ENVIRONMENTAL CHECKLIST

for the

Terminal 91 Uplands Redevelopment

prepared for

Port of Seattle

July 10, 2023

EA Engineering, Science, and Technology, Inc., PBC

PREFACE

The purpose of this Environmental Checklist is to identify and evaluate probable significant environmental impacts that could result from the Terminal 91 (T-91) Uplands Redevelopment and to identify measures to mitigate those impacts. To meet the demand for maritime light industrial space in the Interbay/Ballard area, the Port of Seattle is proposing to develop up to 400,000 square feet of maritime light industrial space in two phases in the upland portion of T-91. Proposed redevelopment would occur in two phases under the city of Seattle Major Phased Development Process.

The State Environmental Policy Act (SEPA)[1] requires that all governmental agencies consider the environmental impacts of a proposal before the proposal is decided upon. This Environmental Checklist has been prepared in compliance with the SEPA Rules, effective April 4, 1984, as amended (Chapter 197-11), Washington Administrative Code; and Port of Seattle SEPA Resolution No. 3650.

This document is intended to serve as SEPA review for site preparation work, building construction, and operation of the proposed development comprising the T-91 Uplands Redevelopment. Analysis associated with the proposed project contained in this Environmental Checklist is based on plans for the project, which are on-file with the Port of Seattle. While not construction-level in detail, the schematic plans accurately represent the eventual size, location and configuration of the proposed structures and are considered adequate for analysis and disclosure of environmental impacts.

This Environmental Checklist is organized into three major sections. *Section A* of the Checklist (starting on page 1) provides background information concerning the *Proposed Action* (e.g., purpose, proponent/contact person, project description, project location, etc.). *Section B* (beginning on page 13) contains the analysis of environmental impacts that could result from implementation of the proposed project, based on review of major environmental parameters. This section also identifies possible minimization measures. *Section C* (page 50) contains the signature of the proponent, confirming the completeness of this Environmental Checklist.

Relevant project analyses that served as a basis for this Environmental Checklist include: the *Greenhouse Gas Emissions Worksheet* (EA, 2021), *Visual Simulations (Watershed Company, 2023), Historic/Cultural Resources Analysis (CRC*, 2021*),* and *Transportation Impact Analysis* (PH Consulting, 2022). These reports are on-file at the Port of Seattle and are included as appendices to this SEPA Checklist.

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[1] Chapter 43.21C. RCW

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PURPOSE

The State Environmental Policy Act (SEPA), Chapter 43.21 RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. The purpose of this checklist is to provide information to help identify impacts from the proposal (and to reduce or avoid impacts, if possible) and to help the Port of Seattle to make a SEPA threshold determination.

A. BACKGROUND

1. Name of Proposed Project:

   Terminal 91 (T-91) Uplands Redevelopment

2. Name of Applicant:

   Port of Seattle

3. Address and Phone Number of Applicant and Contact Person:

   Laura Wolfe, Senior Environmental Program Manager
   Port of Seattle, Pier 69
   2811 Alaskan Way
   Seattle, WA
   206-787-4292
   Wolfe.l@portseattle.org

4. Date Checklist Prepared

   July 2023

5. Agency Requesting Checklist

   Port of Seattle (the Port)

6. Proposed Timing or Schedule (including phasing, if applicable):

   The T-91 Uplands Redevelopment would be developed as a Major Phased Development (MPD), phased over a period of up to 15 years.

   Phase 1 includes three buildings with approximately 118,250 square feet of space, parking and loading area, driveways, and utility connections; up to 16,010 square feet of mezzanine may be installed for a total Phase 1 square footage of 134,260. Phase 1 development would be located in the northern portion of the site (Phase 1 area), with construction anticipated for completion in 2025.

   Phase 2 includes one building with approximately 288,000 square feet of space, parking and loading area, driveways, and utility connections; up to 38,990 square feet of mezzanine may be installed for a total Phase 2 square footage of 326,990. Phase 2 *development would be located in the southern portion of the site (Phase 2 area), with construction anticipated for completion by 2032.*

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

   No additions to the T-91 Uplands Redevelopment are anticipated beyond the proposed MPD.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal:

   Studies referenced in this SEPA Checklist include:
   - *Geotechnical Engineering Report (Shannon & Wilson, December 2022);*
   - *Greenhouse Gas Emissions Worksheet (EA 2023);*
   - *Critical Areas Report (Shannon & Wilson, February 2023);*
   - *Groundwater and Soil Environmental Investigation Report (Shannon & Wilson, February 2023);*
   - *Visual Simulations (Watershed Company, 2023);*
   - *Historic/Cultural Resources Analysis (CRC 2021); and*
   - *Transportation Impact Analysis (PH Consulting, December 2022).*

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain:

   There are no other applications that are pending approval for the T-91 Uplands Redevelopment.

10. List any government approvals or permits that will be needed for your proposal, if known:

   The following approvals or permits are anticipated to be required for proposed redevelopment under both Phase 1 and Phase 2 of the T-91 Uplands Redevelopment.

   <u>State and Regional Agencies</u>

   Washington Department of Ecology
   - *Construction General NPDES Permit*

   Seattle-King County Department of Health
   - *Plumbing Permits*

   Port of Seattle
   - *Construction Authorization by Port of Seattle Commission*

Local Agencies

City of Seattle

***Department of Construction and Inspections* -- permits/approvals associated with the proposed project, including:**

- *Major Phased Development Permit*
- *Demolition Permits*
- *Grading Permit*
- *Building Permits*
- *Mechanical Permits*
- *Electrical Permits*
- *Elevator Permits (if necessary)*
- *Certificates of Occupancy*
- *Comprehensive Drainage Control Plan approval*

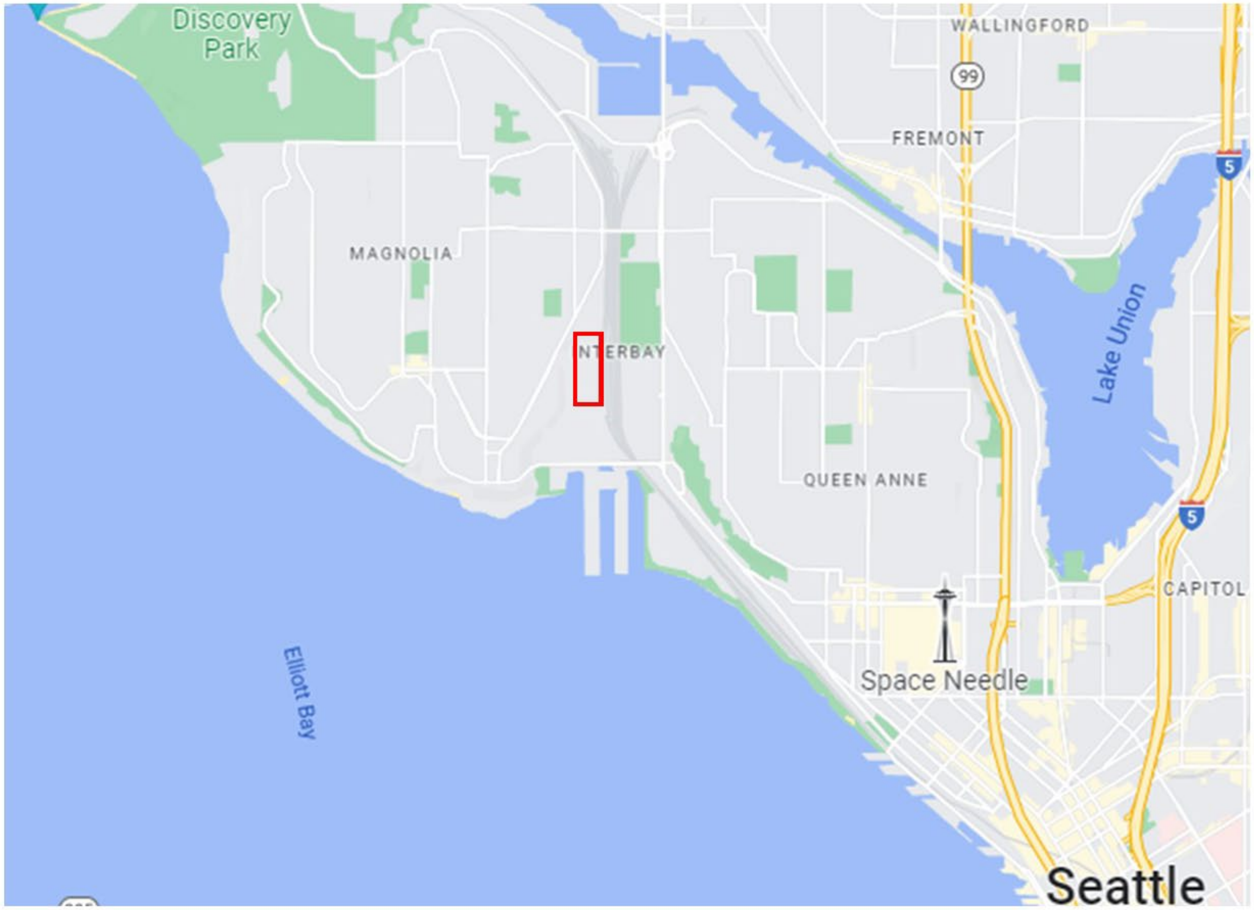
11. Give a brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page.

