	**0**	8	222	483	0	0	**705**	6	**1712**
9:00PM	22	0	17	0	**39**	0	64	0	126	0	0	**190**	0	**0**	0	45	98	0	0	**143**	0	**372**
9:15PM	15	0	18	0	**33**	3	48	0	88	0	0	**136**	0	**0**	0	50	89	0	0	**139**	2	**308**
9:30PM	9	0	20	0	**29**	3	39	0	97	0	0	**136**	0	**0**	0	33	65	0	0	**98**	1	**263**
9:45PM	9	0	21	0	**30**	2	36	0	64	0	0	**100**	0	**0**	0	31	45	0	0	**76**	2	**206**
Hourly Total	55	0	76	0	**131**	8	187	0	375	0	0	**562**	0	**0**	0	159	297	0	0	**456**	5	**1149**
10:00PM	11	0	9	0	**20**	1	40	0	61	0	0	**101**	0	**0**	1	42	45	0	0	**87**	0	**208**
10:15PM	6	0	5	0	**11**	0	30	0	51	0	0	**81**	0	**0**	1	27	31	0	0	**58**	0	**150**
10:30PM	10	0	11	0	**21**	1	24	0	42	0	0	**66**	0	**0**	3	22	27	0	0	**49**	1	**136**
10:45PM	5	0	8	0	**13**	1	16	0	38	0	0	**54**	0	**0**	0	20	33	0	0	**53**	0	**120**
Hourly Total	32	0	33	0	**65**	3	110	0	192	0	0	**302**	0	**0**	5	111	136	0	0	**247**	1	**614**
11:00PM	6	1	7	0	**14**	0	17	0	35	0	0	**52**	0	**0**	1	8	15	0	0	**23**	0	**89**
11:15PM	1	0	10	0	**11**	2	11	0	39	0	0	**50**	0	**0**	0	6	20	0	0	**26**	0	**87**
11:30PM	4	0	3	0	**7**	0	11	0	38	0	0	**49**	0	**0**	0	8	17	0	0	**25**	0	**81**
11:45PM	2	0	9	0	**11**	0	6	0	32	0	0	**38**	0	**0**	2	13	10	0	0	**23**	0	**72**
Hourly Total	13	1	29	0	**43**	2	45	0	144	0	0	**189**	0	**0**	3	35	62	0	0	**97**	0	**329**
Total	3544	20	4493	0	**8057**	116	8258	96	14754	0	0	**23108**	3	**0**	121	6954	11526	0	0	**18480**	30	**49645**
% Approach	44.0%	0.2%	55.8%	0%	-	-	35.7%	0.4%	63.8%	0%	0%	-	-	-	-	37.6%	62.4%	0%	0%	-	-	-

Leg	I-5 SB Ramps						SR 531 (172nd St NE)							I-5 SB ON Ramp		SR 531 (172nd St NE)						
Direction	Southbound						Westbound							Northbound		Eastbound						
Time	R	T	L	U	App	Ped*	HR	R	T	L	U	App	Ped*	App	Ped*	R	T	L	U	App	Ped*	Int
% Total	7.1%	0%	9.1%	0%	**16.2%**	-	16.6%	0.2%	29.7%	0%	0%	**46.5%**	-	**0%**	-	14.0%	23.2%	0%	0%	**37.2%**	-	-
Motorcycles	3	0	10	0	**13**	-	12	3	13	0	0	**28**	-	**0**	-	6	14	0	0	**20**	-	61
% Motorcycles	0.1%	0%	0.2%	0%	**0.2%**	-	0.1%	3.1%	0.1%	0%	0%	**0.1%**	-	**-**	-	0.1%	0.1%	0%	0%	**0.1%**	-	0.1%
Lights	3461	19	4193	0	**7673**	-	7665	84	14397	0	0	**22146**	-	**0**	-	6767	11279	0	0	**18046**	-	47865
% Lights	97.7%	95.0%	93.3%	0%	**95.2%**	-	92.8%	87.5%	97.6%	0%	0%	**95.8%**	-	**-**	-	97.3%	97.9%	0%	0%	**97.7%**	-	96.4%
Single-Unit Trucks	51	1	150	0	**202**	-	275	1	179	0	0	**455**	-	**0**	-	109	131	0	0	**240**	-	897
% Single-Unit Trucks	1.4%	5.0%	3.3%	0%	**2.5%**	-	3.3%	1.0%	1.2%	0%	0%	**2.0%**	-	**-**	-	1.6%	1.1%	0%	0%	**1.3%**	-	1.8%
Articulated Trucks	17	0	128	0	**145**	-	242	0	93	0	0	**335**	-	**0**	-	54	33	0	0	**87**	-	567
% Articulated Trucks	0.5%	0%	2.8%	0%	**1.8%**	-	2.9%	0%	0.6%	0%	0%	**1.4%**	-	**-**	-	0.8%	0.3%	0%	0%	**0.5%**	-	1.1%
Buses	12	0	12	0	**24**	-	64	8	71	0	0	**143**	-	**0**	-	17	68	0	0	**85**	-	252
% Buses	0.3%	0%	0.3%	0%	**0.3%**	-	0.8%	8.3%	0.5%	0%	0%	**0.6%**	-	**-**	-	0.2%	0.6%	0%	0%	**0.5%**	-	0.5%
Bicycles on Road	0	0	0	0	**0**	-	0	0	1	0	0	**1**	-	**0**	-	1	1	0	0	**2**	-	3
% Bicycles on Road	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	0%	**0%**	-	**-**	-	0%	0%	0%	0%	**0%**	-	0%
Pedestrians	-	-	-	-	-	109	-	-	-	-	-	-	3	-	112	-	-	-	-	-	28	
% Pedestrians	-	-	-	-	-	94.0%	-	-	-	-	-	-	100%	-	92.6%	-	-	-	-	-	93.3%	-
Bicycles on Crosswalk	-	-	-	-	-	7	-	-	-	-	-	-	0	-	9	-	-	-	-	-	2	
% Bicycles on Crosswalk	-	-	-	-	-	6.0%	-	-	-	-	-	-	0%	-	7.4%	-	-	-	-	-	6.7%	-

*Pedestrians and Bicycles on Crosswalk. HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

I-5mp206.08_SR531NB_Ramps_2016-0713 - TMC
Wed Jul 13, 2016
Full Length (12AM-12AM (+1))
All Classes (Motorcycles, Cars, Light Goods Vehicles, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 331647, Location: 48.152382, -122.187505, Site Code: 0520608NB0716

WASHINGTON STATE DEPT. OF TRANSPORTATION
Northwest Region - Traffic Studies
Provided by: Washington State DOT
15700 Dayton Ave North, MS-120,
P.O. Box 330310,
Seattle, WA, 98133, US

I-5mp206.08_SR531NB_Ramps_2...

Complete (Published) Arlington, WA

57°F Clear

0.959 PHF
3.9%

I-5mp206.08_SR531NB_Ramps_2016-0713 - TMC
Wed Jul 13, 2016
Full Length (12AM-12AM (+1))
All Classes (Motorcycles, Cars, Light Goods Vehicles, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 331647, Location: 48.152382, -122.187505, Site Code: 0520608NB0716

Leg	I-5 NB ON Ramp		SR531 (172nd St NE)					I-5 NB OFF Ramp						SR531 (172nd St NE)					
Direction	Southbound		Westbound					Northbound						Eastbound					
Time	App	Ped*	T	R	U	App	Ped*	L	T	R	HR	App	Ped*	L	T	U	App	Ped*	Int
2016-07-13 12:00AM	0	0	19	10	0	29	0	24	0	1	32	57	1	5	29	0	34	0	120
12:15AM	0	0	15	10	0	25	0	13	1	2	33	49	0	5	15	0	20	0	94
12:30AM	0	1	19	12	0	31	0	3	0	2	16	21	0	6	12	0	18	0	70
12:45AM	0	0	11	3	0	14	0	8	0	2	25	35	0	2	15	0	17	0	66
Hourly Total	0	1	64	35	0	99	0	48	1	7	106	162	1	18	71	0	89	0	350
1:00AM	0	1	18	8	0	26	1	4	1	0	21	26	1	4	18	0	22	0	74
1:15AM	0	1	18	9	0	27	1	10	0	0	20	30	1	2	8	0	10	0	67
1:30AM	0	2	22	4	0	26	0	6	0	1	20	27	0	3	18	0	21	0	74
1:45AM	0	0	15	9	0	24	0	4	2	1	12	19	0	0	11	0	11	0	54
Hourly Total	0	4	73	30	0	103	2	24	3	2	73	102	2	9	55	0	64	0	269
2:00AM	0	0	16	7	0	23	0	11	0	0	14	25	0	3	5	0	8	0	56
2:15AM	0	0	17	5	0	22	0	7	0	0	12	19	0	1	8	0	9	0	50
2:30AM	0	1	23	6	0	29	1	4	0	0	10	14	1	1	11	0	12	0	55
2:45AM	0	0	33	12	0	45	0	9	0	0	16	25	0	2	10	0	12	0	82
Hourly Total	0	1	89	30	0	119	1	31	0	0	52	83	1	7	34	0	41	0	243
3:00AM	0	1	40	3	0	43	0	6	0	1	10	17	0	3	6	0	9	0	69
3:15AM	0	0	33	2	1	36	0	3	0	0	12	15	0	3	7	0	10	0	61
3:30AM	0	0	42	10	0	52	0	4	0	0	13	17	0	2	22	0	24	0	93
3:45AM	0	0	44	8	0	52	0	7	0	1	13	21	0	3	16	0	19	0	92
Hourly Total	0	1	159	23	1	183	0	20	0	2	48	70	0	11	51	0	62	0	315
4:00AM	0	0	78	6	0	84	0	6	0	0	15	21	0	3	11	0	14	0	119
4:15AM	0	0	102	5	0	107	0	4	0	1	18	23	0	2	23	0	25	0	155
4:30AM	0	0	107	9	0	116	0	3	0	0	16	19	1	3	52	0	55	0	190
4:45AM	0	1	120	15	0	135	0	3	0	0	28	31	0	6	69	0	75	0	241
Hourly Total	0	1	407	35	0	442	0	16	0	1	77	94	1	14	155	0	169	0	705
5:00AM	0	1	125	18	0	143	0	15	0	0	31	46	0	5	52	0	57	0	246
5:15AM	0	1	155	34	0	189	0	9	0	0	59	68	0	9	60	0	69	0	326
5:30AM	0	2	157	45	0	202	0	20	0	0	94	114	0	9	117	0	126	0	442
5:45AM	0	1	195	38	0	233	0	33	0	0	99	132	0	10	130	0	140	0	505
Hourly Total	0	5	632	135	0	767	0	77	0	0	283	360	0	33	359	0	392	0	1519
6:00AM	0	1	169	27	0	196	0	20	0	1	75	96	0	12	80	0	92	0	384
6:15AM	0	0	187	33	0	220	0	31	0	0	92	123	0	13	89	0	102	0	445
6:30AM	0	0	197	48	0	245	0	51	0	1	103	155	0	28	120	0	148	0	548
6:45AM	0	0	188	55	0	243	0	60	0	0	94	154	0	17	131	0	148	0	545
Hourly Total	0	1	741	163	0	904	0	162	0	2	364	528	0	70	420	0	490	0	1922
7:00AM	0	1	211	57	0	268	0	48	1	0	80	129	0	28	123	0	151	0	548
7:15AM	0	3	252	53	0	305	0	36	0	2	97	135	1	24	113	0	137	0	577
7:30AM	0	1	226	66	0	292	0	61	1	2	133	197	0	27	136	0	163	0	652
7:45AM	0	2	203	69	0	272	0	48	0	2	153	203	2	24	175	0	199	0	674
Hourly Total	0	7	892	245	0	1137	0	193	2	6	463	664	3	103	547	0	650	0	2451
8:00AM	0	0	169	72	0	241	0	35	0	0	118	153	2	27	134	0	161	0	555
8:15AM	0	0	202	60	0	262	0	56	1	2	111	170	1	18	157	0	175	0	607
8:30AM	0	0	205	54	0	259	0	48	0	0	129	177	1	22	141	0	163	0	599
8:45AM	0	1	204	52	0	256	0	50	0	1	131	182	0	29	169	0	198	0	636
Hourly Total	0	1	780	238	0	1018	0	189	1	3	489	682	4	96	601	0	697	0	2397
9:00AM	0	2	201	49	0	250	0	50	0	2	94	146	2	18	124	0	142	0	538
9:15AM	0	0	201	67	0	268	0	71	0	2	96	169	0	28	151	0	179	0	616
9:30AM	0	1	214	65	0	279	0	58	0	3	92	153	0	41	156	0	197	0	629
9:45AM	0	2	208	64	0	272	0	58	0	2	122	182	4	31	156	0	187	0	641
Hourly Total	0	5	824	245	0	1069	0	237	0	9	404	650	6	118	587	0	705	0	2424
10:00AM	0	0	233	66	0	299	0	72	0	2	107	181	0	31	164	0	195	0	675
10:15AM	0	0	257	83	0	340	0	64	2	2	105	173	0	35	158	0	193	0	706
10:30AM	0	0	212	70	0	282	0	89	0	2	118	209	3	43	187	0	230	0	721
10:45AM	0	2	243	71	0	314	0	105	0	5	142	252	6	58	191	0	249	0	815

Leg	I-5 NB ON Ramp		SR531 (172nd St NE)					I-5 NB OFF Ramp						SR531 (172nd St NE)					
Direction	Southbound		Westbound					Northbound						Eastbound					
Time	App	Ped*	T	R	U	App	Ped*	L	T	R	HR	App	Ped*	L	T	U	App	Ped*	Int
Hourly Total	0	2	945	290	0	1235	0	330	2	11	472	815	9	167	700	0	867	0	2917
11:00AM	0	1	238	73	0	311	0	79	0	0	121	200	3	51	196	0	247	0	758
11:15AM	0	3	287	86	0	373	0	92	0	0	119	211	6	52	198	0	250	0	834
11:30AM	0	3	259	90	0	349	0	96	0	0	124	220	0	48	215	0	263	0	832
11:45AM	0	1	265	98	0	363	0	101	0	0	127	228	3	75	213	0	288	0	879
Hourly Total	0	8	1049	347	0	1396	0	368	0	0	491	859	12	226	822	0	1048	0	3303
12:00PM	0	1	284	92	0	376	0	79	0	4	129	212	4	58	224	0	282	0	870
12:15PM	0	0	328	94	0	422	0	120	0	4	130	254	1	69	202	0	271	0	947
12:30PM	0	1	298	89	0	387	0	86	0	3	126	215	0	59	217	0	276	0	878
12:45PM	0	1	312	84	0	396	0	125	0	16	164	305	0	41	254	0	295	0	996
Hourly Total	0	3	1222	359	0	1581	0	410	0	27	549	986	5	227	897	0	1124	0	3691
1:00PM	0	1	263	79	0	342	0	130	3	20	207	360	2	38	205	0	243	0	945
1:15PM	0	0	259	57	0	316	0	130	5	24	195	354	1	35	295	0	330	0	1000
1:30PM	0	1	255	74	0	329	0	127	3	28	197	355	3	42	265	0	307	0	991
1:45PM	0	0	272	67	0	339	0	138	1	11	218	368	0	49	208	0	257	0	964
Hourly Total	0	2	1049	277	0	1326	0	525	12	83	817	1437	6	164	973	0	1137	0	3900
2:00PM	0	3	281	78	0	359	0	101	0	4	149	254	4	57	187	0	244	0	857
2:15PM	0	1	261	73	0	334	0	132	0	4	186	322	0	58	180	0	238	0	894
2:30PM	0	0	254	95	0	349	0	113	0	6	195	314	2	72	191	0	263	0	926
2:45PM	0	0	250	100	0	350	0	129	0	0	169	298	2	82	278	0	360	0	1008
Hourly Total	0	4	1046	346	0	1392	0	475	0	14	699	1188	8	269	836	0	1105	0	3685
3:00PM	0	4	285	114	0	399	2	148	0	5	177	330	1	63	203	0	266	0	995
3:15PM	0	0	268	101	0	369	0	152	0	9	195	356	1	65	213	0	278	0	1003
3:30PM	0	2	274	96	0	370	2	142	0	7	218	367	7	73	187	1	261	0	998
3:45PM	0	0	285	118	0	403	0	142	1	4	177	324	2	78	211	0	289	0	1016
Hourly Total	0	6	1112	429	0	1541	4	584	1	25	767	1377	11	279	814	1	1094	0	4012
4:00PM	0	0	264	113	0	377	0	146	0	7	182	335	0	88	222	0	310	0	1022
4:15PM	0	0	286	132	1	419	0	126	0	5	222	353	0	75	223	0	298	0	1070
4:30PM	0	0	292	134	0	426	2	140	0	10	194	344	2	78	221	0	299	0	1069
4:45PM	0	1	342	132	0	474	2	164	0	8	211	383	0	75	224	0	299	0	1156
Hourly Total	0	1	1184	511	1	1696	4	576	0	30	809	1415	2	316	890	0	1206	0	4317
5:00PM	0	2	327	142	0	469	1	151	0	12	228	391	4	64	212	0	276	0	1136
5:15PM	0	0	320	130	0	450	0	135	0	5	187	327	3	78	217	0	295	0	1072
5:30PM	0	1	310	117	0	427	0	143	0	6	183	332	1	76	185	0	261	0	1020
5:45PM	0	0	273	97	0	370	1	152	0	4	195	351	3	79	173	0	252	0	973
Hourly Total	0	3	1230	486	0	1716	2	581	0	27	793	1401	11	297	787	0	1084	0	4201
6:00PM	0	3	252	108	0	360	1	98	0	2	143	243	1	41	198	0	239	0	842
6:15PM	0	2	225	74	0	299	2	85	0	1	130	216	1	71	229	0	300	0	815
6:30PM	0	0	211	82	0	293	0	104	1	9	117	231	1	60	178	0	238	0	762
6:45PM	0	3	237	86	0	323	0	101	0	4	137	242	2	52	154	0	206	0	771
Hourly Total	0	8	925	350	0	1275	3	388	1	16	527	932	5	224	759	0	983	0	3190
7:00PM	0	0	217	78	0	295	0	113	1	0	127	241	6	35	169	0	204	0	740
7:15PM	0	3	174	61	0	235	0	85	1	4	124	214	0	39	160	1	200	0	649
7:30PM	0	0	178	69	0	247	0	97	0	1	131	229	0	54	175	1	230	0	706
7:45PM	0	0	155	53	0	208	0	89	1	2	117	209	1	48	165	0	213	0	630
Hourly Total	0	3	724	261	0	985	0	384	3	7	499	893	7	176	669	2	847	0	2725
8:00PM	0	0	176	60	0	236	0	85	1	3	117	206	3	42	137	0	179	0	621
8:15PM	0	0	189	55	0	244	0	81	1	1	118	201	4	48	124	0	172	0	617
8:30PM	0	0	154	54	0	208	0	67	1	2	98	168	1	46	130	0	176	0	552
8:45PM	0	1	142	45	0	187	0	49	0	5	71	125	1	39	91	0	130	0	442
Hourly Total	0	1	661	214	0	875	0	282	3	11	404	700	9	175	482	0	657	0	2232
9:00PM	0	0	115	42	0	157	0	51	0	4	72	127	0	29	86	0	115	0	399
9:15PM	0	1	117	41	0	158	0	52	0	1	71	124	2	23	86	0	109	0	391
9:30PM	0	6	92	37	0	129	0	48	0	1	72	121	2	18	76	0	94	0	344
9:45PM	0	0	101	29	0	130	0	39	0	0	61	100	0	21	79	0	100	0	330
Hourly Total	0	7	425	149	0	574	0	190	0	6	276	472	4	91	327	0	418	0	1464
10:00PM	0	0	91	19	0	110	0	31	0	1	51	83	0	20	70	0	90	0	283
10:15PM	0	0	70	20	0	90	0	38	1	1	56	96	0	12	49	0	61	0	247
10:30PM	0	0	49	21	0	70	0	40	0	0	66	106	0	9	41	0	50	0	226
10:45PM	0	0	52	30	0	82	0	34	0	0	69	103	0	16	28	0	44	0	229
Hourly Total	0	0	262	90	0	352	0	143	1	2	242	388	0	57	188	0	245	0	985
11:00PM	0	0	45	18	0	63	0	32	0	1	54	87	2	4	32	0	36	0	186

Leg	I-5 NB ON Ramp		SR531 (172nd St NE)					I-5 NB OFF Ramp						SR531 (172nd St NE)					
Direction	Southbound		Westbound					Northbound						Eastbound					
Time	**App**	Ped*	T	R	U	**App**	Ped*	L	T	R	HR	**App**	Ped*	L	T	U	**App**	Ped*	**Int**
11:15PM	**0**	0	33	17	0	**50**	0	23	0	1	61	**85**	0	12	31	0	**43**	0	**178**
11:30PM	**0**	0	28	16	0	**44**	0	17	0	1	52	**70**	2	4	24	0	**28**	0	**142**
11:45PM	**0**	0	21	11	0	**32**	0	18	0	0	36	**54**	0	5	20	0	**25**	0	**111**
Hourly Total	**0**	0	127	62	0	**189**	0	90	0	3	203	**296**	4	25	107	0	**132**	0	**617**
Total	**0**	75	16622	5350	2	**21974**	16	6323	30	294	9907	**16554**	111	3172	12131	3	**15306**	0	**53834**
% Approach	**-**	-	75.6%	24.3%	0%	**-**	-	38.2%	0.2%	1.8%	59.8%	**-**	-	20.7%	79.3%	0%	**-**	-	**-**
% Total	**0%**	-	30.9%	9.9%	0%	**40.8%**	-	11.7%	0.1%	0.5%	18.4%	**30.8%**	-	5.9%	22.5%	0%	**28.4%**	-	**-**
Motorcycles	**0**	-	127	27	0	**154**	-	33	0	0	86	**119**	-	20	99	0	**119**	-	392
% Motorcycles	**-**	-	0.8%	0.5%	0%	**0.7%**	-	0.5%	0%	0%	0.9%	**0.7%**	-	0.6%	0.8%	0%	**0.8%**	-	0.7%
Cars	**0**	-	12966	4190	2	**17158**	-	5138	20	233	7803	**13194**	-	2584	9403	2	**11989**	-	42341
% Cars	**-**	-	78.0%	78.3%	100%	**78.1%**	-	81.3%	66.7%	79.3%	78.8%	**79.7%**	-	81.5%	77.5%	66.7%	**78.3%**	-	78.7%
Light Goods Vehicles	**0**	-	2896	833	0	**3729**	-	1013	5	35	1451	**2504**	-	468	2277	1	**2746**	-	8979
% Light Goods Vehicles	**-**	-	17.4%	15.6%	0%	**17.0%**	-	16.0%	16.7%	11.9%	14.6%	**15.1%**	-	14.8%	18.8%	33.3%	**17.9%**	-	16.7%
Single-Unit Trucks	**0**	-	370	189	0	**559**	-	96	2	13	310	**421**	-	81	234	0	**315**	-	1295
% Single-Unit Trucks	**-**	-	2.2%	3.5%	0%	**2.5%**	-	1.5%	6.7%	4.4%	3.1%	**2.5%**	-	2.6%	1.9%	0%	**2.1%**	-	2.4%
Articulated Trucks	**0**	-	213	109	0	**322**	-	32	3	10	231	**276**	-	19	89	0	**108**	-	706
% Articulated Trucks	**-**	-	1.3%	2.0%	0%	**1.5%**	-	0.5%	10.0%	3.4%	2.3%	**1.7%**	-	0.6%	0.7%	0%	**0.7%**	-	1.3%
Buses	**0**	-	49	2	0	**51**	-	11	0	3	26	**40**	-	0	25	0	**25**	-	116
% Buses	**-**	-	0.3%	0%	0%	**0.2%**	-	0.2%	0%	1.0%	0.3%	**0.2%**	-	0%	0.2%	0%	**0.2%**	-	0.2%
Bicycles on Road	**0**	-	1	0	0	**1**	-	0	0	0	0	**0**	-	0	4	0	**4**	-	5
% Bicycles on Road	**-**	-	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%
Pedestrians		71	-	-	-		16	-	-	-	-		103	-	-	-		0	
% Pedestrians		94.7%	-	-	-		100%	-	-	-	-		92.8%	-	-	-		-	
Bicycles on Crosswalk		4	-	-	-		0	-	-	-	-		8	-	-	-		0	
% Bicycles on Crosswalk		5.3%	-	-	-		0%	-	-	-	-		7.2%	-	-	-		-	

*Pedestrians and Bicycles on Crosswalk. HR: Hard right, L: Left, R: Right, T: Thru, U: U-Turn

SR531mp6.63_Smokey_Point_Blvd_2019-0723 - TMC
Tue Jul 23, 2019
Full Length (12 AM-12 AM (+1))
All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 680546, Location: 48.15245, -122.182971, Site Code: 53100663_0719

WASHINGTON STATE DEPT. OF TRANSPORTATION
Northwest Region - Traffic Studies

Provided by: Washington State DOT
15700 Dayton Ave North, MS-120, P.O. Box 330310,
Seattle, WA, 98133, US

Tue Jul 23, 2019
24 h TMC

61°F Clear

Lat: 48.152450 N
Long: 122.182971 W

Peak Hour Factor

Scope	Time	Count	PHF
▶ AM	Tue Jul 23, 2019 10:00 AM	3,373	0.958
▶ Midday	Tue Jul 23, 2019 12:00 PM	3,988	0.972
▶ PM	Tue Jul 23, 2019 4:45 PM	4,431	0.964

SR531mp6.63_Smokey_Point_Blvd_2019-0723 - TMC
Tue Jul 23, 2019
Full Length (12 AM-12 AM (+1))
All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 680546, Location: 48.15245, -122.182971, Site Code: 53100663_0719

WASHINGTON STATE DEPT. OF TRANSPORTATION
Northwest Region - Traffic Studies

Provided by: Washington State DOT
15700 Dayton Ave North, MS-120, P.O. Box 330310,
Seattle, WA, 98133, US

Leg	Smokey Point Blvd						SR 531 (172nd St NE)						Smokey Point Blvd						SR 531 (172nd St NE)						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2019-07-23 12:00AM	3	2	3	0	**8**	0	0	16	2	0	**18**	6	6	3	11	0	**20**	0	5	32	16	1	**54**	0	**100**
12:15AM	3	3	5	0	**11**	0	6	19	2	0	**27**	0	3	6	16	0	**25**	0	3	28	9	4	**44**	0	**107**
12:30AM	3	3	1	0	**7**	0	2	12	2	1	**17**	1	2	3	14	0	**19**	0	6	14	7	1	**28**	0	**71**
12:45AM	4	1	3	0	**8**	2	2	11	1	0	**14**	0	1	5	5	0	**11**	0	7	21	9	0	**37**	0	**70**
Hourly Total	13	9	12	0	**34**	2	10	58	7	1	**76**	7	12	17	46	0	**75**	0	21	95	41	6	**163**	0	**348**
1:00AM	9	0	4	0	**13**	0	3	16	3	0	**22**	0	1	4	5	0	**10**	0	10	17	17	1	**45**	0	**90**
1:15AM	7	1	3	0	**11**	1	1	9	5	0	**15**	2	1	5	5	0	**11**	1	6	14	4	0	**24**	1	**61**
1:30AM	6	3	8	0	**17**	0	0	7	0	0	**7**	0	1	2	10	0	**13**	0	11	10	8	0	**29**	0	**66**
1:45AM	4	1	2	0	**7**	0	0	15	2	0	**17**	1	1	3	3	0	**7**	2	3	19	5	1	**28**	0	**59**
Hourly Total	26	5	17	0	**48**	1	4	47	10	0	**61**	3	4	14	23	0	**41**	3	30	60	34	2	**126**	1	**276**
2:00AM	2	2	2	0	**6**	1	1	10	0	0	**11**	0	2	3	12	0	**17**	0	1	12	8	0	**21**	2	**55**
2:15AM	5	3	3	0	**11**	2	1	14	2	0	**17**	2	4	2	4	0	**10**	0	3	9	1	1	**14**	0	**52**
2:30AM	4	1	5	0	**10**	0	1	13	0	1	**15**	0	2	4	6	0	**12**	2	5	9	9	1	**24**	0	**61**
2:45AM	6	1	2	0	**9**	0	0	18	0	0	**18**	0	2	2	10	0	**14**	0	6	8	6	0	**20**	0	**61**
Hourly Total	17	7	12	0	**36**	3	3	55	2	1	**61**	2	10	11	32	0	**53**	2	15	38	24	2	**79**	2	**229**
3:00AM	4	1	1	0	**6**	0	0	22	4	0	**26**	0	2	2	7	0	**11**	2	9	13	2	2	**26**	2	**69**
3:15AM	11	3	2	0	**16**	0	0	26	1	0	**27**	0	1	3	5	0	**9**	0	9	17	4	1	**31**	0	**83**
3:30AM	8	3	7	0	**18**	0	0	29	1	0	**30**	0	2	1	13	0	**16**	0	6	26	9	0	**41**	0	**105**
3:45AM	17	7	3	0	**27**	0	0	41	2	1	**44**	0	1	0	7	0	**8**	0	17	37	3	0	**57**	0	**136**
Hourly Total	40	14	13	0	**67**	0	0	118	8	1	**127**	0	6	6	32	0	**44**	2	41	93	18	3	**155**	2	**393**
4:00AM	34	6	3	0	**43**	0	1	49	2	0	**52**	0	4	2	24	0	**30**	1	9	10	11	0	**30**	0	**155**
4:15AM	34	2	2	0	**38**	1	2	71	13	0	**86**	1	6	2	13	0	**21**	0	12	30	4	1	**47**	0	**192**
4:30AM	43	7	8	0	**58**	0	3	73	3	2	**81**	0	5	3	19	0	**27**	0	22	45	16	2	**85**	0	**251**
4:45AM	46	10	4	0	**60**	1	2	90	10	0	**102**	1	11	7	27	0	**45**	0	31	98	20	5	**154**	0	**361**
Hourly Total	157	25	17	0	**199**	2	8	283	28	2	**321**	2	26	14	83	0	**123**	1	74	183	51	8	**316**	0	**959**
5:00AM	58	12	7	0	**77**	0	2	96	3	0	**101**	0	2	9	25	0	**36**	0	29	68	11	0	**108**	1	**322**
5:15AM	52	21	2	0	**75**	0	3	104	5	1	**113**	0	4	10	35	0	**49**	0	28	85	15	2	**130**	0	**367**
5:30AM	50	22	6	0	**78**	0	0	92	9	2	**103**	0	16	10	36	0	**62**	0	51	158	20	1	**230**	1	**473**
5:45AM	68	25	12	0	**105**	1	3	86	7	0	**96**	3	12	9	32	0	**53**	0	61	161	24	3	**249**	0	**503**
Hourly Total	228	80	27	0	**335**	1	8	378	24	3	**413**	3	34	38	128	0	**200**	0	169	472	70	6	**717**	2	**1665**
6:00AM	56	25	19	0	**100**	0	7	121	8	0	**136**	2	14	4	38	0	**56**	0	37	101	20	2	**160**	0	**452**
6:15AM	66	28	16	0	**110**	0	8	135	21	2	**166**	0	11	20	45	0	**76**	0	60	132	36	2	**230**	0	**582**
6:30AM	73	31	19	0	**123**	0	2	150	19	3	**174**	1	15	18	38	0	**71**	2	71	125	50	2	**248**	1	**616**
6:45AM	33	32	24	0	**89**	2	13	113	32	1	**159**	3	16	24	49	0	**89**	0	87	132	48	3	**270**	0	**607**
Hourly Total	228	116	78	0	**422**	2	30	519	80	6	**635**	6	56	66	170	0	**292**	2	255	490	154	9	**908**	1	**2257**
7:00AM	56	39	11	0	**106**	0	6	125	25	0	**156**	3	11	17	64	0	**92**	1	60	104	32	2	**198**	0	**552**
7:15AM	67	51	21	0	**139**	3	6	146	27	4	**183**	1	25	28	52	0	**105**	2	97	140	34	6	**277**	1	**704**
7:30AM	69	44	18	0	**131**	0	13	143	42	1	**199**	3	25	32	63	0	**120**	1	73	134	42	2	**251**	0	**701**
7:45AM	46	47	24	0	**117**	0	12	122	35	3	**172**	1	19	24	55	0	**98**	2	103	167	42	6	**318**	1	**705**
Hourly Total	238	181	74	0	**493**	3	37	536	129	8	**710**	8	80	101	234	0	**415**	6	333	545	150	16	**1044**	2	**2662**
8:00AM	56	34	19	0	**109**	1	8	133	26	1	**168**	2	29	30	51	0	**110**	1	76	143	47	9	**275**	0	**662**
8:15AM	38	39	24	0	**101**	3	10	127	40	2	**179**	4	22	19	61	0	**102**	1	73	139	30	6	**248**	0	**630**
8:30AM	69	43	27	0	**139**	1	11	143	37	3	**194**	4	31	43	85	0	**159**	0	69	112	37	9	**227**	2	**719**
8:45AM	45	66	20	0	**131**	1	17	138	58	2	**215**	2	34	42	70	0	**146**	1	82	144	44	7	**277**	3	**769**
Hourly Total	208	182	90	0	**480**	6	46	541	161	8	**756**	12	116	134	267	0	**517**	3	300	538	158	31	**1027**	5	**2780**
9:00AM	37	57	47	0	**141**	0	17	105	40	1	**163**	6	37	55	100	0	**192**	0	65	109	65	8	**247**	2	**743**
9:15AM	60	56	23	0	**139**	2	14	139	39	0	**192**	1	39	55	64	0	**158**	2	72	109	53	6	**240**	3	**729**
9:30AM	49	48	17	0	**114**	7	23	174	45	1	**243**	3	39	47	91	0	**177**	0	60	148	46	12	**266**	2	**800**
9:45AM	52	56	22	0	**130**	2	20	137	47	1	**205**	6	41	51	92	0	**184**	0	76	127	63	13	**279**	2	**798**
Hourly Total	198	217	109	0	**524**	11	74	555	171	3	**803**	16	156	208	347	0	**711**	2	273	493	227	39	**1032**	9	**3070**
10:00AM	44	39	38	0	**121**	3	31	166	36	0	**233**	5	32	38	86	0	**156**	1	46	122	54	11	**233**	2	**743**
10:15AM	53	48	33	0	**134**	2	19	141	40	4	**204**	1	49	72	133	0	**254**	4	79	151	43	9	**282**	3	**874**
10:30AM	41	68	39	0	**148**	2	19	148	45	3	**215**	6	48	49	104	0	**201**	3	70	171	60	12	**313**	3	**877**
10:45AM	46	50	32	0	**128**	0	20	160	62	1	**243**	2	40	59	121	0	**220**	1	81	146	54	8	**289**	1	**880**
Hourly Total	184	205	142	0	**531**	7	89	615	183	8	**895**	14	169	218	444	0	**831**	9	276	590	211	40	**1117**	9	**3374**
11:00AM	53	51	29	0	**133**	3	15	157	66	1	**239**	7	35	54	98	0	**187**	0	70	124	48	9	**251**	4	**810**
11:15AM	48	59	43	0	**150**	1	26	156	48	2	**232**	1	51	67	112	0	**230**	3	65	190	53	18	**326**	6	**938**
11:30AM	47	55	27	0	**129**	1	17	172	52	3	**244**	7	56	61	109	0	**226**	2	63	179	68	10	**320**	6	**919**
11:45AM	56	67	34	0	**157**	1	21	182	51	0	**254**	2	59	62	116	0	**237**	0	76	220	55	6	**357**	1	**1005**
Hourly Total	204	232	133	0	**569**	6	79	667	217	6	**969**	17	201	244	435	0	**880**	5	274	713	224	43	**1254**	17	**3672**
12:00PM	68	53	50	0	**171**	1	31	146	58	1	**236**	6	55	65	119	0	**239**	5	76	159	59	9	**303**	5	**949**
12:15PM	46	62	47	0	**155**	0	26	178	68	0	**272**	0	62	72	108	0	**242**	2	69	190	64	14	**337**	8	**1006**
12:30PM	39	66	44	0	**149**	3	25	178	65	1	**269**	4	44	85	135	0	**264**	0	83	184	67	11	**345**	4	**1027**
12:45PM	55	62	41	0	**158**	6	26	168	54	2	**250**	3	70	73	114	0	**257**	1	81	186	60	15	**342**	9	**1007**
Hourly Total	208	243	182	0	**633**	10	108	670	245	4	**1027**	13	231	295	476	0	**1002**	8	309	719	250	49	**1327**	26	**3989**
1:00PM	45	91	39	0	**175**	4	27	201	62	1	**291**	1	58	74	141	0	**273**	3	93	180	60	18	**351**	2	**1090**
1:15PM	59	67	27	0	**153**	4	26	173	60	1	**260**	4	59	77	115	0	**251**	3	84	182	73	7	**346**	1	**1010**
1:30PM	72	78	31	0	**181**	1	25	169	55	1	**250**	3	51	89	118	0	**258**	0	84	202	69	18	**373**	3	**1062**
1:45PM	44	60	27	0	**131**	2	26	195	67	0	**288**	10	60	81	107	0	**248**	1	87	190	68	18	**363**	6	**1030**
Hourly Total	220	296	124	0	**640**	11	104	738	244	3	**1089**	18	228	321	481	0	**1030**	7	348	754	270	61	**1433**	12	**4192**
2:00PM	62	52	39	0	**153**	6	24	121	45	3	**193**	5	44	68	120	0	**232**	1	72	184	82	13	**351**	1	**929**
2:15PM	56	53	29	0	**138**	4	19	175	62	4	**260**	13	51	70	114	0	**235**	1	84	183	82	13	**362**	4	**995**
2:30PM	74	52	55	0	**181**	3	29	166	33	1	**229**	4	51	89	143	0	**283**	2	68	228	65	15	**376**	5	**1069**
2:45PM	61	70	35	0	**166**	1	15	198	71	1	**285**	4	49	96	128	0	**273**	3	94	188	98	21	**401**	4	**1125**

Leg	Smokey Point Blvd						SR 531 (172nd St NE)						Smokey Point Blvd						SR 531 (172nd St NE)						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
Hourly Total	253	227	158	0	638	14	87	660	211	9	967	26	195	323	505	0	1023	7	318	783	327	62	1490	14	4118
3:00PM	75	70	47	0	192	1	17	134	51	1	203	5	70	118	136	0	324	1	89	171	82	10	352	1	1071
3:15PM	70	56	35	0	161	3	18	184	51	1	254	1	46	87	118	0	251	0	83	221	92	19	415	1	1081
3:30PM	75	66	34	1	176	3	33	175	60	0	268	6	48	116	128	0	292	1	89	183	67	16	355	2	1091
3:45PM	76	52	43	0	171	3	33	216	53	0	302	7	52	102	132	0	286	0	88	198	85	19	390	4	1149
Hourly Total	296	244	159	1	700	10	101	709	215	2	1027	19	216	423	514	0	1153	2	349	773	326	64	1512	8	4392
4:00PM	64	66	22	0	152	2	23	215	54	1	293	5	49	111	129	0	289	1	68	163	84	21	336	2	1070
4:15PM	53	42	38	0	133	5	27	180	47	1	255	3	49	99	133	0	281	0	96	186	96	14	392	2	1061
4:30PM	61	70	29	0	160	0	23	191	42	0	256	8	48	109	124	0	281	1	96	159	92	17	364	1	1061
4:45PM	74	70	35	0	179	1	35	216	53	0	304	5	47	95	162	0	304	0	83	175	91	13	362	0	1149
Hourly Total	252	248	124	0	624	8	108	802	196	2	1108	21	193	414	548	0	1155	2	343	683	363	65	1454	5	4341
5:00PM	70	50	39	0	159	1	26	218	40	0	284	1	57	107	136	0	300	1	73	186	86	11	356	1	1099
5:15PM	76	45	29	0	150	1	24	225	38	0	287	0	48	96	127	0	271	3	68	218	104	16	406	4	1114
5:30PM	86	58	44	0	188	1	17	177	36	1	231	5	67	115	134	0	316	3	72	159	87	16	334	4	1069
5:45PM	58	33	30	0	121	1	21	186	43	0	250	18	37	97	111	0	245	3	77	198	91	17	383	6	999
Hourly Total	290	186	142	0	618	4	88	806	157	1	1052	24	209	415	508	0	1132	10	290	761	368	60	1479	15	4281
6:00PM	51	50	34	0	135	2	23	133	38	1	195	5	53	95	144	0	292	1	62	177	82	19	340	2	962
6:15PM	34	44	34	0	112	1	14	131	39	1	185	6	38	79	122	0	239	0	65	191	96	14	366	1	902
6:30PM	57	32	29	0	118	0	34	151	33	2	220	8	28	69	99	0	196	1	58	164	69	17	308	5	842
6:45PM	46	29	24	0	99	2	18	140	26	2	186	3	32	51	104	0	187	0	52	146	63	5	266	0	738
Hourly Total	188	155	121	0	464	5	89	555	136	6	786	22	151	294	469	0	914	2	237	678	310	55	1280	8	3444
7:00PM	18	25	26	0	69	1	16	116	28	1	161	1	34	44	98	0	176	2	45	124	74	5	248	7	654
7:15PM	41	26	19	0	86	5	15	103	27	0	145	2	32	41	80	0	153	0	40	134	64	4	242	2	626
7:30PM	27	24	25	0	76	1	11	95	13	1	120	2	25	37	79	0	141	1	31	126	51	13	221	3	558
7:45PM	34	28	26	0	88	3	15	87	22	2	126	6	28	41	60	0	129	0	37	102	54	12	205	3	548
Hourly Total	120	103	96	0	319	10	57	401	90	4	552	11	119	163	317	0	599	3	153	486	243	34	916	15	2386
8:00PM	37	29	21	0	87	0	13	81	21	1	116	3	24	45	62	0	131	2	35	105	55	4	199	0	533
8:15PM	34	30	24	0	88	3	11	61	21	1	94	4	25	46	67	0	138	1	28	130	64	15	237	2	557
8:30PM	30	24	23	0	77	1	5	63	16	0	84	6	24	37	50	0	111	2	43	80	50	10	183	6	455
8:45PM	28	22	15	0	65	1	14	65	12	0	91	3	20	31	42	0	93	2	45	102	55	5	207	1	456
Hourly Total	129	105	83	0	317	5	43	270	70	2	385	16	93	159	221	0	473	7	151	417	224	34	826	9	2001
9:00PM	20	10	13	0	43	2	4	58	16	1	79	2	13	26	56	0	95	0	27	74	41	8	150	3	367
9:15PM	18	18	17	0	53	1	8	71	12	2	93	3	11	26	40	0	77	1	21	67	51	6	145	4	368
9:30PM	25	16	16	0	57	0	1	44	16	3	64	1	21	15	32	0	68	0	15	81	35	7	138	0	327
9:45PM	13	11	6	0	30	2	7	44	8	4	63	2	9	18	33	0	60	2	16	74	33	3	126	2	279
Hourly Total	76	55	52	0	183	5	20	217	52	10	299	8	54	85	161	0	300	3	79	296	160	24	559	9	1341
10:00PM	16	10	5	0	31	2	5	45	9	1	60	3	7	11	27	0	45	0	23	46	34	4	107	0	243
10:15PM	16	8	5	0	29	0	5	32	9	2	48	0	6	12	17	0	35	0	11	44	31	4	90	2	202
10:30PM	10	3	6	0	19	0	3	40	7	0	50	1	3	12	22	0	37	0	9	47	29	1	86	2	192
10:45PM	7	5	6	0	18	0	4	16	2	0	22	2	3	6	23	0	32	1	20	49	29	1	99	0	171
Hourly Total	49	26	22	0	97	2	17	133	27	3	180	6	19	41	89	0	149	1	63	186	123	10	382	4	808
11:00PM	8	6	3	0	17	0	2	17	2	1	22	6	10	10	23	0	43	4	11	54	15	1	81	1	163
11:15PM	9	1	1	0	11	5	2	30	2	1	35	1	3	9	17	0	29	1	7	36	15	3	61	1	136
11:30PM	6	2	3	0	11	0	2	22	2	0	26	5	6	4	18	0	28	0	9	33	21	1	64	1	129
11:45PM	5	1	3	0	9	0	1	17	3	1	22	1	2	10	4	0	16	0	7	32	18	3	60	0	107
Hourly Total	28	10	10	0	48	5	7	86	9	3	105	13	21	33	62	0	116	5	34	155	69	8	266	3	535
Total	3850	3171	1997	1	9019	133	1217	10419	2672	96	14404	287	2599	4037	6592	0	13228	92	4735	11001	4395	731	20862	178	57513
% Approach	42.7%	35.2%	22.1%	0%	-	-	8.4%	72.3%	18.6%	0.7%	-	-	19.6%	30.5%	49.8%	0%	-	-	22.7%	52.7%	21.1%	3.5%	-	-	-
% Total	6.7%	5.5%	3.5%	0%	15.7%	-	2.1%	18.1%	4.6%	0.2%	25.0%	-	4.5%	7.0%	11.5%	0%	23.0%	-	8.2%	19.1%	7.6%	1.3%	36.3%	-	-
Motorcycles	22	35	8	0	65	-	4	38	18	0	60	-	26	36	48	0	110	-	31	49	18	2	100	-	335
% Motorcycles	0.6%	1.1%	0.4%	0%	0.7%	-	0.3%	0.4%	0.7%	0%	0.4%	-	1.0%	0.9%	0.7%	0%	0.8%	-	0.7%	0.4%	0.4%	0.3%	0.5%	-	0.6%
Lights	3700	2983	1954	1	8638	-	1195	9653	2487	96	13431	-	2444	3825	6164	0	12433	-	4406	10294	4247	726	19673	-	54175
% Lights	96.1%	94.1%	97.8%	100%	95.8%	-	98.2%	92.6%	93.1%	100%	93.2%	-	94.0%	94.7%	93.5%	0%	94.0%	-	93.1%	93.6%	96.6%	99.3%	94.3%	-	94.2%
Single-Unit Trucks	43	64	25	0	132	-	11	404	77	0	492	-	83	61	198	0	342	-	168	379	50	3	600	-	1566
% Single-Unit Trucks	1.1%	2.0%	1.3%	0%	1.5%	-	0.9%	3.9%	2.9%	0%	3.4%	-	3.2%	1.5%	3.0%	0%	2.6%	-	3.5%	3.4%	1.1%	0.4%	2.9%	-	2.7%
Articulated Trucks	12	25	5	0	42	-	3	296	87	0	386	-	45	49	165	0	259	-	122	262	7	0	391	-	1078
% Articulated Trucks	0.3%	0.8%	0.3%	0%	0.5%	-	0.2%	2.8%	3.3%	0%	2.7%	-	1.7%	1.2%	2.5%	0%	2.0%	-	2.6%	2.4%	0.2%	0%	1.9%	-	1.9%
Buses	73	63	1	0	137	-	2	25	3	0	30	-	0	63	14	0	77	-	8	14	73	0	95	-	339
% Buses	1.9%	2.0%	0.1%	0%	1.5%	-	0.2%	0.2%	0.1%	0%	0.2%	-	0%	1.6%	0.2%	0%	0.6%	-	0.2%	0.1%	1.7%	0%	0.5%	-	0.6%
Pedestrians	0	0	0	0	0	-	0	1	0	0	1	-	0	0	0	0	0	-	0	0	0	0	0	-	1
% Pedestrians	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%
Bicycles on Road	0	1	4	0	5	-	2	2	0	0	4	-	1	3	3	0	7	-	0	3	0	0	3	-	19
% Bicycles on Road	0%	0%	0.2%	0%	0.1%	-	0.2%	0%	0%	0%	0%	-	0%	0.1%	0%	0%	0.1%	-	0%	0%	0%	0%	0%	-	0%
Pedestrians	-	-	-	-	-	130	-	-	-	-	-	265	-	-	-	-	-	86	-	-	-	-	-	171	
% Pedestrians	-	-	-	-	-	97.7%	-	-	-	-	-	92.3%	-	-	-	-	-	93.5%	-	-	-	-	-	96.1%	-
Bicycles on Crosswalk	-	-	-	-	-	3	-	-	-	-	-	22	-	-	-	-	-	6	-	-	-	-	-	7	
% Bicycles on Crosswalk	-	-	-	-	-	2.3%	-	-	-	-	-	7.7%	-	-	-	-	-	6.5%	-	-	-	-	-	3.9%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

SR531mp6.92_40th_Ave_NE_2019-0723 - TMC
Tue Jul 23, 2019
Full Length (12 AM-12 AM (+1))
All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 680545, Location: 48.152363, -122.1766, Site Code: 53100692_0719

WASHINGTON STATE DEPT. OF TRANSPORTATION
Northwest Region - Traffic Studies

Provided by: Washington State DOT
15700 Dayton Ave North, MS-120, P.O. Box 330310,
Seattle, WA, 98133, US

Tue Jul 23, 2019
24 h TMC

61°F Clear

Lat: 48.152363 N
Long: 122.176600 W

Peak Hour Factor

Scope	Time	Count	PHF
▶ AM	Tue Jul 23, 2019 10:00 AM	1,700	0.947
▶ Midday	Tue Jul 23, 2019 12:00 PM	2,051	0.966
▶ PM	Tue Jul 23, 2019 4:45 PM	2,169	0.997

SR531mp6.92_40th_Ave_NE_2019-0723 - TMC
Tue Jul 23, 2019
Full Length (12 AM-12 AM (+1))
All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 680545, Location: 48.152363, -122.1766, Site Code: 53100692_0719

WASHINGTON STATE DEPT. OF TRANSPORTATION
Northwest Region - Traffic Studies

Provided by: Washington State DOT
15700 Dayton Ave North, MS-120, P.O. Box 330310,
Seattle, WA, 98133, US

Leg	40th Ave NE (Not open yet)						SR 531 (172nd St NE)						40th Ave NE (Businesses)						SR 531 (172nd St NE)						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2019-07-23 12:00AM	0	0	0	0	**0**	0	0	12	0	0	**12**	0	0	0	4	0	**4**	0	2	30	0	0	**32**	0	**48**
12:15AM	0	0	0	0	**0**	0	0	20	0	0	**20**	0	0	0	3	0	**3**	0	1	23	0	0	**24**	0	**47**
12:30AM	0	0	0	0	**0**	0	0	13	0	0	**13**	0	1	0	3	0	**4**	0	2	20	0	0	**22**	0	**39**
12:45AM	0	0	0	0	**0**	0	0	15	0	0	**15**	0	0	0	1	0	**1**	0	1	21	0	0	**22**	0	**38**
Hourly Total	0	0	0	0	**0**	0	0	60	0	0	**60**	0	1	0	11	0	**12**	0	6	94	0	0	**100**	0	**172**
1:00AM	0	0	0	0	**0**	0	0	13	0	0	**13**	0	0	0	3	0	**3**	0	0	17	0	0	**17**	0	**33**
1:15AM	0	0	0	0	**0**	0	0	10	0	0	**10**	0	0	0	3	0	**3**	0	1	18	0	0	**19**	0	**32**
1:30AM	0	0	0	0	**0**	0	0	8	0	0	**8**	0	0	0	1	0	**1**	0	0	16	0	0	**16**	0	**25**
1:45AM	0	0	0	0	**0**	0	0	15	0	0	**15**	0	1	0	0	0	**1**	0	0	21	0	0	**21**	0	**37**
Hourly Total	0	0	0	0	**0**	0	0	46	0	0	**46**	0	1	0	7	0	**8**	0	1	72	0	0	**73**	0	**127**
2:00AM	0	0	0	0	**0**	0	0	7	0	0	**7**	0	0	0	2	0	**2**	0	0	14	0	0	**14**	0	**23**
2:15AM	0	0	0	0	**0**	0	0	18	0	0	**18**	0	0	0	0	0	**0**	0	0	12	0	0	**12**	0	**30**
2:30AM	0	0	0	0	**0**	0	0	13	0	0	**13**	0	0	0	2	0	**2**	1	0	13	0	0	**13**	0	**28**
2:45AM	0	0	0	0	**0**	0	0	19	0	0	**19**	0	0	0	0	0	**0**	0	0	12	0	0	**12**	0	**31**
Hourly Total	0	0	0	0	**0**	0	0	57	0	0	**57**	0	0	0	4	0	**4**	1	0	51	0	0	**51**	0	**112**
3:00AM	0	0	0	0	**0**	0	0	25	0	0	**25**	0	0	0	2	0	**2**	0	0	14	0	0	**14**	0	**41**
3:15AM	0	0	0	0	**0**	0	0	31	0	0	**31**	0	0	0	0	0	**0**	0	0	21	0	0	**21**	0	**52**
3:30AM	0	0	0	0	**0**	0	0	29	0	0	**29**	0	0	0	0	0	**0**	0	0	30	0	0	**30**	1	**59**
3:45AM	0	0	0	0	**0**	0	0	44	0	0	**44**	0	0	0	0	0	**0**	0	1	33	0	0	**34**	0	**78**
Hourly Total	0	0	0	0	**0**	0	0	129	0	0	**129**	0	0	0	2	0	**2**	0	1	98	0	0	**99**	1	**230**
4:00AM	0	0	0	0	**0**	0	0	61	0	0	**61**	0	0	0	0	0	**0**	0	0	14	0	0	**14**	0	**75**
4:15AM	0	0	0	0	**0**	0	0	82	0	0	**82**	0	0	0	1	0	**1**	1	0	33	0	0	**33**	0	**116**
4:30AM	0	0	0	0	**0**	0	0	87	0	0	**87**	0	0	0	2	0	**2**	1	1	48	0	0	**49**	0	**138**
4:45AM	0	0	0	0	**0**	0	0	92	0	0	**92**	0	0	0	1	0	**1**	0	2	101	0	0	**103**	0	**196**
Hourly Total	0	0	0	0	**0**	0	0	322	0	0	**322**	0	0	0	4	0	**4**	2	3	196	0	0	**199**	0	**525**
5:00AM	0	0	0	0	**0**	0	0	107	0	0	**107**	0	1	0	4	0	**5**	0	1	69	0	0	**70**	0	**182**
5:15AM	0	0	0	0	**0**	0	0	115	0	0	**115**	0	0	0	2	0	**2**	0	0	81	0	0	**81**	0	**198**
5:30AM	0	0	0	0	**0**	0	0	103	0	0	**103**	0	0	0	0	0	**0**	1	2	166	0	0	**168**	0	**271**
5:45AM	0	0	0	0	**0**	1	0	119	0	0	**119**	0	0	0	1	0	**1**	1	3	200	0	0	**203**	0	**323**
Hourly Total	0	0	0	0	**0**	1	0	444	0	0	**444**	0	1	0	7	0	**8**	2	6	516	0	0	**522**	0	**974**
6:00AM	0	0	0	0	**0**	2	0	147	0	0	**147**	0	0	0	3	0	**3**	0	4	118	0	0	**122**	0	**272**
6:15AM	0	0	0	0	**0**	0	0	150	0	0	**150**	0	1	0	7	0	**8**	0	2	127	0	0	**129**	0	**287**
6:30AM	0	0	0	0	**0**	0	0	164	0	0	**164**	0	0	0	2	0	**2**	0	3	144	0	0	**147**	0	**313**
6:45AM	0	0	0	0	**0**	1	0	165	0	0	**165**	0	0	0	2	0	**2**	1	1	138	0	0	**139**	0	**306**
Hourly Total	0	0	0	0	**0**	3	0	626	0	0	**626**	0	1	0	14	0	**15**	1	10	527	0	0	**537**	0	**1178**
7:00AM	0	0	0	0	**0**	0	0	163	0	0	**163**	0	0	0	2	0	**2**	0	0	113	0	0	**113**	0	**278**
7:15AM	0	0	0	0	**0**	1	0	188	0	0	**188**	0	0	0	6	0	**6**	0	4	138	0	0	**142**	0	**336**
7:30AM	0	0	0	0	**0**	2	0	187	0	0	**187**	0	0	0	6	0	**6**	0	4	141	0	0	**145**	0	**338**
7:45AM	0	0	0	0	**0**	0	0	173	0	0	**173**	0	2	0	4	0	**6**	0	6	158	0	0	**164**	0	**343**
Hourly Total	0	0	0	0	**0**	3	0	711	0	0	**711**	0	2	0	18	0	**20**	0	14	550	0	0	**564**	0	**1295**
8:00AM	0	0	0	0	**0**	1	0	169	0	0	**169**	0	0	0	4	0	**4**	0	8	139	0	0	**147**	0	**320**
8:15AM	0	0	0	0	**0**	0	0	165	0	0	**165**	0	1	0	9	0	**10**	0	1	163	0	0	**164**	0	**339**
8:30AM	0	0	0	0	**0**	0	0	183	0	0	**183**	0	1	0	3	0	**4**	0	6	143	0	0	**149**	0	**336**
8:45AM	0	0	0	0	**0**	0	0	200	0	0	**200**	0	0	0	11	0	**11**	1	3	138	0	1	**142**	0	**353**
Hourly Total	0	0	0	0	**0**	1	0	717	0	0	**717**	0	2	0	27	0	**29**	1	18	583	0	1	**602**	0	**1348**
9:00AM	0	0	0	0	**0**	0	0	162	0	0	**162**	0	1	0	10	0	**11**	0	8	129	0	0	**137**	0	**310**
9:15AM	0	0	0	0	**0**	0	0	190	0	0	**190**	0	3	0	7	0	**10**	0	7	142	0	0	**149**	1	**349**
9:30AM	0	0	0	0	**0**	1	0	213	0	0	**213**	0	2	0	8	0	**10**	0	8	150	0	0	**158**	1	**381**
9:45AM	0	0	0	0	**0**	0	0	185	0	0	**185**	0	3	0	10	0	**13**	0	9	144	0	0	**153**	1	**351**
Hourly Total	0	0	0	0	**0**	1	0	750	0	0	**750**	0	9	0	35	0	**44**	0	32	565	0	0	**597**	3	**1391**
10:00AM	0	0	0	0	**0**	0	0	227	0	0	**227**	0	4	0	11	0	**15**	0	6	155	0	0	**161**	0	**403**
10:15AM	0	0	0	0	**0**	0	0	183	0	0	**183**	0	1	0	12	0	**13**	3	14	199	0	0	**213**	0	**409**
10:30AM	0	0	0	0	**0**	0	0	217	0	0	**217**	0	3	0	9	0	**12**	0	15	205	0	0	**220**	0	**449**
10:45AM	0	0	0	0	**0**	0	0	233	0	0	**233**	0	2	0	16	0	**18**	0	10	178	0	0	**188**	0	**439**
Hourly Total	0	0	0	0	**0**	0	0	860	0	0	**860**	0	10	0	48	0	**58**	3	45	737	0	0	**782**	0	**1700**
11:00AM	0	0	0	0	**0**	0	0	234	0	0	**234**	0	5	0	16	0	**21**	0	10	174	0	0	**184**	0	**439**
11:15AM	0	0	0	0	**0**	0	0	240	0	0	**240**	0	8	0	9	0	**17**	0	8	215	0	0	**223**	0	**480**
11:30AM	0	0	0	0	**0**	0	0	220	0	0	**220**	0	6	0	14	0	**20**	0	8	220	0	0	**228**	0	**468**
11:45AM	0	0	0	0	**0**	1	0	222	0	0	**222**	0	1	0	18	0	**19**	0	19	246	0	0	**265**	0	**506**
Hourly Total	0	0	0	0	**0**	1	0	916	0	0	**916**	0	20	0	57	0	**77**	0	45	855	0	0	**900**	0	**1893**
12:00PM	0	0	0	0	**0**	0	0	225	0	0	**225**	0	5	0	24	0	**29**	0	20	220	0	0	**240**	0	**494**
12:15PM	0	0	0	0	**0**	0	0	249	0	0	**249**	0	5	0	28	0	**33**	0	25	224	0	0	**249**	0	**531**
12:30PM	0	0	0	0	**0**	0	0	247	0	0	**247**	0	6	0	20	0	**26**	1	23	224	0	0	**247**	0	**520**
12:45PM	0	0	0	0	**0**	0	0	242	0	0	**242**	0	5	0	23	0	**28**	1	25	214	0	0	**239**	0	**509**
Hourly Total	0	0	0	0	**0**	0	0	963	0	0	**963**	0	21	0	95	0	**116**	2	93	882	0	0	**975**	0	**2054**
1:00PM	0	0	0	0	**0**	1	0	265	0	0	**265**	0	7	1	31	0	**39**	1	19	223	0	1	**243**	0	**547**
1:15PM	0	0	1	0	**1**	1	0	259	0	0	**259**	0	6	0	12	0	**18**	0	20	236	0	0	**256**	0	**534**
1:30PM	0	0	0	0	**0**	0	0	235	0	0	**235**	0	2	0	23	0	**25**	0	18	231	0	0	**249**	0	**509**

Leg	40th Ave NE (Not open yet)						SR 531 (172nd St NE)						40th Ave NE (Businesses)						SR 531 (172nd St NE)						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
1:45PM	0	0	0	0	**0**	0	1	227	0	0	**228**	0	7	2	25	0	**34**	2	16	207	0	0	**223**	0	**485**
Hourly Total	0	0	1	0	**1**	2	1	986	0	0	**987**	0	22	3	91	0	**116**	3	73	897	0	1	**971**	0	**2075**
2:00PM	1	0	0	0	**1**	0	0	235	0	0	**235**	0	1	0	16	0	**17**	2	12	225	0	0	**237**	0	**490**
2:15PM	0	0	0	0	**0**	0	0	243	0	0	**243**	0	6	0	18	0	**24**	0	14	219	0	0	**233**	0	**500**
2:30PM	0	0	0	0	**0**	1	0	282	0	0	**282**	1	4	0	18	0	**22**	3	22	260	0	1	**283**	1	**587**
2:45PM	0	0	0	0	**0**	3	0	260	0	0	**260**	0	2	0	23	0	**25**	0	18	223	0	0	**241**	0	**526**
Hourly Total	1	0	0	0	**1**	4	0	1020	0	0	**1020**	1	13	0	75	0	**88**	5	66	927	0	1	**994**	1	**2103**
3:00PM	0	0	0	0	**0**	0	0	204	0	0	**204**	0	6	0	13	0	**19**	0	22	222	0	0	**244**	0	**467**
3:15PM	0	0	0	0	**0**	5	0	258	0	0	**258**	1	5	0	15	0	**20**	1	19	224	0	0	**243**	0	**521**
3:30PM	0	0	0	0	**0**	0	0	296	0	0	**296**	0	6	0	24	0	**30**	1	18	237	0	0	**255**	0	**581**
3:45PM	0	0	0	0	**0**	4	0	300	0	0	**300**	0	6	0	18	0	**24**	0	18	205	0	0	**223**	0	**547**
Hourly Total	0	0	0	0	**0**	9	0	1058	0	0	**1058**	1	23	0	70	0	**93**	2	77	888	0	0	**965**	0	**2116**
4:00PM	0	0	0	0	**0**	0	0	263	0	0	**263**	0	4	0	16	0	**20**	0	14	217	0	0	**231**	0	**514**
4:15PM	0	0	0	0	**0**	2	0	235	0	0	**235**	0	6	0	25	0	**31**	1	15	232	0	0	**247**	0	**513**
4:30PM	0	0	0	0	**0**	0	0	289	0	0	**289**	0	7	0	24	0	**31**	0	22	200	0	0	**222**	0	**542**
4:45PM	0	0	0	0	**0**	0	0	285	0	0	**285**	0	7	0	21	0	**28**	0	8	221	0	0	**229**	0	**542**
Hourly Total	0	0	0	0	**0**	2	0	1072	0	0	**1072**	0	24	0	86	0	**110**	1	59	870	0	0	**929**	0	**2111**
5:00PM	0	0	0	0	**0**	3	0	247	0	0	**247**	0	9	0	27	0	**36**	0	18	242	0	0	**260**	0	**543**
5:15PM	0	0	0	0	**0**	2	0	254	0	0	**254**	0	5	0	18	0	**23**	1	15	248	0	0	**263**	0	**540**
5:30PM	0	0	0	0	**0**	3	0	251	0	0	**251**	0	7	0	29	0	**36**	1	29	228	0	0	**257**	0	**544**
5:45PM	0	0	0	0	**0**	1	0	209	0	0	**209**	0	4	0	24	0	**28**	1	13	212	0	0	**225**	0	**462**
Hourly Total	0	0	0	0	**0**	9	0	961	0	0	**961**	0	25	0	98	0	**123**	3	75	930	0	0	**1005**	0	**2089**
6:00PM	0	0	0	0	**0**	0	0	191	0	0	**191**	0	11	0	13	0	**24**	0	17	209	0	0	**226**	0	**441**
6:15PM	0	0	0	0	**0**	0	0	196	0	0	**196**	0	8	0	20	0	**28**	2	11	225	0	0	**236**	0	**460**
6:30PM	0	0	0	0	**0**	0	0	197	0	0	**197**	0	8	0	11	0	**19**	0	19	174	0	0	**193**	0	**409**
6:45PM	0	0	0	0	**0**	1	0	166	0	0	**166**	0	7	0	17	0	**24**	2	17	185	0	0	**202**	0	**392**
Hourly Total	0	0	0	0	**0**	1	0	750	0	0	**750**	0	34	0	61	0	**95**	4	64	793	0	0	**857**	0	**1702**
7:00PM	0	0	0	0	**0**	1	0	143	0	0	**143**	0	8	0	15	0	**23**	0	14	155	0	0	**169**	4	**335**
7:15PM	0	0	0	0	**0**	0	0	143	0	0	**143**	0	11	0	11	0	**22**	1	7	168	0	0	**175**	0	**340**
7:30PM	0	0	0	0	**0**	0	0	118	0	0	**118**	0	7	0	4	0	**11**	0	10	147	0	0	**157**	0	**286**
7:45PM	0	0	0	0	**0**	0	0	109	0	0	**109**	0	4	0	11	0	**15**	0	6	136	0	0	**142**	0	**266**
Hourly Total	0	0	0	0	**0**	1	0	513	0	0	**513**	0	30	0	41	0	**71**	1	37	606	0	0	**643**	4	**1227**
8:00PM	0	0	0	0	**0**	1	0	110	0	0	**110**	0	3	0	9	0	**12**	1	6	133	0	0	**139**	0	**261**
8:15PM	0	0	0	0	**0**	0	0	94	0	0	**94**	0	2	0	13	0	**15**	0	20	126	0	0	**146**	0	**255**
8:30PM	0	0	0	0	**0**	0	0	71	0	0	**71**	0	1	0	12	0	**13**	0	4	131	0	0	**135**	0	**219**
8:45PM	0	0	0	0	**0**	0	0	76	0	0	**76**	0	3	0	13	0	**16**	2	7	112	0	0	**119**	0	**211**
Hourly Total	0	0	0	0	**0**	1	0	351	0	0	**351**	0	9	0	47	0	**56**	3	37	502	0	0	**539**	0	**946**
9:00PM	0	0	0	0	**0**	1	0	70	0	0	**70**	0	1	0	1	0	**2**	2	1	98	1	0	**100**	0	**172**
9:15PM	0	0	0	0	**0**	0	0	86	0	0	**86**	0	1	0	6	0	**7**	0	2	90	0	0	**92**	0	**185**
9:30PM	0	0	0	0	**0**	2	0	60	0	0	**60**	0	0	0	3	0	**3**	0	1	92	0	0	**93**	0	**156**
9:45PM	0	0	0	0	**0**	0	0	48	0	0	**48**	0	1	0	5	0	**6**	2	4	84	0	0	**88**	0	**142**
Hourly Total	0	0	0	0	**0**	3	0	264	0	0	**264**	0	3	0	15	0	**18**	4	8	364	1	0	**373**	0	**655**
10:00PM	0	0	0	0	**0**	0	0	55	0	0	**55**	0	1	0	7	0	**8**	0	1	57	0	0	**58**	0	**121**
10:15PM	0	0	0	0	**0**	0	0	35	0	0	**35**	0	1	0	5	0	**6**	0	2	44	0	0	**46**	0	**87**
10:30PM	0	0	0	0	**0**	1	0	35	0	0	**35**	0	0	0	10	0	**10**	0	1	49	0	0	**50**	0	**95**
10:45PM	0	0	0	0	**0**	1	0	21	0	0	**21**	0	0	0	1	0	**1**	0	0	48	0	0	**48**	0	**70**
Hourly Total	0	0	0	0	**0**	2	0	146	0	0	**146**	0	2	0	23	0	**25**	0	4	198	0	0	**202**	0	**373**
11:00PM	0	0	0	0	**0**	0	0	26	0	0	**26**	0	0	0	2	0	**2**	0	1	63	0	0	**64**	0	**92**
11:15PM	0	0	0	0	**0**	0	0	21	0	0	**21**	0	0	0	3	0	**3**	0	0	40	0	0	**40**	0	**64**
11:30PM	0	0	0	0	**0**	0	0	21	0	0	**21**	0	0	0	2	0	**2**	0	1	35	0	0	**36**	0	**59**
11:45PM	0	0	0	0	**0**	0	0	18	0	0	**18**	0	0	0	2	0	**2**	0	0	29	0	0	**29**	0	**49**
Hourly Total	0	0	0	0	**0**	0	0	86	0	0	**86**	0	0	0	9	0	**9**	0	2	167	0	0	**169**	0	**264**
Total	1	0	1	0	**2**	44	1	13808	0	0	**13809**	2	253	3	945	0	**1201**	38	776	12868	1	3	**13648**	9	**28660**
% Approach	50.0%	0%	50.0%	0%	**-**	-	0%	100.0%	0%	0%	**-**	-	21.1%	0.2%	78.7%	0%	**-**	-	5.7%	94.3%	0%	0%	**-**	-	-
% Total	0%	0%	0%	0%	**0%**	-	0%	48.2%	0%	0%	**48.2%**	-	0.9%	0%	3.3%	0%	**4.2%**	-	2.7%	44.9%	0%	0%	**47.6%**	-	-
Motorcycles	0	0	0	0	**0**	-	0	83	0	0	**83**	-	1	0	4	0	**5**	-	4	74	0	0	**78**	-	166
% Motorcycles	0%	0%	0%	0%	**0%**	-	0%	0.6%	0%	0%	**0.6%**	-	0.4%	0%	0.4%	0%	**0.4%**	-	0.5%	0.6%	0%	0%	**0.6%**	-	0.6%
Lights	1	0	1	0	**2**	-	1	12838	0	0	**12839**	-	248	2	922	0	**1172**	-	743	12028	0	3	**12774**	-	26787
% Lights	100%	0%	100%	0%	**100%**	-	100%	93.0%	0%	0%	**93.0%**	-	98.0%	66.7%	97.6%	0%	**97.6%**	-	95.7%	93.5%	0%	100%	**93.6%**	-	93.5%
Single-Unit Trucks	0	0	0	0	**0**	-	0	467	0	0	**467**	-	4	0	15	0	**19**	-	12	442	0	0	**454**	-	940
% Single-Unit Trucks	0%	0%	0%	0%	**0%**	-	0%	3.4%	0%	0%	**3.4%**	-	1.6%	0%	1.6%	0%	**1.6%**	-	1.5%	3.4%	0%	0%	**3.3%**	-	3.3%
Articulated Trucks	0	0	0	0	**0**	-	0	382	0	0	**382**	-	0	1	3	0	**4**	-	12	308	0	0	**320**	-	706
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0%	2.8%	0%	0%	**2.8%**	-	0%	33.3%	0.3%	0%	**0.3%**	-	1.5%	2.4%	0%	0%	**2.3%**	-	2.5%
Buses	0	0	0	0	**0**	-	0	32	0	0	**32**	-	0	0	1	0	**1**	-	1	11	0	0	**12**	-	45
% Buses	0%	0%	0%	0%	**0%**	-	0%	0.2%	0%	0%	**0.2%**	-	0%	0%	0.1%	0%	**0.1%**	-	0.1%	0.1%	0%	0%	**0.1%**	-	0.2%
Pedestrians	0	0	0	0	**0**	-	0	1	0	0	**1**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	1
% Pedestrians	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%
Bicycles on Road	0	0	0	0	**0**	-	0	5	0	0	**5**	-	0	0	0	0	**0**	-	4	5	1	0	**10**	-	15
% Bicycles on Road	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0.5%	0%	100%	0%	**0.1%**	-	0.1%
Pedestrians	-	-	-	-	-	41	-	-	-	-	-	2	-	-	-	-	-	33	-	-	-	-	-	8	
% Pedestrians	-	-	-	-	-	93.2%	-	-	-	-	-	100%	-	-	-	-	-	86.8%	-	-	-	-	-	88.9%	-
Bicycles on Crosswalk	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	5	-	-	-	-	-	1	
% Bicycles on Crosswalk	-	-	-	-	-	6.8%	-	-	-	-	-	0%	-	-	-	-	-	13.2%	-	-	-	-	-	11.1%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

SR531mp7.12_43rd_Ave_NE_2019-0710 - TMC
Wed Jul 10, 2019
Full Length (12 AM-12 AM (+1))
All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 676657, Location: 48.152292, -122.172292, Site Code: 53100712_0719

WASHINGTON STATE DEPT. OF TRANSPORTATION
Northwest Region - Traffic Studies

Provided by: Washington State DOT
15700 Dayton Ave North, MS-120, P.O. Box 330310,
Seattle, WA, 98133, US

Wed Jul 10, 2019
24 h TMC

61°F Drizzle

Lat: 48.152292 N
Long: 122.172292 W

Peak Hour Factor

Scope	Time	Count	PHF
▶ AM	Wed Jul 10, 2019 10:00 AM	1,671	0.914
▶ Midday	Wed Jul 10, 2019 12:00 PM	2,142	0.944
▶ PM	Wed Jul 10, 2019 4:00 PM	2,259	0.944

SR531mp7.12_43rd_Ave_NE_2019-0710 - TMC
Wed Jul 10, 2019
Full Length (12 AM-12 AM (+1))
All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 676657, Location: 48.152292, -122.172292, Site Code: 53100712_0719

WASHINGTON STATE DEPT. OF TRANSPORTATION
Northwest Region - Traffic Studies

Provided by: Washington State DOT
15700 Dayton Ave North, MS-120, P.O. Box 330310,
Seattle, WA, 98133, US

Leg	43rd Ave NE						SR 531 (172nd St NE)						43rd Ave NE						SR 531 (172nd St NE)						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2019-07-10 12:00AM	2	0	0	0	**2**	0	0	8	3	0	**11**	0	3	0	4	0	**7**	0	0	27	0	1	**28**	0	**48**
12:15AM	1	0	0	0	**1**	0	0	18	3	0	**21**	0	4	0	2	0	**6**	0	0	19	0	2	**21**	0	**49**
12:30AM	0	0	0	0	**0**	0	0	8	1	0	**9**	0	3	1	4	0	**8**	0	0	21	2	0	**23**	0	**40**
12:45AM	0	0	0	0	**0**	0	0	7	3	0	**10**	0	4	1	2	0	**7**	0	0	16	0	0	**16**	0	**33**
Hourly Total	3	0	0	0	**3**	0	0	41	10	0	**51**	0	14	2	12	0	**28**	0	0	83	2	3	**88**	0	**170**
1:00AM	1	0	0	0	**1**	0	0	11	2	0	**13**	0	2	0	3	0	**5**	0	0	20	0	2	**22**	0	**41**
1:15AM	1	0	0	0	**1**	0	0	11	0	0	**11**	0	3	0	1	0	**4**	0	0	14	0	1	**15**	0	**31**
1:30AM	0	0	0	0	**0**	0	0	9	1	0	**10**	0	2	0	1	0	**3**	0	0	4	1	1	**6**	0	**19**
1:45AM	1	0	0	0	**1**	0	0	9	0	0	**9**	0	2	0	0	0	**2**	0	1	14	0	0	**15**	0	**27**
Hourly Total	3	0	0	0	**3**	0	0	40	3	0	**43**	0	9	0	5	0	**14**	0	1	52	1	4	**58**	0	**118**
2:00AM	0	0	0	0	**0**	0	0	6	0	0	**6**	0	1	0	0	0	**1**	0	1	21	1	0	**23**	0	**30**
2:15AM	0	0	1	0	**1**	0	1	16	1	0	**18**	0	5	0	1	0	**6**	0	0	14	0	0	**14**	0	**39**
2:30AM	0	0	0	0	**0**	0	0	5	0	0	**5**	0	1	0	0	0	**1**	0	0	6	0	0	**6**	0	**12**
2:45AM	0	0	1	0	**1**	0	0	14	1	0	**15**	0	0	0	0	0	**0**	0	0	12	0	0	**12**	0	**28**
Hourly Total	0	0	2	0	**2**	0	1	41	2	0	**44**	0	7	0	1	0	**8**	0	1	53	1	0	**55**	0	**109**
3:00AM	0	0	0	0	**0**	0	0	31	1	0	**32**	0	2	0	2	0	**4**	0	0	10	0	0	**10**	0	**46**
3:15AM	0	0	0	0	**0**	0	0	34	2	0	**36**	0	3	0	3	0	**6**	0	1	16	1	1	**19**	0	**61**
3:30AM	2	0	2	0	**4**	0	1	13	3	0	**17**	0	2	0	1	0	**3**	0	2	22	1	0	**25**	0	**49**
3:45AM	0	0	0	0	**0**	0	1	38	0	0	**39**	0	0	0	2	0	**2**	0	0	26	0	0	**26**	0	**67**
Hourly Total	2	0	2	0	**4**	0	2	116	6	0	**124**	0	7	0	8	0	**15**	0	3	74	2	1	**80**	0	**223**
4:00AM	0	0	0	0	**0**	0	0	62	2	0	**64**	0	1	0	2	0	**3**	0	2	22	0	0	**24**	0	**91**
4:15AM	0	0	0	0	**0**	1	0	69	0	0	**69**	0	0	0	0	0	**0**	0	0	31	0	0	**31**	0	**100**
4:30AM	2	0	0	0	**2**	0	1	95	3	0	**99**	0	0	0	2	0	**2**	0	1	40	0	0	**41**	0	**144**
4:45AM	3	0	1	0	**4**	0	1	99	3	0	**103**	0	2	0	1	0	**3**	0	2	77	0	1	**80**	0	**190**
Hourly Total	5	0	1	0	**6**	1	2	325	8	0	**335**	0	3	0	5	0	**8**	0	5	170	0	1	**176**	0	**525**
5:00AM	1	0	0	0	**1**	0	0	91	5	0	**96**	0	0	0	2	0	**2**	0	1	53	0	0	**54**	0	**153**
5:15AM	1	0	1	0	**2**	0	0	104	2	0	**106**	0	1	0	4	0	**5**	0	0	80	0	1	**81**	0	**194**
5:30AM	0	0	1	0	**1**	1	0	123	5	0	**128**	0	6	0	0	0	**6**	0	1	164	1	0	**166**	0	**301**
5:45AM	1	0	4	0	**5**	0	1	134	4	0	**139**	0	2	0	3	0	**5**	2	0	163	0	0	**163**	0	**312**
Hourly Total	3	0	6	0	**9**	1	1	452	16	0	**469**	0	9	0	9	0	**18**	2	2	460	1	1	**464**	0	**960**
6:00AM	1	0	2	0	**3**	4	1	149	3	0	**153**	0	2	0	3	0	**5**	0	1	108	0	0	**109**	0	**270**
6:15AM	0	0	5	0	**5**	0	1	154	5	0	**160**	0	5	0	5	0	**10**	0	0	122	1	0	**123**	0	**298**
6:30AM	3	0	2	0	**5**	0	2	153	2	0	**157**	0	5	1	4	0	**10**	0	3	121	1	1	**126**	0	**298**
6:45AM	1	0	4	0	**5**	3	0	147	7	0	**154**	0	1	0	6	0	**7**	0	2	162	0	0	**164**	0	**330**
Hourly Total	5	0	13	0	**18**	7	4	603	17	0	**624**	0	13	1	18	0	**32**	0	6	513	2	1	**522**	0	**1196**
7:00AM	3	1	7	0	**11**	0	2	147	4	0	**153**	0	1	1	9	0	**11**	1	5	110	0	2	**117**	0	**292**
7:15AM	6	0	3	0	**9**	2	0	188	3	0	**191**	0	4	0	6	0	**10**	0	1	126	0	1	**128**	0	**338**
7:30AM	2	0	2	0	**4**	0	2	168	6	0	**176**	0	8	0	10	0	**18**	0	2	154	0	4	**160**	1	**358**
7:45AM	6	0	2	0	**8**	0	3	171	8	0	**182**	0	7	0	9	0	**16**	0	3	146	0	1	**150**	0	**356**
Hourly Total	17	1	14	0	**32**	2	7	674	21	0	**702**	0	20	1	34	0	**55**	1	11	536	0	8	**555**	1	**1344**
8:00AM	3	1	2	0	**6**	0	0	173	7	0	**180**	0	9	2	7	0	**18**	0	4	140	1	0	**145**	0	**349**
8:15AM	4	1	1	0	**6**	0	3	169	5	0	**177**	0	8	0	15	0	**23**	0	3	102	3	3	**111**	1	**317**
8:30AM	2	0	1	0	**3**	0	1	192	10	0	**203**	0	10	1	10	0	**21**	0	2	157	0	2	**161**	1	**388**
8:45AM	5	1	2	0	**8**	0	3	179	19	0	**201**	0	11	0	14	0	**25**	0	5	147	1	0	**153**	0	**387**
Hourly Total	14	3	6	0	**23**	0	7	713	41	0	**761**	0	38	3	46	0	**87**	0	14	546	5	5	**570**	2	**1441**
9:00AM	2	0	3	0	**5**	9	3	182	9	0	**194**	0	12	0	8	0	**20**	0	8	108	0	0	**116**	0	**335**
9:15AM	3	1	1	0	**5**	0	4	169	15	0	**188**	0	14	0	27	0	**41**	0	5	115	2	5	**127**	0	**361**
9:30AM	4	0	5	0	**9**	5	2	169	13	0	**184**	0	16	0	24	0	**40**	0	3	148	1	3	**155**	0	**388**
9:45AM	3	0	5	0	**8**	0	2	165	23	0	**190**	0	13	0	28	0	**41**	0	4	112	3	4	**123**	0	**362**
Hourly Total	12	1	14	0	**27**	14	11	685	60	0	**756**	0	55	0	87	0	**142**	0	20	483	6	12	**521**	0	**1446**
10:00AM	8	1	2	0	**11**	0	1	191	17	0	**209**	0	12	1	28	0	**41**	0	3	113	2	6	**124**	0	**385**
10:15AM	0	0	4	0	**4**	0	1	212	25	0	**238**	0	19	0	26	0	**45**	0	4	122	3	5	**134**	0	**421**
10:30AM	3	0	5	0	**8**	0	1	175	27	0	**203**	0	24	0	25	0	**49**	0	3	141	2	2	**148**	0	**408**
10:45AM	2	1	3	0	**6**	0	2	176	19	0	**197**	0	28	0	40	0	**68**	0	14	163	5	4	**186**	0	**457**
Hourly Total	13	2	14	0	**29**	0	5	754	88	0	**847**	0	83	1	119	0	**203**	0	24	539	12	17	**592**	0	**1671**
11:00AM	1	3	1	0	**5**	0	1	216	26	0	**243**	0	28	2	32	0	**62**	0	3	162	0	2	**167**	1	**477**
11:15AM	6	0	2	0	**8**	0	5	181	20	0	**206**	0	29	3	42	0	**74**	0	7	180	8	5	**200**	0	**488**
11:30AM	4	0	8	0	**12**	0	3	235	22	0	**260**	0	23	2	46	0	**71**	0	9	181	3	6	**199**	0	**542**
11:45AM	3	0	3	0	**6**	0	2	221	22	0	**245**	0	32	1	41	0	**74**	0	6	180	3	5	**194**	2	**519**
Hourly Total	14	3	14	0	**31**	0	11	853	90	0	**954**	0	112	8	161	0	**281**	0	25	703	14	18	**760**	3	**2026**
12:00PM	4	0	4	0	**8**	2	5	173	30	0	**208**	0	27	2	39	0	**68**	0	8	176	2	5	**191**	0	**475**
12:15PM	3	2	4	0	**9**	1	3	224	38	0	**265**	0	37	0	49	0	**86**	0	11	188	2	2	**203**	0	**563**
12:30PM	4	2	3	0	**9**	0	3	208	35	0	**246**	0	37	0	49	0	**86**	0	16	174	3	3	**196**	0	**537**
12:45PM	1	1	1	0	**3**	1	3	173	39	0	**215**	0	65	5	74	0	**144**	0	19	177	2	7	**205**	0	**567**
Hourly Total	12	5	12	0	**29**	4	14	778	142	0	**934**	0	166	7	211	0	**384**	0	54	715	9	17	**795**	0	**2142**
1:00PM	2	2	1	0	**5**	0	1	195	36	0	**232**	0	37	4	64	0	**105**	0	11	187	1	3	**202**	0	**544**
1:15PM	3	0	0	0	**3**	0	5	197	21	0	**223**	0	47	3	45	0	**95**	1	7	174	0	5	**186**	1	**507**
1:30PM	1	4	6	0	**11**	1	3	198	35	0	**236**	0	53	1	55	0	**109**	0	5	192	4	11	**212**	2	**568**
1:45PM	9	0	1	0	**10**	0	4	192	19	0	**215**	0	36	1	44	0	**81**	1	14	199	4	8	**225**	0	**531**
Hourly Total	15	6	8	0	**29**	1	13	782	111	0	**906**	0	173	9	208	0	**390**	2	37	752	9	27	**825**	3	**2150**
2:00PM	2	0	4	0	**6**	0	1	192	24	0	**217**	0	40	0	52	0	**92**	0	6	172	3	6	**187**	2	**502**