Introduction

*To meet the demand for maritime light industrial space in the Interbay/Ballard area, the Port of Seattle is proposing to develop up to approximately 406,000 square feet to 460,000 square feet (including mezzanines) of maritime light industrial space on the upland portion of T-91; see **Figure 1**.*

*The T-91 Uplands Redevelopment site comprises approximately 21-acres of the northern portion of T-91 (see **Figure 2**).*

As noted, the site would be developed as a Major Phased Development (MPD), pursuant to SMC 23.47A.007. An MPD is defined as a "nonresidential multiple building project that, by the nature of its size or function, is complex enough to require construction phasing over an extended period of time …" (SMC 23.84A.025). Under SMC 23.47A.007 this Major Phased Development (MPD) is only required to provide "a level of detail that is sufficient to reasonably assess anticipated impacts, including those associated with a maximum build-out, within the timeframe requested for Master Use Permit extension," which is to a maximum of 15 years from the date of issuance. Therefore, the current MPD site plan and phasing concept is conceptual in nature. It is anticipated that the plans and the project will be further developed and refined during the 15-year lifespan of the MPD.



— Project Site

Note: This figure is not to scale.

North

Source: Google Maps and EA Engineering, 2023.

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Figure 1

Regional Map

T-91 Uplands Redevelopment Project
Environmental Checklist

Source: Shannon and Wilson, 2023.

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Figure 2
Vicinity Map

Existing Conditions

The approximately 21-acre T-91 Uplands Redevelopment site consists of two phasing areas (Phase 1 and Phase 2), and currently contains five buildings with approximately 56,000 square feet of space as described below.

The Phase 1 area contains two structures with approximately 5,621 square feet of space as follows:

Ancillary #1 - 4,099 square feet
Ancillary #3 – 1,522 square feet

All existing building area is located in the extreme southern portion of the Phase 1 area.

The Phase 2 area contains six structures with approximately 50,724 square feet of space as follows:

Golden Alaska – 37,230 square feet
Ancillary #2 – 1,491 square feet
Building – 7,769 square feet
Building – 3,227 square feet
Building – 410 square feet
Building – 597 square feet

Structures are distributed throughout the Phase 2 area.

***Table 1** summarizes existing site area characteristics, including both Phase 1 and Phase 2 portions of the site.*

TABLE 1
EXISTING SITE AREA SUMMARY

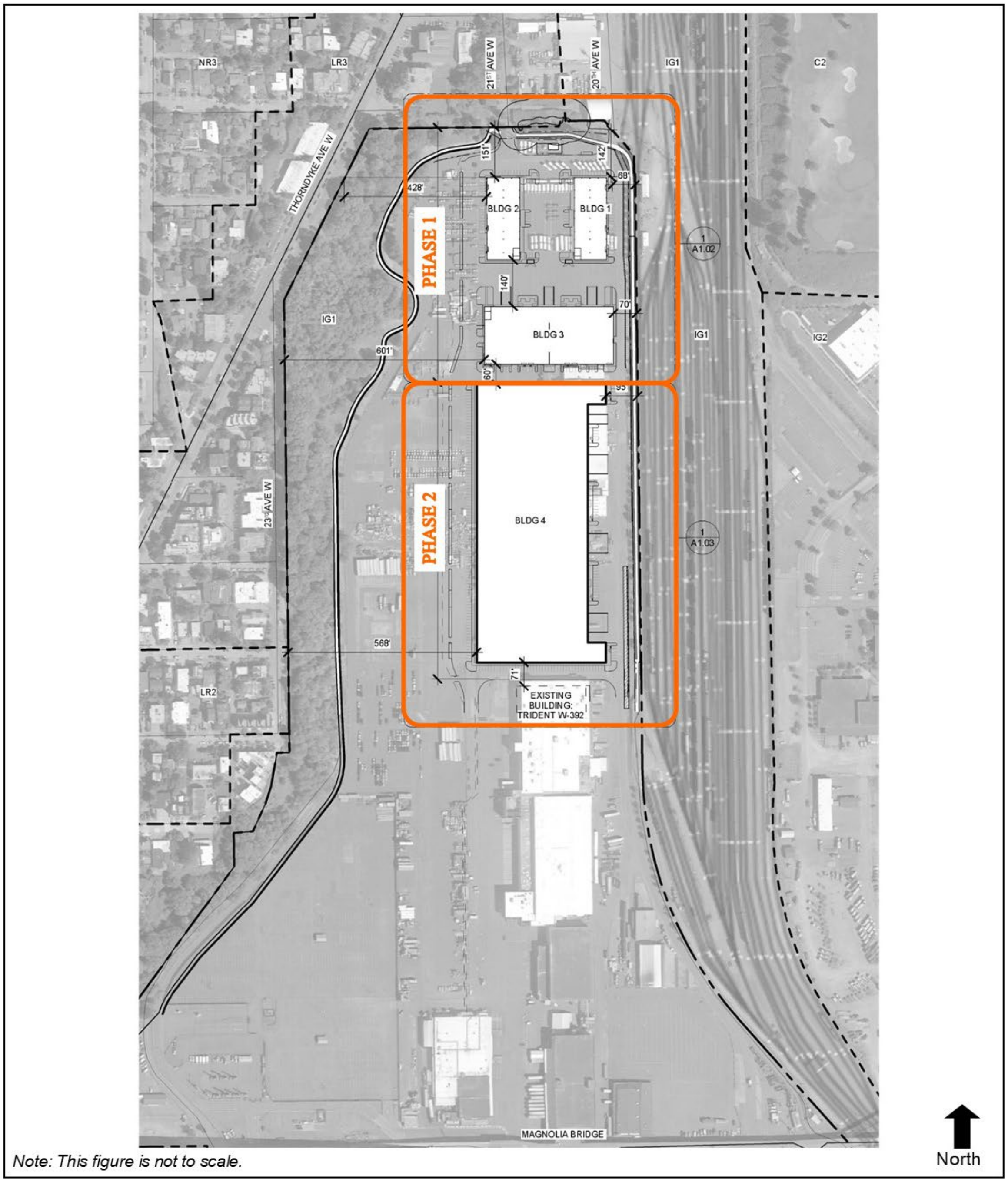
	Phase 1 Area	Phase 2 Area	Entire Site
Acreage[1]	8.64 ac.	12.23 ac.	20.87 ac.
Building Space	5,621 sq.ft.	50,724 sq.ft.	56,345 sq.ft.
Impervious Surface	376,556 sq.ft.	532,589 sq.ft.	909,145 sq.ft.
Pervious Area	0 sq.ft.	0 sq.ft.	0 sq.ft.