Leg	43rd Ave NE						SR 531 (172nd St NE)						43rd Ave NE						SR 531 (172nd St NE)						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2:15PM	4	1	1	0	**6**	0	1	205	20	0	**226**	0	44	2	58	0	**104**	0	10	208	3	4	**225**	0	**561**
2:30PM	7	1	0	0	**8**	3	2	221	30	0	**253**	0	42	0	48	0	**90**	0	11	178	4	5	**198**	1	**549**
2:45PM	4	3	3	0	**10**	0	3	194	40	0	**237**	1	38	2	60	0	**100**	1	4	173	2	8	**187**	2	**534**
Hourly Total	17	5	8	0	**30**	3	7	812	114	0	**933**	1	164	4	218	0	**386**	1	31	731	12	23	**797**	5	**2146**
3:00PM	1	1	0	0	**2**	0	2	149	16	0	**167**	0	43	2	51	0	**96**	1	6	193	3	3	**205**	0	**470**
3:15PM	4	2	2	0	**8**	0	2	206	28	0	**236**	1	47	4	63	0	**114**	2	8	182	0	9	**199**	2	**557**
3:30PM	3	2	2	0	**7**	0	2	202	27	0	**231**	0	41	9	68	0	**118**	0	13	150	6	5	**174**	0	**530**
3:45PM	3	1	2	0	**6**	1	5	198	31	0	**234**	0	30	2	36	0	**68**	1	7	200	3	4	**214**	2	**522**
Hourly Total	11	6	6	0	**23**	1	11	755	102	0	**868**	1	161	17	218	0	**396**	4	34	725	12	21	**792**	4	**2079**
4:00PM	3	2	3	0	**8**	0	4	216	33	0	**253**	0	52	2	67	0	**121**	0	9	198	3	6	**216**	0	**598**
4:15PM	5	0	1	0	**6**	2	4	208	31	0	**243**	0	54	2	73	0	**129**	0	6	170	6	6	**188**	0	**566**
4:30PM	3	1	0	0	**4**	1	3	229	35	0	**267**	0	48	2	51	0	**101**	0	6	178	3	3	**190**	1	**562**
4:45PM	3	1	3	0	**7**	0	6	215	31	0	**252**	0	35	4	42	0	**81**	0	8	177	7	2	**194**	0	**534**
Hourly Total	14	4	7	0	**25**	3	17	868	130	0	**1015**	0	189	10	233	0	**432**	0	29	723	19	17	**788**	1	**2260**
5:00PM	0	0	3	0	**3**	0	3	198	24	0	**225**	0	53	1	60	0	**114**	0	6	179	10	4	**199**	0	**541**
5:15PM	2	0	3	0	**5**	2	7	220	32	0	**259**	1	44	1	39	0	**84**	0	3	200	4	3	**210**	0	**558**
5:30PM	4	0	9	0	**13**	0	5	160	24	0	**189**	0	38	1	48	0	**87**	0	7	183	3	7	**200**	0	**489**
5:45PM	2	0	4	0	**6**	0	2	178	29	0	**209**	0	38	3	37	0	**78**	1	8	201	4	4	**217**	0	**510**
Hourly Total	8	0	19	0	**27**	2	17	756	109	0	**882**	1	173	6	184	0	**363**	1	24	763	21	18	**826**	0	**2098**
6:00PM	7	2	3	0	**12**	0	8	167	22	0	**197**	0	42	3	47	0	**92**	0	7	163	5	2	**177**	0	**478**
6:15PM	3	2	5	0	**10**	0	5	156	18	0	**179**	0	40	2	43	0	**85**	0	4	184	2	1	**191**	0	**465**
6:30PM	6	3	3	0	**12**	0	2	154	19	0	**175**	0	39	5	24	0	**68**	0	5	184	9	1	**199**	0	**454**
6:45PM	8	1	5	0	**14**	1	5	112	21	0	**138**	0	27	1	33	0	**61**	0	3	155	4	4	**166**	1	**379**
Hourly Total	24	8	16	0	**48**	1	20	589	80	0	**689**	0	148	11	147	0	**306**	0	19	686	20	8	**733**	1	**1776**
7:00PM	7	2	3	0	**12**	0	1	125	14	0	**140**	0	28	0	25	0	**53**	0	4	116	7	1	**128**	0	**333**
7:15PM	2	1	2	0	**5**	2	4	95	15	0	**114**	0	41	3	33	0	**77**	0	1	137	1	2	**141**	1	**337**
7:30PM	3	1	0	0	**4**	0	1	104	25	0	**130**	0	26	1	30	0	**57**	0	1	135	4	4	**144**	0	**335**
7:45PM	2	0	2	0	**4**	0	1	77	13	0	**91**	0	28	2	31	0	**61**	1	5	125	2	5	**137**	1	**293**
Hourly Total	14	4	7	0	**25**	2	7	401	67	0	**475**	0	123	6	119	0	**248**	1	11	513	14	12	**550**	2	**1298**
8:00PM	2	1	1	0	**4**	0	4	98	17	0	**119**	0	41	1	25	0	**67**	0	3	126	4	2	**135**	0	**325**
8:15PM	1	1	1	0	**3**	0	1	73	8	0	**82**	0	21	1	24	0	**46**	2	4	109	5	6	**124**	0	**255**
8:30PM	5	0	5	0	**10**	0	4	66	16	0	**86**	0	30	1	17	0	**48**	0	2	97	1	2	**102**	0	**246**
8:45PM	3	0	0	0	**3**	1	1	63	12	0	**76**	0	17	0	23	0	**40**	0	3	80	5	0	**88**	0	**207**
Hourly Total	11	2	7	0	**20**	1	10	300	53	0	**363**	0	109	3	89	0	**201**	2	12	412	15	10	**449**	0	**1033**
9:00PM	0	1	2	0	**3**	0	2	60	14	0	**76**	0	24	2	13	0	**39**	1	3	102	2	2	**109**	0	**227**
9:15PM	3	0	2	0	**5**	2	1	56	7	0	**64**	1	18	1	21	0	**40**	0	2	68	2	2	**74**	0	**183**
9:30PM	0	0	0	0	**0**	0	1	48	8	0	**57**	0	16	0	14	0	**30**	0	3	58	0	2	**63**	0	**150**
9:45PM	1	1	0	0	**2**	0	1	33	12	0	**46**	0	12	1	16	0	**29**	0	1	65	2	1	**69**	1	**146**
Hourly Total	4	2	4	0	**10**	2	5	197	41	0	**243**	1	70	4	64	0	**138**	1	9	293	6	7	**315**	1	**706**
10:00PM	2	0	5	0	**7**	0	1	29	7	0	**37**	1	13	2	14	0	**29**	1	0	59	2	2	**63**	0	**136**
10:15PM	0	0	0	0	**0**	0	0	22	3	0	**25**	0	12	1	10	0	**23**	0	3	58	0	2	**63**	0	**111**
10:30PM	0	0	0	0	**0**	0	1	24	7	0	**32**	0	11	0	5	0	**16**	0	1	51	0	1	**53**	0	**101**
10:45PM	1	0	0	0	**1**	1	0	24	1	0	**25**	0	7	0	8	0	**15**	0	0	43	2	0	**45**	1	**86**
Hourly Total	3	0	5	0	**8**	1	2	99	18	0	**119**	1	43	3	37	0	**83**	1	4	211	4	5	**224**	1	**434**
11:00PM	2	0	1	0	**3**	0	1	26	7	0	**34**	0	4	0	8	0	**12**	0	0	41	0	2	**43**	0	**92**
11:15PM	0	0	1	0	**1**	0	0	19	5	0	**24**	0	5	1	9	0	**15**	0	1	42	0	0	**43**	1	**83**
11:30PM	0	0	0	0	**0**	0	0	11	1	0	**12**	0	6	0	2	0	**8**	0	0	27	1	1	**29**	0	**49**
11:45PM	2	0	0	0	**2**	0	0	18	0	0	**18**	0	5	0	6	0	**11**	0	0	27	0	0	**27**	0	**58**
Hourly Total	4	0	2	0	**6**	0	1	74	13	0	**88**	0	20	1	25	0	**46**	0	1	137	1	3	**142**	1	**282**
Total	228	52	187	0	**467**	46	175	11708	1342	0	**13225**	5	1909	97	2258	0	**4264**	16	377	10873	188	239	**11677**	25	**29633**
% Approach	48.8%	11.1%	40.0%	0%	**-**	-	1.3%	88.5%	10.1%	0%	**-**	-	44.8%	2.3%	53.0%	0%	**-**	-	3.2%	93.1%	1.6%	2.0%	**-**	-	-
% Total	0.8%	0.2%	0.6%	0%	**1.6%**	-	0.6%	39.5%	4.5%	0%	**44.6%**	-	6.4%	0.3%	7.6%	0%	**14.4%**	-	1.3%	36.7%	0.6%	0.8%	**39.4%**	-	-
Motorcycles	0	0	1	0	**1**	-	0	16	2	0	**18**	-	4	1	1	0	**6**	-	0	22	0	0	**22**	-	47
% Motorcycles	0%	0%	0.5%	0%	**0.2%**	-	0%	0.1%	0.1%	0%	**0.1%**	-	0.2%	1.0%	0%	0%	**0.1%**	-	0%	0.2%	0%	0%	**0.2%**	-	0.2%
Lights	228	51	186	0	**465**	-	173	10995	1322	0	**12490**	-	1881	96	2220	0	**4197**	-	370	10235	188	239	**11032**	-	28184
% Lights	100%	98.1%	99.5%	0%	**99.6%**	-	98.9%	93.9%	98.5%	0%	**94.4%**	-	98.5%	99.0%	98.3%	0%	**98.4%**	-	98.1%	94.1%	100%	100%	**94.5%**	-	95.1%
Single-Unit Trucks	0	1	0	0	**1**	-	1	399	12	0	**412**	-	19	0	22	0	**41**	-	5	344	0	0	**349**	-	803
% Single-Unit Trucks	0%	1.9%	0%	0%	**0.2%**	-	0.6%	3.4%	0.9%	0%	**3.1%**	-	1.0%	0%	1.0%	0%	**1.0%**	-	1.3%	3.2%	0%	0%	**3.0%**	-	2.7%
Articulated Trucks	0	0	0	0	**0**	-	1	268	3	0	**272**	-	1	0	11	0	**12**	-	2	254	0	0	**256**	-	540
% Articulated Trucks	0%	0%	0%	0%	**0%**	-	0.6%	2.3%	0.2%	0%	**2.1%**	-	0.1%	0%	0.5%	0%	**0.3%**	-	0.5%	2.3%	0%	0%	**2.2%**	-	1.8%
Buses	0	0	0	0	**0**	-	0	27	2	0	**29**	-	3	0	4	0	**7**	-	0	16	0	0	**16**	-	52
% Buses	0%	0%	0%	0%	**0%**	-	0%	0.2%	0.1%	0%	**0.2%**	-	0.2%	0%	0.2%	0%	**0.2%**	-	0%	0.1%	0%	0%	**0.1%**	-	0.2%
Bicycles on Road	0	0	0	0	**0**	-	0	3	1	0	**4**	-	1	0	0	0	**1**	-	0	2	0	0	**2**	-	7
% Bicycles on Road	0%	0%	0%	0%	**0%**	-	0%	0%	0.1%	0%	**0%**	-	0.1%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%
Pedestrians	-	-	-	-	-	39	-	-	-	-	-	2	-	-	-	-	-	13	-	-	-	-	-	21	
% Pedestrians	-	-	-	-	-	84.8%	-	-	-	-	-	40.0%	-	-	-	-	-	81.3%	-	-	-	-	-	84.0%	-
Bicycles on Crosswalk	-	-	-	-	-	7	-	-	-	-	-	3	-	-	-	-	-	3	-	-	-	-	-	4	
% Bicycles on Crosswalk	-	-	-	-	-	15.2%	-	-	-	-	-	60.0%	-	-	-	-	-	18.8%	-	-	-	-	-	16.0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

SR531mp7.62_51st_Ave_NE_2019-0710 - TMC
Wed Jul 10, 2019
Full Length (12 AM-12 AM (+1))
All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 676655, Location: 48.152117, -122.161569, Site Code: 53100762_0719

WASHINGTON STATE DEPT. OF TRANSPORTATION
Northwest Region - Traffic Studies

Provided by: Washington State DOT
15700 Dayton Ave North, MS-120, P.O. Box 330310,
Seattle, WA, 98133, US

Wed Jul 10, 2019
24 h TMC

61°F Drizzle

Lat: 48.152117 N
Long: 122.161569 W

Peak Hour Factor

Scope	Time	Count	PHF
▶ AM	Wed Jul 10, 2019 10:00 AM	1,672	0.959
▶ Midday	Wed Jul 10, 2019 11:30 AM	2,062	0.978
▶ PM	Wed Jul 10, 2019 4:00 PM	2,272	0.956

SR531mp7.62_51st_Ave_NE_2019-0710 - TMC
Wed Jul 10, 2019
Full Length (12 AM-12 AM (+1))
All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 676655, Location: 48.152117, -122.161569, Site Code: 53100762_0719

WASHINGTON STATE DEPT. OF TRANSPORTATION
Northwest Region - Traffic Studies

Provided by: Washington State DOT
15700 Dayton Ave North, MS-120, P.O. Box 330310,
Seattle, WA, 98133, US

Leg	51st Ave NE						SR 531 (172nd St NE)						51st Ave NE						SR 531 (172nd St NE)						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2019-07-10 12:00AM	0	0	1	0	1	0	1	12	0	0	13	0	2	1	0	0	3	0	3	30	0	0	33	0	50
12:15AM	1	0	1	0	2	0	1	16	1	0	18	0	1	0	3	0	4	0	0	21	0	0	21	0	45
12:30AM	0	0	1	0	1	0	1	4	2	0	7	0	0	0	4	0	4	0	1	24	0	0	25	0	37
12:45AM	0	1	1	0	2	0	1	10	1	0	12	0	0	0	1	0	1	0	2	15	3	0	20	0	35
Hourly Total	1	1	4	0	6	0	4	42	4	0	50	0	3	1	8	0	12	0	6	90	3	0	99	0	167
1:00AM	0	0	0	0	0	0	0	12	1	0	13	0	0	0	0	0	0	0	2	22	0	0	24	0	37
1:15AM	0	0	0	0	0	0	0	11	0	0	11	0	0	0	1	0	1	0	2	15	0	0	17	0	29
1:30AM	0	0	1	0	1	0	1	7	0	0	8	0	0	0	2	0	2	0	1	5	0	0	6	0	17
1:45AM	0	1	0	0	1	0	0	7	0	0	7	0	0	0	2	0	2	0	3	12	1	0	16	0	26
Hourly Total	0	1	1	0	2	0	1	37	1	0	39	0	0	0	5	0	5	0	8	54	1	0	63	0	109
2:00AM	1	1	1	0	3	0	0	7	0	0	7	0	0	0	0	0	0	0	2	19	0	0	21	0	31
2:15AM	0	0	0	0	0	0	0	12	0	0	12	0	0	0	4	0	4	0	3	17	0	0	20	0	36
2:30AM	0	0	0	0	0	0	0	6	2	0	8	0	1	0	1	0	2	0	1	4	2	0	7	0	17
2:45AM	0	1	1	0	2	0	1	15	1	0	17	0	2	0	0	0	2	0	3	10	1	0	14	0	35
Hourly Total	1	2	2	0	5	0	1	40	3	0	44	0	3	0	5	0	8	0	9	50	3	0	62	0	119
3:00AM	6	1	1	0	8	0	1	27	2	0	30	0	3	0	1	0	4	0	2	9	1	0	12	0	54
3:15AM	1	1	1	0	3	0	1	27	0	0	28	0	1	0	5	0	6	0	1	16	0	0	17	0	54
3:30AM	1	0	0	0	1	0	0	15	0	0	15	0	2	0	2	0	4	0	4	23	0	0	27	0	47
3:45AM	0	2	0	0	2	0	0	38	2	0	40	0	5	0	1	0	6	0	0	26	0	0	26	1	74
Hourly Total	8	4	2	0	14	0	2	107	4	0	113	0	11	0	9	0	20	0	7	74	1	0	82	1	229
4:00AM	0	0	0	0	0	0	1	57	1	0	59	0	2	0	8	0	10	0	0	23	0	0	23	0	92
4:15AM	0	0	2	0	2	0	0	68	1	0	69	0	3	1	5	0	9	0	2	28	0	0	30	0	110
4:30AM	0	1	1	0	2	0	1	89	0	0	90	0	3	1	10	0	14	0	1	40	0	0	41	0	147
4:45AM	1	3	3	0	7	0	5	91	4	0	100	0	8	1	11	0	20	0	6	70	5	0	81	0	208
Hourly Total	1	4	6	0	11	0	7	305	6	0	318	0	16	3	34	0	53	0	9	161	5	0	175	0	557
5:00AM	2	0	4	0	6	0	1	90	2	0	93	0	7	1	8	0	16	0	1	48	2	0	51	0	166
5:15AM	0	0	2	0	2	0	3	88	2	0	93	0	17	2	17	0	36	0	1	79	2	0	82	0	213
5:30AM	1	3	3	0	7	1	6	122	3	0	131	0	13	6	12	0	31	0	3	153	10	0	166	0	335
5:45AM	0	4	6	0	10	1	12	124	10	0	146	0	29	7	16	0	52	0	4	151	11	0	166	0	374
Hourly Total	3	7	15	0	25	2	22	424	17	0	463	0	66	16	53	0	135	0	9	431	25	0	465	0	1088
6:00AM	1	4	10	0	15	1	3	133	2	0	138	1	11	4	16	0	31	0	8	107	5	0	120	0	304
6:15AM	2	5	7	0	14	1	3	145	4	0	152	0	6	2	23	0	31	0	3	120	0	0	123	0	320
6:30AM	2	1	7	0	10	1	4	130	5	0	139	0	22	1	25	0	48	0	9	103	4	0	116	0	313
6:45AM	3	6	6	0	15	0	10	145	11	0	166	0	24	5	12	0	41	0	10	162	12	0	184	0	406
Hourly Total	8	16	30	0	54	3	20	553	22	0	595	1	63	12	76	0	151	0	30	492	21	0	543	0	1343
7:00AM	2	7	8	0	17	0	4	126	12	0	142	1	19	4	24	0	47	1	9	100	5	0	114	0	320
7:15AM	5	5	6	0	16	0	5	164	11	0	180	0	13	5	22	0	40	0	10	117	8	0	135	0	371
7:30AM	4	6	9	0	19	2	9	153	9	0	171	0	16	5	20	0	41	0	8	151	5	0	164	0	395
7:45AM	4	3	4	0	11	2	14	163	11	0	188	0	25	9	26	0	60	0	12	145	8	0	165	0	424
Hourly Total	15	21	27	0	63	4	32	606	43	0	681	1	73	23	92	0	188	1	39	513	26	0	578	0	1510
8:00AM	1	1	4	0	6	0	2	148	3	0	153	0	13	5	22	0	40	0	21	124	7	1	153	0	352
8:15AM	6	2	11	0	19	0	8	165	11	0	184	0	17	3	20	0	40	0	9	92	2	0	103	0	346
8:30AM	2	6	6	0	14	0	5	177	10	0	192	0	12	2	25	0	39	0	9	148	5	0	162	0	407
8:45AM	4	6	11	0	21	1	12	160	10	0	182	0	13	7	36	0	56	0	18	123	15	0	156	0	415
Hourly Total	13	15	32	0	60	1	27	650	34	0	711	0	55	17	103	0	175	0	57	487	29	1	574	0	1520
9:00AM	3	4	8	0	15	0	6	161	7	0	174	0	13	4	22	0	39	0	15	105	4	0	124	0	352
9:15AM	3	4	5	0	12	0	6	165	9	0	180	0	8	5	21	0	34	0	13	111	10	0	134	0	360
9:30AM	9	11	6	0	26	0	4	162	15	0	181	0	16	4	25	0	45	0	25	121	9	0	155	0	407
9:45AM	2	5	6	0	13	0	3	154	8	0	165	0	16	11	27	0	54	0	25	109	8	0	142	0	374
Hourly Total	17	24	25	0	66	0	19	642	39	0	700	0	53	24	95	0	172	0	78	446	31	0	555	0	1493
10:00AM	8	4	6	0	18	0	6	156	12	0	174	2	16	4	39	0	59	0	15	105	5	0	125	0	376
10:15AM	9	5	13	0	27	0	2	197	7	0	206	0	12	8	34	0	54	0	23	117	9	0	149	0	436
10:30AM	11	6	14	0	31	0	4	158	11	0	173	0	17	3	34	0	54	0	26	139	8	0	173	0	431
10:45AM	10	3	8	1	22	0	5	158	23	0	186	0	6	8	27	0	41	0	26	146	8	0	180	0	429
Hourly Total	38	18	41	1	98	0	17	669	53	0	739	2	51	23	134	0	208	0	90	507	30	0	627	0	1672
11:00AM	10	9	11	0	30	0	3	197	10	0	210	1	17	13	28	0	58	0	23	165	4	0	192	0	490
11:15AM	4	4	7	0	15	0	5	179	13	0	197	1	26	13	31	0	70	0	32	149	12	0	193	0	475
11:30AM	13	8	10	0	31	0	2	214	19	0	235	0	13	3	33	0	49	0	30	158	12	0	200	0	515
11:45AM	15	13	6	0	34	0	7	185	17	0	209	0	15	5	35	0	55	0	25	187	17	0	229	0	527
Hourly Total	42	34	34	0	110	0	17	775	59	0	851	2	71	34	127	0	232	0	110	659	45	0	814	0	2007
12:00PM	11	6	12	0	29	1	9	176	16	0	201	0	14	6	36	0	56	0	24	171	13	0	208	0	494
12:15PM	14	6	13	0	33	0	6	193	11	0	210	0	14	8	46	0	68	0	37	169	9	0	215	0	526
12:30PM	10	11	10	0	31	0	5	181	13	0	199	0	19	7	49	0	75	0	36	163	8	0	207	0	512
12:45PM	9	6	9	0	24	0	11	167	8	0	186	0	17	7	37	0	61	0	37	201	11	0	249	0	520
Hourly Total	44	29	44	0	117	1	31	717	48	0	796	0	64	28	168	0	260	0	134	704	41	0	879	0	2052
1:00PM	8	6	12	0	26	0	8	189	10	0	207	0	20	5	39	0	64	0	32	194	10	0	236	0	533
1:15PM	9	4	4	0	17	0	11	177	13	0	201	0	13	8	35	0	56	1	41	174	9	0	224	0	498
1:30PM	11	10	7	0	28	0	5	197	12	0	214	0	18	7	31	0	56	0	39	186	9	0	234	0	532
1:45PM	9	12	5	0	26	0	3	157	14	0	174	0	18	5	42	0	65	1	34	178	8	0	220	0	485
Hourly Total	37	32	28	0	97	0	27	720	49	0	796	0	69	25	147	0	241	2	146	732	36	0	914	0	2048
2:00PM	4	7	2	0	13	0	4	190	12	0	206	0	9	6	38	0	53	0	30	208	11	0	249	0	521
2:15PM	12	5	5	0	22	2	8	175	12	0	195	0	15	7	28	0	50	0	36	190	11	0	237	0	504

Leg	51st Ave NE						SR 531 (172nd St NE)						51st Ave NE						SR 531 (172nd St NE)						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2:30PM	8	13	13	0	**34**	0	6	191	17	0	**214**	0	24	10	48	0	**82**	1	45	173	11	0	**229**	1	**559**
2:45PM	6	4	6	0	**16**	2	10	207	23	0	**240**	2	17	10	21	0	**48**	0	44	181	8	0	**233**	0	**537**
Hourly Total	30	29	26	0	**85**	4	28	763	64	0	**855**	2	65	33	135	0	**233**	1	155	752	41	0	**948**	1	**2121**
3:00PM	3	6	12	0	**21**	1	9	147	12	0	**168**	1	28	9	31	0	**68**	0	47	170	8	0	**225**	0	**482**
3:15PM	8	5	4	0	**17**	1	7	175	26	0	**208**	0	21	8	45	0	**74**	0	43	164	13	0	**220**	0	**519**
3:30PM	9	15	11	0	**35**	0	7	200	17	0	**224**	0	29	10	35	0	**74**	0	41	170	10	0	**221**	0	**554**
3:45PM	5	12	9	0	**26**	1	5	191	21	0	**217**	0	12	15	36	0	**63**	0	45	158	12	0	**215**	0	**521**
Hourly Total	25	38	36	0	**99**	3	28	713	76	0	**817**	1	90	42	147	0	**279**	0	176	662	43	0	**881**	0	**2076**
4:00PM	15	8	5	0	**28**	0	12	207	11	0	**230**	0	22	10	39	0	**71**	0	37	192	11	0	**240**	0	**569**
4:15PM	14	15	3	0	**32**	0	6	200	21	0	**227**	0	11	15	40	0	**66**	2	40	175	5	0	**220**	2	**545**
4:30PM	27	16	27	0	**70**	1	7	206	21	0	**234**	0	20	19	24	0	**63**	0	39	175	13	0	**227**	0	**594**
4:45PM	15	11	11	0	**37**	0	3	199	19	0	**221**	0	22	12	38	0	**72**	0	43	187	4	0	**234**	0	**564**
Hourly Total	71	50	46	0	**167**	1	28	812	72	0	**912**	0	75	56	141	0	**272**	2	159	729	33	0	**921**	2	**2272**
5:00PM	10	12	9	0	**31**	0	6	192	14	0	**212**	1	25	10	38	0	**73**	0	40	173	14	0	**227**	0	**543**
5:15PM	8	6	2	0	**16**	2	5	194	13	0	**212**	2	17	6	36	0	**59**	0	36	196	14	0	**246**	0	**533**
5:30PM	4	12	5	0	**21**	0	7	148	13	0	**168**	0	15	12	41	0	**68**	1	30	211	5	0	**246**	0	**503**
5:45PM	7	6	8	0	**21**	0	6	166	13	0	**185**	0	16	14	35	0	**65**	0	33	183	6	0	**222**	0	**493**
Hourly Total	29	36	24	0	**89**	2	24	700	53	0	**777**	3	73	42	150	0	**265**	1	139	763	39	0	**941**	0	**2072**
6:00PM	3	7	5	0	**15**	0	8	157	16	0	**181**	0	12	8	27	0	**47**	0	40	186	8	0	**234**	0	**477**
6:15PM	10	17	12	0	**39**	0	8	144	13	0	**165**	0	1	5	39	0	**45**	0	49	162	9	0	**220**	0	**469**
6:30PM	7	3	6	0	**16**	0	3	121	19	0	**143**	0	9	8	32	0	**49**	0	34	190	4	0	**228**	0	**436**
6:45PM	3	6	2	0	**11**	0	6	111	13	0	**130**	0	10	8	33	0	**51**	0	41	157	11	0	**209**	0	**401**
Hourly Total	23	33	25	0	**81**	0	25	533	61	0	**619**	0	32	29	131	0	**192**	0	164	695	32	0	**891**	0	**1783**
7:00PM	1	7	4	0	**12**	0	2	100	9	0	**111**	0	6	8	28	0	**42**	0	25	111	8	0	**144**	0	**309**
7:15PM	4	4	3	0	**11**	0	5	95	9	0	**109**	0	9	6	26	0	**41**	0	33	138	6	0	**177**	0	**338**
7:30PM	5	5	4	0	**14**	0	6	90	7	0	**103**	0	7	7	29	0	**43**	1	27	136	3	0	**166**	0	**326**
7:45PM	5	3	1	0	**9**	0	2	76	8	0	**86**	0	4	2	22	0	**28**	0	39	110	2	0	**151**	0	**274**
Hourly Total	15	19	12	0	**46**	0	15	361	33	0	**409**	0	26	23	105	0	**154**	1	124	495	19	0	**638**	0	**1247**
8:00PM	3	4	4	0	**11**	0	2	91	4	0	**97**	0	13	3	20	0	**36**	0	31	123	9	0	**163**	0	**307**
8:15PM	3	2	3	0	**8**	0	4	56	9	0	**69**	0	9	7	24	0	**40**	0	22	105	2	0	**129**	0	**246**
8:30PM	5	2	4	0	**11**	0	1	57	3	0	**61**	0	9	6	20	0	**35**	0	25	116	2	0	**143**	0	**250**
8:45PM	3	2	1	0	**6**	0	1	60	4	0	**65**	0	4	9	20	0	**33**	0	15	82	3	0	**100**	0	**204**
Hourly Total	14	10	12	0	**36**	0	8	264	20	0	**292**	0	35	25	84	0	**144**	0	93	426	16	0	**535**	0	**1007**
9:00PM	3	3	2	0	**8**	1	1	49	3	0	**53**	0	4	3	20	0	**27**	0	24	97	3	0	**124**	0	**212**
9:15PM	2	4	5	0	**11**	0	3	41	5	0	**49**	0	4	4	16	0	**24**	0	19	67	3	0	**89**	0	**173**
9:30PM	5	3	4	0	**12**	0	3	47	3	0	**53**	0	1	3	9	0	**13**	0	18	51	4	0	**73**	0	**151**
9:45PM	1	4	2	0	**7**	0	5	34	3	0	**42**	0	8	2	9	0	**19**	0	10	69	2	0	**81**	0	**149**
Hourly Total	11	14	13	0	**38**	1	12	171	14	0	**197**	0	17	12	54	0	**83**	0	71	284	12	0	**367**	0	**685**
10:00PM	0	2	2	0	**4**	0	1	30	1	0	**32**	0	4	2	5	0	**11**	0	15	57	3	0	**75**	0	**122**
10:15PM	0	0	0	0	**0**	0	3	19	4	0	**26**	0	1	2	6	0	**9**	0	7	66	1	0	**74**	0	**109**
10:30PM	1	0	1	0	**2**	0	1	22	2	0	**25**	0	0	1	9	0	**10**	2	15	45	0	0	**60**	2	**97**
10:45PM	1	0	0	0	**1**	1	0	15	2	0	**17**	0	0	0	10	0	**10**	0	6	43	1	0	**50**	0	**78**
Hourly Total	2	2	3	0	**7**	1	5	86	9	0	**100**	0	5	5	30	0	**40**	2	43	211	5	0	**259**	2	**406**
11:00PM	1	0	0	0	**1**	0	0	28	3	0	**31**	0	3	1	2	0	**6**	0	2	40	2	0	**44**	0	**82**
11:15PM	1	0	1	0	**2**	1	0	21	1	0	**22**	0	3	1	3	0	**7**	1	5	42	2	0	**49**	0	**80**
11:30PM	0	1	0	0	**1**	0	0	8	2	0	**10**	0	2	0	3	0	**5**	0	6	23	2	0	**31**	0	**47**
11:45PM	0	0	0	0	**0**	0	1	15	1	0	**17**	0	2	1	3	0	**6**	0	6	29	1	0	**36**	0	**59**
Hourly Total	2	1	1	0	**4**	1	1	72	7	0	**80**	0	10	3	11	0	**24**	1	19	134	7	0	**160**	0	**268**
Total	450	440	489	1	**1380**	24	401	10762	791	0	**11954**	12	1026	476	2044	0	**3546**	11	1875	10551	544	1	**12971**	6	**29851**
% Approach	32.6%	31.9%	35.4%	0.1%	**-**	-	3.4%	90.0%	6.6%	0%	**-**	-	28.9%	13.4%	57.6%	0%	**-**	-	14.5%	81.3%	4.2%	0%	**-**	-	-
% Total	1.5%	1.5%	1.6%	0%	**4.6%**	-	1.3%	36.1%	2.6%	0%	**40.0%**	-	3.4%	1.6%	6.8%	0%	**11.9%**	-	6.3%	35.3%	1.8%	0%	**43.5%**	-	-
Motorcycles	0	2	4	0	**6**	-	2	15	3	0	**20**	-	1	5	4	0	**10**	-	5	20	0	0	**25**	-	61
% Motorcycles	0%	0.5%	0.8%	0%	**0.4%**	-	0.5%	0.1%	0.4%	0%	**0.2%**	-	0.1%	1.1%	0.2%	0%	**0.3%**	-	0.3%	0.2%	0%	0%	**0.2%**	-	0.2%
Lights	435	414	464	1	**1314**	-	382	10114	699	0	**11195**	-	931	458	1958	0	**3347**	-	1807	9947	528	1	**12283**	-	28139
% Lights	96.7%	94.1%	94.9%	100%	**95.2%**	-	95.3%	94.0%	88.4%	0%	**93.7%**	-	90.7%	96.2%	95.8%	0%	**94.4%**	-	96.4%	94.3%	97.1%	100%	**94.7%**	-	94.3%
Single-Unit Trucks	5	20	10	0	**35**	-	11	340	74	0	**425**	-	69	7	64	0	**140**	-	30	322	11	0	**363**	-	963
% Single-Unit Trucks	1.1%	4.5%	2.0%	0%	**2.5%**	-	2.7%	3.2%	9.4%	0%	**3.6%**	-	6.7%	1.5%	3.1%	0%	**3.9%**	-	1.6%	3.1%	2.0%	0%	**2.8%**	-	3.2%
Articulated Trucks	9	3	7	0	**19**	-	4	261	13	0	**278**	-	23	2	17	0	**42**	-	28	243	5	0	**276**	-	615
% Articulated Trucks	2.0%	0.7%	1.4%	0%	**1.4%**	-	1.0%	2.4%	1.6%	0%	**2.3%**	-	2.2%	0.4%	0.8%	0%	**1.2%**	-	1.5%	2.3%	0.9%	0%	**2.1%**	-	2.1%
Buses	0	1	4	0	**5**	-	1	31	2	0	**34**	-	2	4	1	0	**7**	-	3	19	0	0	**22**	-	68
% Buses	0%	0.2%	0.8%	0%	**0.4%**	-	0.2%	0.3%	0.3%	0%	**0.3%**	-	0.2%	0.8%	0%	0%	**0.2%**	-	0.2%	0.2%	0%	0%	**0.2%**	-	0.2%
Bicycles on Road	1	0	0	0	**1**	-	1	1	0	0	**2**	-	0	0	0	0	**0**	-	2	0	0	0	**2**	-	5
% Bicycles on Road	0.2%	0%	0%	0%	**0.1%**	-	0.2%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0.1%	0%	0%	0%	**0%**	-	0%
Pedestrians	-	-	-	-	-	15	-	-	-	-	-	12	-	-	-	-	-	11	-	-	-	-	-	5	
% Pedestrians	-	-	-	-	-	62.5%	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	83.3%	-
Bicycles on Crosswalk	-	-	-	-	-	9	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	
% Bicycles on Crosswalk	-	-	-	-	-	37.5%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	16.7%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

SR531mp8.12_59th_Ave_NE_2019-0710 - TMC
Wed Jul 10, 2019
Full Length (12 AM-12 AM (+1))
All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 676656, Location: 48.152048, -122.150767, Site Code: 53100812_0719

WASHINGTON STATE DEPT. OF TRANSPORTATION
Northwest Region - Traffic Studies

Provided by: Washington State DOT
15700 Dayton Ave North, MS-120, P.O. Box 330310,
Seattle, WA, 98133, US

Wed Jul 10, 2019
24 h TMC

61°F Drizzle

Lat: 48.152048 N
Long: 122.150767 W

Peak Hour Factor

Scope	Time	Count	PHF
▶ AM	Wed Jul 10, 2019 7:45 AM	1,403	0.897
▶ Midday	Wed Jul 10, 2019 11:00 AM	1,766	0.964
▶ PM	Wed Jul 10, 2019 4:00 PM	1,929	0.919

SR531mp8.12_59th_Ave_NE_2019-0710 - TMC
Wed Jul 10, 2019
Full Length (12 AM-12 AM (+1))
All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 676656, Location: 48.152048, -122.150767, Site Code: 53100812_0719

WASHINGTON STATE DEPT. OF TRANSPORTATION
Northwest Region - Traffic Studies

Provided by: Washington State DOT
15700 Dayton Ave North, MS-120, P.O. Box 330310,
Seattle, WA, 98133, US

Leg	59th Ave NE						SR 531 (172nd St NE)						59th Ave NE						SR 531 (172nd St NE)						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2019-07-10 12:00AM	4	0	0	0	**4**	0	0	9	0	0	**9**	0	0	0	0	0	**0**	0	0	26	2	0	**28**	0	**41**
12:15AM	4	0	0	0	**4**	0	0	12	0	0	**12**	0	0	0	0	0	**0**	0	0	25	1	0	**26**	0	**42**
12:30AM	2	0	0	0	**2**	0	0	5	0	0	**5**	0	0	0	0	0	**0**	0	0	23	1	0	**24**	0	**31**
12:45AM	2	0	1	0	**3**	0	0	9	0	0	**9**	0	0	0	0	0	**0**	0	0	13	2	0	**15**	0	**27**
Hourly Total	12	0	1	0	**13**	0	0	35	0	0	**35**	0	0	0	0	0	**0**	0	0	87	6	0	**93**	0	**141**
1:00AM	2	0	0	0	**2**	0	0	10	1	0	**11**	0	0	0	0	0	**0**	0	0	24	0	0	**24**	0	**37**
1:15AM	1	0	0	0	**1**	0	0	12	0	0	**12**	0	0	0	0	0	**0**	0	1	15	1	0	**17**	0	**30**
1:30AM	2	0	0	0	**2**	0	0	5	0	0	**5**	0	0	0	2	0	**2**	0	1	5	0	0	**6**	0	**15**
1:45AM	1	0	0	0	**1**	0	0	5	0	0	**5**	0	0	0	0	0	**0**	0	0	10	1	0	**11**	0	**17**
Hourly Total	6	0	0	0	**6**	0	0	32	1	0	**33**	0	0	0	2	0	**2**	0	2	54	2	0	**58**	0	**99**
2:00AM	1	0	0	0	**1**	0	0	6	1	0	**7**	0	0	0	2	0	**2**	0	0	20	1	0	**21**	0	**31**
2:15AM	3	0	0	0	**3**	0	0	9	1	0	**10**	0	0	0	1	0	**1**	0	0	14	2	0	**16**	0	**30**
2:30AM	2	0	0	0	**2**	0	0	5	0	1	**6**	0	0	0	1	0	**1**	0	0	4	0	0	**4**	0	**13**
2:45AM	5	0	2	0	**7**	0	2	12	0	0	**14**	0	0	0	0	0	**0**	0	1	10	2	0	**13**	0	**34**
Hourly Total	11	0	2	0	**13**	0	2	32	2	1	**37**	0	0	0	4	0	**4**	0	1	48	5	0	**54**	0	**108**
3:00AM	5	0	3	0	**8**	0	2	24	0	0	**26**	0	0	0	1	0	**1**	0	2	9	3	0	**14**	0	**49**
3:15AM	1	0	1	0	**2**	0	0	26	0	0	**26**	0	1	0	0	0	**1**	0	0	14	3	0	**17**	0	**46**
3:30AM	1	0	0	0	**1**	0	1	16	0	0	**17**	0	0	0	1	0	**1**	0	0	17	6	0	**23**	0	**42**
3:45AM	1	0	0	0	**1**	0	3	39	0	0	**42**	0	0	0	0	0	**0**	0	1	14	18	0	**33**	0	**76**
Hourly Total	8	0	4	0	**12**	0	6	105	0	0	**111**	0	1	0	2	0	**3**	0	3	54	30	0	**87**	0	**213**
4:00AM	5	0	0	0	**5**	0	1	57	0	0	**58**	0	0	0	1	0	**1**	0	3	13	7	0	**23**	0	**87**
4:15AM	4	0	0	0	**4**	0	1	69	1	0	**71**	0	0	0	0	0	**0**	0	3	9	21	0	**33**	0	**108**
4:30AM	1	0	0	0	**1**	0	8	84	0	0	**92**	0	0	0	3	0	**3**	0	1	18	24	0	**43**	0	**139**
4:45AM	8	0	0	0	**8**	0	10	93	5	0	**108**	0	1	0	1	0	**2**	0	3	25	48	0	**76**	0	**194**
Hourly Total	18	0	0	0	**18**	0	20	303	6	0	**329**	0	1	0	5	0	**6**	0	10	65	100	0	**175**	0	**528**
5:00AM	6	0	1	0	**7**	0	3	81	9	0	**93**	0	2	0	2	0	**4**	0	11	11	34	0	**56**	0	**160**
5:15AM	10	0	2	0	**12**	0	6	95	14	0	**115**	0	1	0	2	0	**3**	0	16	25	49	0	**90**	0	**220**
5:30AM	18	0	0	0	**18**	0	10	111	11	0	**132**	0	5	1	3	0	**9**	0	17	48	82	0	**147**	0	**306**
5:45AM	12	0	0	0	**12**	0	23	117	11	0	**151**	0	6	0	13	0	**19**	0	12	66	116	0	**194**	0	**376**
Hourly Total	46	0	3	0	**49**	0	42	404	45	0	**491**	0	14	1	20	0	**35**	0	56	150	281	0	**487**	0	**1062**
6:00AM	22	0	3	0	**25**	0	10	116	8	0	**134**	0	5	0	8	0	**13**	0	16	56	48	0	**120**	0	**292**
6:15AM	18	0	2	0	**20**	0	8	114	9	0	**131**	0	6	1	18	0	**25**	0	13	64	45	0	**122**	0	**298**
6:30AM	15	0	1	0	**16**	0	14	115	5	0	**134**	0	2	1	9	0	**12**	0	4	82	45	0	**131**	0	**293**
6:45AM	27	0	0	0	**27**	0	25	142	14	0	**181**	0	6	1	13	0	**20**	0	7	68	92	0	**167**	0	**395**
Hourly Total	82	0	6	0	**88**	0	57	487	36	0	**580**	0	19	3	48	0	**70**	0	40	270	230	0	**540**	0	**1278**
7:00AM	24	0	2	0	**26**	0	5	110	16	0	**131**	0	3	0	16	0	**19**	0	6	77	59	0	**142**	0	**318**
7:15AM	35	0	0	0	**35**	0	7	141	10	0	**158**	0	6	0	13	0	**19**	0	6	66	53	0	**125**	0	**337**
7:30AM	40	3	2	0	**45**	0	12	114	7	0	**133**	0	2	0	13	0	**15**	0	6	80	64	0	**150**	0	**343**
7:45AM	42	0	5	0	**47**	0	17	131	5	0	**153**	0	2	0	8	0	**10**	0	9	71	101	0	**181**	0	**391**
Hourly Total	141	3	9	0	**153**	0	41	496	38	0	**575**	0	13	0	50	0	**63**	0	27	294	277	0	**598**	0	**1389**
8:00AM	35	0	3	0	**38**	0	9	121	3	0	**133**	0	5	0	8	0	**13**	0	4	79	63	0	**146**	0	**330**
8:15AM	36	0	4	0	**40**	0	13	155	8	0	**176**	0	1	0	8	0	**9**	0	3	56	50	0	**109**	0	**334**
8:30AM	43	0	3	0	**46**	0	8	127	4	0	**139**	0	4	1	13	0	**18**	0	3	82	60	0	**145**	0	**348**
8:45AM	47	0	5	0	**52**	0	9	139	5	0	**153**	0	5	1	14	0	**20**	0	4	97	52	0	**153**	0	**378**
Hourly Total	161	0	15	0	**176**	0	39	542	20	0	**601**	0	15	2	43	0	**60**	0	14	314	225	0	**553**	0	**1390**
9:00AM	42	0	5	0	**47**	0	4	120	5	0	**129**	0	5	0	9	0	**14**	0	2	80	52	0	**134**	0	**324**
9:15AM	37	1	5	0	**43**	0	7	130	5	0	**142**	0	2	0	8	0	**10**	0	3	72	46	0	**121**	0	**316**
9:30AM	49	1	3	0	**53**	0	5	129	4	0	**138**	0	1	2	8	0	**11**	0	8	70	45	0	**123**	0	**325**
9:45AM	47	2	1	0	**50**	0	7	113	2	0	**122**	0	1	2	10	0	**13**	0	7	93	41	0	**141**	0	**326**
Hourly Total	175	4	14	0	**193**	0	23	492	16	0	**531**	0	9	4	35	0	**48**	0	20	315	184	0	**519**	0	**1291**
10:00AM	48	0	4	0	**52**	0	3	129	1	0	**133**	0	2	1	6	0	**9**	0	1	76	38	0	**115**	0	**309**
10:15AM	56	1	4	0	**61**	0	5	152	3	0	**160**	0	1	0	5	0	**6**	0	4	106	46	0	**156**	0	**383**
10:30AM	38	0	4	0	**42**	0	6	130	2	0	**138**	0	2	0	8	0	**10**	0	6	120	35	0	**161**	0	**351**
10:45AM	45	3	4	0	**52**	0	3	128	9	0	**140**	0	1	3	11	0	**15**	0	5	103	41	0	**149**	0	**356**
Hourly Total	187	4	16	0	**207**	0	17	539	15	0	**571**	0	6	4	30	0	**40**	0	16	405	160	0	**581**	0	**1399**
11:00AM	87	2	7	0	**96**	0	3	131	16	1	**151**	0	5	0	14	0	**19**	0	6	123	50	0	**179**	0	**445**
11:15AM	67	0	8	0	**75**	0	7	124	4	0	**135**	0	9	2	21	0	**32**	0	1	110	79	0	**190**	0	**432**
11:30AM	88	0	0	0	**88**	0	6	153	6	0	**165**	0	6	0	10	0	**16**	0	7	127	55	0	**189**	0	**458**
11:45AM	50	1	2	0	**53**	0	12	141	6	0	**159**	0	2	0	7	0	**9**	1	8	126	76	0	**210**	0	**431**
Hourly Total	292	3	17	0	**312**	0	28	549	32	1	**610**	0	22	2	52	0	**76**	1	22	486	260	0	**768**	0	**1766**
12:00PM	104	1	8	0	**113**	1	5	122	8	0	**135**	0	4	0	19	0	**23**	0	4	115	50	0	**169**	0	**440**
12:15PM	71	1	6	0	**78**	0	6	124	5	0	**135**	0	3	2	11	0	**16**	0	5	133	58	0	**196**	0	**425**
12:30PM	64	1	9	0	**74**	0	2	136	12	0	**150**	0	4	0	16	0	**20**	0	5	125	53	0	**183**	1	**427**
12:45PM	50	0	2	0	**52**	0	7	119	5	0	**131**	0	6	4	13	0	**23**	0	10	149	65	0	**224**	1	**430**
Hourly Total	289	3	25	0	**317**	1	20	501	30	0	**551**	0	17	6	59	0	**82**	0	24	522	226	0	**772**	2	**1722**
1:00PM	60	1	4	0	**65**	0	5	154	2	0	**161**	0	5	0	11	0	**16**	0	4	143	58	0	**205**	0	**447**
1:15PM	47	0	7	0	**54**	0	9	133	2	0	**144**	0	2	3	18	0	**23**	0	9	137	48	0	**194**	0	**415**
1:30PM	64	0	9	0	**73**	0	6	128	2	0	**136**	0	5	0	15	0	**20**	0	4	144	37	0	**185**	0	**414**
1:45PM	54	1	3	0	**58**	0	4	117	12	0	**133**	0	11	0	11	0	**22**	0	3	148	50	0	**201**	0	**414**
Hourly Total	225	2	23	0	**250**	0	24	532	18	0	**574**	0	23	3	55	0	**81**	0	20	572	193	0	**785**	0	**1690**

Leg	59th Ave NE						SR 531 (172nd St NE)						59th Ave NE						SR 531 (172nd St NE)						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2:00PM	52	0	6	0	**58**	0	7	143	1	0	**151**	0	10	0	19	0	**29**	0	6	152	44	0	**202**	0	**440**
2:15PM	80	0	6	0	**86**	0	4	108	1	0	**113**	0	4	0	6	0	**10**	0	3	166	44	0	**213**	0	**422**
2:30PM	108	0	15	0	**123**	0	8	129	4	0	**141**	0	11	0	8	0	**19**	0	4	149	35	0	**188**	0	**471**
2:45PM	69	0	8	0	**77**	0	5	140	2	0	**147**	0	4	0	9	0	**13**	0	5	151	47	0	**203**	1	**440**
Hourly Total	309	0	35	0	**344**	0	24	520	8	0	**552**	0	29	0	42	0	**71**	0	18	618	170	0	**806**	1	**1773**
3:00PM	55	2	8	0	**65**	0	3	109	10	0	**122**	0	10	0	13	0	**23**	0	6	151	49	0	**206**	0	**416**
3:15PM	60	1	7	0	**68**	0	3	153	3	0	**159**	0	8	1	10	0	**19**	0	5	158	29	0	**192**	1	**438**
3:30PM	93	2	20	0	**115**	0	4	126	2	0	**132**	0	8	0	11	0	**19**	0	3	173	33	0	**209**	0	**475**
3:45PM	67	0	13	0	**80**	0	5	149	2	0	**156**	0	4	1	10	0	**15**	0	3	153	39	0	**195**	0	**446**
Hourly Total	275	5	48	0	**328**	0	15	537	17	0	**569**	0	30	2	44	0	**76**	0	17	635	150	0	**802**	1	**1775**
4:00PM	122	2	21	0	**145**	0	10	125	1	0	**136**	0	4	1	12	0	**17**	0	4	168	42	0	**214**	0	**512**
4:15PM	89	0	17	0	**106**	0	7	118	3	0	**128**	0	3	0	6	0	**9**	0	2	160	38	0	**200**	0	**443**
4:30PM	143	2	34	0	**179**	0	5	121	3	0	**129**	0	3	0	7	0	**10**	0	1	166	40	0	**207**	0	**525**
4:45PM	68	0	9	0	**77**	0	7	133	3	0	**143**	0	2	0	5	0	**7**	0	5	162	55	0	**222**	0	**449**
Hourly Total	422	4	81	0	**507**	0	29	497	10	0	**536**	0	12	1	30	0	**43**	0	12	656	175	0	**843**	0	**1929**
5:00PM	103	1	18	0	**122**	0	3	115	5	0	**123**	0	8	1	5	0	**14**	0	1	182	34	0	**217**	0	**476**
5:15PM	57	0	11	0	**68**	0	4	139	0	0	**143**	0	4	0	15	0	**19**	0	2	193	28	0	**223**	0	**453**
5:30PM	55	0	9	0	**64**	0	6	112	2	0	**120**	0	3	0	7	0	**10**	0	6	182	26	0	**214**	0	**408**
5:45PM	52	0	5	0	**57**	0	7	125	2	0	**134**	0	5	0	6	0	**11**	0	2	184	20	0	**206**	0	**408**
Hourly Total	267	1	43	0	**311**	0	20	491	9	0	**520**	0	20	1	33	0	**54**	0	11	741	108	0	**860**	0	**1745**
6:00PM	43	1	5	0	**49**	0	4	134	0	0	**138**	0	1	0	11	0	**12**	0	9	170	24	0	**203**	0	**402**
6:15PM	41	0	3	0	**44**	0	3	117	0	0	**120**	0	2	0	11	0	**13**	0	7	157	15	0	**179**	0	**356**
6:30PM	42	0	3	0	**45**	0	3	105	1	0	**109**	0	4	0	4	0	**8**	0	1	189	20	0	**210**	0	**372**
6:45PM	29	0	8	0	**37**	0	3	106	3	0	**112**	0	8	2	6	0	**16**	0	3	161	14	0	**178**	0	**343**
Hourly Total	155	1	19	0	**175**	0	13	462	4	0	**479**	0	15	2	32	0	**49**	0	20	677	73	0	**770**	0	**1473**
7:00PM	26	0	3	0	**29**	0	1	82	0	0	**83**	0	2	0	5	0	**7**	0	1	117	11	0	**129**	0	**248**
7:15PM	20	1	0	0	**21**	0	1	95	0	0	**96**	0	3	0	0	0	**3**	0	1	135	12	0	**148**	0	**268**
7:30PM	35	0	4	0	**39**	0	2	62	0	0	**64**	0	0	0	1	0	**1**	0	1	126	17	0	**144**	0	**248**
7:45PM	14	0	4	0	**18**	0	0	76	0	0	**76**	0	0	0	2	0	**2**	0	1	115	9	0	**125**	0	**221**
Hourly Total	95	1	11	0	**107**	0	4	315	0	0	**319**	0	5	0	8	0	**13**	0	4	493	49	0	**546**	0	**985**
8:00PM	21	0	1	0	**22**	0	1	72	0	0	**73**	0	0	0	2	0	**2**	0	3	133	9	0	**145**	0	**242**
8:15PM	17	0	1	0	**18**	0	1	57	0	0	**58**	0	1	0	1	0	**2**	0	0	114	9	0	**123**	0	**201**
8:30PM	9	0	4	0	**13**	0	1	55	0	0	**56**	0	0	0	1	0	**1**	0	1	115	9	0	**125**	0	**195**
8:45PM	10	0	2	0	**12**	0	0	51	0	0	**51**	0	0	0	2	0	**2**	0	0	86	11	0	**97**	0	**162**
Hourly Total	57	0	8	0	**65**	0	3	235	0	0	**238**	0	1	0	6	0	**7**	0	4	448	38	0	**490**	0	**800**
9:00PM	4	0	0	0	**4**	0	0	47	1	0	**48**	0	1	0	0	0	**1**	0	0	96	4	0	**100**	0	**153**
9:15PM	8	0	1	0	**9**	0	0	48	0	0	**48**	0	1	0	1	0	**2**	0	0	81	5	0	**86**	0	**145**
9:30PM	5	0	1	0	**6**	0	3	47	0	0	**50**	0	0	0	0	0	**0**	0	0	57	3	0	**60**	0	**116**
9:45PM	6	0	2	0	**8**	0	0	35	0	0	**35**	0	2	0	5	0	**7**	0	2	68	8	0	**78**	0	**128**
Hourly Total	23	0	4	0	**27**	0	3	177	1	0	**181**	0	4	0	6	0	**10**	0	2	302	20	0	**324**	0	**542**
10:00PM	3	0	0	0	**3**	0	0	26	0	0	**26**	0	1	0	1	0	**2**	0	2	63	4	0	**69**	0	**100**
10:15PM	5	0	0	0	**5**	0	0	23	0	0	**23**	0	0	0	0	0	**0**	0	0	61	1	0	**62**	0	**90**
10:30PM	6	0	0	0	**6**	0	0	19	0	0	**19**	0	0	0	0	0	**0**	0	0	42	6	0	**48**	0	**73**
10:45PM	2	0	2	0	**4**	1	0	14	0	0	**14**	0	0	0	0	0	**0**	0	0	46	1	0	**47**	0	**65**
Hourly Total	16	0	2	0	**18**	1	0	82	0	0	**82**	0	1	0	1	0	**2**	0	2	212	12	0	**226**	0	**328**
11:00PM	8	0	1	0	**9**	0	0	22	0	0	**22**	0	0	0	4	0	**4**	0	0	37	3	0	**40**	0	**75**
11:15PM	6	0	0	0	**6**	0	0	18	1	0	**19**	0	0	0	1	0	**1**	0	0	44	3	0	**47**	0	**73**
11:30PM	1	0	0	0	**1**	0	0	6	0	0	**6**	0	0	0	0	0	**0**	0	0	23	1	0	**24**	0	**31**
11:45PM	7	0	0	0	**7**	0	0	12	0	0	**12**	0	0	0	0	0	**0**	0	0	27	2	0	**29**	0	**48**
Hourly Total	22	0	1	0	**23**	0	0	58	1	0	**59**	0	0	0	5	0	**5**	0	0	131	9	0	**140**	0	**227**
Total	3294	31	387	0	**3712**	2	430	8423	309	2	**9164**	0	257	31	612	0	**900**	1	345	8549	2983	0	**11877**	4	**25653**
% Approach	88.7%	0.8%	10.4%	0%	**-**	-	4.7%	91.9%	3.4%	0%	**-**	-	28.6%	3.4%	68.0%	0%	**-**	-	2.9%	72.0%	25.1%	0%	**-**	-	**-**
% Total	12.8%	0.1%	1.5%	0%	**14.5%**	-	1.7%	32.8%	1.2%	0%	**35.7%**	-	1.0%	0.1%	2.4%	0%	**3.5%**	-	1.3%	33.3%	11.6%	0%	**46.3%**	-	**-**
Motorcycles	1	0	1	0	**2**	-	1	15	0	0	**16**	-	0	0	1	0	**1**	-	2	20	6	0	**28**	-	47
% Motorcycles	0%	0%	0.3%	0%	**0.1%**	-	0.2%	0.2%	0%	0%	**0.2%**	-	0%	0%	0.2%	0%	**0.1%**	-	0.6%	0.2%	0.2%	0%	**0.2%**	-	0.2%
Lights	2936	25	362	0	**3323**	-	400	8090	286	2	**8778**	-	239	27	521	0	**787**	-	266	8216	2669	0	**11151**	-	24039
% Lights	89.1%	80.6%	93.5%	0%	**89.5%**	-	93.0%	96.0%	92.6%	100%	**95.8%**	-	93.0%	87.1%	85.1%	0%	**87.4%**	-	77.1%	96.1%	89.5%	0%	**93.9%**	-	93.7%
Single-Unit Trucks	205	5	17	0	**227**	-	20	185	17	0	**222**	-	11	3	62	0	**76**	-	55	184	176	0	**415**	-	940
% Single-Unit Trucks	6.2%	16.1%	4.4%	0%	**6.1%**	-	4.7%	2.2%	5.5%	0%	**2.4%**	-	4.3%	9.7%	10.1%	0%	**8.4%**	-	15.9%	2.2%	5.9%	0%	**3.5%**	-	3.7%
Articulated Trucks	132	1	3	0	**136**	-	4	124	6	0	**134**	-	5	1	22	0	**28**	-	19	122	123	0	**264**	-	562
% Articulated Trucks	4.0%	3.2%	0.8%	0%	**3.7%**	-	0.9%	1.5%	1.9%	0%	**1.5%**	-	1.9%	3.2%	3.6%	0%	**3.1%**	-	5.5%	1.4%	4.1%	0%	**2.2%**	-	2.2%
Buses	19	0	4	0	**23**	-	5	8	0	0	**13**	-	2	0	6	0	**8**	-	3	6	9	0	**18**	-	62
% Buses	0.6%	0%	1.0%	0%	**0.6%**	-	1.2%	0.1%	0%	0%	**0.1%**	-	0.8%	0%	1.0%	0%	**0.9%**	-	0.9%	0.1%	0.3%	0%	**0.2%**	-	0.2%
Bicycles on Road	1	0	0	0	**1**	-	0	1	0	0	**1**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	3
% Bicycles on Road	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%
Pedestrians	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	3	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	0%	-	-	-	-	-	75.0%	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	1	
% Bicycles on Crosswalk	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	25.0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

SR531mp8.59_67th_Ave_NE_2019-0710 - TMC
Wed Jul 10, 2019
Full Length (12 AM-12 AM (+1))
All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Trains, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 676658, Location: 48.151907, -122.14059, Site Code: 53100859-0719

WASHINGTON STATE DEPT. OF TRANSPORTATION
Northwest Region - Traffic Studies

Provided by: Washington State DOT
15700 Dayton Ave North, MS-120, P.O. Box 330310,
Seattle, WA, 98133, US

Wed Jul 10, 2019
24 h TMC

61°F Drizzle

Lat: 48.151907 N
Long: 122.140590 W

Peak Hour Factor

Scope	Time	Count	PHF
▶ AM	Wed Jul 10, 2019 6:45 AM	1,305	0.922
▶ Midday	Wed Jul 10, 2019 11:45 AM	1,468	0.936
▶ PM	Wed Jul 10, 2019 4:30 PM	1,938	0.975

SR531mp8.59_67th_Ave_NE_2019-0710 - TMC
Wed Jul 10, 2019
Full Length (12 AM-12 AM (+1))
All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Trains, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 676658, Location: 48.151907, -122.14059, Site Code: 53100859-0719

WASHINGTON STATE DEPT. OF TRANSPORTATION
Northwest Region - Traffic Studies

Provided by: Washington State DOT
15700 Dayton Ave North, MS-120, P.O. Box 330310,
Seattle, WA, 98133, US

Leg	67th Ave NE						SR 531 (172nd St NE)						67th Ave NE					
Direction	Southbound						Westbound						Northbound					
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*
2019-07-10 12:00AM	3	4	1	0	**8**	0	1	6	1	0	**8**	0	1	1	1	0	**3**	0
12:15AM	1	1	1	0	**3**	0	1	9	1	0	**11**	0	1	2	1	0	**4**	0
12:30AM	2	1	0	0	**3**	0	1	2	0	0	**3**	0	2	1	1	0	**4**	0
12:45AM	1	1	0	0	**2**	0	0	5	1	0	**6**	0	4	0	2	0	**6**	0
Hourly Total	7	7	2	0	**16**	0	3	22	3	0	**28**	0	8	4	5	0	**17**	0
1:00AM	5	2	0	0	**7**	0	1	6	0	0	**7**	0	1	3	0	0	**4**	0
1:15AM	4	1	0	0	**5**	0	0	7	0	0	**7**	0	0	2	0	0	**2**	0
1:30AM	1	0	1	0	**2**	0	0	2	1	0	**3**	0	0	0	2	0	**2**	0
1:45AM	4	0	1	0	**5**	0	1	1	1	0	**3**	0	1	0	0	0	**1**	0
Hourly Total	14	3	2	0	**19**	0	2	16	2	0	**20**	0	2	5	2	0	**9**	0
2:00AM	3	2	3	0	**8**	0	1	5	1	0	**7**	0	0	2	0	0	**2**	0
2:15AM	4	2	2	0	**8**	0	1	4	1	0	**6**	0	2	2	0	0	**4**	0
2:30AM	6	3	0	0	**9**	0	0	3	0	0	**3**	0	1	0	0	0	**1**	0
2:45AM	3	2	0	0	**5**	0	0	8	0	0	**8**	0	0	2	1	0	**3**	0
Hourly Total	16	9	5	0	**30**	0	2	20	2	0	**24**	0	3	6	1	0	**10**	0
3:00AM	5	2	1	0	**8**	0	0	16	0	0	**16**	0	0	2	1	0	**3**	0
3:15AM	9	1	1	0	**11**	0	2	18	2	0	**22**	0	1	4	3	0	**8**	0
3:30AM	7	2	0	0	**9**	0	1	10	2	0	**13**	0	0	7	0	0	**7**	0
3:45AM	18	1	0	0	**19**	0	0	19	1	0	**20**	0	1	1	3	0	**5**	0
Hourly Total	39	6	2	0	**47**	0	3	63	5	0	**71**	0	2	14	7	0	**23**	0
4:00AM	14	8	1	0	**23**	0	1	40	1	0	**42**	0	0	2	6	0	**8**	0
4:15AM	21	4	4	0	**29**	0	0	50	2	0	**52**	0	0	7	3	0	**10**	0
4:30AM	28	7	0	0	**35**	0	6	54	3	0	**63**	0	0	7	7	0	**14**	0
4:45AM	22	5	0	0	**27**	0	6	75	6	0	**87**	0	1	16	7	0	**24**	0
Hourly Total	85	24	5	0	**114**	0	13	219	12	0	**244**	0	1	32	23	0	**56**	0
5:00AM	29	10	2	0	**41**	0	4	67	5	0	**76**	1	0	9	7	0	**16**	0
5:15AM	28	9	1	0	**38**	0	8	67	3	0	**78**	0	3	13	15	0	**31**	0
5:30AM	41	10	2	0	**53**	0	9	79	6	0	**94**	0	8	13	12	0	**33**	0
5:45AM	18	10	1	0	**29**	0	26	117	11	0	**154**	0	3	35	19	0	**57**	0
Hourly Total	116	39	6	0	**161**	0	47	330	25	0	**402**	1	14	70	53	0	**137**	0
6:00AM	35	13	9	0	**57**	0	23	73	4	0	**100**	0	1	19	17	0	**37**	0
6:15AM	31	17	2	0	**50**	0	26	90	3	0	**119**	0	2	24	14	0	**40**	0
6:30AM	40	35	2	0	**77**	0	21	76	11	0	**108**	0	5	32	10	0	**47**	0
6:45AM	44	24	5	0	**73**	0	28	116	12	0	**156**	0	3	39	17	0	**59**	0
Hourly Total	150	89	18	0	**257**	0	98	355	30	0	**483**	0	11	114	58	0	**183**	0
7:00AM	44	25	11	0	**80**	0	13	80	9	0	**102**	0	5	21	11	0	**37**	0
7:15AM	32	30	10	0	**72**	0	15	101	17	0	**133**	0	11	27	12	0	**50**	0
7:30AM	48	30	9	0	**87**	0	8	81	17	0	**106**	0	8	25	18	0	**51**	0
7:45AM	33	21	9	0	**63**	0	16	105	5	0	**126**	0	5	23	13	0	**41**	0
Hourly Total	157	106	39	0	**302**	0	52	367	48	0	**467**	0	29	96	54	0	**179**	0
8:00AM	31	19	8	0	**58**	0	7	76	9	0	**92**	0	3	25	10	0	**38**	0
8:15AM	41	19	9	0	**69**	0	5	132	11	0	**148**	0	5	30	12	0	**47**	0
8:30AM	34	21	5	0	**60**	0	11	81	5	0	**97**	1	10	19	19	0	**48**	0
8:45AM	46	26	6	0	**78**	0	10	99	13	0	**122**	0	4	16	10	0	**30**	0
Hourly Total	152	85	28	0	**265**	0	33	388	38	0	**459**	1	22	90	51	0	**163**	0
9:00AM	41	18	3	0	**62**	0	11	72	6	0	**89**	0	10	23	11	0	**44**	0
9:15AM	51	25	9	0	**85**	0	18	77	9	0	**104**	0	4	17	11	0	**32**	0
9:30AM	27	31	8	0	**66**	0	9	89	13	0	**111**	0	7	15	20	0	**42**	0
9:45AM	39	25	10	0	**74**	0	3	76	13	0	**92**	1	9	22	5	0	**36**	0
Hourly Total	158	99	30	0	**287**	0	41	314	41	0	**396**	1	30	77	47	0	**154**	0
10:00AM	34	10	4	0	**48**	0	6	89	17	0	**112**	0	7	17	13	0	**37**	0

Leg	67th Ave NE						SR 531 (172nd St NE)						67th Ave NE					
Direction	Southbound						Westbound						Northbound					
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*
10:15AM	49	27	6	0	**82**	0	9	88	11	0	**108**	0	8	13	12	0	**33**	0
10:30AM	40	16	15	0	**71**	0	12	92	10	0	**114**	0	5	17	14	0	**36**	0
10:45AM	43	21	6	0	**70**	0	10	84	15	0	**109**	0	13	26	20	0	**59**	0
Hourly Total	166	74	31	0	**271**	0	37	353	53	0	**443**	0	33	73	59	0	**165**	0
11:00AM	49	16	7	0	**72**	0	11	84	11	0	**106**	0	12	19	12	0	**43**	0
11:15AM	49	28	11	0	**88**	0	10	72	4	0	**86**	0	12	27	12	0	**51**	0
11:30AM	58	32	8	0	**98**	0	10	74	18	0	**102**	0	12	18	15	0	**45**	0
11:45AM	42	28	10	0	**80**	0	8	96	17	0	**121**	0	5	33	7	0	**45**	0
Hourly Total	198	104	36	0	**338**	0	39	326	50	0	**415**	0	41	97	46	0	**184**	0
12:00PM	45	24	8	0	**77**	0	9	89	7	0	**105**	1	10	25	10	0	**45**	0
12:15PM	54	30	7	0	**91**	0	8	63	5	0	**76**	0	11	22	17	0	**50**	0
12:30PM	44	34	10	0	**88**	0	7	90	11	0	**108**	0	11	24	16	0	**51**	0
12:45PM	40	19	10	0	**69**	0	6	70	6	0	**82**	1	11	23	16	0	**50**	0
Hourly Total	183	107	35	0	**325**	0	30	312	29	0	**371**	2	43	94	59	0	**196**	0
1:00PM	31	24	3	0	**58**	0	6	106	20	0	**132**	0	13	32	11	0	**56**	0
1:15PM	40	28	6	0	**74**	0	13	90	18	0	**121**	0	5	25	7	0	**37**	0
1:30PM	44	21	9	0	**74**	0	5	89	13	0	**107**	0	14	31	12	0	**57**	0
1:45PM	39	22	13	0	**74**	0	18	76	10	0	**104**	0	12	34	12	0	**58**	0
Hourly Total	154	95	31	0	**280**	0	42	361	61	0	**464**	0	44	122	42	0	**208**	0
2:00PM	35	21	12	0	**68**	0	18	84	15	0	**117**	0	15	33	10	0	**58**	0
2:15PM	29	17	8	0	**54**	0	14	82	12	0	**108**	2	16	31	7	0	**54**	0
2:30PM	53	47	10	0	**110**	0	8	67	12	0	**87**	0	13	35	19	0	**67**	0
2:45PM	42	37	13	0	**92**	0	8	69	8	0	**85**	0	14	31	12	0	**57**	0
Hourly Total	159	122	43	0	**324**	0	48	302	47	0	**397**	2	58	130	48	0	**236**	0
3:00PM	46	35	15	0	**96**	0	12	74	10	0	**96**	0	5	31	8	0	**44**	0
3:15PM	46	37	13	0	**96**	0	14	94	15	0	**123**	0	19	42	11	0	**72**	0
3:30PM	46	48	29	0	**123**	0	9	74	13	0	**96**	0	11	40	10	0	**61**	0
3:45PM	41	38	19	0	**98**	0	18	101	13	0	**132**	0	15	38	15	0	**68**	0
Hourly Total	179	158	76	0	**413**	0	53	343	51	0	**447**	0	50	151	44	0	**245**	0
4:00PM	48	35	33	0	**116**	0	14	79	16	0	**109**	1	22	53	12	0	**87**	0
4:15PM	38	38	17	0	**93**	0	13	59	15	0	**87**	1	16	56	11	0	**83**	0
4:30PM	36	56	37	0	**129**	0	13	70	13	0	**96**	0	17	50	13	0	**80**	0
4:45PM	31	40	14	0	**85**	0	14	88	10	0	**112**	1	29	35	16	0	**80**	0
Hourly Total	153	169	101	0	**423**	0	54	296	54	0	**404**	3	84	194	52	0	**330**	0
5:00PM	41	62	31	0	**134**	0	10	75	13	0	**98**	0	15	42	10	0	**67**	0
5:15PM	32	48	16	0	**96**	0	8	83	9	0	**100**	0	19	50	13	0	**82**	0
5:30PM	22	33	14	0	**69**	0	6	93	17	0	**116**	1	16	25	9	0	**50**	0
5:45PM	32	25	14	0	**71**	0	8	62	10	0	**80**	0	22	46	23	0	**91**	0
Hourly Total	127	168	75	0	**370**	0	32	313	49	0	**394**	1	72	163	55	0	**290**	0
6:00PM	35	25	14	0	**74**	0	10	83	17	0	**110**	0	13	43	12	0	**68**	0
6:15PM	30	28	6	0	**64**	0	2	73	6	0	**81**	0	18	31	14	0	**63**	0
6:30PM	31	25	7	0	**63**	0	7	61	8	0	**76**	1	16	31	11	0	**58**	0
6:45PM	25	23	5	0	**53**	0	19	80	6	0	**105**	0	19	26	8	0	**53**	0
Hourly Total	121	101	32	0	**254**	0	38	297	37	0	**372**	1	66	131	45	0	**242**	0
7:00PM	25	18	3	0	**46**	0	3	52	7	0	**62**	0	14	25	9	0	**48**	0
7:15PM	20	13	6	0	**39**	0	2	60	9	0	**71**	0	6	15	11	0	**32**	0
7:30PM	10	12	7	0	**29**	0	4	39	5	0	**48**	2	8	16	8	0	**32**	0
7:45PM	18	18	2	0	**38**	0	5	45	6	0	**56**	0	6	8	9	0	**23**	0
Hourly Total	73	61	18	0	**152**	0	14	196	27	0	**237**	2	34	64	37	0	**135**	0
8:00PM	20	10	4	0	**34**	0	3	43	6	0	**52**	0	9	13	8	0	**30**	0
8:15PM	23	18	6	0	**47**	0	2	33	3	0	**38**	2	13	17	5	0	**35**	0
8:30PM	18	11	2	0	**31**	0	2	27	5	0	**34**	0	2	9	4	0	**15**	0
8:45PM	18	14	3	0	**35**	0	2	25	5	0	**32**	0	9	13	7	0	**29**	0
Hourly Total	79	53	15	0	**147**	0	9	128	19	0	**156**	2	33	52	24	0	**109**	0
9:00PM	12	8	2	0	**22**	0	4	27	6	0	**37**	0	14	17	8	0	**39**	0
9:15PM	9	8	1	0	**18**	0	4	32	5	0	**41**	0	11	17	7	0	**35**	0
9:30PM	13	15	3	0	**31**	0	6	34	0	0	**40**	0	7	7	3	0	**17**	0
9:45PM	11	10	5	0	**26**	0	2	20	3	0	**25**	0	5	10	5	0	**20**	0
Hourly Total	45	41	11	0	**97**	0	16	113	14	0	**143**	0	37	51	23	0	**111**	0
10:00PM	10	6	2	0	**18**	0	2	8	4	0	**14**	0	2	7	4	0	**13**	0

Leg	67th Ave NE						SR 531 (172nd St NE)						67th Ave NE					
Direction	Southbound						Westbound						Northbound					
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*
10:15PM	6	3	1	0	**10**	0	0	13	2	0	**15**	0	4	8	3	0	**15**	0
10:30PM	3	7	1	0	**11**	0	1	13	6	0	**20**	0	2	5	2	0	**9**	0
10:45PM	6	5	0	0	**11**	0	2	7	1	0	**10**	0	4	2	1	0	**7**	0
Hourly Total	25	21	4	0	**50**	0	5	41	13	0	**59**	0	12	22	10	0	**44**	0
11:00PM	11	7	0	0	**18**	0	0	16	1	0	**17**	0	0	2	0	0	**2**	0
11:15PM	7	2	2	0	**11**	0	2	7	1	0	**10**	1	1	6	1	0	**8**	1
11:30PM	2	2	1	0	**5**	0	1	3	2	0	**6**	0	3	1	2	0	**6**	0
11:45PM	6	3	1	0	**10**	0	0	2	0	0	**2**	0	3	7	3	0	**13**	0
Hourly Total	26	14	4	0	**44**	0	3	28	4	0	**35**	1	7	16	6	0	**29**	1
Total	2582	1755	649	0	**4986**	0	714	5503	714	0	**6931**	17	736	1868	851	0	**3455**	1
% Approach	51.8%	35.2%	13.0%	0%	**-**	-	10.3%	79.4%	10.3%	0%	**-**	-	21.3%	54.1%	24.6%	0%	**-**	-
% Total	10.6%	7.2%	2.7%	0%	**20.4%**	-	2.9%	22.6%	2.9%	0%	**28.4%**	-	3.0%	7.7%	3.5%	0%	**14.2%**	-
Motorcycles	7	4	0	0	**11**	-	0	6	0	0	**6**	-	0	4	3	0	**7**	-
% Motorcycles	0.3%	0.2%	0%	0%	**0.2%**	-	0%	0.1%	0%	0%	**0.1%**	-	0%	0.2%	0.4%	0%	**0.2%**	-
Lights	2443	1702	579	0	**4724**	-	632	5332	699	0	**6663**	-	719	1808	822	0	**3349**	-
% Lights	94.6%	97.0%	89.2%	0%	**94.7%**	-	88.5%	96.9%	97.9%	0%	**96.1%**	-	97.7%	96.8%	96.6%	0%	**96.9%**	-
Single-Unit Trucks	72	38	56	0	**166**	-	63	109	12	0	**184**	-	14	44	13	0	**71**	-
% Single-Unit Trucks	2.8%	2.2%	8.6%	0%	**3.3%**	-	8.8%	2.0%	1.7%	0%	**2.7%**	-	1.9%	2.4%	1.5%	0%	**2.1%**	-
Articulated Trucks	59	8	12	0	**79**	-	16	47	1	0	**64**	-	1	7	8	0	**16**	-
% Articulated Trucks	2.3%	0.5%	1.8%	0%	**1.6%**	-	2.2%	0.9%	0.1%	0%	**0.9%**	-	0.1%	0.4%	0.9%	0%	**0.5%**	-
Buses	1	3	2	0	**6**	-	3	8	2	0	**13**	-	2	2	5	0	**9**	-
% Buses	0%	0.2%	0.3%	0%	**0.1%**	-	0.4%	0.1%	0.3%	0%	**0.2%**	-	0.3%	0.1%	0.6%	0%	**0.3%**	-
Trains	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-
% Trains	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-
Bicycles on Road	0	0	0	0	**0**	-	0	1	0	0	**1**	-	0	3	0	0	**3**	-
% Bicycles on Road	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0.2%	0%	0%	**0.1%**	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	10	-	-	-	-	-	1
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	58.8%	-	-	-	-	-	100%
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	7	-	-	-	-	-	0
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	41.2%	-	-	-	-	-	0%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