Source: Port of Seattle, 2023

Proposal

*To meet the demand for maritime light industrial space in the Interbay/Ballard area, the Port of Seattle is proposing to develop up to approximately 406,000 square feet to 460,000 square feet (including mezzanines) of maritime light industrial space on the upland portion of T-91. The T-91 Uplands Redevelopment would be developed in two phases under the Major Phased Development (MPD) process, phased over a period of up to 15 years (see **Figure 3** for the proposed site plan).*

T-91 Uplands Redevelopment Project
Environmental Checklist



Note: This figure is not to scale.

Source: Google Earth and EA Engineering, 2023.

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Figure 3
Site Plan

Phase 1 includes three buildings with approximately 118,250 square feet of space, parking and loading areas, driveways, and utility connections; up to 16,010 square feet of mezzanine may be installed for a total Phase 1 square footage of 134,260. Phase 1 development would be located in the northern portion of the site (Phase 1 area), with construction anticipated for completion by approximately 2025.

Phase 2 includes one building with approximately 288,000 square feet of space, parking and loading areas, driveways, and utility connections; up to 38,990 square feet of mezzanine may be installed for a total Phase 2 square footage of 326,990. Phase 2 development would be located in the southern portion of the site (Phase 2 area), with construction anticipated for completion by 2032.

*The phased development under the T-91 Uplands Redevelopment is summarized in **Table 2**.*

TABLE 2
PROPOSED DEVELOPMENT SUMMARY

	Phase 1 Area	Phase 2 Area	Entire Site
Acreage	8.64 ac.	12.23 ac.	20.87 ac.
Existing Building Space	5,633 sq.ft.	49,919 sq.ft.	55,552 sq.ft.
Proposed Building Demolition	5,633 sq.ft.	49,919 sq.ft.	55,552 sq.ft.
Retained Building Space	0 sq.ft.	0 sq.ft.	0 sq.ft.
Proposed New Light Industrial Space	94,600 sq.ft.	230,400 sq.ft.	325,000 sq.ft.
Proposed New Support Office Space	23,650 sq.ft.	57,600 sq.ft.	81,250 sq.ft.
Total Building Space	118,250 (134,260)[2]	288,000 (326,990)[2]	406,250 (461,250)[2]
Proposed Parking Stalls	97	167	264
Proposed Landscape Area	17,964 sq.ft.	17,523 sq.ft.	35,487 sq.ft.

Source: Port of Seattle, 2023

***Table 3** provides a comparison of existing site area characteristics with site characteristics under the proposal.*

TABLE 3
EXISTING/PROPOSED SITE CHARACTERISTICS COMPARISON

	Existing Site Conditions	Proposed Site Conditions (Phase 1 and Phase 2)
Acreage	20.87 ac.	20.87 ac.
Building Space	55,552 sq.ft.	406,250 sq.ft.
Impervious Area	909,145 sq.ft.	873,658 sq.ft.
Pervious Area	0 sq.ft.	35,487 sq.ft.

Source: Port of Seattle, 2023

2 (includes potential mezzanine space).

Buildings and Uses

*As indicated previously, to meet the demand for maritime light industrial space in the Interbay/Ballard area, the Port of Seattle is proposing phased development of five buildings containing up to approximately 400,000 square feet to 460,000 square feet (including mezzanine space) of maritime light industrial space on the upland portion of T-91; see **Figure 3**. The T-91 Uplands Redevelopment has a goal of acquiring LEED Core and Shell Silver certification for the buildings.*

Phase 1 of the proposed redevelopment would include three new buildings, totaling up to 118,250 square feet to 134,260 square feet (including potential mezzanine space) of building space. The proposed Phase 1 buildings would include:

- *Building 1 – single-story approximately 25,000 square feet.*
- *Building 2 – single-story approximately 25,000 square feet.*
- *Building 3 – single-story approximately 68,250 square feet.*
- *Potential mezzanine space – 16,010 square feet.*

Phase 2 of the proposed redevelopment would include one new building as listed below.

- *Building 4 – single-story approximately 288,000 square feet.*
- *Potential mezzanine space – 38,990 square feet.*

Circulation, Parking, and Loading

Vehicular Circulation

Vehicular access to the T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas) is provided from two gated access points. The East Gate is the primary access point, which connects to the intersection of Alaskan Way E and Elliott Ave over the Galer Street Flyover. The West Gate is typically only used when cruise ships are in port and is accessed via the Magnolia Bridge on/off ramps on the western edge of the bridge at 23rd Avenue W; traffic from the Magnolia neighborhood to the west cannot directly access the West Gate. Vehicles traveling to the T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas) use various public streets, including key roadways in the project vicinity such as: Elliott Avenue W, 15th Avenue W, the Magnolia Bridge, Garfield Street, Thorndyke Avenue W, 20th Avenue W, and W Dravus Street.

The proposed T-91 Uplands Redevelopment (Phase 1 and Phase 2) does not include any new or improvements to existing public roads, streets or state transportation facilities.

Parking

There are presently approximately 500 parking spaces within T-91 Uplands Redevelopment (Phase 1 and Phase 2 areas). Per SMC 23.54, manufacturing land uses require one parking space per 2,000 square feet of building space, which would require that the proposed T-91 Uplands Redevelopment site (Phase 1 and Phase 2) *provide a total of 231 parking spaces on the site. In total, the project would provide approximately 264 parking spaces, which would exceed the City requirements (see* ***Appendix F*** *for details; Phase 1 would provide 97 parking spaces and Phase 2 would provide 167 parking spaces).*

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any. If a proposal would occur over a range of area, provide the range or boundaries of the site(s).

The T-91 Upland Redevelopment site is located in the northeastern portion of the overall Port of Seattle T-91. The T-91 Upland Redevelopment site is bounded by the Elliott Bay Trail and roadway dead-ends associated with 20th Avenue W and 21st Avenue W to the north, BNSF rail lines and switching yard to the east, and T-91 marine industrial area to the west and south.

The site is addressed as 2001 W Garfield St., Seattle, WA 98119.

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. **General description of the site (circle one):**
<u>Flat</u>, rolling, hilly, <u>steep slopes</u>, mountainous, other:

The T-91 Uplands Redevelopment site is entirely pavement and buildings and is relatively level. Site elevations are 10 to 17 feet above mean sea level.

b. **What is the steepest slope on the site (approximate percent slope)?**

The T-91 Uplands Redevelopment site is level and does not contain any slope area. Steep slope areas associated with Magnolia bluff are located approximately 200 feet to the west of the Phase 1 area and approximately 300 feet west of the Phase 2 area.

c. **What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.**

The T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas) is entirely fill (consisting of heterogeneous mixture of very loose to medium dense, silty sand, clayey sand, silt and clay) extending approximately 10 to 14 feet below surface, underlain by marine deposits estuarine and beach deposits). Underlying marine deposits are glacial deposits consisting of hard silt and clay and very dense sand and gravel. [3]

No agricultural land of long-term commercial significance is present at T-91.

Soil sampling conducted at the site indicates that soils in the Phase 2 area falls into the following two categories:

> *1) Category 1 / 2 Soils – Soils containing detectable levels of petroleum hydrocarbons, VOCs, PAHS, PCBs, and/or metals that are below MCTA Method A or B cleanup levels.*
>
> *2) Problem Waste – Soils that contains one or more contaminant(s) at concentrations that exceed the MTCA Method A or B cleanup levels.*

For the disposal and handling purposes, soils generated during the redevelopment will likely be a mix of Category 1 / 2 Soils, and Problem Waste. Different disposal options apply to each of the two categories of soil present.