SR531mp8.59_67th_Ave_NE_2019-0710 - TMC
Wed Jul 10, 2019
Full Length (12 AM-12 AM (+1))
All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Trains, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 676658, Location: 48.151907, -122.14059, Site Code: 53100859-0719

WASHINGTON STATE DEPT. OF TRANSPORTATION
Northwest Region - Traffic Studies

Provided by: Washington State DOT
15700 Dayton Ave North, MS-120, P.O. Box 330310,
Seattle, WA, 98133, US

Leg	Railroad			SR 531 (172nd St NE)						Railroad			
Direction	Northeastbound			Eastbound						Southeastbound			
Time	L	App	Ped*	R	T	L	U	App	Ped*	R	App	Ped*	Int
2019-07-10 12:00AM	0	**0**	-	3	13	9	0	**25**	0	0	**0**	-	**44**
12:15AM	0	**0**	-	0	15	8	0	**23**	0	0	**0**	-	**41**
12:30AM	0	**0**	-	0	13	9	0	**22**	0	0	**0**	-	**32**
12:45AM	0	**0**	-	5	8	4	0	**17**	0	0	**0**	-	**31**
Hourly Total	0	**0**	-	8	49	30	0	**87**	0	0	**0**	-	**148**
1:00AM	0	**0**	-	4	15	3	0	**22**	0	0	**0**	-	**40**
1:15AM	0	**0**	-	0	8	9	0	**17**	0	0	**0**	-	**31**
1:30AM	0	**0**	-	1	3	0	0	**4**	0	0	**0**	-	**11**
1:45AM	0	**0**	-	1	3	4	0	**8**	0	0	**0**	-	**17**
Hourly Total	0	**0**	-	6	29	16	0	**51**	0	0	**0**	-	**99**
2:00AM	0	**0**	-	1	10	7	0	**18**	0	0	**0**	-	**35**
2:15AM	0	**0**	-	1	5	7	0	**13**	0	0	**0**	-	**31**
2:30AM	0	**0**	-	1	0	5	0	**6**	0	0	**0**	-	**19**
2:45AM	0	**0**	-	1	5	5	0	**11**	0	0	**0**	-	**27**
Hourly Total	0	**0**	-	4	20	24	0	**48**	0	0	**0**	-	**112**
3:00AM	0	**0**	-	2	5	5	0	**12**	0	0	**0**	-	**39**
3:15AM	0	**0**	-	2	6	5	0	**13**	0	0	**0**	-	**54**
3:30AM	0	**0**	-	3	6	7	0	**16**	0	0	**0**	-	**45**
3:45AM	0	**0**	-	1	6	4	0	**11**	0	0	**0**	-	**55**
Hourly Total	0	**0**	-	8	23	21	0	**52**	0	0	**0**	-	**193**
4:00AM	0	**0**	-	2	8	3	0	**13**	0	0	**0**	-	**86**
4:15AM	0	**0**	-	0	7	2	0	**9**	0	0	**0**	-	**100**
4:30AM	0	**0**	-	0	4	11	0	**15**	0	0	**0**	-	**127**
4:45AM	0	**0**	-	1	10	12	0	**23**	0	0	**0**	-	**161**
Hourly Total	0	**0**	-	3	29	28	0	**60**	0	0	**0**	-	**474**
5:00AM	0	**0**	-	2	8	5	0	**15**	0	0	**0**	-	**148**
5:15AM	0	**0**	-	3	14	5	0	**22**	0	0	**0**	-	**169**
5:30AM	0	**0**	-	3	16	21	0	**40**	0	0	**0**	-	**220**
5:45AM	0	**0**	-	5	16	35	0	**56**	0	0	**0**	-	**296**
Hourly Total	0	**0**	-	13	54	66	0	**133**	0	0	**0**	-	**833**
6:00AM	0	**0**	-	7	30	29	0	**66**	0	0	**0**	-	**260**
6:15AM	0	**0**	-	7	34	27	0	**68**	0	0	**0**	-	**277**
6:30AM	0	**0**	-	5	54	25	0	**84**	0	0	**0**	-	**316**
6:45AM	0	**0**	-	2	32	32	0	**66**	0	0	**0**	-	**354**
Hourly Total	0	**0**	-	21	150	113	0	**284**	0	0	**0**	-	**1207**
7:00AM	0	**0**	-	3	47	24	0	**74**	0	0	**0**	-	**293**
7:15AM	0	**0**	-	6	46	24	0	**76**	0	0	**0**	-	**331**
7:30AM	0	**0**	-	5	46	32	0	**83**	0	0	**0**	-	**327**
7:45AM	0	**0**	-	8	41	25	0	**74**	0	0	**0**	-	**304**
Hourly Total	0	**0**	-	22	180	105	0	**307**	0	0	**0**	-	**1255**
8:00AM	0	**0**	-	11	45	28	0	**84**	0	0	**0**	-	**272**
8:15AM	0	**0**	-	4	35	24	0	**63**	0	0	**0**	-	**327**
8:30AM	0	**0**	-	4	43	33	0	**80**	0	0	**0**	-	**285**
8:45AM	0	**0**	-	6	54	36	0	**96**	0	0	**0**	-	**326**
Hourly Total	0	**0**	-	25	177	121	0	**323**	0	0	**0**	-	**1210**
9:00AM	0	**0**	-	9	48	31	0	**88**	0	0	**0**	-	**283**
9:15AM	0	**0**	-	12	44	30	0	**86**	0	0	**0**	-	**307**
9:30AM	0	**0**	-	9	48	19	0	**76**	0	0	**0**	-	**295**
9:45AM	0	**0**	-	8	31	34	0	**73**	0	0	**0**	-	**275**
Hourly Total	0	**0**	-	38	171	114	0	**323**	0	0	**0**	-	**1160**
10:00AM	0	**0**	-	10	58	19	0	**87**	0	0	**0**	-	**284**

Leg	Railroad			SR 531 (172nd St NE)						Railroad			
Direction	Northeastbound			Eastbound						Southeastbound			
Time	L	App	Ped*	R	T	L	U	App	Ped*	R	App	Ped*	Int
10:15AM	0	0	-	11	65	38	0	114	0	0	0	-	337
10:30AM	0	0	-	9	56	44	0	109	0	0	0	-	330
10:45AM	0	0	-	6	63	40	0	109	0	0	0	-	347
Hourly Total	0	0	-	36	242	141	0	419	0	0	0	-	1298
11:00AM	0	0	-	10	83	46	0	139	0	0	0	-	360
11:15AM	0	0	-	14	74	48	0	136	0	0	0	-	361
11:30AM	0	0	-	14	59	45	0	118	0	0	0	-	363
11:45AM	0	0	-	12	80	41	0	133	0	0	0	-	379
Hourly Total	0	0	-	50	296	180	0	526	0	0	0	-	1463
12:00PM	0	0	-	18	62	44	0	124	0	0	0	-	351
12:15PM	1	1	-	16	71	41	0	128	0	0	0	-	346
12:30PM	0	0	-	8	83	54	0	145	0	0	0	-	392
12:45PM	0	0	-	6	89	47	0	142	0	0	0	-	343
Hourly Total	1	1	-	48	305	186	0	539	0	0	0	-	1432
1:00PM	0	0	-	16	84	50	0	150	0	0	0	-	396
1:15PM	0	0	-	12	86	48	0	146	0	0	0	-	378
1:30PM	0	0	-	10	95	53	0	158	0	0	0	-	396
1:45PM	0	0	-	14	80	64	0	158	0	0	0	-	394
Hourly Total	0	0	-	52	345	215	0	612	0	0	0	-	1564
2:00PM	0	0	-	24	94	39	0	157	0	0	0	-	400
2:15PM	0	0	-	19	93	70	0	182	0	0	0	-	398
2:30PM	0	0	-	26	87	46	0	159	0	0	0	-	423
2:45PM	0	0	-	18	106	48	0	172	0	0	0	-	406
Hourly Total	0	0	-	87	380	203	0	670	0	0	0	-	1627
3:00PM	0	0	-	18	100	46	0	164	0	0	0	-	400
3:15PM	0	0	-	23	99	44	0	166	0	0	0	-	457
3:30PM	0	0	-	20	131	51	0	202	0	0	0	-	482
3:45PM	0	0	-	30	91	48	0	169	0	0	0	-	467
Hourly Total	0	0	-	91	421	189	0	701	0	0	0	-	1806
4:00PM	0	0	-	27	104	45	0	176	0	0	0	-	488
4:15PM	0	0	-	26	107	64	0	197	0	0	0	-	460
4:30PM	0	0	-	32	109	46	0	187	0	0	0	-	492
4:45PM	0	0	-	29	123	44	0	196	0	0	0	-	473
Hourly Total	0	0	-	114	443	199	0	756	0	0	0	-	1913
5:00PM	0	0	-	24	103	50	0	177	0	1	1	-	477
5:15PM	0	0	-	20	132	67	0	219	0	0	0	-	497
5:30PM	0	0	-	14	130	47	0	191	0	0	0	-	426
5:45PM	0	0	-	23	114	62	0	199	0	0	0	-	441
Hourly Total	0	0	-	81	479	226	0	786	0	1	1	-	1841
6:00PM	0	0	-	18	118	42	0	178	0	0	0	-	430
6:15PM	0	0	-	17	105	55	0	177	0	0	0	-	385
6:30PM	0	0	-	26	98	51	0	175	0	0	0	-	372
6:45PM	0	0	-	18	108	55	0	181	0	0	0	-	392
Hourly Total	0	0	-	79	429	203	0	711	0	0	0	-	1579
7:00PM	0	0	-	14	61	45	0	120	0	0	0	-	276
7:15PM	0	0	-	9	91	42	0	142	0	0	0	-	284
7:30PM	0	0	-	14	82	37	0	133	0	0	0	-	242
7:45PM	0	0	-	12	74	31	0	117	0	0	0	-	234
Hourly Total	0	0	-	49	308	155	0	512	0	0	0	-	1036
8:00PM	0	0	-	10	81	40	0	131	0	0	0	-	247
8:15PM	0	0	-	16	72	33	0	121	0	0	0	-	241
8:30PM	0	0	-	17	68	39	0	124	0	0	0	-	204
8:45PM	0	0	-	15	54	20	0	89	1	0	0	-	185
Hourly Total	0	0	-	58	275	132	0	465	1	0	0	-	877
9:00PM	0	0	-	5	61	30	0	96	1	0	0	-	194
9:15PM	0	0	-	6	55	28	0	89	0	0	0	-	183
9:30PM	0	0	-	7	28	21	0	56	0	0	0	-	144
9:45PM	0	0	-	11	36	23	0	70	0	0	0	-	141
Hourly Total	0	0	-	29	180	102	0	311	1	0	0	-	662
10:00PM	0	0	-	8	40	15	0	63	0	0	0	-	108

Leg Direction	Railroad Northeastbound			SR 531 (172nd St NE) Eastbound						Railroad Southeastbound			
Time	L	**App**	Ped*	R	T	L	U	**App**	Ped*	R	**App**	Ped*	**Int**
10:15PM	0	**0**	-	6	40	20	0	**66**	0	0	**0**	-	**106**
10:30PM	0	**0**	-	1	19	17	0	**37**	0	0	**0**	-	**77**
10:45PM	0	**0**	-	3	32	14	0	**49**	0	0	**0**	-	**77**
Hourly Total	0	**0**	-	18	131	66	0	**215**	0	0	**0**	-	**368**
11:00PM	0	**0**	-	3	27	10	0	**40**	0	0	**0**	-	**77**
11:15PM	0	**0**	-	5	29	11	0	**45**	0	0	**0**	-	**74**
11:30PM	0	**0**	-	4	16	7	0	**27**	0	0	**0**	-	**44**
11:45PM	0	**0**	-	1	11	12	0	**24**	0	0	**0**	-	**49**
Hourly Total	0	**0**	-	13	83	40	0	**136**	0	0	**0**	-	**244**
Total	1	**1**	-	953	5199	2875	0	**9027**	2	1	**1**	-	**24401**
% Approach	100%	**-**	-	10.6%	57.6%	31.8%	0%	**-**	-	100%	**-**	-	**-**
% Total	0%	**0%**	-	3.9%	21.3%	11.8%	0%	**37.0%**	-	0%	**0%**	-	**-**
Motorcycles	0	**0**	-	3	14	4	0	**21**	-	0	**0**	-	45
% Motorcycles	0%	**0%**	-	0.3%	0.3%	0.1%	0%	**0.2%**	-	0%	**0%**	-	0.2%
Lights	0	**0**	-	931	5007	2749	0	**8687**	-	0	**0**	-	23423
% Lights	0%	**0%**	-	97.7%	96.3%	95.6%	0%	**96.2%**	-	0%	**0%**	-	96.0%
Single-Unit Trucks	0	**0**	-	13	107	63	0	**183**	-	0	**0**	-	604
% Single-Unit Trucks	0%	**0%**	-	1.4%	2.1%	2.2%	0%	**2.0%**	-	0%	**0%**	-	2.5%
Articulated Trucks	0	**0**	-	3	63	56	0	**122**	-	0	**0**	-	281
% Articulated Trucks	0%	**0%**	-	0.3%	1.2%	1.9%	0%	**1.4%**	-	0%	**0%**	-	1.2%
Buses	0	**0**	-	2	7	3	0	**12**	-	0	**0**	-	40
% Buses	0%	**0%**	-	0.2%	0.1%	0.1%	0%	**0.1%**	-	0%	**0%**	-	0.2%
Trains	1	**1**	-	0	0	0	0	**0**	-	1	**1**	-	2
% Trains	100%	**100%**	-	0%	0%	0%	0%	**0%**	-	100%	**100%**	-	0%
Bicycles on Road	0	**0**	-	1	1	0	0	**2**	-	0	**0**	-	6
% Bicycles on Road	0%	**0%**	-	0.1%	0%	0%	0%	**0%**	-	0%	**0%**	-	0%
Pedestrians	-	-	0	-	-	-	-	-	2	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	100%	-	-	-	-
Bicycles on Crosswalk	-	-	0	-	-	-	-	-	0	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0%	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

SR009mp26.05_SR531-172nd_St_NE_RAB_2019-0305 - TMC
Tue Mar 5, 2019
Full Length (12 AM-12 AM (+1))
All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 645135, Location: 48.151649, -122.113259, Site Code: 00902605_0319

WASHINGTON STATE DEPT. OF TRANSPORTATION
Northwest Region - Traffic Studies

Provided by: Washington State DOT
15700 Dayton Ave North, MS-120, P.O. Box 330310,
Seattle, WA, 98133, US

Tue Mar 5, 2019
24 h TMC

28°F Clear

Lat: 48.151649 N
Long: 122.113259 W

Peak Hour Factor

Scope	Time	Count	PHF
▶ AM	Tue Mar 5, 2019 7:00 AM	1,437	0.926
▶ Midday	Tue Mar 5, 2019 11:45 AM	1,010	0.932
▶ PM	Tue Mar 5, 2019 3:45 PM	1,722	0.944

SR009mp26.05_SR531-172nd_St_NE_RAB_2019-0305 - TMC
Tue Mar 5, 2019
Full Length (12 AM-12 AM (+1))
All Classes (Motorcycles, Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 645135, Location: 48.151649, -122.113259, Site Code: 00902605_0319

WASHINGTON STATE DEPT. OF TRANSPORTATION
Northwest Region - Traffic Studies

Provided by: Washington State DOT
15700 Dayton Ave North, MS-120, P.O. Box 330310,
Seattle, WA, 98133, US

Leg	SR 9						172nd St NE						SR 9						SR531 (172nd St NE)						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2019-03-05 12:00AM	5	5	0	0	10	0	0	1	0	0	1	0	0	3	0	0	3	0	2	2	3	0	7	0	21
12:15AM	2	2	0	0	4	0	0	0	0	0	0	0	0	0	1	0	1	0	1	2	3	0	6	0	11
12:30AM	2	1	0	0	3	0	1	1	0	0	2	0	0	1	0	0	1	0	3	6	2	0	11	0	17
12:45AM	0	3	0	0	3	0	0	0	0	0	0	0	1	3	2	0	6	0	2	1	5	0	8	0	17
Hourly Total	9	11	0	0	20	0	1	2	0	0	3	0	1	7	3	0	11	0	8	11	13	0	32	0	66
1:00AM	0	3	1	0	4	0	0	0	0	0	0	0	0	1	1	0	2	0	1	3	2	0	6	0	12
1:15AM	2	1	0	0	3	0	0	2	0	0	2	0	0	0	1	0	1	0	1	1	3	0	5	0	11
1:30AM	3	1	0	0	4	0	0	0	0	0	0	0	0	1	1	0	2	0	0	4	0	0	4	0	10
1:45AM	1	5	0	0	6	0	1	0	0	0	1	0	0	1	1	0	2	0	2	1	1	0	4	0	13
Hourly Total	6	10	1	0	17	0	1	2	0	0	3	0	0	3	4	0	7	0	4	9	6	0	19	0	46
2:00AM	0	8	0	0	8	0	0	1	0	0	1	0	0	1	2	0	3	0	0	2	1	0	3	0	15
2:15AM	1	3	0	0	4	0	0	0	0	0	0	0	0	1	0	0	1	0	2	1	0	0	3	0	8
2:30AM	2	3	0	0	5	0	0	4	0	0	4	0	0	2	1	0	3	0	3	1	0	0	4	0	16
2:45AM	2	7	1	0	10	0	1	2	0	0	3	0	0	2	3	0	5	0	2	1	2	0	5	0	23
Hourly Total	5	21	1	0	27	0	1	7	0	0	8	0	0	6	6	0	12	0	7	5	3	0	15	0	62
3:00AM	1	8	0	0	9	0	0	2	0	0	2	0	0	2	1	0	3	0	8	2	2	0	12	0	26
3:15AM	6	12	1	0	19	0	0	1	0	0	1	0	0	5	1	0	6	0	3	0	0	0	3	0	29
3:30AM	2	3	1	0	6	0	0	4	0	0	4	0	0	1	6	0	7	0	5	0	0	0	5	0	22
3:45AM	6	8	0	0	14	0	0	2	0	0	2	0	0	5	7	0	12	0	4	0	0	0	4	0	32
Hourly Total	15	31	2	0	48	0	0	9	0	0	9	0	0	13	15	0	28	0	20	2	2	0	24	0	109
4:00AM	10	10	0	0	20	0	0	6	0	0	6	0	0	6	6	0	12	0	3	0	1	0	4	0	42
4:15AM	8	18	1	0	27	0	0	12	0	0	12	0	0	5	8	0	13	0	2	0	1	0	3	0	55
4:30AM	9	25	0	0	34	0	1	15	1	0	17	0	0	9	13	0	22	0	5	1	2	0	8	0	81
4:45AM	11	29	0	0	40	0	2	15	0	0	17	0	0	12	14	0	26	0	8	0	3	0	11	0	94
Hourly Total	38	82	1	0	121	0	3	48	1	0	52	0	0	32	41	0	73	0	18	1	7	0	26	0	272
5:00AM	13	44	0	0	57	0	1	19	1	0	21	0	1	12	14	0	27	0	13	1	3	0	17	0	122
5:15AM	9	26	1	0	36	0	1	10	0	0	11	0	0	14	22	0	36	0	13	1	3	0	17	0	100
5:30AM	14	47	0	0	61	0	1	21	2	0	24	0	0	28	31	0	59	0	20	1	6	0	27	0	171
5:45AM	15	53	1	0	69	0	4	19	1	0	24	0	0	53	47	0	100	0	20	3	5	0	28	0	221
Hourly Total	51	170	2	0	223	0	7	69	4	0	80	0	1	107	114	0	222	0	66	6	17	0	89	0	614
6:00AM	13	57	0	0	70	0	1	17	6	0	24	0	0	31	31	0	62	0	24	1	2	0	27	0	183
6:15AM	14	82	1	0	97	0	3	16	1	0	20	0	0	38	49	0	87	0	29	3	12	0	44	0	248
6:30AM	11	74	2	0	87	0	5	14	8	0	27	0	0	61	72	0	133	0	33	2	14	0	49	0	296
6:45AM	23	66	4	0	93	0	14	14	3	0	31	0	0	59	59	0	118	0	24	8	24	0	56	0	298
Hourly Total	61	279	7	0	347	0	23	61	18	0	102	0	0	189	211	0	400	0	110	14	52	0	176	0	1025
7:00AM	22	57	2	0	81	0	7	18	7	0	32	0	1	65	47	0	113	0	36	2	30	0	68	0	294
7:15AM	30	79	6	0	115	0	17	15	4	0	36	0	1	82	65	0	148	0	42	6	41	0	89	0	388
7:30AM	35	60	4	0	99	0	16	14	7	0	37	0	1	74	56	0	131	0	44	2	72	0	118	0	385
7:45AM	43	81	5	0	129	0	15	15	1	0	31	0	1	68	59	0	128	0	31	2	49	0	82	0	370
Hourly Total	130	277	17	0	424	0	55	62	19	0	136	0	4	289	227	0	520	0	153	12	192	0	357	0	1437
8:00AM	36	72	5	0	113	0	4	11	4	0	19	0	0	44	54	0	98	0	30	6	10	0	46	0	276
8:15AM	10	60	3	0	73	0	3	16	1	0	20	0	0	58	52	0	110	0	23	6	14	0	43	0	246
8:30AM	14	46	3	0	63	0	13	15	2	0	30	0	1	49	41	0	91	0	23	8	32	0	63	0	247
8:45AM	22	67	1	0	90	0	12	16	0	0	28	0	0	76	40	0	116	0	13	6	47	0	66	0	300
Hourly Total	82	245	12	0	339	0	32	58	7	0	97	0	1	227	187	0	415	0	89	26	103	0	218	0	1069
9:00AM	41	85	10	0	136	0	7	19	6	0	32	0	1	56	43	0	100	0	27	8	28	0	63	0	331
9:15AM	26	56	5	0	87	0	2	14	0	0	16	0	0	49	39	0	88	0	40	10	14	0	64	0	255
9:30AM	13	37	3	0	53	0	5	9	3	0	17	0	1	55	50	0	106	0	25	11	22	0	58	0	234
9:45AM	30	33	6	0	69	0	7	11	6	0	24	0	0	54	43	0	97	0	24	7	26	0	57	0	247
Hourly Total	110	211	24	0	345	0	21	53	15	0	89	0	2	214	175	0	391	0	116	36	90	0	242	0	1067
10:00AM	20	41	1	0	62	0	2	17	1	0	20	0	0	50	45	0	95	0	31	7	15	0	53	0	230
10:15AM	27	45	3	0	75	0	1	6	2	0	9	0	0	45	41	0	86	0	38	13	20	0	71	0	241
10:30AM	21	47	2	0	70	0	6	12	1	0	19	0	0	38	33	0	71	0	19	12	17	0	48	0	208
10:45AM	19	45	4	0	68	0	5	14	2	0	21	0	1	41	40	0	82	0	30	11	22	0	63	0	234
Hourly Total	87	178	10	0	275	0	14	49	6	0	69	0	1	174	159	0	334	0	118	43	74	0	235	0	913
11:00AM	20	40	2	0	62	0	4	10	0	0	14	0	1	48	41	0	90	0	24	8	12	0	44	0	210
11:15AM	17	46	3	0	66	0	7	12	0	0	19	0	0	44	33	0	77	0	35	16	18	0	69	0	231
11:30AM	14	48	4	0	66	0	4	10	1	0	15	0	1	42	33	0	76	0	28	9	24	0	61	0	218
11:45AM	31	42	5	0	78	0	4	20	1	0	25	0	0	41	39	0	80	0	34	16	24	0	74	0	257
Hourly Total	82	176	14	0	272	0	19	52	2	0	73	0	2	175	146	0	323	0	121	49	78	0	248	0	916
12:00PM	19	45	7	0	71	0	8	11	1	0	20	0	2	56	38	0	96	0	33	9	18	0	60	0	247
12:15PM	24	49	6	0	79	0	3	12	3	0	18	0	3	51	40	0	94	0	37	20	23	0	80	0	271
12:30PM	30	60	6	0	96	0	6	12	3	0	21	0	1	30	30	0	61	0	26	13	18	0	57	0	235
12:45PM	21	45	3	0	69	0	9	10	3	0	22	0	0	41	35	0	76	0	37	23	22	0	82	0	249
Hourly Total	94	199	22	0	315	0	26	45	10	0	81	0	6	178	143	0	327	0	133	65	81	0	279	0	1002
1:00PM	24	53	3	0	80	0	4	14	0	0	18	0	1	38	34	0	73	0	31	11	16	0	58	0	229
1:15PM	25	47	7	0	79	0	3	5	2	0	10	0	1	44	40	0	85	0	34	16	28	0	78	0	252
1:30PM	34	49	3	0	86	0	4	14	3	0	21	0	1	64	30	0	95	0	28	14	16	0	58	0	260
1:45PM	23	59	4	0	86	0	5	12	2	0	19	0	0	61	37	0	98	0	35	13	34	0	82	0	285
Hourly Total	106	208	17	0	331	0	16	45	7	0	68	0	3	207	141	0	351	0	128	54	94	0	276	0	1026

Leg	SR 9						172nd St NE						SR 9						SR531 (172nd St NE)						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2:00PM	15	64	3	0	82	0	4	8	3	0	15	0	0	51	45	0	96	0	35	13	27	0	75	0	268
2:15PM	22	69	5	0	96	0	7	8	4	0	19	0	3	58	44	0	105	0	42	10	54	0	106	0	326
2:30PM	61	81	13	0	155	0	3	11	0	0	14	0	2	65	49	0	116	0	50	20	32	0	102	0	387
2:45PM	67	85	19	1	172	0	9	15	5	0	29	0	3	75	45	0	123	0	47	17	33	0	97	0	421
Hourly Total	165	299	40	1	505	0	23	42	12	0	77	0	8	249	183	0	440	0	174	60	146	0	380	0	1402
3:00PM	31	66	10	0	107	0	5	12	2	0	19	0	1	81	43	1	126	0	53	18	25	0	96	0	348
3:15PM	24	61	7	0	92	0	8	10	4	0	22	0	3	81	52	0	136	0	46	25	40	0	111	0	361
3:30PM	31	87	14	0	132	0	10	12	0	0	22	0	1	86	49	1	137	0	64	23	36	0	123	0	414
3:45PM	47	78	11	0	136	0	4	17	1	0	22	0	6	116	45	0	167	0	46	26	39	0	111	0	436
Hourly Total	133	292	42	0	467	0	27	51	7	0	85	0	11	364	189	2	566	0	209	92	140	0	441	0	1559
4:00PM	23	83	15	0	121	0	5	17	4	0	26	0	1	96	56	0	153	0	57	22	31	0	110	0	410
4:15PM	29	99	6	1	135	0	5	13	5	0	23	0	1	98	69	1	169	0	67	24	38	0	129	0	456
4:30PM	33	92	4	0	129	0	5	16	0	0	21	0	2	91	55	0	148	0	62	21	39	0	122	0	420
4:45PM	19	75	10	0	104	0	4	14	1	0	19	0	4	100	57	0	161	0	54	18	35	0	107	0	391
Hourly Total	104	349	35	1	489	0	19	60	10	0	89	0	8	385	237	1	631	0	240	85	143	0	468	0	1677
5:00PM	30	86	9	0	125	0	5	8	4	0	17	0	1	101	42	0	144	0	55	21	32	0	108	0	394
5:15PM	37	95	8	0	140	0	5	10	2	0	17	0	3	104	53	0	160	0	58	21	26	0	105	0	422
5:30PM	39	85	9	0	133	0	6	5	0	0	11	0	2	75	61	0	138	0	57	21	41	0	119	0	401
5:45PM	38	69	8	0	115	0	3	12	3	0	18	0	1	89	55	0	145	0	43	29	33	0	105	0	383
Hourly Total	144	335	34	0	513	0	19	35	9	0	63	0	7	369	211	0	587	0	213	92	132	0	437	0	1600
6:00PM	27	59	8	0	94	0	6	6	1	0	13	0	2	96	40	0	138	0	35	33	31	0	99	0	344
6:15PM	37	60	6	0	103	0	2	13	3	0	18	0	1	61	56	0	118	0	31	26	28	0	85	0	324
6:30PM	33	56	6	0	95	0	4	4	4	0	12	0	3	55	37	0	95	0	30	23	24	0	77	0	279
6:45PM	24	43	7	0	74	0	7	13	0	0	20	0	2	45	35	0	82	0	28	23	32	0	83	0	259
Hourly Total	121	218	27	0	366	0	19	36	8	0	63	0	8	257	168	0	433	0	124	105	115	0	344	0	1206
7:00PM	24	41	5	0	70	0	7	8	1	0	16	0	2	47	23	0	72	0	34	19	27	0	80	0	238
7:15PM	18	28	3	0	49	0	2	6	1	0	9	0	2	34	18	0	54	0	27	11	27	0	65	0	177
7:30PM	13	24	10	0	47	0	1	3	2	0	6	0	2	31	16	0	49	0	24	23	15	0	62	0	164
7:45PM	13	22	2	0	37	0	0	9	0	0	9	0	0	36	12	0	48	0	17	13	25	0	55	0	149
Hourly Total	68	115	20	0	203	0	10	26	4	0	40	0	6	148	69	0	223	0	102	66	94	0	262	0	728
8:00PM	15	27	4	0	46	0	0	7	2	0	9	0	0	24	18	0	42	0	23	16	21	0	60	0	157
8:15PM	18	33	3	0	54	0	4	2	2	0	8	0	2	18	14	0	34	0	22	8	26	0	56	0	152
8:30PM	8	16	5	0	29	0	2	5	0	0	7	0	0	24	15	0	39	0	18	10	13	0	41	0	116
8:45PM	9	29	0	0	38	0	1	2	0	0	3	0	1	26	12	0	39	0	14	8	11	0	33	0	113
Hourly Total	50	105	12	0	167	0	7	16	4	0	27	0	3	92	59	0	154	0	77	42	71	0	190	0	538
9:00PM	15	20	2	0	37	0	0	2	0	0	2	0	0	19	4	0	23	0	12	13	11	0	36	0	98
9:15PM	18	21	0	0	39	0	1	3	1	0	5	0	1	18	9	0	28	0	14	14	13	0	41	0	113
9:30PM	4	12	5	0	21	0	0	4	1	0	5	0	0	11	1	0	12	0	6	9	9	0	24	0	62
9:45PM	4	9	0	0	13	0	1	3	1	0	5	0	0	10	4	0	14	0	7	9	12	0	28	0	60
Hourly Total	41	62	7	0	110	0	2	12	3	0	17	0	1	58	18	0	77	0	39	45	45	0	129	0	333
10:00PM	3	10	1	0	14	0	0	0	0	0	0	0	0	12	10	0	22	0	4	0	4	0	8	0	44
10:15PM	2	10	0	0	12	0	0	3	0	0	3	0	0	10	1	0	11	0	8	4	5	0	17	0	43
10:30PM	1	8	0	0	9	0	0	0	0	0	0	0	0	6	2	0	8	0	5	2	5	0	12	0	29
10:45PM	4	8	1	0	13	0	0	1	0	0	1	0	0	4	2	0	6	0	2	3	2	0	7	0	27
Hourly Total	10	36	2	0	48	0	0	4	0	0	4	0	0	32	15	0	47	0	19	9	16	0	44	0	143
11:00PM	0	3	0	0	3	0	0	0	0	0	0	0	0	9	4	0	13	0	8	0	6	0	14	0	30
11:15PM	0	3	0	0	3	0	0	2	0	0	2	0	1	5	5	0	11	0	4	4	2	0	10	0	26
11:30PM	0	4	0	0	4	0	1	1	0	0	2	0	0	7	0	0	7	0	2	3	3	0	8	0	21
11:45PM	4	3	0	0	7	0	0	1	0	0	1	0	0	2	2	0	4	0	0	4	5	0	9	0	21
Hourly Total	4	13	0	0	17	0	1	4	0	0	5	0	1	23	11	0	35	0	14	11	16	0	41	0	98
Total	1716	3922	349	2	5989	0	346	848	146	0	1340	0	74	3798	2732	3	6607	0	2302	940	1730	0	4972	0	18908
% Approach	28.7%	65.5%	5.8%	0%	-	-	25.8%	63.3%	10.9%	0%	-	-	1.1%	57.5%	41.4%	0%	-	-	46.3%	18.9%	34.8%	0%	-	-	-
% Total	9.1%	20.7%	1.8%	0%	31.7%	-	1.8%	4.5%	0.8%	0%	7.1%	-	0.4%	20.1%	14.4%	0%	34.9%	-	12.2%	5.0%	9.1%	0%	26.3%	-	-
Motorcycles	3	5	2	0	10	-	0	3	0	0	3	-	1	5	3	0	9	-	0	1	3	0	4	-	26
% Motorcycles	0.2%	0.1%	0.6%	0%	0.2%	-	0%	0.4%	0%	0%	0.2%	-	1.4%	0.1%	0.1%	0%	0.1%	-	0%	0.1%	0.2%	0%	0.1%	-	0.1%
Lights	1665	3749	338	0	5752	-	336	827	142	0	1305	-	69	3602	2571	0	6242	-	2132	919	1664	0	4715	-	18014
% Lights	97.0%	95.6%	96.8%	0%	96.0%	-	97.1%	97.5%	97.3%	0%	97.4%	-	93.2%	94.8%	94.1%	0%	94.5%	-	92.6%	97.8%	96.2%	0%	94.8%	-	95.3%
Single-Unit Trucks	18	104	4	0	126	-	8	11	2	0	21	-	1	96	102	2	201	-	109	17	16	0	142	-	490
% Single-Unit Trucks	1.0%	2.7%	1.1%	0%	2.1%	-	2.3%	1.3%	1.4%	0%	1.6%	-	1.4%	2.5%	3.7%	66.7%	3.0%	-	4.7%	1.8%	0.9%	0%	2.9%	-	2.6%
Articulated Trucks	1	43	1	0	45	-	0	4	0	0	4	-	1	76	40	0	117	-	44	1	7	0	52	-	218
% Articulated Trucks	0.1%	1.1%	0.3%	0%	0.8%	-	0%	0.5%	0%	0%	0.3%	-	1.4%	2.0%	1.5%	0%	1.8%	-	1.9%	0.1%	0.4%	0%	1.0%	-	1.2%
Buses	29	21	4	2	56	-	2	3	2	0	7	-	2	19	16	1	38	-	17	2	40	0	59	-	160
% Buses	1.7%	0.5%	1.1%	100%	0.9%	-	0.6%	0.4%	1.4%	0%	0.5%	-	2.7%	0.5%	0.6%	33.3%	0.6%	-	0.7%	0.2%	2.3%	0%	1.2%	-	0.8%
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0
% Bicycles on Road	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

D PM Peak Hour TM Volumes

Weekday PM Peak Hour Traffic Volumes

Directional Reference:

Existing (2020)

1 — 67th Ave NE / 188th St NE

		470			455	
110		65	395	10		
	105				15	20
	5		1,120		0	
235	125				5	
		45	335	15		30
	525			395		

2 — I-5 SB Ramps / 172nd St NE

		585			515	
1,685		290	5	290		
					515	1,910
	955		3,890		1,395	
1,395	440					
						1,245
	445			0		

3 — I-5 NB Ramps / 172nd St NE

		0			865	
1,950						
	305				560	1,895
	910		4,615		1,335	
1,215						
		615	0	890		1,800
	0			1,505		

4 — Smokey Point Blvd / 172nd St NE

		685			890	
1,775	55	310	225	150		
	370				105	1,125
	745		4,480		845	
1,470	300				170	
		565	415	220	5	1,120
	695			1,200		

5 — NE 40st Ave NE / 172nd St NE

		0			0	
1,140						
						1,045
	950		2,190		1,045	
1,020	70					
		95		30		980
	70			125		

No Action (2040)

1 — 67th Ave NE / 188th St NE

		620			615	
210		160	445	15		
	285				20	30
	15		1,650		5	
625	325				5	
		45	310	20		50
	775			375		

2 — I-5 SB Ramps / 172nd St NE

		685			800	
2,185		455	5	225		
	0				800	2,530
	1,230		4,985		1,730	
1,770	540				0	
		0	0	0		1,455
	545			0		

3 — I-5 NB Ramps / 172nd St NE

		0			1,025	
2,530		0	0	0		
	415				610	2,475
	1,040		5,420		1,865	
1,455	0				0	
		665	0	825		1,865
	0			1,490		

4 — Smokey Point Blvd / 172nd St NE

		895			1,095	
2,340	55	465	240	190		
	380				185	1,375
	830		5,245		1,095	
1,600	335				90	
		725	530	120	5	1,145
	665			1,375		

5 — NE 40st Ave NE / 172nd St NE

		220			350	
1,305		110	10	100		
	220				115	1,290
	745		2,780		1,070	
1,095	130				105	
		125	15	35		880
	245			175		

Alt 2 (2040)

1 — 67th Ave NE / 188th St NE

		690			645	
240		185	490	15		
	315				20	30
	15		1,770		5	
675	345				5	
		50	310	15		45
	840			375		

2 — I-5 SB Ramps / 172nd St NE

		680			820	
2,190		455	5	220		
	0				820	2,555
	1,220		4,995		1,735	
1,760	540				0	
		0	0	0		1,440
	545			0		

3 — I-5 NB Ramps / 172nd St NE

		0			1,030	
2,555		0	0	0		
	410				620	2,515
	1,030		5,430		1,895	
1,440	0				0	
		660	0	815		1,845
	0			1,475		

4 — Smokey Point Blvd / 172nd St NE

		905			1,090	
2,385	55	480	235	190		
	375				195	1,395
	815		5,260		1,110	
1,580	335				85	
		740	520	120	5	1,130
	655			1,380		

5 — NE 40st Ave NE / 172nd St NE

		220			350	
1,325	0	110	10	100	0	
	220				115	1,310
	745		2,800		1,090	
1,095	130				105	
		125	15	35		880
	245			175		

Alt 2_Mitigated (2040)

1 — 67th Ave NE / 188th St NE

		720			635	
265		210	495	15		
	275				20	30
	15		1,715		5	
555	265				5	
		50	340	20		50
	765			410		

2 — I-5 SB Ramps / 172nd St NE

		690			820	
2,185		455	5	230		
	0				820	2,550
	1,230		5,010		1,730	
1,770	540				0	
		0	0	0		1,460
	545			0		

3 — I-5 NB Ramps / 172nd St NE

		0			1,025	
2,550		0	0	0		
	410				615	2,505
	1,050		5,440		1,890	
1,460	0				0	
		660	0	815		1,865
	0			1,475		

4 — Smokey Point Blvd / 172nd St NE

		915			1,085	
2,375	55	475	250	190		
	375				195	1,400
	835		5,285		1,110	
1,600	335				90	
		735	515	120	5	1,150
	675			1,370		

5 — NE 40st Ave NE / 172nd St NE

		220			350	
1,325	0	110	10	100	0	
	220				115	1,310
	865		2,920		1,090	
1,215	130				105	
		125	15	35		1,000
	245			175		

Weekday PM Peak Hour Traffic Volumes

Directional Reference:

Existing (2020)

6 — 43rd Ave NE / 172nd St NE

		25			45	
1,140	15	15	5	5		
	20				15	1,020
	730		2,275		875	
795	30				130	
		235	10	190		925
	165			435		