Excavated soils that would be considered Category 1 / 2 Soils may be disposed of at a Land Reclamation Facility. Such facilities may accept Category 1 / 2 Soils with low concentrations of hydrocarbon contaminants. Under certain conditions Category 1 / 2

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[3] Shannon and Wilson, *Geotechnical Report, December 2022*.

soils may also be reused onsite as specified in the Guidance for Remediation of Petroleum Contaminated Sites (Ecology, 2016).

Soils that are considered Problem Waste will need to be disposed of at a RCRA Subtitle D Landfill such as Rabanco's Roosevelt Landfill in Eastern Washington or Chemical Waste Management's Columbia Ridge Landfill in Arlington, Oregon.

All of the Phase 1 area and approximately half of the Phase 2 area are located in the City-defined 1,000-foot methane buffer zone around the former Interbay landfill. A passive venting system and/or a vapor barrier would be provided for development of on-site structures proposed within Phase 1 and 2 .

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

The Puget Sound region is a seismically active region; thus, T-91 (including the Phase 1 and Phase 2 areas comprising the T-91 Uplands Redevelopment site) could experience seismic activity, which may cause surface rupture, liquefaction and subsidence. The site is shown on the City of Seattle Critical Areas Map as a seismic hazard area and could be subject to liquefaction during a major seismic event[4]. Site specific studies would be performed prior to construction and appropriate recommendations would be identified and followed.

Steep slope area and potential landslide area associated with Magnolia Bluff are mapped to the west of the T-91 Upland Redevelopment site (approximately 200 feet to the west of the Phase 1 area and approximately 300 feet west of the Phase 2 area). There is a mapped slide event along the west slope.

e. Describe the purpose, type, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

As part of Phase 1 and Phase 2 redevelopment, approximately 9,700 cubic yard of cut and approximately 12,500 cubic yards of fill would be required (including approximately 5,200 cubic yards cut and 3,000 cubic yards fill (2,200 cubic yards net cut) for Phase 1 and approximately 4,500 cubic yards cut and 9,500 cubic yards fill (5,000 cubic yards net fill for Phase 2). The specific source of the fill is not known at this time but would be from an approved and suitable source of material.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Erosion is possible in conjunction with any construction activity. Site work associated with both Phase 1 and Phase 2 of the T-91 Uplands Redevelopment would expose soils, but the implementation of a Temporary Erosion Sedimentation Control (TESC) plan would minimize potential impacts. Following construction, the Phase 1 and Phase 2 site would be stabilized and soils would not be exposed.

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[4] Seattle Department of Construction and Inspections (SDCI) GIS Map. http://web6.seattle.gov/dpd/maps/dpdgis.aspx.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

***Phase 1 Area**.*

The existing Phase 1 area is comprised of approximately 8.64 acres of impervious surfaces (i.e. asphalt paving and buildings). There is no pervious area currently on the Phase 1 area.

Under the proposed T-91 Uplands Redevelopment, the Phase 1 area would consist of approximately 8.23 acres (95.2%) of impervious surface consisting of building footprint, and asphalt parking and loading area. Approximately 0.41 acres (4.8%) of the Phase 1 area would be pervious area, consisting of landscaping and LID stormwater features.

***Phase 2 Area**.*

The existing Phase 2 area is comprised of approximately 12.23 acres of impervious surfaces (i.e. asphalt paving and buildings). There is no pervious area currently on the Phase 2 area.

Under the proposed T-91 Uplands Redevelopment, the Phase 2 area would consist of approximately 11.82 acres (96.7%) of impervious surface consisting of building footprint, and asphalt parking and loading area. Approximately 0.40 acres (3.3%) of the Phase 2 area would be pervious area, consisting of landscaping and LID stormwater features.

Entire Site

The existing T-91 Uplands Redevelopment site is comprised of approximately 20.87 acres of impervious surfaces with no pervious area. Under the proposed project, the site would consist of approximately 20.06 acres (96.1%) of impervious surface and approximately 0.81 acres (3.9%) of pervious surfaces. Impervious surfaces under the proposed project would include asphalt parking/loading/drives and buildings, with pervious area consisting of landscaping and LID stormwater features.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

The following best management practices and regulatory requirements apply to redevelopment under both Phase 1 and Phase 2 of the T-91 Uplands Redevelopment.

- *Comprehensive Drainage Control Plans (including Construction Best Management Practices and Temporary Erosion and Sediment Control Plans) would be submitted as part of Building Permit applications, in accordance with City of Seattle requirements.*
- *Because all of the Phase 1 area and approximately half of the Phase 2 area are located in the City-defined 1,000-foot methane buffer zone around the former Interbay landfill. A passive venting system and/or a vapor barrier would be provided for development of on-site structures proposed within Phase 1 and 2.*

- *For the disposal and handling purposes, soils generated during the construction under Phase 1 and Phase 2 will likely be a mix of Category 1 / 2 Soils, and Problem Waste. Different disposal options apply to each of the two categories of soil present.*

  1) Excavated soils that would be considered Category 1 / 2 Soils may be disposed of at Land Reclamation Facility. Such facilities may accept Category 1 / 2 Soils with low concentrations of hydrocarbon contaminants. Under certain conditions Category 1 / 2 soils may also be reused onsite as specified in the Guidance for Remediation of Petroleum Contaminated Sites (Ecology, 2016).

  2) Soils that are considered Problem Waste will need to be disposed of at a RCRA Subtitle D Landfill such as Rabanco's Roosevelt Landfill in Eastern Washington or Chemical Waste Management's Columbia Ridge Landfill in Arlington, Oregon.

2. Air

a. What type of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.

The proposed Phase 1 and Phase 2 projects could result in localized increases in air emissions (primarily carbon monoxide and dust) due to construction vehicles, equipment and activities. The primary air emission would be carbon monoxide (CO); emissions would also include carbon dioxide (CO_2), sulfur oxides (SO_x), nitrogen oxides (NO_x) and particulates. Some activities (e.g., asphalt paving) could also generate odors detectable to some people. Construction contractors would have to comply with PSCAA regulations that require that all reasonable precautions be taken to minimize fugitive dust emissions and emissions from diesel equipment to reduce potential health risks.

Upon completion of construction, operation of redevelopment under Phase 1 and/or Phase 2 of the T-91 Uplands Redevelopment, an increase in the number of vehicle trips would result which would generate a relatively minor amount of additional air quality impacts when compared to the contribution of existing vehicles, especially given the State's transition to electric vehicles. Traffic associated with redevelopment would not be anticipated to cause significant increases in emissions levels and significant air quality impacts are not anticipated.

To evaluate the climate change impacts of the proposed projects, Greenhouse Gas Emissions Worksheets were prepared to estimate the emissions footprint for the lifecycle of Phases 1 and 2 on a gross-level basis. The emissions estimates use the combined emissions from the following sources:

<u>Embodied Emissions</u> – extraction, processing, transportation, construction and disposal of materials and landscape disturbance;

<u>Energy-related Emissions</u> – energy demands created by the development after it is completed; and

<u>Transportation-related Emissions</u> – transportation demands created by the development after it is completed.

*The Worksheet estimates are based on building use and size. The estimated lifespan emissions for each of the proposed redevelopment projects are listed below (see **Appendix A** to this Checklist for the Greenhouse Gas Emissions Worksheets)*

<u>Phase 1</u>
Approximately 211,412 $MTCO_2e$[5] lifespan emissions.

<u>Phase 2</u>
Approximately 514,755 $MTCO_2e$ lifespan emissions.