7 — 51st Ave NE / 172nd St NE

		165			120	
1,030		70	50	45		
	35				30	925
	735		2,290		820	
930	160				75	
		140	55	75		855
	285			270		

8 — 59th Ave NE / 172nd St NE

		510			210	
955		425	5	80		
	175				30	540
	665		1,945		500	
850	10				10	
		30	5	10		755
	25			45		

9 — 67th Ave NE / 172nd St NE

		450			435	
515		140	210	100		
	210				45	410
	470		1,960		320	
785	105				45	
		55	180	80		650
	360			315		

10 — SR 9 / 172nd St NE

		495			560	
405		105	350	35	5	
	145				20	90
	85		1,700		60	
470	240				10	
	5	240	390	10		130
	605			645		

No Action (2040)

6 — 43rd Ave NE / 172nd St NE

		75			180	
1,285	15	45	25	5		
	110				5	1,070
	605		2,535		920	
830	100				145	
		305	65	190		800
	270			560		

7 — 51st Ave NE / 172nd St NE

		285			355	
1,080		70	135	80		
	35				115	1,030
	820		2,800		825	
1,000	145				90	
		185	205	95		995
	370			485		

8 — 59th Ave NE / 172nd St NE

		770			535	
1,065		415	270	85		
	240				30	765
	740		3,015		620	
990	10				115	
		30	265	195		1,020
	395			490		

9 — 67th Ave NE / 172nd St NE

		645			470	
680		105	420	120		
	155				50	700
	740		2,895		515	
1,025	130				135	
		60	265	200		1,060
	685			525		

10 — SR 9 / 172nd St NE

		765			630	
725		130	535	100		
	155				100	435
	410		2,805		320	
885	320				15	
		275	375	70		580
	870			720		

Alt 2 (2040)

6 — 43rd Ave NE / 172nd St NE

		75			180	
1,340	15	45	30	0		
	100				5	1,130
	600		2,605		970	
825	110				155	
		310	75	190		790
	295			575		

7 — 51st Ave NE / 172nd St NE

		295			365	
1,095		70	140	85		
	35				130	1,095
	795		2,870		840	
1,000	170				125	
		185	200	95		975
	435			480		

8 — 59th Ave NE / 172nd St NE

		890			530	
1,125		455	320	115		
	240				40	805
	725		3,125		640	
975	10				125	
		30	250	175		1,015
	455			455		

9 — 67th Ave NE / 172nd St NE

		695			485	
645		95	465	135		
	175				55	700
	745		2,955		500	
1,050	130				145	
		50	255	205		1,085
	740			510		

10 — SR 9 / 172nd St NE

		795			635	
715		130	585	80		
	165				95	415
	430		2,825		315	
900	305				5	
		270	375	70		580
	895			715		

Alt 2_Mitigated (2040)

6 — 43rd Ave NE / 172nd St NE

		75			170	
1,360	15	45	20	10		
	95				15	1,175
	680		2,700		1,005	
890	100				155	
		295	60	205		895
	275			560		

7 — 51st Ave NE / 172nd St NE

		340			410	
1,105		70	115	155		
	35				220	1,150
	660		3,155		800	
915	220				130	
		235	155	360		1,175
	465			750		

8 — 59th Ave NE / 172nd St NE

		920			455	
1,190		435	325	160		
	215				40	930
	955		3,520		725	
1,180	10				165	
		30	200	260		1,375
	500			490		

9 — 67th Ave NE / 172nd St NE

		675			465	
720		70	420	185		
	190				55	770
	1,060		3,365		585	
1,420	170				130	
		65	220	215		1,460
	720			500		

10 — SR 9 / 172nd St NE

		720			695	
760		125	495	100		
	235				95	455
	560		3,155		355	
1,275	480				5	
		280	365	60		720
	980			705		

Weekday PM Peak Hour Traffic Volumes

Directional Reference:

Existing (2020)

11 Smokey Point Blvd / 156th St NE

		675			715	
230		40	625	10		
	30				30	50
	5		1,845		5	
275	240				15	
		185	655	5		20
	880			845		

12 Smokey Point Blvd / 152nd St NE

		915			855	
15		5	640	270		
	10				245	350
	5		2,035		5	
25	10				100	
		5	600	140		415
	750			745		

No Action (2040)

11 Smokey Point Blvd / 156th St NE

		1,425			1,065	
1,615		410	860	155		
	230				175	960
	330		4,630		635	
975	415				150	
		570	660	40		525
	1,425			1,270		

12 Smokey Point Blvd / 152nd St NE

		1,435			1,205	
15		5	1,245	185		
	10				310	595
	5		3,125		5	
25	10				280	
		5	885	180		370
	1,535			1,070		

Alt 2 (2040)

11 Smokey Point Blvd / 156th St NE

		1,450			1,055	
1,645		415	895	140		
	235				170	1,000
	305		4,665		665	
955	415				165	
		565	650	45		490
	1,475			1,260		

12 Smokey Point Blvd / 152nd St NE

		1,485			1,200	
15		5	1,300	180		
	10				310	610
	5		3,185		5	
25	10				295	
		5	880	180		365
	1,605			1,065		

Alt 2_Mitigated (2040)

11 Smokey Point Blvd / 156th St NE

		1,420			1,050	
1,645		415	890	115		
	230				170	990
	310		4,625		660	
955	415				160	
		570	650	40		465
	1,465			1,260		

12 Smokey Point Blvd / 152nd St NE

		1,475			1,195	
15		5	1,290	180		
	10				310	605
	5		3,165		5	
25	10				290	
		5	875	180		365
	1,590			1,060		

E HCM Definitions

Highway Capacity Manual 2010/6th Edition

Signalized intersection level of service (LOS) is defined in terms of a weighted average control delay for the entire intersection. Control delay quantifies the increase in travel time that a vehicle experiences due to the traffic signal control as well as provides a surrogate measure for driver discomfort and fuel consumption. Signalized intersection LOS is stated in terms of average control delay per vehicle (in seconds) during a specified time period (e.g., weekday PM peak hour). Control delay is a complex measure based on many variables, including signal phasing and coordination (i.e., progression of movements through the intersection and along the corridor), signal cycle length, and traffic volumes with respect to intersection capacity and resulting queues. Table 1 summarizes the LOS criteria for signalized intersections, as described in the *Highway Capacity Manual 2010* and 6th Edition (Transportation Research Board, 2010 and 2016, respectively).

Table 1. Level of Service Criteria for Signalized Intersections

Level of Service	Average Control Delay (seconds/vehicle)	General Description
A	≤10	Free Flow
B	>10 – 20	Stable Flow (slight delays)
C	>20 – 35	Stable flow (acceptable delays)
D	>35 – 55	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)
E	>55 – 80	Unstable flow (intolerable delay)
F[1]	>80	Forced flow (congested and queues fail to clear)

Source: *Highway Capacity Manual 2010 and 6th Edition*, Transportation Research Board, 2010 and 2016, respectively.

1. If the volume-to-capacity (v/c) ratio for a lane group exceeds 1.0 LOS F is assigned to the individual lane group. LOS for overall approach or intersection is determined solely by the control delay.

Unsignalized intersection LOS criteria can be further reduced into two intersection types: all-way stop and two-way stop control. All-way stop control intersection LOS is expressed in terms of the weighted average control delay of the overall intersection or by approach. Two-way stop-controlled intersection LOS is defined in terms of the average control delay for each minor-street movement (or shared movement) as well as major-street left-turns. This approach is because major-street through vehicles are assumed to experience zero delay, a weighted average of all movements results in very low overall average delay, and this calculated low delay could mask deficiencies of minor movements. Table 2 shows LOS criteria for unsignalized intersections.

Table 2. Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (seconds/vehicle)
A	0 – 10
B	>10 – 15
C	>15 – 25
D	>25 – 35
E	>35 – 50
F[1]	>50

Source: *Highway Capacity Manual 2010 and 6th Edition*, Transportation Research Board, 2010 and 2016, respectively.

1. If the volume-to-capacity (v/c) ratio exceeds 1.0, LOS F is assigned an individual lane group for all unsignalized intersections, or minor street approach at two-way stop-controlled intersections. Overall intersection LOS is determined solely by control delay.

F LOS Worksheets

Intersection	
Int Delay, s/veh	7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	105	5	125	5	0	15	45	335	15	10	395	65
Future Vol, veh/h	105	5	125	5	0	15	45	335	15	10	395	65
Conflicting Peds, #/hr	0	0	1	6	0	5	1	0	6	5	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	30	-	-	105	-	-	110	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	3	3	3	26	26	26	6	6	6	2	2	2
Mvmt Flow	124	6	147	6	0	18	53	394	18	12	465	76

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1013	1014	472	1125	1081	414	542	0	0	418	0	0
Stage 1	490	490	-	515	515	-	-	-	-	-	-	-
Stage 2	523	524	-	610	566	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.36	6.76	6.46	4.16	-	-	4.12	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.36	5.76	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.36	5.76	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.734	4.234	3.534	2.254	-	-	2.218	-	-
Pot Cap-1 Maneuver	216	238	590	164	197	590	1007	-	-	1141	-	-
Stage 1	558	547	-	501	497	-	-	-	-	-	-	-
Stage 2	535	528	-	443	471	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	198	221	586	113	183	584	1006	-	-	1134	-	-
Mov Cap-2 Maneuver	198	221	-	113	183	-	-	-	-	-	-	-
Stage 1	528	540	-	472	468	-	-	-	-	-	-	-
Stage 2	489	497	-	323	465	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	29.8	18.2	1	0.2
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1006	-	-	198	551	113	584	1134	-	-
HCM Lane V/C Ratio	0.053	-	-	0.624	0.278	0.052	0.03	0.01	-	-
HCM Control Delay (s)	8.8	-	-	49.3	14	38.6	11.4	8.2	-	-
HCM Lane LOS	A	-	-	E	B	E	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	3.6	1.1	0.2	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	5	240	15	5	30	185	655	5	10	625	40
Future Volume (vph)	30	5	240	15	5	30	185	655	5	10	625	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.87		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1900	1615	1805	1655		1787	3570		1770	3507	
Flt Permitted	0.64	1.00	1.00	0.75	1.00		0.25	1.00		0.39	1.00	
Satd. Flow (perm)	1223	1900	1615	1434	1655		462	3570		727	3507	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	31	5	250	16	5	31	193	682	5	10	651	42
RTOR Reduction (vph)	0	0	213	0	27	0	0	0	0	0	4	0
Lane Group Flow (vph)	31	5	37	16	9	0	193	687	0	10	689	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	1%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	12.0	9.8	9.8	9.6	8.6		39.6	33.6		24.8	23.8	
Effective Green, g (s)	12.0	9.8	9.8	9.6	8.6		39.6	33.6		24.8	23.8	
Actuated g/C Ratio	0.18	0.15	0.15	0.15	0.13		0.61	0.51		0.38	0.36	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.5		2.0	3.5	
Lane Grp Cap (vph)	243	284	242	216	217		498	1834		291	1276	
v/s Ratio Prot	c0.00	0.00		0.00	0.01		c0.06	0.19		0.00	c0.20	
v/s Ratio Perm	0.02		c0.02	0.01			0.17			0.01		
v/c Ratio	0.13	0.02	0.15	0.07	0.04		0.39	0.37		0.03	0.54	
Uniform Delay, d1	22.2	23.7	24.2	24.0	24.8		6.9	9.6		12.7	16.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.0	0.1	0.1	0.0		0.2	0.2		0.0	0.5	
Delay (s)	22.3	23.7	24.3	24.1	24.8		7.0	9.7		12.7	17.0	
Level of Service	C	C	C	C	C		A	A		B	B	
Approach Delay (s)		24.1			24.6			9.1			16.9	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	65.4	Sum of lost time (s)	20.0
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	5	10	100	5	245	5	600	140	270	640	5
Future Volume (veh/h)	10	5	10	100	5	245	5	600	140	270	640	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1885	1885	1885	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	5	10	104	5	255	5	625	146	281	667	5
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	1	1	1	2	2	2	2	2	2
Cap, veh/h	200	79	158	458	6	311	395	861	201	453	1562	12
Arrive On Green	0.01	0.14	0.14	0.07	0.20	0.20	0.01	0.30	0.30	0.14	0.43	0.43
Sat Flow, veh/h	1810	565	1131	1795	31	1571	1781	2860	667	1781	3615	27
Grp Volume(v), veh/h	10	0	15	104	0	260	5	388	383	281	328	344
Grp Sat Flow(s),veh/h/ln	1810	0	1696	1795	0	1602	1781	1777	1750	1781	1777	1865
Q Serve(g_s), s	0.3	0.0	0.4	2.7	0.0	8.8	0.1	11.0	11.0	5.6	7.2	7.2
Cycle Q Clear(g_c), s	0.3	0.0	0.4	2.7	0.0	8.8	0.1	11.0	11.0	5.6	7.2	7.2
Prop In Lane	1.00		0.67	1.00		0.98	1.00		0.38	1.00		0.01
Lane Grp Cap(c), veh/h	200	0	237	458	0	317	395	535	527	453	768	806
V/C Ratio(X)	0.05	0.00	0.06	0.23	0.00	0.82	0.01	0.72	0.73	0.62	0.43	0.43
Avail Cap(c_a), veh/h	534	0	331	686	0	426	733	1103	1086	557	1103	1158
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.8	0.0	21.1	18.6	0.0	21.7	13.6	17.6	17.6	11.6	11.1	11.2
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	6.8	0.0	1.4	1.4	1.1	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.2	1.0	0.0	3.5	0.0	4.1	4.1	1.8	2.4	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.8	0.0	21.1	18.7	0.0	28.5	13.6	19.0	19.1	12.7	11.4	11.4
LnGrp LOS	C	A	C	B	A	C	B	B	B	B	B	B
Approach Vol, veh/h		25			364			776			953	
Approach Delay, s/veh		21.0			25.7			19.0			11.8	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.7	22.0	8.8	12.9	5.3	29.4	5.6	16.1
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	11.0	35.0	11.0	11.0	11.0	35.0	11.0	15.0
Max Q Clear Time (g_c+I1), s	7.6	13.0	4.7	2.4	2.1	9.2	2.3	10.8
Green Ext Time (p_c), s	0.2	3.9	0.1	0.0	0.0	3.3	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	16.9
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

1: 67th Ave NE & 188th St NE Performance by movement

Movement	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	3.7	0.4	0.5	3.8	0.1	0.0	0.0	0.0	3.1	0.3	0.2	0.5
Total Del/Veh (s)	12.9	13.2	6.0	10.1	3.2	16.1	11.4	10.5	3.7	1.2	0.5	6.9

2: I-5 SB On Ramp & SR 531 (172nd St) & I-5 SB Ramps Performance by movement

Movement	EBT	EBR	WBT	WBR	SBL2	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	1.8	1.0	3.4	0.4
Total Del/Veh (s)	7.5	4.8	13.9	8.6	52.1	41.8	13.3	13.4

3: I-5 NB Off Ramp/I-5 NB On Ramp & SR 531 (172nd St) Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	18.6	18.7	6.1
Total Del/Veh (s)	55.7	31.1	35.0	12.4	51.8	51.2	38.2

4: Smokey Pt Blvd & SR 531 (172nd St) Performance by movement

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Denied Del/Veh (s)	0.0	12.5	6.7	9.3	0.0	0.0	0.0	0.0	66.0	61.4	64.4	0.0
Total Del/Veh (s)	172.2	175.4	40.0	10.9	70.9	70.8	64.4	5.9	401.0	76.0	42.5	79.1

4: Smokey Pt Blvd & SR 531 (172nd St) Performance by movement

Movement	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	19.4
Total Del/Veh (s)	47.4	56.3	103.2

5: 40th Ave NE & SR 531 (172nd St) Performance by movement

Movement	EBT	EBR	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.3	0.3	0.0	1.1	0.1	0.2
Total Del/Veh (s)	11.9	6.8	4.1	40.9	22.5	9.3

6: 43rd Ave NE & SR 531 (172nd St) Performance by movement

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Denied Del/Veh (s)	0.2	0.5	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.1
Total Del/Veh (s)	94.1	87.7	30.6	4.0	82.6	16.0	14.7	61.8	92.8	41.8	124.4	100.9

6: 43rd Ave NE & SR 531 (172nd St) Performance by movement

Movement	SBR	All
Denied Del/Veh (s)	0.1	0.4
Total Del/Veh (s)	14.3	33.0

7: 51st Ave NE & SR 531 (172nd St) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	1.0	2.1	3.4	0.0	0.0	0.0	1.4	0.4	1.3	1.0	0.2	0.2
Total Del/Veh (s)	102.0	123.5	119.2	64.0	29.7	26.5	121.7	75.3	59.4	80.4	63.5	49.6

7: 51st Ave NE & SR 531 (172nd St) Performance by movement

Movement	All
Denied Del/Veh (s)	1.1
Total Del/Veh (s)	77.1

8: 59th Ave NE & SR 531 (172nd St) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.4	1.6	0.1	0.2	0.1	0.0	4.1	0.1	0.2	0.8	1.8	1.6
Total Del/Veh (s)	87.9	52.5	63.6	81.3	40.6	36.3	77.8	124.4	73.5	97.5	64.9	52.7

8: 59th Ave NE & SR 531 (172nd St) Performance by movement

Movement	All
Denied Del/Veh (s)	1.3
Total Del/Veh (s)	55.1

9: 67th Ave NE & SR 531 (172nd St) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.8	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	10.5	4.5	2.1	33.8	41.2	35.0	50.2	50.2	37.7	59.5	47.9	55.8

9: 67th Ave NE & SR 531 (172nd St) Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	32.0

10: SR 9 & SR 531 (172nd St) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.2	0.1	4.0	3.2	1.0	1.1	0.4	0.6
Total Del/Veh (s)	9.1	3.9	4.1	7.6	10.0	8.1	5.1	5.5	9.4	4.7	8.5	8.9

10: SR 9 & SR 531 (172nd St) Performance by movement

Movement	SBT	SBR	All
Denied Del/Veh (s)	0.7	3.3	1.0
Total Del/Veh (s)	13.3	2.8	7.8

11: Smokey Pt Blvd & 156th St NE Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.8	0.8	3.7	4.0	0.2	0.2	0.0	0.0	0.0	0.1	0.0	0.0
Total Del/Veh (s)	19.1	23.1	8.2	25.6	26.3	5.7	12.8	6.5	4.8	13.4	13.4	10.0

11: Smokey Pt Blvd & 156th St NE Performance by movement

Movement	All
Denied Del/Veh (s)	0.6
Total Del/Veh (s)	10.2

12: Smokey Pt Blvd & 152nd Ave NE Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	3.6	0.5	0.5	1.7	0.2	0.2	0.2	0.0	0.0
Total Del/Veh (s)	25.2	21.9	5.3	20.3	17.1	7.3	11.8	12.3	7.5	14.1	6.5	4.7

12: Smokey Pt Blvd & 152nd Ave NE Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	10.2

16: BNSF Railway Spur & SR 531 (172nd St) Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	9.9	0.0	5.8
Total Del/Veh (s)	14.9	1.3	9.3

33: SR 531 (172nd St) Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.3	0.0	0.2
Total Del/Veh (s)	6.2	22.8	15.1

47: SR 531 (172nd St) Performance by movement

Movement	EBT	WBT	SBR	All
Denied Del/Veh (s)	0.1	0.0	0.2	0.1
Total Del/Veh (s)	60.0	4.1	30.1	32.6

51: SR 531 (172nd St) Performance by movement

Movement	EBT	EBR	WBL	WBT	NBR	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	11.5	6.2	26.0	1.7	37.8	7.2

52: SR 531 (172nd St) Performance by movement

Movement	EBT	EBR	WBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	6.8	4.8	1.7	10.5	4.1

Total Network Performance

Denied Del/Veh (s)	13.6
Total Del/Veh (s)	134.3

Arterial Level of Service: EB SR 531 (172nd St)

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	33	6.2	90.6	0.8	33
I-5 SB On Ramp	2	7.5	19.6	0.1	23
I-5 NB Off Ramp	3	32.6	49.4	0.2	12
	47	62.1	73.1	0.1	5
Smokey Pt Blvd	4	40.0	54.6	0.1	7
	45	5.7	16.8	0.1	22
	52	6.8	15.1	0.1	19
40th Ave NE	5	11.9	23.4	0.1	17
	51	11.5	20.0	0.1	15
43rd Ave NE	6	30.5	42.7	0.1	10
51st Ave NE	7	119.4	177.2	0.5	10
59th Ave NE	8	53.7	102.7	0.5	18
	28	27.8	67.9	0.4	21
	22	10.5	14.8	0.0	10
BNSF Railway Spur	16	14.9	26.7	0.0	4
67th Ave NE	9	4.5	6.3	0.0	12
	42	4.6	44.0	0.4	31
	21	2.6	29.6	0.3	32
	31	2.4	24.9	0.2	32
	34	3.0	30.3	0.3	31
SR 9	10	3.9	14.0	0.2	40
Total		462.2	943.8	4.6	18

Arterial Level of Service: WB SR 531 (172nd St)

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
SR 9	10	10.0	23.8	0.2	23
	34	1.9	24.8	0.2	23
	31	0.8	28.0	0.3	34
	21	1.2	23.7	0.2	33
	42	1.8	28.9	0.3	33
67th Ave NE	9	41.2	78.2	0.4	17
BNSF Railway Spur	16	1.9	4.5	0.0	16
	22	0.3	2.7	0.0	26
	28	0.3	4.7	0.0	32
59th Ave NE	8	40.6	79.3	0.4	18
51st Ave NE	7	34.6	90.9	0.5	20
43rd Ave NE	6	14.7	64.6	0.5	27
	51	1.6	13.8	0.1	30
40th Ave NE	5	4.1	12.4	0.1	24
	52	1.8	13.2	0.1	30
	45	0.9	9.3	0.1	31
Smokey Pt Blvd	4	64.4	74.3	0.1	5
	47	5.5	16.5	0.1	22
I-5 NB On Ramp	3	34.9	45.5	0.1	9
I-5 SB Ramps	2	16.3	32.3	0.2	18
	33	17.1	30.8	0.1	15
Total		295.9	702.2	3.9	20

Intersection: 1: 67th Ave NE & 188th St NE

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	89	94	34	58	55	43	32	38	25
Average Queue (ft)	37	33	3	15	17	2	3	3	1
95th Queue (ft)	67	66	19	47	48	17	17	22	10
Link Distance (ft)		670		692		7825		1046	1046
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	60		30		105		110		
Storage Blk Time (%)	3	1	1	1					
Queuing Penalty (veh)	4	1	0	0					

Intersection: 2: I-5 SB On Ramp & SR 531 (172nd St) & I-5 SB Ramps

Movement	EB	EB	EB	WB	WB	SB	SB	SB
Directions Served	T	T	R	T	T	<	<L	R
Maximum Queue (ft)	239	220	184	480	497	205	285	320
Average Queue (ft)	107	92	58	130	133	104	138	105
95th Queue (ft)	198	177	126	353	366	189	236	274
Link Distance (ft)	591	591		766	766		734	
Upstream Blk Time (%)				0	0			
Queuing Penalty (veh)				0	0			
Storage Bay Dist (ft)			183			383		383
Storage Blk Time (%)		1	0				0	0
Queuing Penalty (veh)		3	0				0	1

Intersection: 3: I-5 NB Off Ramp/I-5 NB On Ramp & SR 531 (172nd St)

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	T	T	R	L	LT	R
Maximum Queue (ft)	530	540	533	457	475	492	315	373	952	1002
Average Queue (ft)	244	212	221	253	272	254	156	206	457	368
95th Queue (ft)	421	437	442	410	428	448	369	335	1058	1172
Link Distance (ft)		766	766	518	518	518			1140	1140
Upstream Blk Time (%)		0	0	0	0	0			11	13
Queuing Penalty (veh)		2	3	0	1	3			0	0
Storage Bay Dist (ft)	610						255	395		
Storage Blk Time (%)		2				7	2	0	0	
Queuing Penalty (veh)		5				37	11	0	1	

Intersection: 4: Smokey Pt Blvd & SR 531 (172nd St)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	B45	NB	NB
Directions Served	UL	T	T	R	UL	T	T	T	R	T	L	L
Maximum Queue (ft)	502	516	489	436	310	331	393	453	272	37	309	368
Average Queue (ft)	462	454	369	135	160	201	232	288	50	2	299	365
95th Queue (ft)	508	555	552	354	273	308	356	424	197	30	352	376
Link Distance (ft)	449	449	449	449		448	448	448		371		
Upstream Blk Time (%)	71	48	5	2			0	1				
Queuing Penalty (veh)	321	216	24	8			0	5				
Storage Bay Dist (ft)					393				266		250	250
Storage Blk Time (%)					0	0		21			31	79
Queuing Penalty (veh)					1	0		22			64	164

Intersection: 4: Smokey Pt Blvd & SR 531 (172nd St)

Movement	NB	NB	NB	SB	SB	SB	SB	B46	B46
Directions Served	T	T	R	L	T	T	R	T	T
Maximum Queue (ft)	2153	2100	203	225	331	409	250	54	81
Average Queue (ft)	1607	1402	79	127	121	195	188	5	7
95th Queue (ft)	2488	2438	160	212	261	399	285	77	80
Link Distance (ft)	3707	3707			366	366		1521	1521
Upstream Blk Time (%)					1	3			
Queuing Penalty (veh)					0	0			
Storage Bay Dist (ft)			160	132			150		
Storage Blk Time (%)	1	14	2	18	2	4	28		
Queuing Penalty (veh)	4	31	5	21	3	11	32		

Intersection: 5: 40th Ave NE & SR 531 (172nd St)

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	TR	T	T	L	R
Maximum Queue (ft)	244	231	162	198	176	74
Average Queue (ft)	84	63	56	76	62	22
95th Queue (ft)	254	222	124	154	151	61
Link Distance (ft)	527	527	373	373	430	430
Upstream Blk Time (%)	2	2		0	1	
Queuing Penalty (veh)	11	9		0	0	
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: 43rd Ave NE & SR 531 (172nd St)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	B24	SB	SB
Directions Served	UL	T	R	L	T	TR	L	L	TR	T	L	TR
Maximum Queue (ft)	220	546	150	225	330	199	182	177	221	217	42	65
Average Queue (ft)	45	308	10	124	109	95	98	95	123	32	8	18
95th Queue (ft)	130	594	67	208	241	193	166	162	214	222	30	48
Link Distance (ft)		524	524		2479		147	147	147	669		1920
Upstream Blk Time (%)		6	0				3	3	12	2		
Queuing Penalty (veh)		24	1				0	0	0	0		
Storage Bay Dist (ft)	158			217		62					109	
Storage Blk Time (%)		22		1	13	13						0
Queuing Penalty (veh)		8		12	75	76						0

Intersection: 7: 51st Ave NE & SR 531 (172nd St)

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	TR
Maximum Queue (ft)	526	1853	484	759	225	556	122	145	304
Average Queue (ft)	107	1122	81	363	154	127	49	47	114
95th Queue (ft)	420	2198	256	665	245	516	103	111	279
Link Distance (ft)		2479		2485		3018			3251
Upstream Blk Time (%)		3							
Queuing Penalty (veh)		27							
Storage Bay Dist (ft)	246		244		185		150	127	
Storage Blk Time (%)		37		16	18	4	0	2	7
Queuing Penalty (veh)		13		12	24	8	0	3	3

Intersection: 8: 59th Ave NE & SR 531 (172nd St)

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	489	847	211	636	92	94	671	437
Average Queue (ft)	169	435	20	308	34	22	162	253
95th Queue (ft)	327	1206	101	560	78	69	757	434
Link Distance (ft)		2485		1993		988	2979	
Upstream Blk Time (%)		4					0	
Queuing Penalty (veh)		33					0	
Storage Bay Dist (ft)	350		140		98			385
Storage Blk Time (%)	0	15		32	1	4	3	4
Queuing Penalty (veh)	1	26		3	0	1	13	3

Intersection: 9: 67th Ave NE & SR 531 (172nd St)

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	L	TR
Maximum Queue (ft)	87	86	50	216	475	235	378	218	597
Average Queue (ft)	36	37	17	48	227	59	172	106	286
95th Queue (ft)	67	68	45	149	402	158	305	232	506
Link Distance (ft)	29	29	29		1914		787		7825
Upstream Blk Time (%)	50	36	5						
Queuing Penalty (veh)	132	94	13						
Storage Bay Dist (ft)				129		155		106	
Storage Blk Time (%)				0	29	0	17	5	41
Queuing Penalty (veh)				0	13	0	9	16	41

Intersection: 10: SR 9 & SR 531 (172nd St)

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	UL	TR	ULT	R
Maximum Queue (ft)	154	72	78	88	56	154	30
Average Queue (ft)	56	18	33	32	12	56	4
95th Queue (ft)	115	52	64	68	43	117	22
Link Distance (ft)	702		697		1118	1173	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		585		588			800
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 11: Smokey Pt Blvd & 156th St NE

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	61	31	140	49	52	122	117	113	60	202	185
Average Queue (ft)	21	4	66	15	22	52	44	43	6	89	86
95th Queue (ft)	53	22	112	42	47	97	96	93	36	168	163
Link Distance (ft)		824			791		1046	1046		3707	3707
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	187		185	200		211			98		
Storage Blk Time (%)			0							6	
Queuing Penalty (veh)			0							1	

Intersection: 12: Smokey Pt Blvd & 152nd Ave NE

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	42	39	115	131	32	176	168	190	125	137
Average Queue (ft)	9	12	51	63	4	95	86	83	43	61
95th Queue (ft)	32	36	91	105	22	151	143	145	102	111
Link Distance (ft)	124	124		260		1809	1809		1046	1046
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)			140		87			133		
Storage Blk Time (%)			0	0		8		2	0	
Queuing Penalty (veh)			0	0		0		5	0	

Intersection: 16: BNSF Railway Spur & SR 531 (172nd St)

Movement	EB	EB	EB	B22	B22	B28	WB
Directions Served	T	T	T	T	T	T	T
Maximum Queue (ft)	152	149	62	169	240	459	27
Average Queue (ft)	87	102	7	27	110	138	1
95th Queue (ft)	164	169	37	105	255	879	12
Link Distance (ft)	56	56	56	164	164	1993	29
Upstream Blk Time (%)	29	32	0	0	12	5	0
Queuing Penalty (veh)	75	82	0	2	46	37	0
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 33: SR 531 (172nd St)

Movement	WB	WB
Directions Served	T	T
Maximum Queue (ft)	508	563
Average Queue (ft)	225	252
95th Queue (ft)	425	478
Link Distance (ft)	591	591
Upstream Blk Time (%)		1
Queuing Penalty (veh)		10
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 47: SR 531 (172nd St)

Movement	EB	EB	EB	EB	WB	WB	SB
Directions Served	T	T	T	T	T	T	R
Maximum Queue (ft)	448	557	549	646	11	46	159
Average Queue (ft)	317	351	335	342	0	3	69
95th Queue (ft)	557	663	683	810	7	30	125
Link Distance (ft)		518	518	518	449	449	526
Upstream Blk Time (%)		10	11	23			
Queuing Penalty (veh)		57	67	137			
Storage Bay Dist (ft)	350						
Storage Blk Time (%)	33	28					
Queuing Penalty (veh)	148	125					

Intersection: 51: SR 531 (172nd St)

Movement	EB	EB	WB	WB	NB
Directions Served	T	TR	L	T	R
Maximum Queue (ft)	289	211	138	20	89
Average Queue (ft)	56	35	53	1	26
95th Queue (ft)	265	211	113	20	75
Link Distance (ft)	373	373		524	272
Upstream Blk Time (%)	5	3			
Queuing Penalty (veh)	23	15			
Storage Bay Dist (ft)			204		
Storage Blk Time (%)				0	
Queuing Penalty (veh)				0	

Intersection: 52: SR 531 (172nd St)

Movement	EB	EB	B45	B45	NB
Directions Served	T	TR	T	T	R
Maximum Queue (ft)	52	62	46	48	60
Average Queue (ft)	10	10	9	9	20
95th Queue (ft)	112	111	109	108	47
Link Distance (ft)	371	371	448	448	348
Upstream Blk Time (%)	2	2	1	1	
Queuing Penalty (veh)	10	10	8	8	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 2571

LANE LEVEL OF SERVICE

Lane Level of Service

Site: 10 [Existing Weekday PM Peak Hour]

SR 9/SR 531 (172nd St NE)
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

MOVEMENT SUMMARY

Site: 10 [Existing Weekday PM Peak Hour]

SR 9/SR 531 (172nd St NE)
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: SR 9												
3u	U	5	5.0	0.263	13.6	LOS B	1.6	41.6	0.54	0.70	0.54	34.0
3	L2	261	5.0	0.263	11.3	LOS B	1.6	41.6	0.54	0.70	0.54	33.3
8	T1	424	5.0	0.346	5.5	LOS A	2.4	62.1	0.55	0.55	0.55	35.8
18	R2	11	5.0	0.346	5.7	LOS A	2.4	62.1	0.55	0.55	0.55	34.7
Approach		701	5.0	0.346	7.7	LOS A	2.4	62.1	0.55	0.61	0.55	34.8
East: SR 531 (172nd St NE)												
1	L2	11	2.0	0.135	12.4	LOS B	0.6	14.4	0.60	0.73	0.60	35.3
6	T1	65	2.0	0.135	7.1	LOS A	0.6	14.4	0.60	0.73	0.60	35.3
16	R2	22	2.0	0.135	6.9	LOS A	0.6	14.4	0.60	0.73	0.60	34.4
Approach		98	2.0	0.135	7.6	LOS A	0.6	14.4	0.60	0.73	0.60	35.1
North: SR 9												
7u	U	5	4.0	0.393	13.6	LOS B	2.3	60.0	0.55	0.60	0.55	36.2
7	L2	38	4.0	0.393	11.3	LOS B	2.3	60.0	0.55	0.60	0.55	35.4
4	T1	380	4.0	0.393	5.9	LOS A	2.3	60.0	0.55	0.60	0.55	35.4
14	R2	114	4.0	0.168	6.9	LOS A	0.7	19.1	0.50	0.67	0.50	34.8
Approach		538	4.0	0.393	6.6	LOS A	2.3	60.0	0.54	0.62	0.54	35.3
West: SR 531 (172nd St NE)												
5	L2	158	5.0	0.266	12.1	LOS B	1.7	43.3	0.64	0.73	0.64	34.1
2	T1	92	5.0	0.266	6.6	LOS A	1.7	43.3	0.64	0.73	0.64	34.1
12	R2	261	5.0	0.228	6.3	LOS A	1.5	38.6	0.61	0.65	0.61	34.8
Approach		511	5.0	0.266	8.1	LOS A	1.7	43.3	0.62	0.69	0.62	34.5
All Vehicles		1848	4.6	0.393	7.5	LOS A	2.4	62.1	0.57	0.64	0.57	34.9

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection	
Int Delay, s/veh	58.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	285	15	325	5	5	20	45	310	20	15	445	160
Future Vol, veh/h	285	15	325	5	5	20	45	310	20	15	445	160
Conflicting Peds, #/hr	0	0	1	6	0	5	1	0	6	5	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	30	-	-	105	-	-	110	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	26	26	26	6	6	6	2	2	2
Mvmt Flow	310	16	353	5	5	22	49	337	22	16	484	174

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	982	980	491	1246	1143	359	659	0	0	365	0	0
Stage 1	517	517	-	452	452	-	-	-	-	-	-	-
Stage 2	465	463	-	794	691	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.36	6.76	6.46	4.16	-	-	4.12	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.36	5.76	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.36	5.76	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.734	4.234	3.534	2.254	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 227	249	575	134	181	635	910	-	-	1194	-	-
Stage 1	539	532	-	543	532	-	-	-	-	-	-	-
Stage 2	576	562	-	348	411	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 202	231	571	45	168	628	909	-	-	1187	-	-
Mov Cap-2 Maneuver	~ 202	231	-	45	168	-	-	-	-	-	-	-
Stage 1	509	525	-	511	500	-	-	-	-	-	-	-
Stage 2	518	528	-	126	405	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	153.4	28	1.1	0.2
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	909	-	-	202	536	45	406	1187	-	-
HCM Lane V/C Ratio	0.054	-	-	1.534	0.689	0.121	0.067	0.014	-	-
HCM Control Delay (s)	9.2	-	-	$ 306.3	25.3	95.7	14.5	8.1	-	-
HCM Lane LOS	A	-	-	F	D	F	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	19.4	5.3	0.4	0.2	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	330	415	150	635	175	570	660	40	155	860	410
Future Volume (veh/h)	230	330	415	150	635	175	570	660	40	155	860	410
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	240	344	432	156	661	182	594	688	42	161	896	427
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	1	1	1	2	2	2
Cap, veh/h	264	1026	458	182	668	184	617	1370	84	213	1009	450
Arrive On Green	0.15	0.28	0.28	0.10	0.24	0.24	0.18	0.40	0.40	0.06	0.28	0.28
Sat Flow, veh/h	1810	3610	1610	1810	2797	769	3483	3429	209	3456	3554	1585
Grp Volume(v), veh/h	240	344	432	156	426	417	594	359	371	161	896	427
Grp Sat Flow(s),veh/h/ln	1810	1805	1610	1810	1805	1761	1742	1791	1848	1728	1777	1585
Q Serve(g_s), s	16.9	9.8	34.1	11.0	30.6	30.6	22.0	19.5	19.6	6.0	31.3	34.3
Cycle Q Clear(g_c), s	16.9	9.8	34.1	11.0	30.6	30.6	22.0	19.5	19.6	6.0	31.3	34.3
Prop In Lane	1.00		1.00	1.00		0.44	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	264	1026	458	182	431	421	617	715	738	213	1009	450
V/C Ratio(X)	0.91	0.34	0.94	0.86	0.99	0.99	0.96	0.50	0.50	0.76	0.89	0.95
Avail Cap(c_a), veh/h	265	1026	458	265	431	421	617	715	738	293	1013	452
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.6	36.7	45.4	57.4	49.2	49.2	53.0	29.3	29.3	59.9	44.5	45.6
Incr Delay (d2), s/veh	31.6	0.1	28.1	12.1	40.2	41.1	26.8	0.7	0.7	4.3	9.8	29.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	4.4	17.0	5.6	18.4	18.1	11.8	8.5	8.7	2.7	15.0	17.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	86.2	36.8	73.6	69.5	89.5	90.4	79.8	29.9	29.9	64.2	54.3	75.4
LnGrp LOS	F	D	E	E	F	F	E	C	C	E	D	E
Approach Vol, veh/h		1016			999			1324			1484	
Approach Delay, s/veh		64.1			86.7			52.3			61.5	
Approach LOS		E			F			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	56.8	18.1	41.9	28.0	41.8	23.9	36.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	11.0	49.0	19.0	31.0	23.0	37.0	19.0	31.0
Max Q Clear Time (g_c+I1), s	8.0	21.6	13.0	36.1	24.0	36.3	18.9	32.6
Green Ext Time (p_c), s	0.1	5.7	0.1	0.0	0.0	0.6	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	64.7
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	5	10	280	5	310	5	885	180	185	1245	5
Future Volume (veh/h)	10	5	10	280	5	310	5	885	180	185	1245	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1885	1885	1885	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	5	10	292	5	323	5	922	188	193	1297	5
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	1	1	1	2	2	2	2	2	2
Cap, veh/h	181	65	130	522	6	380	118	1132	231	261	1603	6
Arrive On Green	0.01	0.12	0.12	0.14	0.24	0.24	0.01	0.38	0.38	0.06	0.44	0.44
Sat Flow, veh/h	1810	565	1131	1795	24	1577	1781	2940	599	1781	3631	14
Grp Volume(v), veh/h	10	0	15	292	0	328	5	557	553	193	635	667
Grp Sat Flow(s),veh/h/ln	1810	0	1696	1795	0	1601	1781	1777	1763	1781	1777	1868
Q Serve(g_s), s	0.3	0.0	0.5	9.0	0.0	13.0	0.1	18.6	18.6	1.3	20.6	20.6
Cycle Q Clear(g_c), s	0.3	0.0	0.5	9.0	0.0	13.0	0.1	18.6	18.6	1.3	20.6	20.6
Prop In Lane	1.00		0.67	1.00		0.98	1.00		0.34	1.00		0.01
Lane Grp Cap(c), veh/h	181	0	196	522	0	386	118	684	678	261	785	825
V/C Ratio(X)	0.06	0.00	0.08	0.56	0.00	0.85	0.04	0.81	0.82	0.74	0.81	0.81
Avail Cap(c_a), veh/h	272	0	512	522	0	604	216	885	878	419	1046	1100
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.6	0.0	26.2	20.5	0.0	24.0	18.2	18.2	18.3	28.7	16.1	16.1
Incr Delay (d2), s/veh	0.0	0.0	0.1	0.8	0.0	4.0	0.1	4.1	4.2	3.1	3.2	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.2	3.6	0.0	4.9	0.0	7.5	7.4	3.0	7.8	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.7	0.0	26.2	21.4	0.0	28.0	18.3	22.4	22.5	31.8	19.2	19.1
LnGrp LOS	C	A	C	C	A	C	B	C	C	C	B	B
Approach Vol, veh/h		25			620			1115			1495	
Approach Delay, s/veh		26.0			24.9			22.4			20.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.1	30.5	14.0	12.6	5.4	34.3	5.7	21.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	10.0	33.0	9.0	20.0	4.0	39.0	4.0	25.0
Max Q Clear Time (g_c+I1), s	3.3	20.6	11.0	2.5	2.1	22.6	2.3	15.0
Green Ext Time (p_c), s	0.2	4.9	0.0	0.0	0.0	6.7	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	22.2
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