<u>Entire Project</u>
The estimated lifespan emissions for the two phases would total approximately 726,167 $MTCO_2e$. Based on an assumed building life of 62.5 years[6], the proposed project would be estimated to generate approximately 11,619 $MTCO_2e$ annually.

The proposed T-91 Upland Redevelopment Project (Phase 1 and Phase 2) would be designed to conform to applicable regulations and standards of agencies regulating air quality in Seattle, including: the Environmental Protection Agency (EPA), Washington State Department of Ecology (DOE) and the Puget Sound Clean Air Agency (PSCAA).

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

The Burlington Northern Santa Fe (BNSF) mainline and switching yard to the immediate east, and maritime industrial uses on the portion of T-91 to the south, are existing sources of emissions and odor in the immediate vicinity of the Phase 1 and Phase 2 areas. These sources are not anticipated to affect the proposed maritime industrial uses proposed under Phase 1 and Phase 2 of the T-91 Uplands Redevelopment.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

The following proposed best management practices and regulatory requirements apply to redevelopment under both Phase 1 and Phase 2 of the T-91 Uplands Redevelopment. These measures could be implemented to control emissions and/or dust during construction:

- *All construction equipment will be maintained in proper working order and within compliance with State regulations for vehicle emissions.*
- *During construction, the site will be watered as necessary to reduce fugitive dust emissions.*

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[5] $MTCO_2e$ is defined as Metric Ton Carbon Dioxide Equivalent; equates to 2204.62 pounds of CO_2. This is a standard measure of amount of CO_2 emissions reduced or sequestered. Carbon is not the same as Carbon Dioxide. Sequestering 3.67 tons of CO_2 is equivalent to sequester one ton of carbon.

[6] According to the Greenhouse Gas Emissions Worksheet, 62.5 years is the assumed building life for industrial buildings.

- *Construction-related trucks would avoiding prolonged periods of vehicle idling.*

- *Using electrically operated small tools in place of gas-powered small tools, wherever feasible.*

- *Development under the proposed T-91 Uplands Redevelopment (Phase 1 and Phase 2) would pursue LEED Core and Shell Silver and would feature solar panels on the roof, lighting reduction on building exterior, LED lighting in the building interior, and energy efficient mechanical equipment through tenant lease requirements, reducing expected building emissions.*

- *Safe bike and pedestrian spaces will be installed to encourage alternate forms of transportation.*

3. Water

a. Surface:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

Elliott Bay is located approximately 3,800 feet from the Phase 1 area and approximately 3,000 feet from the Phase 2 area. An approximately 0.06 acre Category III wetland (Wetland A/moderate function level) is located immediately adjacent to the northern edge of the Phase 1 area.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

The T-91 Upland Redevelopment Project (Phase 1 and Phase 2) would not require work over, in or adjacent to (within 200 feet) of Elliott Bay.

Phase 1 development would occur within 200 feet of Wetland A (see 4. Plants, a and b of this SEPA Checklist).

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

No fill or dredge material would be placed in or removed from any surface water body with the proposed development under Phase 1 and Phase 2 of the T-91 Uplands Redevelopment.

4) **Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.**

The proposed redevelopment under Phase 1 or Phase 2 of the T-91 Uplands Redevelopment would not require any surface water withdrawals or diversions.

5) **Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.**

The Phase 1 and Phase 2 areas do not lie within a 100-year floodplain and are not identified as a flood prone area on the City of Seattle Environmentally Critical Areas map layers.

6) **Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.**

There would be no discharge of waste materials to surface waters under redevelopment under Phase 1 or Phase 2 of the T-91 Uplands Redevelopment.

b. Ground:

1) **Will ground water be withdrawn, or will water be discharged to ground water? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.**

No groundwater would be withdrawn or water discharged to ground water. T-91 Upland Redevelopment (Phase 1 and Phase 2). Impacted groundwater was confirmed to be present in the Phase 1 area and encountered in the Phase 2 area. The presence of this impacted groundwater indicates that it would need to be managed during redevelopment under both Phase 1 and Phase 2 of the T-91 Uplands Redevelopment. Construction dewatering activities that generate a waste stream will likely need treatment prior to discharge to sanitary sewer systems or surface waters.

2) **Describe waste material that will be discharged into the ground from septic tanks or other sources; industrial, containing the following chemicals; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.**

Waste material would not be discharged into the ground from septic tanks or other sources. The proposed buildings under both Phase 1 and Phase 2 of the T-91 Uplands Redevelopment would connect to the City's sewer system and would discharge directly to the sewer system.

c. Water Runoff (including storm water):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Existing and new impervious surfaces constructed on the Phase 1 and Phase 2 areas would continue to be the source of runoff. Stormwater runoff on the Phase 1 and Phase 2 areas (and in the site vicinity) generally flows from north to south, and drains to Elliott Bay via several outfalls.

On an overall basis, the area in impervious surface on the Phase 1 and Phase 2 areas would be equal to or less than under current conditions. Stormwater from the Phase 1 and Phase 2 areas currently drains without water quality treatment.

Under the T-91 Uplands Redevelopment (Phase 1 and Phase 2) stormwater infrastructure would largely be replaced in the Phase 1 and Phase 2 areas along with each phase of redevelopment, respectively. The existing laterals to the west would remain along with the existing 42-inch storm main. A new 36-inch storm line would be constructed (under Phase 1), and along with the remaining 42-inch line and laterals, would collect and convey stormwater from the Phase 1 and Phase 2 impervious surfaces.

To treat the stormwater runoff from the Phase 1 and Phase 2 development, a combination of bioretention planters and perkfilter filtration catch basins would be used. The bioretention planters will collect sheet flow from the west side of the proposed development areas as well as the northeast corner of the site. The planters have been sized to treat the amount of pollution generating surface going to their respective planter. All the other areas on the site will drain to low points and be collected by the perkfilter catch basins. The planters and catch basins connect to the previously mentioned 36-inch storm line and do not infiltrate into the ground. This will ensure the stormwater from the pollution generating areas will be properly treated before it drains to Elliot Bay.

2) Could waste materials enter ground or surface waters? If so, generally describe.

The proposed stormwater drainage control systems and associated mitigation measures would prevent waste materials from entering ground water or surface waters.

3) Does the proposal alter or otherwise affect drainage patterns in *the vicinity of the site? If so, describe.*

The phased redevelopment would not alter or otherwise affect drainage patterns in the site vicinity.

d. **Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:**

The following proposed best management practices and regulatory requirements apply to redevelopment under both Phase 1 and Phase 2 of the T-91 Uplands Redevelopment.

- *Stormwater from new impervious surfaces would be managed per the City's current stormwater code.*
- *The proposed projects would require City approval of Comprehensive Drainage Control Plans (including Construction Best Management Practices, Erosion and Sediment Control approvals) as part of the building permit processes.*
- *The presence of this impacted groundwater indicates that it would need to be managed during redevelopment under both Phase 1 and Phase 2 of the T-91 Uplands Redevelopment. Construction dewatering activities that generate a waste stream will likely need treatment prior to discharge to sanitary sewer systems or surface waters.*
- *Development under the proposed T-91 Uplands Redevelopment (Phase 1 and Phase 2) would pursue LEED Core and Shell Silver and would feature bioretention swales for stormwater management.*
- *The project will revegetate of a portion of the wetland buffer with native species.*

4. Plants

a. **Check or circle types of vegetation found on the site:**

__deciduous tree
__evergreen tree
__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:

The T-91 Upland Redevelopment site (both Phase 1 and Phase 2 areas) is entirely impervious surface, with no existing vegetation.

To the immediate north of the Phase 1 area is an approximately 0.06-acre Palustrine, Scrub-Shrub, seasonally flooded Category III Wetland (see ***Appendix B****, Critical Areas Report). The vegetated portion of the wetland buffer is enclosed within a gated chain-link fence and is dominated by invasive species including Himalayan blackberry and Japanese knotweed.*

b. What kind and amount of vegetation will be removed or altered?

The Phase 1 and Phase 2 areas do not currently contain any vegetation and no vegetation would be removed under Phase 1 or Phase 2 of the T-91 Uplands Redevelopment.

c. List threatened or endangered species known to be on or near the site.

No known threatened or endangered plant species are located on or proximate to the Phase 1 or Phase 2 areas.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

There is no landscaping or native plants on the Phase 1 and Phase 2 areas. Landscaping would be provided for development under Phase 1 and Phase 2 of the T-91 Upland Redevelopment Project that would meet the requirements of the Seattle Land Use Code. Landscaping proposed under Phase 1 and Phase 2 is provided below.

- *Under Phase 1, 17,964 square feet of landscape provided, including revegetation of a portion of the wetland buffer with native species.*
- *Under Phase 2, 17,523 square feet of landscape provided.*

e. List all noxious weeds and invasive species known to be on or near the site.

There are no known noxious weeds of invasive plants on the Phase 1 area. Himalayan blackberry and Japanese knotweed are present in the wetland buffer enclosed within a gated chain-link fence to the immediate north of the Phase 1 area.

There are no known noxious weeds or invasive plants on the Phase 2 area.

5. Animals

a. Circle (underlined) any birds and animals that have been observed on or near the site or are known to be on or near the site:

birds: songbirds**,** hawk, heron, eagle**,** other: seagulls, pigeons.
mammals: deer, bear, elk, beaver**,** other: small mammals.
fish: bass, salmon, trout, herring, shellfish**.**

Birds and small mammals tolerant of urban conditions may use and may be present on and near the T-91 Upland Redevelopment Project site (Phase 1 and Phase 2 areas). Mammals possibly to be present include: mouse, rat, opossum, and feral cats. Additionally, raccoon, eastern gray squirrel and muskrat could be present at the wetland and buffer area to the immediate north of the Phase 1 area.

Birds common to the area include: European starling, house sparrow, rock dove, American crow, seagull, western gull, Canada goose, American robin, and house finch.

b. List any threatened or endangered species known to be on or near the site.

There are no threatened or endangered species known to be present on or near the T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas).

Elliott Bay is located approximately 3,000 feet (0.55 mile) from the southern edge of the Phase 2 area. Chinook salmon and Puget Sound steelhead trout are listed as threatened under the federal Endangered Species Act (ESA). Puget Sound coho salmon are considered an ESA species of concern.

c. Is the site part of a migration route? If so, explain.

The entire Puget Sound area is within the Pacific Flyway, which is a major north-south flyway for migratory birds in America—extending from Alaska to Patagonia. Every year, migratory birds travel some or all this distance both in spring and in fall, following food sources, heading to breeding grounds or travelling to overwintering sites. The buildings proposed under Phase 1 and Phase 2 would be of a similar height to existing and adjacent structures; therefore, no impacts on the Pacific Flyway migration route are expected.

d. Proposed measures to preserve or enhance wildlife, if any:

The following proposed best management practices and regulatory requirements apply to redevelopment under both Phase 1 and Phase 2 of the T-91 Uplands Redevelopment.

- *Temporary and permanent stormwater control system plans (including construction BMPs and erosion and sediment control approvals) would be implemented, which would limit stormwater impacts on fisheries resources downstream of the T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas).*

- *Increased landscaping could provide some refuge to nearby animals.*

e. List any invasive animal species known to be on or near the site.

Invasive species found in urban portions of King County (including the T-91 Uplands Redevelopment site) include European starling, house sparrow and eastern gray squirrel.

6. Energy and Natural Resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Electricity is the primary source of energy that would serve proposed redevelopment under Phase 1 and Phase 2 of the T-91 Uplands Redevelopment; natural gas may be considered based on individual tenant needs. During operation, these energy sources would be used for heating, cooling, hot water and lighting. The proposed development is installing solar arrays, which are expected to provide 20% of the building's energy.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

The proposed redevelopment under Phase 1 and Phase 2 of the T-91 Uplands Redevelopment would not affect adjacent properties use of solar energy.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

The following proposed best management practices and regulatory requirements apply to redevelopment under both Phase 1 and Phase 2 of the T-91 Upland Redevelopment Project.

- *Development under the proposed T-91 Uplands Redevelopment (Phase 1 and Phase 2) would pursue LEED Core and Shell Silver and would feature solar panels on the roof, bioretention swales for stormwater management, lighting reduction on building exterior, LED lighting in the building interior, and efficient mechanical and plumbing equipment through tenant lease requirements.*
- *The project will comply with City of Seattle building and energy code.*

7. Environmental Health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste that could occur as a result of this proposal? If so, describe.

Exposure to hazardous site materials (soil and groundwater) and building materials could occur with the T-91 Uplands Redevelopment (Phase 1 and Phase 2).

1) Describe any known or possible contamination at the site from present or past uses.

*A review of previous investigations and available historical documents was completed and presented in the Environmental Investigation Work Plan prepared for the project. The following is a summary of previous investigations. (See **Appendix C**, Environmental Investigation Work Plan).*

Between 2007 and 2020, several subsurface soil and groundwater investigations were completed in the Phase 1 and Phase 2 areas for the purpose of characterization prior to planned construction and development under Phase 1 and Phase 2 of the T-91 Upland Redevelopment Project. Specifically, soil and groundwater investigations were conducted around historic features as identified in a U.S. Environmental Protection Agency (EPA) Brownfields Assessment. Some of the features identified in the previous investigations included the Building-136 gasoline underground storage tank (UST) area, an incinerator and incinerator UST area, a drum storage area, the so-called Red Label

Storage Area, and Area of Contamination (AOC) 2 – Former Navy Fuel Station and the adjacent BNSF Rail Yard. In addition, fill material of an unknown source was historically used at both the Phase 1 and Phase 2 areas.

The sampling completed during these investigations identified the presence of petroleum-related soil and groundwater contamination around the Incinerator and Incinerator UST area and in AOC 2 along with petroleum-related soil contamination located adjacent to the BNSF Rail Yard. Diesel- and lube-oil-range hydrocarbons along with total arsenic were detected in the groundwater during the 2020 investigation completed in the Phase 1 area.

Adjacent properties to the east and northeast of the Phase 1 area and east of the Phase 2 area include Seattle Public Utilities Halladay Decant Facility, the BNSF tracks and Balmer the Interbay Railroad Yards, and the former Interbay Sanitary Landfill. Over the years, numerous spills of diesel fuel have been documented along the BNSF tracks and associated with the Balmer and Interbay rail yards. Contaminants associated with the former landfill may include halogenated volatile organic compounds (VOCs), priority pollutant metals, PAHs, and pesticides. In addition, the Phase 1 area and approximately half of the Phase 2 area are located within the 1,000-foot methane buffer zone that currently surrounds the landfill as defined in the City of Seattle's Critical Areas Ordinance. Discussion specific to Phase 1 and Phase 2 areas is presented below.

Phase 1

<u>Groundwater</u>

Three groundwater samples were performed on the Phase 1 area (MW-1, MW-2, and MW-3; see ***Appendix C*** *for detail), with diesel detected in all three samples. It only exceeded the Method A cleanup level in monitoring well MW-2. In addition, the sample from MW-2 analyzed with the silica gel cleanup method also exceeded the cleanup level. Because the diesel concentration was significantly higher in the sample not subjected to silica gel cleanup, it suggests that the hydrocarbons are degraded.*

Total and dissolved arsenic were present in all three samples exceeding its Method A cleanup level in MW-2 and MW-3. The arsenic concentrations are considered to be indicative of naturally occurring background.