1: 67th Ave NE & 188th St NE Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	6.1	5.7	5.2	3.8	0.1	0.1	0.0	0.0	0.0	2.7	0.3	0.2
Total Del/Veh (s)	56.7	50.1	42.8	18.0	21.9	4.7	18.7	11.4	13.4	3.2	1.8	1.0

1: 67th Ave NE & 188th St NE Performance by movement

Movement	All
Denied Del/Veh (s)	2.2
Total Del/Veh (s)	21.9

2: I-5 SB On Ramp & SR 531 (172nd St) & I-5 SB Ramps Performance by movement

Movement	EBT	EBR	WBT	WBR	SBL2	SBL	SBR	All
Denied Del/Veh (s)	1.8	2.0	0.0	0.0	158.6	158.8	163.1	27.1
Total Del/Veh (s)	77.6	37.0	18.9	11.7	148.3	159.1	139.1	53.6

3: I-5 NB Off Ramp/I-5 NB On Ramp & SR 531 (172nd St) Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Del/Veh (s)	1.9	2.4	0.2	0.4	319.0	314.3	101.4
Total Del/Veh (s)	164.4	155.9	40.7	18.6	73.7	173.9	92.8

4: Smokey Pt Blvd & SR 531 (172nd St) Performance by movement

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Denied Del/Veh (s)	0.0	75.3	65.0	82.7	0.1	3.9	4.4	2.8	112.6	112.9	132.6	0.0
Total Del/Veh (s)	214.5	219.1	61.3	11.5	61.1	77.7	70.7	7.7	473.9	115.8	61.3	92.3

4: Smokey Pt Blvd & SR 531 (172nd St) Performance by movement

Movement	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	50.0
Total Del/Veh (s)	60.3	154.2	142.1

5: 40th Ave NE & SR 531 (172nd St) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.0	1.9	0.0	10.0	12.2	9.5	59.9	62.6	37.3	33.6	33.6	36.4
Total Del/Veh (s)	87.3	34.4	26.5	100.7	21.2	18.0	104.6	84.6	18.3	107.3	85.0	46.6

5: 40th Ave NE & SR 531 (172nd St) Performance by movement

Movement	All
Denied Del/Veh (s)	13.9
Total Del/Veh (s)	41.7

6: 43rd Ave NE & SR 531 (172nd St) Performance by movement

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Denied Del/Veh (s)	0.4	0.4	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.1
Total Del/Veh (s)	54.8	55.3	42.0	3.0	79.9	35.6	28.9	57.9	62.7	50.2	217.8	80.3

6: 43rd Ave NE & SR 531 (172nd St) Performance by movement

Movement	SBR	All
Denied Del/Veh (s)	0.2	0.8
Total Del/Veh (s)	38.8	45.0

7: 51st Ave NE & SR 531 (172nd St) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	123.9	143.3	136.9	0.0	0.0	0.0	219.1	231.7	228.2	1.7	1.7	1.0
Total Del/Veh (s)	173.6	196.6	196.2	86.5	24.2	21.2	899.2	793.4	823.1	162.0	111.5	114.0

7: 51st Ave NE & SR 531 (172nd St) Performance by movement

Movement	All
Denied Del/Veh (s)	92.4
Total Del/Veh (s)	231.0

8: 59th Ave NE & SR 531 (172nd St) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	11.1	9.9	2.7	64.2	68.7	71.1	150.1	164.2	160.1	239.8	218.9	212.1
Total Del/Veh (s)	238.5	150.1	182.0	294.2	214.0	201.1	214.4	160.2	157.1	579.5	463.6	455.3

8: 59th Ave NE & SR 531 (172nd St) Performance by movement

Movement	All
Denied Del/Veh (s)	110.6
Total Del/Veh (s)	260.8

9: 67th Ave NE & SR 531 (172nd St) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.6	1.1	0.3	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	19.0	5.2	4.6	201.0	103.6	101.2	170.7	140.7	129.0	290.0	163.2	206.6

9: 67th Ave NE & SR 531 (172nd St) Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	113.4

10: SR 9 & SR 531 (172nd St) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	16.4	14.7	14.5	3.2	1.2	1.1	430.2	421.6	414.9
Total Del/Veh (s)	51.6	40.2	4.7	91.9	106.5	108.6	9.7	10.0	5.8	306.4	305.3	85.2

10: SR 9 & SR 531 (172nd St) Performance by movement

Movement	All
Denied Del/Veh (s)	118.1
Total Del/Veh (s)	92.6

11: Smokey Pt Blvd & 156th St NE Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	145.8	152.1	155.8	907.5	918.7	945.6	179.3	141.8	186.8	403.3	383.0	395.5
Total Del/Veh (s)	244.5	71.6	48.1	172.1	194.8	193.2	346.9	84.0	70.0	431.8	457.5	487.9

11: Smokey Pt Blvd & 156th St NE Performance by movement

Movement	All
Denied Del/Veh (s)	410.6
Total Del/Veh (s)	255.8

12: Smokey Pt Blvd & 152nd Ave NE Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	11.7	17.8	10.0	228.6	256.6	255.7	0.0	0.0	0.0
Total Del/Veh (s)	76.0	44.8	11.1	26.4	51.0	49.9	644.9	494.2	329.2	27.6	13.0	8.6

12: Smokey Pt Blvd & 152nd Ave NE Performance by movement

Movement	All
Denied Del/Veh (s)	102.0
Total Del/Veh (s)	170.3

16: BNSF Railway Spur & SR 531 (172nd St) Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	30.9	0.0	17.4
Total Del/Veh (s)	22.6	1.6	13.4

33: SR 531 (172nd St) Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	9.4	0.2	4.7
Total Del/Veh (s)	182.2	38.4	108.7

47: SR 531 (172nd St) Performance by movement

Movement	EBT	WBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.2	0.0
Total Del/Veh (s)	125.4	5.6	49.3	56.2

51: SR 531 (172nd St) Performance by movement

Movement	EBT	EBR	WBL	WBT	NBR	All
Denied Del/Veh (s)	4.3	0.0	0.0	0.5	47.7	3.4
Total Del/Veh (s)	17.6	7.8	22.3	8.1	60.8	13.6

52: SR 531 (172nd St) Performance by movement

Movement	EBT	EBR	WBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	28.8	1.4
Total Del/Veh (s)	14.0	15.1	2.6	37.4	9.0

Total Network Performance

Denied Del/Veh (s)	216.3
Total Del/Veh (s)	334.1

Arterial Level of Service: EB SR 531 (172nd St)

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	33	182.2	269.8	0.8	12
I-5 SB On Ramp	2	77.6	91.4	0.1	5
I-5 NB Off Ramp	3	149.1	168.3	0.2	4
	47	130.3	140.4	0.1	3
Smokey Pt Blvd	4	61.3	136.7	0.1	5
	45	12.0	23.0	0.1	16
	52	14.0	22.3	0.1	13
40th Ave NE	5	35.4	48.4	0.1	9
	51	18.7	32.3	0.1	11
43rd Ave NE	6	41.0	55.6	0.1	8
51st Ave NE	7	192.5	426.3	0.5	7
59th Ave NE	8	147.0	203.6	0.5	9
	28	69.7	109.7	0.4	13
	22	18.5	22.8	0.0	7
BNSF Railway Spur	16	22.6	55.7	0.0	3
67th Ave NE	9	5.2	7.7	0.0	10
	42	5.4	44.6	0.4	31
	21	3.0	30.0	0.3	32
	31	2.7	25.3	0.2	31
	34	3.8	30.9	0.3	31
SR 9	10	40.2	52.9	0.2	11
Total		1232.1	1997.7	4.6	10

Arterial Level of Service: WB SR 531 (172nd St)

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
SR 9	10	106.5	134.4	0.2	5
	34	3.5	27.2	0.2	21
	31	1.5	28.6	0.3	33
	21	1.8	24.4	0.2	32
	42	4.4	31.3	0.3	30
67th Ave NE	9	103.6	140.1	0.4	10
BNSF Railway Spur	16	2.0	4.6	0.0	15
	22	0.6	2.8	0.0	25
	28	1.5	5.9	0.0	26
59th Ave NE	8	214.0	318.5	0.4	6
51st Ave NE	7	25.1	82.5	0.5	22
43rd Ave NE	6	34.1	83.1	0.5	21
	51	9.8	22.1	0.1	19
40th Ave NE	5	21.2	40.8	0.1	10
	52	3.1	14.1	0.1	29
	45	1.3	9.7	0.1	30
Smokey Pt Blvd	4	70.7	83.8	0.1	5
	47	6.5	17.5	0.1	20
I-5 NB On Ramp	3	40.7	51.4	0.1	8
I-5 SB Ramps	2	22.8	39.0	0.2	15
	33	31.4	45.2	0.1	10
Total		706.0	1207.0	3.9	13

Intersection: 1: 67th Ave NE & 188th St NE

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	110	637	42	76	67	51	32	47	37
Average Queue (ft)	99	285	4	22	20	3	3	3	3
95th Queue (ft)	132	637	22	58	54	24	19	22	20
Link Distance (ft)		670		692		7825		1046	1046
Upstream Blk Time (%)		9							
Queuing Penalty (veh)		0							
Storage Bay Dist (ft)	60		30		105		110		
Storage Blk Time (%)	52	30	2	4	0	0			
Queuing Penalty (veh)	178	86	0	0	0	0			

Intersection: 2: I-5 SB On Ramp & SR 531 (172nd St) & I-5 SB Ramps

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	R	T	T	R	<	<L	R
Maximum Queue (ft)	624	631	233	427	418	159	316	757	447
Average Queue (ft)	433	429	160	154	146	15	129	639	403
95th Queue (ft)	806	825	307	372	374	185	280	1033	583
Link Distance (ft)	591	591		766	766	766		734	
Upstream Blk Time (%)	26	25		0	0	0		55	
Queuing Penalty (veh)	226	221		1	2	1		0	
Storage Bay Dist (ft)			183				383		383
Storage Blk Time (%)		41	0				3	3	66
Queuing Penalty (veh)		218	1				17	16	151

Intersection: 3: I-5 NB Off Ramp/I-5 NB On Ramp & SR 531 (172nd St)

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	T	T	R	L	LT	R
Maximum Queue (ft)	675	798	798	539	542	547	315	408	1195	1191
Average Queue (ft)	592	656	613	316	336	350	243	195	891	891
95th Queue (ft)	872	1020	1008	523	549	594	410	376	1538	1605
Link Distance (ft)		766	766	518	518	518			1140	1140
Upstream Blk Time (%)		30	21	1	1	3			47	52
Queuing Penalty (veh)		215	152	8	11	25			0	0
Storage Bay Dist (ft)	610						255	395		
Storage Blk Time (%)	23	44				19	2	0	2	
Queuing Penalty (veh)	123	183				116	15	1	7	

Intersection: 4: Smokey Pt Blvd & SR 531 (172nd St)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	B45	B45	NB
Directions Served	UL	T	T	R	UL	T	T	T	R	T	T	L
Maximum Queue (ft)	494	509	477	479	278	439	459	519	416	6	98	309
Average Queue (ft)	464	468	330	130	92	271	301	336	101	0	6	296
95th Queue (ft)	483	530	564	372	195	411	453	506	330	5	50	342
Link Distance (ft)	449	449	449	449		448	448	448		371	371	
Upstream Blk Time (%)	83	64	15	7	0	1	0	4				
Queuing Penalty (veh)	332	255	61	29	0	2	1	14				
Storage Bay Dist (ft)					393				266			250
Storage Blk Time (%)						1		36				32
Queuing Penalty (veh)						1		66				84

Intersection: 4: Smokey Pt Blvd & SR 531 (172nd St)

Movement	NB	NB	NB	NB	SB	SB	SB	SB	B46	B46
Directions Served	L	T	T	R	L	T	T	R	T	T
Maximum Queue (ft)	368	2398	2282	128	231	404	473	250	1559	1563
Average Queue (ft)	366	1935	1560	35	160	163	432	244	1018	1130
95th Queue (ft)	374	2848	2817	103	257	369	545	303	1991	1924
Link Distance (ft)		3707	3707			366	366		1521	1521
Upstream Blk Time (%)		3	3			6	81		22	40
Queuing Penalty (veh)		15	15			0	0		0	0
Storage Bay Dist (ft)	250			160	132			150		
Storage Blk Time (%)	78	2	15		31	6	2	79		
Queuing Penalty (veh)	207	11	18		37	11	9	95		

Intersection: 5: 40th Ave NE & SR 531 (172nd St)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	248	482	403	249	368	383	172	277	102	159	260
Average Queue (ft)	152	205	157	108	208	248	106	65	24	86	102
95th Queue (ft)	270	444	395	225	381	416	176	258	73	157	301
Link Distance (ft)		524	524		361	361		425			551
Upstream Blk Time (%)		7	7		5	5		6			5
Queuing Penalty (veh)		39	38		23	25		0			0
Storage Bay Dist (ft)	150			150			75		100	100	
Storage Blk Time (%)	21	17		8	11		42	1	0	16	10
Queuing Penalty (veh)	79	38		44	11		21	1	0	19	10

Intersection: 6: 43rd Ave NE & SR 531 (172nd St)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	B24	SB	SB
Directions Served	UL	T	R	L	T	TR	L	L	TR	T	L	TR
Maximum Queue (ft)	252	512	62	313	881	204	207	195	223	401	39	145
Average Queue (ft)	96	262	18	122	254	143	105	103	151	110	8	57
95th Queue (ft)	220	518	49	244	718	239	190	185	245	431	33	125
Link Distance (ft)		524	524		2479		147	147	147	669		1920
Upstream Blk Time (%)		9					5	4	26	8		
Queuing Penalty (veh)		38					0	0	0	0		
Storage Bay Dist (ft)	158			217		62					109	
Storage Blk Time (%)	2	27		2	29	29						3
Queuing Penalty (veh)	12	34		14	179	175						0

Intersection: 7: 51st Ave NE & SR 531 (172nd St)

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	TR
Maximum Queue (ft)	526	1932	250	507	226	3066	230	218	800
Average Queue (ft)	113	1486	84	222	199	2275	84	109	306
95th Queue (ft)	429	2231	185	442	307	3773	215	222	1133
Link Distance (ft)		2479		2485		3018			3251
Upstream Blk Time (%)		9				42			1
Queuing Penalty (veh)		75				0			0
Storage Bay Dist (ft)	246		244		185		150	127	
Storage Blk Time (%)		50	0	6	79	18	11	15	23
Queuing Penalty (veh)		18	1	5	239	49	43	31	19

Intersection: 8: 59th Ave NE & SR 531 (172nd St)

Movement	EB	EB	WB	WB	B28	B22	NB	NB	SB	SB
Directions Served	L	TR	L	TR	T	T	L	TR	L	TR
Maximum Queue (ft)	573	1580	283	1819	71	15	197	978	3035	460
Average Queue (ft)	394	1039	191	1310	11	1	50	694	2620	423
95th Queue (ft)	777	2154	340	2026	82	17	161	1103	3664	626
Link Distance (ft)		2485		1993	164	56		988	2979	
Upstream Blk Time (%)		11		5	1	0		19	61	
Queuing Penalty (veh)		110		33	6	1		0	0	
Storage Bay Dist (ft)	350		140				98			385
Storage Blk Time (%)	21	45	28	60			2	69	9	63
Queuing Penalty (veh)	154	108	184	69			7	21	60	53

Intersection: 9: 67th Ave NE & SR 531 (172nd St)

Movement	EB	EB	EB	WB	WB	B42	NB	NB	B18	B23	SB	SB
Directions Served	L	T	R	L	TR	T	L	TR	T	T	L	TR
Maximum Queue (ft)	62	89	46	217	1332	122	236	820	290	151	218	2197
Average Queue (ft)	29	44	16	168	719	12	114	616	141	32	174	1247
95th Queue (ft)	54	85	43	271	1599	139	265	1003	508	181	266	2442
Link Distance (ft)	29	29	29		1914	1332		787	484	1885		7825
Upstream Blk Time (%)	58	46	12		3			27	13			
Queuing Penalty (veh)	198	159	40		19			0	0			
Storage Bay Dist (ft)				129			155				106	
Storage Blk Time (%)				46	40		3	62			49	60
Queuing Penalty (veh)				258	55		13	37			257	72

Intersection: 10: SR 9 & SR 531 (172nd St)

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	LT	R
Maximum Queue (ft)	508	205	673	138	77	1232	842
Average Queue (ft)	265	37	382	55	18	1175	764
95th Queue (ft)	529	193	771	107	54	1369	1164
Link Distance (ft)	702		697		1118	1173	
Upstream Blk Time (%)	0		19			90	
Queuing Penalty (veh)	1		0			0	
Storage Bay Dist (ft)		585		588			800
Storage Blk Time (%)	1					95	0
Queuing Penalty (veh)	3					124	1

Intersection: 11: Smokey Pt Blvd & 156th St NE

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	369	839	306	242	806	308	1077	1095	178	2066	2100
Average Queue (ft)	323	608	133	165	806	302	1056	943	128	1905	1924
95th Queue (ft)	452	1086	278	326	808	370	1089	1349	231	2183	2213
Link Distance (ft)		824			791		1046	1046		3707	3707
Upstream Blk Time (%)		38			84		44	8			
Queuing Penalty (veh)		0			0		268	48			
Storage Bay Dist (ft)	187		185	200		211			98		
Storage Blk Time (%)	81	13	3	0	74	83	4		8	74	
Queuing Penalty (veh)	607	85	18	0	112	275	22		35	115	

Intersection: 12: Smokey Pt Blvd & 152nd Ave NE

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	54	54	260	280	129	1853	1850	162	260	271
Average Queue (ft)	11	15	161	195	11	1474	1462	75	113	131
95th Queue (ft)	40	43	288	311	77	2353	2362	134	225	242
Link Distance (ft)	124	124		260		1809	1809		1046	1046
Upstream Blk Time (%)			0	12		59	53			
Queuing Penalty (veh)			0	0		0	0			
Storage Bay Dist (ft)			140		87			133		
Storage Blk Time (%)			9	36		93		1	5	
Queuing Penalty (veh)			27	102		5		6	8	

Intersection: 16: BNSF Railway Spur & SR 531 (172nd St)

Movement	EB	EB	EB	B22	B22	B28	WB
Directions Served	T	T	T	T	T	T	T
Maximum Queue (ft)	144	153	92	136	243	801	24
Average Queue (ft)	84	118	14	26	157	390	1
95th Queue (ft)	171	150	54	102	288	1529	13
Link Distance (ft)	56	56	56	164	164	1993	29
Upstream Blk Time (%)	42	56	1	0	26	13	0
Queuing Penalty (veh)	142	189	4	2	134	133	0
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 33: SR 531 (172nd St)

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (ft)	3828	3828	583	668
Average Queue (ft)	1274	1287	437	466
95th Queue (ft)	3684	3693	626	693
Link Distance (ft)	4384	4384	591	591
Upstream Blk Time (%)	4	4	0	7
Queuing Penalty (veh)	0	0	4	76
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 46: Bend

Movement	NB	NB
Directions Served	T	T
Maximum Queue (ft)	74	74
Average Queue (ft)	3	3
95th Queue (ft)	53	54
Link Distance (ft)	366	366
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 47: SR 531 (172nd St)

Movement	EB	EB	EB	EB	WB	WB	WB	SB
Directions Served	T	T	T	T	T	T	T	R
Maximum Queue (ft)	450	569	563	651	82	125	284	225
Average Queue (ft)	425	505	505	572	5	11	38	90
95th Queue (ft)	527	656	672	812	44	69	164	176
Link Distance (ft)		518	518	518	449	449	449	526
Upstream Blk Time (%)		41	43	60			0	
Queuing Penalty (veh)		253	264	374			0	
Storage Bay Dist (ft)	350							
Storage Blk Time (%)	70	64						
Queuing Penalty (veh)	281	256						

Intersection: 51: SR 531 (172nd St)

Movement	EB	EB	WB	WB	WB	NB
Directions Served	T	TR	L	T	T	R
Maximum Queue (ft)	187	115	131	102	176	116
Average Queue (ft)	46	40	41	20	33	49
95th Queue (ft)	257	244	95	169	189	151
Link Distance (ft)	361	361		524	524	272
Upstream Blk Time (%)	8	8		2	2	1
Queuing Penalty (veh)	36	35		15	15	0
Storage Bay Dist (ft)			204			
Storage Blk Time (%)			0	3		
Queuing Penalty (veh)			0	3		

Intersection: 52: SR 531 (172nd St)

Movement	EB	EB	B45	B45	NB
Directions Served	T	TR	T	T	R
Maximum Queue (ft)	108	106	97	94	130
Average Queue (ft)	30	29	28	26	57
95th Queue (ft)	205	204	214	197	165
Link Distance (ft)	371	371	448	448	342
Upstream Blk Time (%)	6	6	5	5	4
Queuing Penalty (veh)	35	36	28	28	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 10637

LANE LEVEL OF SERVICE

Lane Level of Service

Site: 10 [2040 No Action Weekday PM Peak Hour]

SR 9/SR 531 (172nd St NE)
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	B	B	B	B	B

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

MOVEMENT SUMMARY

Site: 10 [2040 No Action Weekday PM Peak Hour]

SR 9/SR 531 (172nd St NE)
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: SR 9												
3	L2	293	5.0	0.482	16.5	LOS B	4.0	103.6	0.92	0.99	1.04	31.3
8	T1	399	5.0	0.591	11.1	LOS B	6.4	166.0	0.99	1.00	1.19	33.7
18	R2	74	5.0	0.591	11.3	LOS B	6.4	166.0	0.99	1.00	1.19	32.7
Approach		766	5.0	0.591	13.2	LOS B	6.4	166.0	0.96	1.00	1.13	32.6
East: SR 531 (172nd St NE)												
1	L2	16	2.0	0.706	16.6	LOS B	5.5	138.8	0.87	1.03	1.18	33.6
6	T1	340	2.0	0.706	11.3	LOS B	5.5	138.8	0.87	1.03	1.18	33.6
16	R2	106	2.0	0.706	11.1	LOS B	5.5	138.8	0.87	1.03	1.18	32.7
Approach		463	2.0	0.706	11.4	LOS B	5.5	138.8	0.87	1.03	1.18	33.4
North: SR 9												
7	L2	106	4.0	0.804	21.3	LOS C	11.3	290.4	0.98	1.21	1.55	31.1
4	T1	569	4.0	0.804	15.9	LOS B	11.3	290.4	0.98	1.21	1.55	31.1
14	R2	138	4.0	0.276	9.9	LOS A	1.4	35.2	0.70	0.85	0.70	33.2
Approach		814	4.0	0.804	15.6	LOS B	11.3	290.4	0.93	1.15	1.41	31.4
West: SR 531 (172nd St NE)												
5	L2	165	5.0	0.742	20.4	LOS C	10.5	273.7	1.00	1.11	1.42	31.3
2	T1	436	5.0	0.742	14.8	LOS B	10.5	273.7	1.00	1.11	1.42	31.4
12	R2	340	5.0	0.559	12.4	LOS B	5.2	134.5	0.96	1.03	1.15	32.1
Approach		941	5.0	0.742	14.9	LOS B	10.5	273.7	0.98	1.08	1.33	31.6
All Vehicles		2984	4.3	0.804	14.1	LOS B	11.3	290.4	0.95	1.07	1.28	32.1

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection	
Int Delay, s/veh	88.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	315	15	345	5	5	20	50	310	15	15	490	185
Future Vol, veh/h	315	15	345	5	5	20	50	310	15	15	490	185
Conflicting Peds, #/hr	0	0	1	6	0	5	1	0	6	5	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	30	-	-	105	-	-	110	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	26	26	26	6	6	6	2	2	2
Mvmt Flow	342	16	375	5	5	22	54	337	16	16	533	201

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1038	1033	540	1326	1226	356	735	0	0	359	0	0
Stage 1	566	566	-	459	459	-	-	-	-	-	-	-
Stage 2	472	467	-	867	767	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.36	6.76	6.46	4.16	-	-	4.12	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.36	5.76	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.36	5.76	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.734	4.234	3.534	2.254	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 208	232	540	118	161	637	852	-	-	1200	-	-
Stage 1	507	506	-	539	528	-	-	-	-	-	-	-
Stage 2	571	560	-	316	378	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 183	213	536	31	148	630	851	-	-	1193	-	-
Mov Cap-2 Maneuver	~ 183	213	-	31	148	-	-	-	-	-	-	-
Stage 1	475	499	-	502	492	-	-	-	-	-	-	-
Stage 2	508	521	-	90	373	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	229.8	36.7	1.3	0.2
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	851	-	-	183	504	31	382	1193	-	-
HCM Lane V/C Ratio	0.064	-	-	1.871	0.776	0.175	0.071	0.014	-	-
HCM Control Delay (s)	9.5	-	-	$ 455.1	32.7	144.4	15.1	8.1	-	-
HCM Lane LOS	A	-	-	F	D	F	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	25.1	7	0.5	0.2	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	305	415	165	665	170	565	650	45	140	895	415
Future Volume (veh/h)	235	305	415	165	665	170	565	650	45	140	895	415
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	245	318	432	172	693	177	589	677	47	146	932	432
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	1	1	1	2	2	2
Cap, veh/h	251	970	433	197	681	174	618	1395	97	198	1032	460
Arrive On Green	0.14	0.27	0.27	0.11	0.24	0.24	0.18	0.41	0.41	0.06	0.29	0.29
Sat Flow, veh/h	1810	3610	1610	1810	2847	727	3483	3398	236	3456	3554	1585
Grp Volume(v), veh/h	245	318	432	172	439	431	589	357	367	146	932	432
Grp Sat Flow(s),veh/h/ln	1810	1805	1610	1810	1805	1769	1742	1791	1843	1728	1777	1585
Q Serve(g_s), s	17.5	9.2	34.8	12.1	31.0	31.0	21.7	19.0	19.0	5.4	32.7	34.5
Cycle Q Clear(g_c), s	17.5	9.2	34.8	12.1	31.0	31.0	21.7	19.0	19.0	5.4	32.7	34.5
Prop In Lane	1.00		1.00	1.00		0.41	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	251	970	433	197	432	423	618	735	757	198	1032	460
V/C Ratio(X)	0.98	0.33	1.00	0.87	1.02	1.02	0.95	0.48	0.49	0.74	0.90	0.94
Avail Cap(c_a), veh/h	251	970	433	223	432	423	618	735	757	267	1042	465
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.6	38.0	47.4	56.9	49.3	49.3	52.8	28.1	28.1	60.2	44.2	44.9
Incr Delay (d2), s/veh	49.5	0.1	42.7	24.9	47.8	48.5	24.9	0.6	0.6	4.2	11.0	27.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.5	4.1	18.8	6.9	19.5	19.2	11.5	8.2	8.4	2.5	15.7	16.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	105.1	38.1	90.1	81.7	97.2	97.8	77.7	28.7	28.7	64.4	55.2	71.9
LnGrp LOS	F	D	F	F	F	F	E	C	C	E	E	E
Approach Vol, veh/h		995			1042			1313			1510	
Approach Delay, s/veh		77.1			94.9			50.7			60.9	
Approach LOS		E			F			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.4	58.2	19.1	39.9	28.0	42.6	23.0	36.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	10.0	51.0	16.0	33.0	23.0	38.0	18.0	31.0
Max Q Clear Time (g_c+I1), s	7.4	21.0	14.1	36.8	23.7	36.5	19.5	33.0
Green Ext Time (p_c), s	0.1	5.8	0.0	0.0	0.0	1.2	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	68.7
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	5	10	295	5	310	5	880	180	180	1300	5
Future Volume (veh/h)	10	5	10	295	5	310	5	880	180	180	1300	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1885	1885	1885	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	5	10	307	5	323	5	917	188	188	1354	5
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	1	1	1	2	2	2	2	2	2
Cap, veh/h	174	75	149	510	6	376	114	1128	231	283	1650	6
Arrive On Green	0.01	0.13	0.13	0.12	0.24	0.24	0.01	0.38	0.38	0.08	0.45	0.45
Sat Flow, veh/h	1810	565	1131	1795	24	1577	1781	2937	602	1781	3631	13
Grp Volume(v), veh/h	10	0	15	307	0	328	5	555	550	188	662	697
Grp Sat Flow(s),veh/h/ln	1810	0	1696	1795	0	1601	1781	1777	1762	1781	1777	1868
Q Serve(g_s), s	0.3	0.0	0.5	8.0	0.0	13.5	0.1	19.2	19.2	1.1	22.3	22.3
Cycle Q Clear(g_c), s	0.3	0.0	0.5	8.0	0.0	13.5	0.1	19.2	19.2	1.1	22.3	22.3
Prop In Lane	1.00		0.67	1.00		0.98	1.00		0.34	1.00		0.01
Lane Grp Cap(c), veh/h	174	0	224	510	0	382	114	682	676	283	807	849
V/C Ratio(X)	0.06	0.00	0.07	0.60	0.00	0.86	0.04	0.81	0.81	0.67	0.82	0.82
Avail Cap(c_a), veh/h	261	0	495	510	0	560	209	907	899	381	1036	1089
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.7	0.0	26.1	22.2	0.0	25.0	18.8	18.9	18.9	28.8	16.3	16.3
Incr Delay (d2), s/veh	0.1	0.0	0.0	1.4	0.0	6.2	0.1	3.8	3.9	2.0	3.8	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.2	4.1	0.0	5.4	0.1	7.7	7.6	2.9	8.6	9.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.7	0.0	26.1	23.6	0.0	31.2	18.9	22.7	22.8	30.8	20.1	19.9
LnGrp LOS	C	A	C	C	A	C	B	C	C	C	C	B
Approach Vol, veh/h		25			635			1110			1547	
Approach Delay, s/veh		25.9			27.5			22.8			21.3	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.2	31.3	13.0	14.1	5.4	36.2	5.7	21.4
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	9.6	35.0	8.0	20.0	4.0	40.0	4.0	24.0
Max Q Clear Time (g_c+I1), s	3.1	21.2	10.0	2.5	2.1	24.3	2.3	15.5
Green Ext Time (p_c), s	0.2	5.1	0.0	0.0	0.0	6.9	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	23.0
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

1: 67th Ave NE & 188th St NE Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	34.1	28.2	29.4	3.9	0.2	0.2	0.0	0.0	0.0	2.9	0.3	0.2
Total Del/Veh (s)	99.7	81.2	73.5	16.6	21.1	4.9	19.6	11.2	11.0	3.3	1.9	1.1

1: 67th Ave NE & 188th St NE Performance by movement

Movement	All
Denied Del/Veh (s)	11.6
Total Del/Veh (s)	34.7

2: I-5 SB On Ramp & SR 531 (172nd St) & I-5 SB Ramps Performance by movement

Movement	EBT	EBR	WBT	WBR	SBL2	SBL	SBR	All
Denied Del/Veh (s)	1.3	2.2	0.0	0.0	87.0	87.0	88.0	14.1
Total Del/Veh (s)	56.9	28.8	17.4	11.9	116.5	110.5	126.0	43.9

3: I-5 NB Off Ramp/I-5 NB On Ramp & SR 531 (172nd St) Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Del/Veh (s)	3.1	3.1	0.2	0.4	259.8	256.2	78.9
Total Del/Veh (s)	148.2	136.4	40.2	19.0	70.3	156.7	85.6

4: Smokey Pt Blvd & SR 531 (172nd St) Performance by movement

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Denied Del/Veh (s)	0.0	57.8	43.2	46.9	7.3	3.5	4.7	3.0	292.4	282.0	305.2	0.0
Total Del/Veh (s)	213.6	214.5	46.2	10.5	75.5	72.6	64.9	7.0	541.3	82.6	45.3	82.2

4: Smokey Pt Blvd & SR 531 (172nd St) Performance by movement

Movement	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	100.3
Total Del/Veh (s)	63.0	159.5	146.6

5: 40th Ave NE & SR 531 (172nd St) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.3	0.1	0.1	2.2	1.4	2.4	3.9	0.6	3.9	3.8	0.7	0.5
Total Del/Veh (s)	77.9	20.0	12.6	64.0	20.1	15.7	67.4	56.1	8.0	61.6	55.0	21.4

5: 40th Ave NE & SR 531 (172nd St) Performance by movement

Movement	All
Denied Del/Veh (s)	1.2
Total Del/Veh (s)	29.8

6: 43rd Ave NE & SR 531 (172nd St) Performance by movement

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Denied Del/Veh (s)	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.0	0.0	0.0	0.2	0.1
Total Del/Veh (s)	53.4	55.3	25.0	3.4	78.7	32.4	21.7	59.0	48.1	37.9	76.3	34.3

6: 43rd Ave NE & SR 531 (172nd St) Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	38.0

7: 51st Ave NE & SR 531 (172nd St) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	202.3	179.0	191.5	0.0	0.0	0.0	267.1	266.0	276.8	0.9	0.3	0.3
Total Del/Veh (s)	141.5	167.0	164.8	140.1	19.9	17.3	972.0	835.1	837.3	86.7	59.5	50.0

7: 51st Ave NE & SR 531 (172nd St) Performance by movement

Movement	All
Denied Del/Veh (s)	117.2
Total Del/Veh (s)	227.5

8: 59th Ave NE & SR 531 (172nd St) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.8	0.9	0.0	183.3	173.9	141.5	9.8	6.6	7.9	405.7	389.4	396.5
Total Del/Veh (s)	194.0	82.9	88.3	332.8	229.0	227.8	142.3	100.9	92.2	498.5	487.5	475.9

8: 59th Ave NE & SR 531 (172nd St) Performance by movement

Movement	All
Denied Del/Veh (s)	164.5
Total Del/Veh (s)	240.4

9: 67th Ave NE & SR 531 (172nd St) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.7	0.8	0.2	3.3	3.5	2.9	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	18.5	5.4	4.9	315.6	188.5	200.1	172.8	162.2	154.4	379.6	222.3	295.2

9: 67th Ave NE & SR 531 (172nd St) Performance by movement

Movement	All
Denied Del/Veh (s)	1.0
Total Del/Veh (s)	155.5

10: SR 9 & SR 531 (172nd St) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.6	0.8	0.7	3.2	1.1	1.1	506.0	511.5	514.9
Total Del/Veh (s)	79.9	63.6	7.6	77.7	72.2	72.9	9.9	9.8	5.6	307.0	309.6	90.6

10: SR 9 & SR 531 (172nd St) Performance by movement

Movement	All
Denied Del/Veh (s)	143.1
Total Del/Veh (s)	94.9

11: Smokey Pt Blvd & 156th St NE Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	2.8	0.5	2.8	4.7	2.1	2.0	10.2	9.0	8.8	1.3	0.3	1.3
Total Del/Veh (s)	86.1	37.7	19.4	102.9	99.8	93.3	109.7	34.8	24.7	76.8	53.5	33.3

11: Smokey Pt Blvd & 156th St NE Performance by movement

Movement	All
Denied Del/Veh (s)	3.9
Total Del/Veh (s)	64.3

12: Smokey Pt Blvd & 152nd Ave NE Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	6.6	1.1	4.7	1.3	0.3	0.2	0.0	0.0	0.0
Total Del/Veh (s)	30.7	36.2	12.9	39.7	27.9	14.5	37.3	17.8	10.6	27.8	11.7	11.8

12: Smokey Pt Blvd & 152nd Ave NE Performance by movement

Movement	All
Denied Del/Veh (s)	1.2
Total Del/Veh (s)	17.4

16: BNSF Railway Spur & SR 531 (172nd St) Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	22.0	0.0	13.5
Total Del/Veh (s)	22.7	1.7	14.6

33: SR 531 (172nd St) Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.5	0.2	0.3
Total Del/Veh (s)	93.9	39.6	65.8

47: SR 531 (172nd St) Performance by movement

Movement	EBT	WBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.2	0.0
Total Del/Veh (s)	108.1	5.5	52.3	50.1

51: SR 531 (172nd St) Performance by movement

Movement	EBT	EBR	WBL	WBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.0
Total Del/Veh (s)	4.6	2.2	18.8	3.1	10.1	4.4

52: SR 531 (172nd St) Performance by movement

Movement	EBT	EBR	WBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0
Total Del/Veh (s)	3.9	2.5	2.6	9.8	3.4

Total Network Performance

Denied Del/Veh (s)	127.4
Total Del/Veh (s)	253.8

Arterial Level of Service: EB SR 531 (172nd St)

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	33	93.9	176.2	0.8	17
I-5 SB On Ramp	2	56.9	70.1	0.1	7
I-5 NB Off Ramp	3	133.6	153.9	0.2	4
	47	109.5	119.7	0.1	3
Smokey Pt Blvd	4	46.2	99.0	0.1	6
	45	3.4	14.5	0.1	26
	52	3.9	12.2	0.1	24
40th Ave NE	5	20.2	31.3	0.1	13
	51	5.1	13.6	0.1	22
43rd Ave NE	6	24.2	35.3	0.1	12
51st Ave NE	7	164.0	459.0	0.5	8
59th Ave NE	8	81.2	128.7	0.5	14
	28	30.0	70.1	0.4	20
	22	17.7	22.0	0.0	7
BNSF Railway Spur	16	22.7	46.8	0.0	3
67th Ave NE	9	5.4	7.8	0.0	10
	42	5.6	44.7	0.4	31
	21	3.0	30.1	0.3	31
	31	3.4	25.9	0.2	30
	34	19.7	46.9	0.3	20
SR 9	10	63.6	76.3	0.2	7
Total		913.3	1684.0	4.6	12

Arterial Level of Service: WB SR 531 (172nd St)

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
SR 9	10	72.2	86.4	0.2	6
	34	3.4	27.2	0.2	21
	31	1.4	28.6	0.3	33
	21	2.6	25.2	0.2	31
	42	26.3	53.1	0.3	18
67th Ave NE	9	188.5	227.7	0.4	6
BNSF Railway Spur	16	2.0	4.6	0.0	15
	22	0.5	2.7	0.0	25
	28	0.9	5.3	0.0	29
59th Ave NE	8	229.0	449.2	0.4	5
51st Ave NE	7	20.7	78.5	0.5	23
43rd Ave NE	6	28.6	76.8	0.5	23
	51	3.6	15.1	0.1	28
40th Ave NE	5	20.1	28.8	0.1	11
	52	3.1	13.9	0.1	29
	45	1.2	9.6	0.1	30
Smokey Pt Blvd	4	64.9	78.2	0.1	5
	47	6.6	17.6	0.1	20
I-5 NB On Ramp	3	40.1	50.8	0.1	8
I-5 SB Ramps	2	21.0	37.2	0.2	16
	33	32.6	46.4	0.1	10
Total		769.3	1362.8	3.9	12

Intersection: 1: 67th Ave NE & 188th St NE

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	110	706	37	67	77	54	30	53	40
Average Queue (ft)	104	467	4	21	23	3	3	5	5
95th Queue (ft)	131	869	20	56	60	25	18	28	23
Link Distance (ft)		670		692		7825		1046	1046
Upstream Blk Time (%)		33							
Queuing Penalty (veh)		0							
Storage Bay Dist (ft)	60		30		105		110		
Storage Blk Time (%)	71	34	1	5	0	0		0	
Queuing Penalty (veh)	255	107	0	0	0	0		0	