The resampling confirmed the presence of diesel-range hydrocarbon contamination in the groundwater at MW-2. The sampling also identified the presence of it in monitoring wells MW-1 and MW-3. At this time, the source of the contamination is unknown in the groundwater at each location, but in the case of MW-1, it may likely be associated with an off-site upgradient source like the adjacent BNSF rail corridor where spills have occurred.

Phase 2

<u>Soil</u>

Lube-oil-range petroleum hydrocarbons are present in the shallow subsurface soils in the Phase 2 area. The majority of the detected concentrations are below the Method A *cleanup level with the exception of one location (P2-GP-1l) that exceeded the cleanup level (see **Appendix C** for detail).*

Gasoline-range petroleum hydrocarbons and VOCs were present at several locations in the Phase 2 area in shallow subsurface soils and at samples collected at the soil-water interface. Gasoline exceeded the Method A cleanup level at one geoprobe location, P2-GP-3, at depth of 13.5 feet bgs where wood with a creosote odor was encountered. Where detected, none of the VOCs exceeded an available regulatory criterion.

Diesel-range petroleum hydrocarbons were only detected in the 13.5 feet bgs sample collected from boring P2-GP-3. The detected concentration did not exceed a regulatory criteria.

Elevated levels of PAHs, including cPAHs, were detected in the shallow subsurface soils and at the soil water interface in the Phase 2 area. Benzo(a)pyrene was detected in six of the samples collected at concentrations that exceed the Method A cleanup level. TEF results corroborated the initial Benzo(a)pyrene analysis. Naphthalene was detected at one location P2-GP-3 at 13.5 feet bgs at a concentration that exceeded the Method A cleanup level.

Numerous total metals were detected in the samples collected from the subsurface soils in the Phase 2 area. With the exception of total arsenic in the sample collected from location P2-GP-3 at depth of 1.1 feet bgs, all of the detected concentrations were below available regulatory criteria. Total arsenic was detected at concentration that exceeded the Method A cleanup level in the sample collected form P2-GP-3. No PCBs were detected in any of the samples analyzed in the Phase 2 area.

<u>Groundwater</u>

A total of six monitoring wells were installed and sampled in the Phase 2 area. Diesel range petroleum hydrocarbons were detected in four of the six groundwater samples collected with concentrations in two samples exceeding the Method A cleanup level.

Total and dissolved arsenic were detected in all six of the samples collected from each of the monitoring wells with three of the six samples exceeding arsenics Method A cleanup level. These concentrations are interpreted to be an artifact of the petroleum in groundwater and the associated reducing conditions. Total lead was detected in one groundwater sample at a concentration that exceeded its Method A cleanup level. Low-level concentrations of PAHs were detected in three of the six samples collected from the monitoring wells. Where PAHs were detected in the groundwater, they were also detected in the soils at each of those locations.

<u>Building Demolition</u>

Phase 1 of the T-91 Uplands Redevelopment includes the demolition of two structures totaling approximately 5,600 square feet of building space. Phase 2 includes the demolition of six buildings totaling approximately 50,000 square feet of building space. Prior to building demolition, a hazardous materials survey will be prepared to identify asbestos-containing materials and lead paint. If any asbestos-containing materials are identified, asbestos work would be performed in compliance with Washington State worker protection and environmental protection regulations. See WAC 292-62, WAC

296-65 and Puget Sound Clean Air Agency Regulation III, Article 4. If lead paint were identified, necessary precautions (e.g., exposure assessments, respiratory protection) would be taken to prevent or minimize worker exposure to lead, as outlined in WAC 296-155-176.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

See the discussion above and ***Appendix C****.*

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

Hydraulic oil and fuel would be used and could be stored onsite during construction of Phase 1 and Phase 2. With proper handling, oil and fuel spills are not anticipated.

The production and use of hazardous chemicals during operations of Phase 1 and Phase 2 buildings would be dependent on individual future tenants. All use and storage of hazardous chemicals associated with operations of Phase 1 and Phase 2 buildings would be conducted consistent with applicable federal, state and local regulations, and impacts associated with hazardous chemicals are not anticipated.

4) Describe special emergency services that might be required.

No special emergency services are anticipated to be required because of redevelopment under Phase 1 and Phase 2. As is typical of urban development, it is possible that normal fire, medical and other emergency services may, on occasion, be needed from the City of Seattle.

5) Proposed measures to reduce or control environmental health hazards, if any:

The following best management practices and regulatory requirements are identified as applicable to both Phase 1 and Phase 2 of the T-91 Upland Redevelopment Project, and just applicable to Phase 2.

<u>Phase 1 and Phase 2 – Groundwater/Soils</u>

- *Impacted groundwater was confirmed to be present in the Phase 1 area and encountered in the Phase 2 area. The presence of this impacted groundwater indicates that it will need to be managed during proposed redevelopment under Phase 1 and Phase 2. Construction dewatering activities that generate a waste stream would likely need treatment prior to discharge to sanitary sewer systems or surface waters.*

- *All of the Phase 1 area and approximately half of the Phase 2 area are located in the City defined 1,000-foot methane buffer zone around the former Interbay* *landfill. A passive venting system and/or a vapor barrier is recommended for development of on-site structures proposed within Phase 1 and 2.*

- *All stormwater will be treated and connect to the existing storm line and will not infiltrate into the ground. This will ensure the stormwater from the pollution generating areas will be properly treated before it drains to Elliot Bay and that stormwater will not cause further mobilization of contaminants through infiltration.*

Phase 2 – Soils

- *The soils encountered in the Phase 2 area fall into one of two categories, which include the following:*

  1. Category 1 / 2 Soils – Soils containing detectable levels of petroleum hydrocarbons, VOCs, PAHS, PCBs, and/or metals that are below MCTA Method A or B cleanup levels.

  2. Problem Waste – Soils that contains one or more contaminant(s) at concentrations that exceed the MTCA Method A or B cleanup levels.

  For the disposal and handling purposes, soils generated during Phase 2 redevelopment will likely be a mix of Category 1 / 2 Soils, and Problem Waste. Different disposal options apply to each of the two categories of soil present.

  Excavated soils that would be considered Category 1 / 2 Soils may be disposed of at Land Reclamation Facility. Such facilities may accept Category 1 / 2 Soils with low concentrations of hydrocarbon contaminants. Under certain conditions Category 1 / 2 soils may also be reused onsite as specified in the Guidance for Remediation of Petroleum Contaminated Sites (Ecology, 2016).

  Soils that are considered Problem Waste will need to be disposed of at a RCRA Subtitle D Landfill such as Rabanco's Roosevelt Landfill in Eastern Washington or Chemical Waste Management's Columbia Ridge Landfill in Arlington, Oregon.

Phase 2 – Building Demolition

- *Asbestos-containing material (ACM) and presumed asbestos-containing material (PACM) that could be impacted by demolition/renovation activities would be removed by a licensed asbestos abatement contractor prior to disturbance. The asbestos work would be performed in compliance with Washington State worker protection and environmental protection regulations. See WAC 292-62, WAC 296-65 and Puget Sound Clean Air Agency Regulation III, Article 4 for additional information.*

- *Necessary precautions (e.g., exposure assessments, respiratory protection) would be taken to prevent or minimize worker exposure to lead, as outlined in WAC 296-155-176. Demolition waste that contains lead would be characterized and disposed of in accordance with the provisions of the Dangerous Waste Regulations (WAC 173-303)*

- *Conventional dust control measures would be implemented to minimize the exposure of workers and the immediate surrounding populations to construction-generated dust.*

b. Noise

1) What types of noise exist in the area that may affect your project (for example: traffic, equipment operation, other)?

The T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas) is located in a working maritime industrial area. The BNSF mainline and switching yard to the immediate east, and maritime industrial/commercial uses associated with Port tenants to the west and south, and other commercial uses to the north are the primary sources of noise in the vicinity of the T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas). Traffic associated with 15th Avenue W (to the east) and with seasonal Port of Seattle cruise ship operations on Pier 90 to the south, are also sources of noise in the vicinity.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from site.