Intersection: 2: I-5 SB On Ramp & SR 531 (172nd St) & I-5 SB Ramps

Movement	EB	EB	EB	WB	WB	SB	SB	SB
Directions Served	T	T	R	T	T	<	<L	R
Maximum Queue (ft)	618	631	233	387	432	306	790	448
Average Queue (ft)	373	364	151	156	147	115	579	399
95th Queue (ft)	764	774	302	317	331	240	1037	555
Link Distance (ft)	591	591		766	766		734	
Upstream Blk Time (%)	16	16					45	
Queuing Penalty (veh)	143	144					0	
Storage Bay Dist (ft)			183			383		383
Storage Blk Time (%)		32	1			0	1	60
Queuing Penalty (veh)		170	4			0	3	135

Intersection: 3: I-5 NB Off Ramp/I-5 NB On Ramp & SR 531 (172nd St)

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	T	T	R	L	LT	R
Maximum Queue (ft)	675	800	790	524	526	552	315	403	1187	1191
Average Queue (ft)	599	631	589	321	347	370	248	197	870	850
95th Queue (ft)	820	1023	1005	493	528	583	410	364	1540	1639
Link Distance (ft)		766	766	518	518	518			1140	1140
Upstream Blk Time (%)		21	16	0	1	3			46	51
Queuing Penalty (veh)		153	115	4	6	23			0	0
Storage Bay Dist (ft)	610						255	395		
Storage Blk Time (%)	16	41				19	3	0	1	
Queuing Penalty (veh)	86	165				116	21	0	3	

Intersection: 4: Smokey Pt Blvd & SR 531 (172nd St)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	B45	B45	NB
Directions Served	UL	T	T	R	UL	T	T	T	R	T	T	L
Maximum Queue (ft)	498	509	490	411	222	427	442	498	416	28	83	309
Average Queue (ft)	465	467	335	106	89	261	292	334	113	1	4	300
95th Queue (ft)	486	520	564	304	179	390	424	481	356	22	43	348
Link Distance (ft)	449	449	449	449		448	448	448		371	371	
Upstream Blk Time (%)	82	55	8	2		0	0	3				
Queuing Penalty (veh)	327	222	32	8		1	1	10				
Storage Bay Dist (ft)					393				266			250
Storage Blk Time (%)						1		33				34
Queuing Penalty (veh)						1		63				88

Intersection: 4: Smokey Pt Blvd & SR 531 (172nd St)

Movement	NB	NB	NB	NB	SB	SB	SB	SB	B46	B46
Directions Served	L	T	T	R	L	T	T	R	T	T
Maximum Queue (ft)	368	2966	2838	134	231	431	478	250	1560	1569
Average Queue (ft)	366	2410	1783	32	150	150	445	250	1243	1315
95th Queue (ft)	370	3179	3011	90	258	366	465	252	2029	1945
Link Distance (ft)		3695	3695			366	366		1521	1521
Upstream Blk Time (%)						4	85		31	58
Queuing Penalty (veh)						0	0		0	0
Storage Bay Dist (ft)	250			160	132			150		
Storage Blk Time (%)	78	1	17	0	27	5	2	82		
Queuing Penalty (veh)	204	10	21	0	32	9	7	97		

Intersection: 5: 40th Ave NE & SR 531 (172nd St)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	250	521	444	244	363	383	168	215	144	171	179
Average Queue (ft)	176	217	142	89	190	234	100	31	26	86	76
95th Queue (ft)	283	438	334	189	352	403	166	129	80	150	149
Link Distance (ft)		524	524		361	361		425			551
Upstream Blk Time (%)		1	0		1	2					
Queuing Penalty (veh)		3	0		3	8					
Storage Bay Dist (ft)	150			150			75		100	100	
Storage Blk Time (%)	24	11		3	12		36	0		12	5
Queuing Penalty (veh)	89	23		14	12		18	0		14	5

Intersection: 6: 43rd Ave NE & SR 531 (172nd St)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	B24	SB
Directions Served	UL	T	R	L	T	TR	L	L	TR	T	TR
Maximum Queue (ft)	252	523	81	305	737	204	209	202	226	383	145
Average Queue (ft)	106	222	22	131	250	143	123	117	157	83	61
95th Queue (ft)	226	441	58	259	560	243	196	192	245	275	125
Link Distance (ft)		524	524		2479		147	147	147	669	1920
Upstream Blk Time (%)		0					7	7	21		
Queuing Penalty (veh)		2					0	0	0		
Storage Bay Dist (ft)	158			217		62					
Storage Blk Time (%)	2	19		1	29	28					3
Queuing Penalty (veh)	13	22		11	190	181					0

Intersection: 7: 51st Ave NE & SR 531 (172nd St)

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	TR
Maximum Queue (ft)	526	2072	255	386	226	3074	230	218	401
Average Queue (ft)	112	1506	143	162	220	2506	74	100	182
95th Queue (ft)	432	2049	254	322	244	3838	199	201	336
Link Distance (ft)		2479		2485		3018			3251
Upstream Blk Time (%)		1				56			
Queuing Penalty (veh)		4				0			
Storage Bay Dist (ft)	246		244		185		150	127	
Storage Blk Time (%)		45	4	3	91	18	2	8	23
Queuing Penalty (veh)		16	42	3	267	52	8	18	20

Intersection: 8: 59th Ave NE & SR 531 (172nd St)

Movement	EB	EB	WB	WB	B28	B22	NB	NB	SB	SB
Directions Served	L	TR	L	TR	T	T	L	TR	L	TR
Maximum Queue (ft)	632	1317	283	1792	60	16	232	866	3042	460
Average Queue (ft)	408	704	205	1342	4	1	71	496	2885	459
95th Queue (ft)	731	1453	353	1813	53	13	199	871	3453	463
Link Distance (ft)		2485		1993	164	56		988	2979	
Upstream Blk Time (%)		1		2	0	0		4	81	
Queuing Penalty (veh)		12		11	3	1		0	0	
Storage Bay Dist (ft)	350		140				98			385
Storage Blk Time (%)	26	31	40	59			3	61	0	69
Queuing Penalty (veh)	194	73	270	74			12	18	0	79

Intersection: 9: 67th Ave NE & SR 531 (172nd St)

Movement	EB	EB	EB	WB	WB	B42	B21	NB	NB	B18	B23	SB
Directions Served	L	T	R	L	TR	T	T	L	TR	T	T	L
Maximum Queue (ft)	77	97	62	217	1676	480	56	236	878	393	281	218
Average Queue (ft)	33	50	18	193	1159	140	6	101	692	181	67	182
95th Queue (ft)	58	91	49	270	2293	669	76	257	1042	576	315	266
Link Distance (ft)	29	29	29		1914	1332	1100		787	484	1885	
Upstream Blk Time (%)	68	51	14		22	2			34	19		
Queuing Penalty (veh)	238	180	49		154	15			0	0		
Storage Bay Dist (ft)				129				155				106
Storage Blk Time (%)				66	40			0	67			59
Queuing Penalty (veh)				365	57			1	33			333

Intersection: 9: 67th Ave NE & SR 531 (172nd St)

Movement	SB
Directions Served	TR
Maximum Queue (ft)	2725
Average Queue (ft)	1737
95th Queue (ft)	3023
Link Distance (ft)	7825
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	60
Queuing Penalty (veh)	82

Intersection: 10: SR 9 & SR 531 (172nd St)

Movement	EB	EB	B34	B31	WB	NB	NB	SB	SB
Directions Served	LT	R	T	T	LTR	L	TR	LT	R
Maximum Queue (ft)	725	548	397	36	582	144	62	1228	842
Average Queue (ft)	415	175	143	5	279	56	18	1197	795
95th Queue (ft)	821	625	754	66	582	108	53	1249	1113
Link Distance (ft)	702		1338	1100	697		1118	1173	
Upstream Blk Time (%)	13		2		2			96	
Queuing Penalty (veh)	141		20		0			0	
Storage Bay Dist (ft)		585				588			800
Storage Blk Time (%)	20							99	0
Queuing Penalty (veh)	60							129	0

Intersection: 11: Smokey Pt Blvd & 156th St NE

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	TR	L	L	T	TR	L
Maximum Queue (ft)	326	374	323	274	242	680	648	259	308	698	603	120
Average Queue (ft)	207	151	106	142	196	462	441	235	269	415	311	51
95th Queue (ft)	348	361	286	241	302	773	738	298	351	900	736	103
Link Distance (ft)		806	806			785	785			1034	1034	
Upstream Blk Time (%)						5	4			1	0	
Queuing Penalty (veh)						0	0			5	1	
Storage Bay Dist (ft)	187			185	200			211	211			98
Storage Blk Time (%)	24	0	0	4	4	51		23	41	1		1
Queuing Penalty (veh)	37	1	0	7	14	85		76	134	8		6

Intersection: 11: Smokey Pt Blvd & 156th St NE

Movement	SB	SB	SB	SB
Directions Served	L	T	T	R
Maximum Queue (ft)	178	604	638	250
Average Queue (ft)	124	332	335	207
95th Queue (ft)	215	536	556	318
Link Distance (ft)		3695	3695	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	98			150
Storage Blk Time (%)	10	52	36	9
Queuing Penalty (veh)	47	73	151	40

Intersection: 12: Smokey Pt Blvd & 152nd Ave NE

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	43	56	247	269	109	300	270	215	288	308
Average Queue (ft)	11	16	156	128	8	173	136	90	118	130
95th Queue (ft)	36	44	249	248	54	281	252	159	228	240
Link Distance (ft)	118	118		254		1809	1809		1034	1034
Upstream Blk Time (%)			2	4						
Queuing Penalty (veh)			0	0						
Storage Bay Dist (ft)			140		87			133		
Storage Blk Time (%)			21	4	0	26		2	3	
Queuing Penalty (veh)			68	12	0	1		14	6	

Intersection: 16: BNSF Railway Spur & SR 531 (172nd St)

Movement	EB	EB	EB	B22	B22	B28	WB
Directions Served	T	T	T	T	T	T	T
Maximum Queue (ft)	162	160	78	202	249	994	24
Average Queue (ft)	110	123	15	61	159	235	1
95th Queue (ft)	180	157	62	177	292	943	12
Link Distance (ft)	56	56	56	164	164	1993	29
Upstream Blk Time (%)	58	54	1	6	20	2	0
Queuing Penalty (veh)	197	181	4	30	100	24	1
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 33: SR 531 (172nd St)

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (ft)	2444	2445	601	682
Average Queue (ft)	673	681	454	491
95th Queue (ft)	2336	2353	609	700
Link Distance (ft)	4384	4384	591	591
Upstream Blk Time (%)			0	9
Queuing Penalty (veh)			5	93
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 46: Bend

Movement	NB
Directions Served	T
Maximum Queue (ft)	39
Average Queue (ft)	0
95th Queue (ft)	0
Link Distance (ft)	366
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 47: SR 531 (172nd St)

Movement	EB	EB	EB	EB	WB	WB	WB	SB
Directions Served	T	T	T	T	T	T	T	R
Maximum Queue (ft)	450	560	562	649	56	120	249	225
Average Queue (ft)	408	480	474	526	3	7	31	96
95th Queue (ft)	553	678	705	878	30	54	138	182
Link Distance (ft)		518	518	518	449	449	449	526
Upstream Blk Time (%)		33	38	55				
Queuing Penalty (veh)		205	231	337				
Storage Bay Dist (ft)	350							
Storage Blk Time (%)	62	58						
Queuing Penalty (veh)	247	232						

Intersection: 51: SR 531 (172nd St)

Movement	EB	EB	WB	WB	WB	NB
Directions Served	T	TR	L	T	T	R
Maximum Queue (ft)	96	30	118	40	122	82
Average Queue (ft)	6	2	44	2	11	34
95th Queue (ft)	53	14	94	23	60	64
Link Distance (ft)	361	361		524	524	272
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			204			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 52: SR 531 (172nd St)

Movement	EB	EB	NB
Directions Served	T	TR	R
Maximum Queue (ft)	88	36	96
Average Queue (ft)	4	2	43
95th Queue (ft)	44	27	79
Link Distance (ft)	371	371	342
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 9105

MOVEMENT SUMMARY

Site: 10 [2040 Action Alternative 2 Weekday PM Peak Hour]

SR 9/SR 531 (172nd St NE)
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: SR 9												
3	L2	287	5.0	0.486	16.8	LOS B	4.1	105.6	0.93	1.00	1.05	31.2
8	T1	399	5.0	0.606	11.6	LOS B	6.7	174.6	1.00	1.02	1.22	33.5
18	R2	74	5.0	0.606	11.8	LOS B	6.7	174.6	1.00	1.02	1.22	32.5
Approach		761	5.0	0.606	13.6	LOS B	6.7	174.6	0.97	1.01	1.16	32.5
East: SR 531 (172nd St NE)												
1	L2	5	2.0	0.677	16.2	LOS B	5.0	128.0	0.85	1.01	1.14	33.8
6	T1	335	2.0	0.677	10.9	LOS B	5.0	128.0	0.85	1.01	1.14	33.8
16	R2	101	2.0	0.677	10.7	LOS B	5.0	128.0	0.85	1.01	1.14	33.0
Approach		441	2.0	0.677	10.9	LOS B	5.0	128.0	0.85	1.01	1.14	33.6
North: SR 9												
7	L2	85	4.0	0.824	21.7	LOS C	12.2	314.4	0.99	1.22	1.60	31.0
4	T1	622	4.0	0.824	16.4	LOS B	12.2	314.4	0.99	1.22	1.60	31.0
14	R2	138	4.0	0.270	9.7	LOS A	1.3	34.1	0.69	0.84	0.69	33.3
Approach		846	4.0	0.824	15.8	LOS B	12.2	314.4	0.94	1.16	1.45	31.4
West: SR 531 (172nd St NE)												
5	L2	176	5.0	0.811	24.3	LOS C	13.4	347.7	1.00	1.21	1.62	29.7
2	T1	457	5.0	0.811	18.7	LOS B	13.4	347.7	1.00	1.21	1.62	29.8
12	R2	324	5.0	0.559	12.8	LOS B	5.2	134.4	0.97	1.05	1.17	31.8
Approach		957	5.0	0.811	17.7	LOS B	13.4	347.7	0.99	1.15	1.47	30.4
All Vehicles		3005	4.3	0.824	15.1	LOS B	13.4	347.7	0.95	1.10	1.34	31.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE LEVEL OF SERVICE

Lane Level of Service

Site: 10 [2040 Action Alternative 2 Weekday PM Peak Hour]

SR 9/SR 531 (172nd St NE)
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	B	B	B	B	B

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	275	15	265	5	5	20	50	340	20	15	495	210
Future Volume (veh/h)	275	15	265	5	5	20	50	340	20	15	495	210
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1660	1660	1660	1355	1355	1355	1620	1620	1620	1673	1673	1673
Adj Flow Rate, veh/h	299	16	288	5	5	22	54	370	22	16	538	228
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	26	26	26	6	6	6	2	2	2
Cap, veh/h	490	21	377	204	61	269	79	689	41	31	710	598
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.05	0.46	0.46	0.02	0.42	0.42
Sat Flow, veh/h	1364	75	1341	870	218	958	1543	1514	90	1594	1673	1410
Grp Volume(v), veh/h	299	0	304	5	0	27	54	0	392	16	538	228
Grp Sat Flow(s),veh/h/ln	1364	0	1416	870	0	1176	1543	0	1604	1594	1673	1410
Q Serve(g_s), s	11.4	0.0	10.9	0.3	0.0	0.9	1.9	0.0	9.8	0.6	15.1	6.2
Cycle Q Clear(g_c), s	12.4	0.0	10.9	11.2	0.0	0.9	1.9	0.0	9.8	0.6	15.1	6.2
Prop In Lane	1.00		0.95	1.00		0.81	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	490	0	398	204	0	330	79	0	730	31	710	598
V/C Ratio(X)	0.61	0.00	0.76	0.02	0.00	0.08	0.69	0.00	0.54	0.51	0.76	0.38
Avail Cap(c_a), veh/h	550	0	460	242	0	382	139	0	730	144	710	598
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.2	0.0	18.2	23.3	0.0	14.7	25.9	0.0	10.9	26.9	13.5	11.0
Incr Delay (d2), s/veh	1.6	0.0	6.4	0.0	0.0	0.1	10.1	0.0	2.8	12.2	7.4	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	3.8	0.1	0.0	0.2	0.9	0.0	3.3	0.3	6.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.8	0.0	24.7	23.4	0.0	14.8	36.0	0.0	13.7	39.1	21.0	12.8
LnGrp LOS	C	A	C	C	A	B	D	A	B	D	C	B
Approach Vol, veh/h		603			32			446			782	
Approach Delay, s/veh		22.8			16.1			16.4			19.0	
Approach LOS		C			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.6	29.7		20.1	7.3	28.0		20.1
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.0	23.5		18.0	5.0	23.5		18.0
Max Q Clear Time (g_c+I1), s	2.6	11.8		14.4	3.9	17.1		13.2
Green Ext Time (p_c), s	0.0	1.8		1.1	0.0	2.3		0.0

Intersection Summary	
HCM 6th Ctrl Delay	19.5
HCM 6th LOS	B

1: 67th Ave NE & 188th St NE Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	9.1	4.5	6.2	3.7	0.1	0.1	0.0	0.0	0.0	2.7	0.3	0.2
Total Del/Veh (s)	62.8	37.8	38.8	16.1	21.7	5.5	19.6	12.0	12.1	4.1	1.8	1.2

1: 67th Ave NE & 188th St NE Performance by movement

Movement	All
Denied Del/Veh (s)	2.5
Total Del/Veh (s)	20.1

2: I-5 SB On Ramp & SR 531 (172nd St) & I-5 SB Ramps Performance by movement

Movement	EBT	EBR	WBT	WBR	SBL2	SBL	SBR	All
Denied Del/Veh (s)	1.1	1.3	0.0	0.0	133.1	117.2	129.3	21.1
Total Del/Veh (s)	72.0	34.8	17.3	11.6	140.7	139.3	141.5	51.0

3: I-5 NB Off Ramp/I-5 NB On Ramp & SR 531 (172nd St) Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Del/Veh (s)	3.4	3.3	0.2	0.4	357.3	352.9	106.9
Total Del/Veh (s)	150.9	146.3	38.5	19.0	73.7	178.9	88.9

4: Smokey Pt Blvd & SR 531 (172nd St) Performance by movement

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Denied Del/Veh (s)	0.0	54.1	45.2	49.0	2.9	13.8	15.5	12.5	234.6	237.3	248.8	0.0
Total Del/Veh (s)	222.5	226.1	46.5	11.2	75.0	76.1	76.4	10.1	489.0	78.8	39.0	91.5

4: Smokey Pt Blvd & SR 531 (172nd St) Performance by movement

Movement	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	82.9
Total Del/Veh (s)	60.1	160.7	139.9

5: 40th Ave NE & SR 531 (172nd St) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.0	0.1	2.6	2.2	3.2	3.9	0.6	3.8	3.8	0.6	0.5
Total Del/Veh (s)	69.7	17.8	15.8	75.3	22.5	21.0	62.3	50.1	9.1	56.2	46.5	19.4

5: 40th Ave NE & SR 531 (172nd St) Performance by movement

Movement	All
Denied Del/Veh (s)	1.6
Total Del/Veh (s)	29.3

6: 43rd Ave NE & SR 531 (172nd St) Performance by movement

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Denied Del/Veh (s)	0.1	0.1	0.0	0.1	0.2	0.0	0.1	0.0	0.0	0.0	2.3	0.1
Total Del/Veh (s)	59.8	61.3	25.6	7.2	52.1	25.6	23.3	51.4	47.4	28.3	71.7	67.5

6: 43rd Ave NE & SR 531 (172nd St) Performance by movement

Movement	SBR	All
Denied Del/Veh (s)	0.1	0.1
Total Del/Veh (s)	29.6	32.1

7: 51st Ave NE & SR 531 (172nd St) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0	0.0	1.7	1.2	1.8	0.7	0.4	0.4
Total Del/Veh (s)	46.8	31.2	30.1	40.8	22.3	24.3	70.7	52.6	28.8	56.7	40.6	27.0

7: 51st Ave NE & SR 531 (172nd St) Performance by movement

Movement	All
Denied Del/Veh (s)	0.5
Total Del/Veh (s)	34.6

8: 59th Ave NE & SR 531 (172nd St) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.1	0.1	3.3	2.1	0.6	24.0	20.0	21.6	245.4	247.3	248.0
Total Del/Veh (s)	204.5	69.6	67.9	275.8	56.4	48.1	165.1	129.4	117.2	367.3	375.9	377.6

8: 59th Ave NE & SR 531 (172nd St) Performance by movement

Movement	All
Denied Del/Veh (s)	69.6
Total Del/Veh (s)	166.4

9: 67th Ave NE & SR 531 (172nd St) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.6	0.6	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Total Del/Veh (s)	13.9	5.6	6.2	155.9	41.8	32.7	246.8	160.3	152.3	87.2	60.3	67.5

9: 67th Ave NE & SR 531 (172nd St) Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	57.4

10: SR 9 & SR 531 (172nd St) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	2.3	0.8	2.1	62.6	53.3	56.2	3.2	1.1	1.1	269.1	283.2	271.1
Total Del/Veh (s)	208.7	167.3	32.9	154.8	161.8	159.4	10.0	9.7	5.5	291.8	290.8	77.8

10: SR 9 & SR 531 (172nd St) Performance by movement

Movement	All
Denied Del/Veh (s)	80.4
Total Del/Veh (s)	132.2

11: Smokey Pt Blvd & 156th St NE Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	22.9	20.1	22.5	296.4	311.8	304.2	60.4	54.1	81.8	1.3	0.3	1.3
Total Del/Veh (s)	136.1	41.7	22.8	146.3	151.9	31.2	267.9	65.9	50.2	85.6	54.4	29.2

11: Smokey Pt Blvd & 156th St NE Performance by movement

Movement	All
Denied Del/Veh (s)	89.6
Total Del/Veh (s)	96.8

12: Smokey Pt Blvd & 152nd Ave NE Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	7.0	3.6	5.0	11.8	4.7	4.6	0.1	0.0	0.0
Total Del/Veh (s)	36.8	44.6	13.1	39.9	37.2	27.3	208.1	124.5	79.5	31.5	12.6	13.3

12: Smokey Pt Blvd & 152nd Ave NE Performance by movement

Movement	All
Denied Del/Veh (s)	2.8
Total Del/Veh (s)	54.0

16: BNSF Railway Spur & SR 531 (172nd St) Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.2	0.0	0.1
Total Del/Veh (s)	30.5	1.6	21.1

33: SR 531 (172nd St) Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	3.0	0.2	1.6
Total Del/Veh (s)	164.6	38.4	99.6

47: SR 531 (172nd St) Performance by movement

Movement	EBT	WBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.2	0.0
Total Del/Veh (s)	115.5	6.1	63.8	52.2

51: SR 531 (172nd St) Performance by movement

Movement	EBT	EBR	WBL	WBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	3.2	3.1	13.6	3.8	4.4	4.0

52: SR 531 (172nd St) Performance by movement

Movement	EBT	EBR	WBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0
Total Del/Veh (s)	2.7	2.1	2.6	13.2	3.2

Total Network Performance

Denied Del/Veh (s)	108.3
Total Del/Veh (s)	268.5

Arterial Level of Service: EB SR 531 (172nd St)

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
	33	164.6	247.2	0.8	12
I-5 SB On Ramp	2	72.0	85.1	0.1	5
I-5 NB Off Ramp	3	142.0	162.3	0.2	4
	47	119.1	129.2	0.1	3
Smokey Pt Blvd	4	46.5	101.6	0.1	6
	45	2.9	14.0	0.1	26
	52	2.7	11.0	0.1	26
40th Ave NE	5	18.0	29.1	0.1	14
	51	3.5	11.9	0.1	25
43rd Ave NE	6	25.6	36.6	0.1	11
51st Ave NE	7	28.9	86.3	0.5	21
59th Ave NE	8	74.1	119.7	0.5	15
BNSF Railway Spur	16	26.0	66.7	0.5	25
67th Ave NE	9	5.6	7.6	0.0	10
	42	60.5	96.4	0.4	14
	21	134.2	160.2	0.3	6
	31	184.7	206.4	0.2	4
	34	300.1	325.7	0.3	3
SR 9	10	167.3	180.6	0.2	3
Total		1578.2	2077.8	4.6	8

Arterial Level of Service: WB SR 531 (172nd St)

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
SR 9	10	161.8	228.9	0.2	3
	34	3.0	26.6	0.2	21
	31	0.7	27.8	0.3	34
	21	0.9	23.5	0.2	34
	42	1.4	28.5	0.3	33
67th Ave NE	9	41.8	79.3	0.4	17
BNSF Railway Spur	16	1.8	4.4	0.0	16
59th Ave NE	8	56.4	98.9	0.5	17
51st Ave NE	7	23.2	78.8	0.5	23
43rd Ave NE	6	21.5	69.5	0.5	25
	51	4.4	15.8	0.1	26
40th Ave NE	5	22.5	32.2	0.1	10
	52	3.0	13.9	0.1	29
	45	2.9	11.3	0.1	26
Smokey Pt Blvd	4	76.4	100.4	0.1	4
	47	7.1	18.1	0.1	20
I-5 NB On Ramp	3	38.5	49.2	0.1	8
I-5 SB Ramps	2	20.3	36.5	0.2	16
	33	31.0	44.8	0.1	10
Total		518.6	988.2	3.9	15

Intersection: 1: 67th Ave NE & 188th St NE

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	110	594	40	88	65	52	30	42	47
Average Queue (ft)	96	246	4	23	25	5	5	4	5
95th Queue (ft)	132	582	23	64	58	29	22	23	24
Link Distance (ft)		670		692		7813		1046	1046
Upstream Blk Time (%)		7							
Queuing Penalty (veh)		0							
Storage Bay Dist (ft)	60		30		105		110		
Storage Blk Time (%)	57	19	1	5		0			
Queuing Penalty (veh)	161	51	0	0		0			

Intersection: 2: I-5 SB On Ramp & SR 531 (172nd St) & I-5 SB Ramps

Movement	EB	EB	EB	WB	WB	SB	SB	SB
Directions Served	T	T	R	T	T	<	<L	R
Maximum Queue (ft)	620	643	233	400	407	356	789	448
Average Queue (ft)	432	432	164	144	137	133	655	418
95th Queue (ft)	804	830	309	303	314	286	1010	559
Link Distance (ft)	591	591		766	766		734	
Upstream Blk Time (%)	23	22					53	
Queuing Penalty (veh)	203	197					0	
Storage Bay Dist (ft)			183			383		383
Storage Blk Time (%)		37	1			1	2	69
Queuing Penalty (veh)		201	3			7	8	161

Intersection: 3: I-5 NB Off Ramp/I-5 NB On Ramp & SR 531 (172nd St)

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	T	T	R	L	LT	R
Maximum Queue (ft)	675	799	790	525	535	550	315	382	1190	1194
Average Queue (ft)	585	658	624	320	342	367	258	184	922	914
95th Queue (ft)	848	1019	1006	504	529	582	404	350	1549	1648
Link Distance (ft)		766	766	518	518	518			1140	1140
Upstream Blk Time (%)		27	18	1	1	3			50	56
Queuing Penalty (veh)		199	133	7	10	27			0	0
Storage Bay Dist (ft)	610						255	395		
Storage Blk Time (%)	19	43				19	3	0	1	
Queuing Penalty (veh)	100	175				118	20	0	3	

Intersection: 4: Smokey Pt Blvd & SR 531 (172nd St)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	B45	B45	NB
Directions Served	UL	T	T	R	UL	T	T	T	R	T	T	L
Maximum Queue (ft)	493	510	492	461	289	484	466	531	416	118	207	309
Average Queue (ft)	462	466	296	131	108	309	341	390	188	7	30	300
95th Queue (ft)	485	523	559	368	238	466	489	549	483	69	153	345
Link Distance (ft)	449	449	449	449		448	448	448		371	371	
Upstream Blk Time (%)	83	63	10	3	0	2	1	9		0	0	
Queuing Penalty (veh)	332	252	41	12	0	6	5	33		0	1	
Storage Bay Dist (ft)					393				266			250
Storage Blk Time (%)						4		46	0			34
Queuing Penalty (veh)						4		90	0			87

Intersection: 4: Smokey Pt Blvd & SR 531 (172nd St)

Movement	NB	NB	NB	NB	SB	SB	SB	SB	B46	B46
Directions Served	L	T	T	R	L	T	T	R	T	T
Maximum Queue (ft)	368	2489	2306	113	231	451	478	250	1563	1570
Average Queue (ft)	366	2105	1523	33	147	214	443	250	1135	1228
95th Queue (ft)	371	2653	2637	79	251	464	461	250	2067	1988
Link Distance (ft)		3695	3695			366	366		1521	1521
Upstream Blk Time (%)						9	85		28	50
Queuing Penalty (veh)						0	0		0	0
Storage Bay Dist (ft)	250			160	132			150		
Storage Blk Time (%)	78	1	16	0	27	6	1	82		
Queuing Penalty (veh)	201	9	19	0	34	11	5	103		

Intersection: 5: 40th Ave NE & SR 531 (172nd St)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	249	406	412	249	373	379	171	211	128	168	187
Average Queue (ft)	162	162	177	114	225	261	97	31	26	79	70
95th Queue (ft)	259	347	354	223	380	404	162	131	76	143	139
Link Distance (ft)		524	524		361	361		425			551
Upstream Blk Time (%)			0		1	3		0			
Queuing Penalty (veh)			0		5	15		0			
Storage Bay Dist (ft)	150			150			75		100	100	
Storage Blk Time (%)	20	7		6	17		32	1		8	3
Queuing Penalty (veh)	86	15		31	17		16	1		10	3

Intersection: 6: 43rd Ave NE & SR 531 (172nd St)

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	B24	SB
Directions Served	UL	T	T	R	L	T	TR	L	L	TR	T	L
Maximum Queue (ft)	240	335	338	242	282	388	417	204	181	210	406	47
Average Queue (ft)	89	142	147	37	122	189	204	110	102	127	56	13
95th Queue (ft)	183	287	288	121	229	332	350	183	167	218	243	40
Link Distance (ft)		524	524			2478	2478	135	135	135	669	
Upstream Blk Time (%)								7	7	16	0	
Queuing Penalty (veh)								0	0	0	0	
Storage Bay Dist (ft)	158			185	217							109
Storage Blk Time (%)	1	9	7		1	6						
Queuing Penalty (veh)	3	10	7		5	9						

Intersection: 6: 43rd Ave NE & SR 531 (172nd St)

Movement	SB
Directions Served	TR
Maximum Queue (ft)	128
Average Queue (ft)	50
95th Queue (ft)	103
Link Distance (ft)	1920
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	2
Queuing Penalty (veh)	0

Intersection: 7: 51st Ave NE & SR 531 (172nd St)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	95	370	400	185	341	358	226	918	230	218	358
Average Queue (ft)	29	179	204	74	132	162	172	249	126	127	133
95th Queue (ft)	71	338	380	146	273	304	251	697	234	218	266
Link Distance (ft)		2478	2478		2486	2486		3006			3240
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	246			244			185		150	127	
Storage Blk Time (%)		5		0	3		18	5	8	15	9
Queuing Penalty (veh)		2		0	3		95	28	30	27	15

Intersection: 8: 59th Ave NE & SR 531 (172nd St)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	526	728	708	283	721	720	232	908	3029	460
Average Queue (ft)	357	466	449	244	444	425	72	623	2777	460
95th Queue (ft)	635	883	849	340	904	877	207	1093	3639	462
Link Distance (ft)		2486	2486		2322	2322		976	2967	
Upstream Blk Time (%)								17	73	
Queuing Penalty (veh)								0	0	
Storage Bay Dist (ft)	350			140			98			385
Storage Blk Time (%)	32	20		71	22		4	64		63
Queuing Penalty (veh)	154	43		259	37		18	19		100

Intersection: 9: 67th Ave NE & SR 531 (172nd St)

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	B18	B23	SB
Directions Served	L	T	T	R	L	T	TR	L	TR	T	T	L
Maximum Queue (ft)	88	83	95	68	216	389	369	236	848	367	164	218
Average Queue (ft)	36	35	43	31	150	235	219	149	666	144	33	172
95th Queue (ft)	61	61	79	55	250	416	353	298	1017	486	226	271
Link Distance (ft)	28	28	28	28		1913	1913		775	484	1885	
Upstream Blk Time (%)	62	54	58	26					33	9		
Queuing Penalty (veh)	222	191	205	91					0	0		
Storage Bay Dist (ft)					129			155				106
Storage Blk Time (%)					37	21		15	69			24
Queuing Penalty (veh)					109	28		65	45			115

Intersection: 9: 67th Ave NE & SR 531 (172nd St)

Movement	SB
Directions Served	TR
Maximum Queue (ft)	848
Average Queue (ft)	469
95th Queue (ft)	816
Link Distance (ft)	7813
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	50
Queuing Penalty (veh)	92

Intersection: 10: SR 9 & SR 531 (172nd St)

Movement	EB	EB	B34	B34	B31	B31	B21	B21	B42	B42	WB	NB
Directions Served	LT	R	T	T	T	T	T	T	T	T	LTR	L
Maximum Queue (ft)	820	813	1451	1450	1208	1212	1439	1438	1776	1791	723	142
Average Queue (ft)	786	770	1238	1233	783	782	632	636	340	346	558	58
95th Queue (ft)	823	869	1867	1874	1641	1641	1694	1696	1305	1325	878	108
Link Distance (ft)	706	706	1338	1338	1100	1100	1332	1332	1913	1913	697	
Upstream Blk Time (%)	99	43	73	73	55	55	31	31	0	0	39	
Queuing Penalty (veh)	721	311	534	535	397	401	225	227	0	1	0	
Storage Bay Dist (ft)												588
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 10: SR 9 & SR 531 (172nd St)

Movement	NB	SB	SB
Directions Served	TR	LT	R
Maximum Queue (ft)	66	1229	842
Average Queue (ft)	19	1142	734
95th Queue (ft)	55	1446	1198
Link Distance (ft)	1118	1173	
Upstream Blk Time (%)		82	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			800
Storage Blk Time (%)		91	0
Queuing Penalty (veh)		114	1

Intersection: 11: Smokey Pt Blvd & 156th St NE

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	L	T	TR	L	T
Maximum Queue (ft)	336	603	262	242	806	806	259	308	1074	1081	178	528
Average Queue (ft)	241	336	120	186	803	773	256	304	924	809	122	317
95th Queue (ft)	412	791	234	322	840	1020	272	329	1339	1332	212	490
Link Distance (ft)		812			791	791			1046	1046		3695
Upstream Blk Time (%)		10			82	47			20	3		
Queuing Penalty (veh)		0			0	0			121	17		
Storage Bay Dist (ft)	187		185	200			211	211			98	
Storage Blk Time (%)	47	5	1	0	65		56	77	2		20	55
Queuing Penalty (veh)	339	32	7	2	104		181	251	10		89	63

Intersection: 11: Smokey Pt Blvd & 156th St NE

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	566	250
Average Queue (ft)	323	199
95th Queue (ft)	517	315
Link Distance (ft)	3695	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		150
Storage Blk Time (%)	37	6
Queuing Penalty (veh)	153	25

Intersection: 12: Smokey Pt Blvd & 152nd Ave NE

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	40	46	254	277	135	1125	1104	197	292	295
Average Queue (ft)	9	15	166	160	12	587	557	90	125	140
95th Queue (ft)	32	42	269	285	74	1389	1370	162	244	256
Link Distance (ft)	118	118		254		1809	1809		1046	1046
Upstream Blk Time (%)			3	7		4	4			
Queuing Penalty (veh)			0	0		0	0			
Storage Bay Dist (ft)			140		87			133		
Storage Blk Time (%)			21	15		63		3	5	
Queuing Penalty (veh)			66	42		3		19	8	

Intersection: 16: BNSF Railway Spur & SR 531 (172nd St)

Movement	EB	EB	EB	EB	WB	WB
Directions Served	T	T	T	T	T	T
Maximum Queue (ft)	242	402	406	125	30	6
Average Queue (ft)	113	198	209	76	1	0
95th Queue (ft)	221	333	340	163	14	5
Link Distance (ft)		2322	2322		28	28
Upstream Blk Time (%)					0	0
Queuing Penalty (veh)					0	0
Storage Bay Dist (ft)	145			25		
Storage Blk Time (%)	10	18	57	15		
Queuing Penalty (veh)	35	65	202	52		

Intersection: 33: SR 531 (172nd St)

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (ft)	3479	3489	606	688
Average Queue (ft)	1210	1220	444	473
95th Queue (ft)	3374	3380	610	688
Link Distance (ft)	4384	4384	591	591
Upstream Blk Time (%)	2	2	0	9
Queuing Penalty (veh)	0	0	5	96
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 47: SR 531 (172nd St)

Movement	EB	EB	EB	EB	WB	WB	WB	SB
Directions Served	T	T	T	T	T	T	T	R
Maximum Queue (ft)	450	563	563	651	78	143	262	222
Average Queue (ft)	417	494	492	549	4	10	38	105
95th Queue (ft)	543	675	693	853	37	75	161	207
Link Distance (ft)		518	518	518	449	449	449	526
Upstream Blk Time (%)		40	43	58				
Queuing Penalty (veh)		247	266	359				
Storage Bay Dist (ft)	350							
Storage Blk Time (%)	65	60						
Queuing Penalty (veh)	260	241						

Intersection: 51: SR 531 (172nd St)

Movement	EB	EB	WB	WB	WB	NB
Directions Served	T	TR	L	T	T	R
Maximum Queue (ft)	7	37	111	130	169	51
Average Queue (ft)	0	4	41	9	20	22
95th Queue (ft)	5	22	87	63	99	46
Link Distance (ft)	361	361		524	524	272
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			204			
Storage Blk Time (%)				0		
Queuing Penalty (veh)				0		

Intersection: 52: SR 531 (172nd St)

Movement	EB	EB	WB	NB
Directions Served	T	TR	T	R
Maximum Queue (ft)	4	17	5	115
Average Queue (ft)	0	1	0	47
95th Queue (ft)	4	10	5	87
Link Distance (ft)	371	371	524	342
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 12080

MOVEMENT SUMMARY

Site: 10 [2040 Action Alternative 2 Mitigated Weekday PM Peak Hour]

SR 9/SR 531 (172nd St NE)
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: SR 9												
3	L2	298	5.0	0.734	33.0	LOS C	8.4	219.4	1.00	1.22	1.59	25.6
8	T1	388	5.0	0.821	30.8	LOS C	13.4	349.6	1.00	1.34	1.86	26.1
18	R2	64	5.0	0.821	31.0	LOS C	13.4	349.6	1.00	1.34	1.86	25.5
Approach		750	5.0	0.821	31.7	LOS C	13.4	349.6	1.00	1.29	1.76	25.8
East: SR 531 (172nd St NE)												
1	L2	5	2.0	0.783	19.3	LOS B	6.9	174.9	0.92	1.12	1.40	32.3
6	T1	378	2.0	0.783	14.0	LOS B	6.9	174.9	0.92	1.12	1.40	32.3
16	R2	101	2.0	0.783	13.8	LOS B	6.9	174.9	0.92	1.12	1.40	31.6
Approach		484	2.0	0.783	14.0	LOS B	6.9	174.9	0.92	1.12	1.40	32.2
North: SR 9												
7	L2	106	4.0	0.784	21.1	LOS C	10.4	268.8	0.98	1.20	1.52	31.1
4	T1	527	4.0	0.784	15.8	LOS B	10.4	268.8	0.98	1.20	1.52	31.2
14	R2	133	4.0	0.276	10.3	LOS B	1.4	35.7	0.72	0.86	0.72	33.0
Approach		766	4.0	0.784	15.6	LOS B	10.4	268.8	0.93	1.14	1.38	31.5
West: SR 531 (172nd St NE)												
5	L2	250	5.0	0.979	41.3	LOS E	29.3	762.3	1.00	1.63	2.58	24.3
2	T1	596	5.0	0.979	35.7	LOS E	29.3	762.3	1.00	1.63	2.58	24.3
12	R2	511	5.0	0.776	17.9	LOS B	10.4	270.2	1.00	1.20	1.52	29.7
Approach		1356	5.0	0.979	30.0	LOS C	29.3	762.3	1.00	1.47	2.18	26.1
All Vehicles		3356	4.3	0.979	24.8	LOS C	29.3	762.3	0.97	1.30	1.79	27.9

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE LEVEL OF SERVICE

Lane Level of Service

Site: 10 [2040 Action Alternative 2 Mitigated Weekday PM Peak Hour]

SR 9/SR 531 (172nd St NE)
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	C	B	B	C	C

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

G General Trip Distribution

CIC General Regional Trip Distribution

APPENDIX

transpogroup

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