The proposed T-91 Uplands Redevelopment (Phases 1 and 2) would create equipment and operational noise related to demolition of buildings (Phase 2) and building construction (Phase 1 and Phase 2).

The T-91 Uplands Redevelopment site is zoned for Industrial uses and potentially affected sensitive receivers in the project vicinity include residences to the west, north and east of the site. The nearest residences west of the site are located on the east slope of the Magnolia neighborhood, approximately 800 feet from the Phase 1 and Phase 2 areas. East of the site, the nearest sensitive receivers are located on the west slope of the Queen Anne neighborhood, approximately 1,700 feet from the Phase 1 and Phase 2 areas. There also is one residential complex approximately 600 feet from the Phase I area. As indicated, the T-91 Uplands Redevelopment site is located in a working maritime industrial area with associated noise conditions.

Construction noise would be short-term and would occur during daytime hours. Typical construction noise activities would include grading, demolition and building construction and would employ equipment such as dump trucks, excavators, pavers, generators and compressors. The foundations for the Phase 1 and Phase 2 buildings would require either shallow foundations or possibly deep foundation (piles) to achieve necessary strength to support the buildings. If pile driving is determined to be the most appropriate foundation system, pile driving activities on the ***Phase 1*** *area would occur approximately 750 feet from the Magnolia neighborhood to the west, approximately 1,700 feet from the Queen Anne neighborhood to the east, and approximately 600 feet from the closest residential uses to the north. Pile driving activities on the* ***Phase 2*** *area would occur approximately 800 feet from the Magnolia neighborhood and approximately 1,700 feet from the Queen Anne neighborhood. The proposed redevelopment under Phase 1 and Phase 2 of the T-91 Upland*

Redevelopment Project would comply with provisions of Seattle's Noise Ordinance (SMC, Chapter 25.08); no noise variances are anticipated.

If pile driving is utilized for foundations, the unique nature of pile driving noise could result in the loudest sounds being audible at the residences nearest this activity. This noise could be perceived by some people as intrusive and possibly annoying, but the low overall sound levels and compliance with Seattle's noise code would minimize the potential for significant impacts.

Once the Phase 1 and Phase 2 buildings are operational, no significant long-term noise impacts are anticipated; the developments would comply with provisions of the City of Seattle's Noise Ordinance.

3) Proposed measures to reduce or control noise impacts, if any:

The following proposed measure applies to redevelopment under both Phase 1 and Phase 2 of the T-91 Upland Redevelopment Project.

- *The project would comply with provisions of the City's Noise Ordinance (SMC 25.08); specifically: construction hours would be limited to 7 AM to 10 PM on weekdays and 9 AM to 10 PM weekends and legal holidays. Impact construction activities (pile driving, jack hammering) are limited to 8 AM to 5 PM weekdays and 9 AM to 5 PM weekends and legal holidays. If extended construction hours are necessary, the applicant would apply for a noise variance.*

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

The overall T-91 property is established with a mix of marine commercial/ industrial and marine transportation uses, including Piers 90 and 91, which host the North Pacific Fishing Fleet and a cruise ship terminal south of the Magnolia Bridge, and cruise terminal accessory parking, warehouse, and outdoor storage uses north of the Bridge. T-91 is part of the Ballard Interbay Northend Manufacturing & Industrial Center (BINMIC).

The T-91 Uplands Redevelopment site is located north of the Bridge and is a maritime light industrial center within the Interbay neighborhood of Seattle. The approximately 20.87-acre T-91 Uplands Redevelopment site is currently completely in developed/disturbed condition as described below for the Phase 1 and Phase 2 areas.

<u>Phase 1 Area</u>

The approximately 8.64-acre Phase 1 area contains approximately 8.46 acres of asphalt pavement area and approximately 0.18-acre (5,600 square feet) of building footprint area consisting of an approximately 4,099-square foot, single-story building and an approximately 1,522-square foot, single-story building.

Phase 2 Area

The approximately 12.23-acre Phase 2 area contains approximately 1.16 acres (50,724 square feet) in building footprint area and approximately 11.07 acres in asphalt pavement area. The Phase 2 area contains six buildings.

The T-91 Uplands Redevelopment site is generally bounded by maritime and transportation uses. To the immediate east is the Elliott Bay Trail with the BNSF/Union Pacific Railway main lines and switching yard beyond. Commercial uses, surface parking, the Interbay Golf Course/Interbay Pea Patch, and 15th Avenue W are located farther to the east. Commercial and residential uses associated with the Queen Anne neighborhood are located east of 15th Avenue W.

To the north, adjacent uses include the Elliott Bay Trail, roadway dead-ends associated with 20th Avenue W and 21st Avenue W, and wetland and buffer area within chain-link fence surrounding SPU's Holladay Vactor Decant Facility. Light industrial, commercial and residential uses are located farther to the north.

To the west is asphalt paved storage area associated with T-91, the Elliott Bay Trail and vegetated slope area. Farther to the west is Thorndyke Avenue W and residential use associated with the Magnolia neighborhood. To the south are maritime industrial uses associated with T-91, the Magnolia Bridge, Piers 90 and 91 and Elliott Bay.

b. Has the site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

The T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas) has not been used as working farmlands or forest lands for over 100 years.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

The T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas) is in a maritime industrial urban area and would not affect or be affected by working farm or forest land; there is no working farm or forest land near this urban site.

c. Describe any structures on the site.

The below describes structures on the T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas)

The Phase 1 area contains two structures with approximately 5,621 square feet of building space as follows:

Ancillary #1 - 4,099 square feet
Ancillary #3 – 1,522 square feet

All existing building area is located in the extreme southern portion of the Phase 1 area.

The Phase 2 area contains six structures with approximately 50,724 square feet of building space as follows:

Golden Alaska – 37,230 square feet
Ancillary #2 – 1,491 square feet
Building – 7,769 square feet
Building – 3,227 square feet
Building – 410 square feet
Building – 597 square feet

Structures are distributed throughout the Phase 2 area.

d. Will any structures be demolished? If so, what?

Building demolition under the T-91 Uplands Redevelopment would be as follows.

Phase 1

Under Phase 1 of the T-91 Uplands Redevelopment, two structures would be demolished to accommodate proposed Phase 1 development. Structure area under Phase 1 would total approximately 5,600 square feet.

Phase 2

Under Phase 2 of the T-91 Uplands Redevelopment all existing structures in the Phase 2 area, would be demolished to accommodate proposed Phase 2 development. Structure area demolished under Phase 2 would total approximately 50,000 square feet.

e. What is the current zoning classification of the site?

According to the Seattle Zoning Code, the T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas) is zoned IG1 U/45.

The T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas) is also within the BINMIC. As noted above, this is one of two designated Manufacturing/ Industrial Centers in the City of Seattle. These areas are home to the city's thriving industrial businesses and are designated as important regional resources for retaining and attracting jobs and maintaining a diversified economy.

f. What is the current comprehensive plan designation of the site?

The Future Land Use Map in the Seattle Comprehensive Plan identifies the T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas) as a Manufacturing Industrial Center.

g. If applicable, what is the current shoreline master program designation of the site?

T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas) is not located in any SMP designation.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

Based on the SDCI GIS mapping, the T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas) contains the following Environmentally Critical Areas (see ***Figure 4*** *for a map of Environmentally Critical Areas).*

<u>Phase 1 Area</u>

- *The entire Phase 1 area designated Liquefaction Prone Area (ECA 5)*
- *The entire Phase 1 area designated Landfill Buffer (Historical – ECA 7).*
- *A portion of the area to the immediate north of the Phase 1 area designated as Wetland.*

<u>Phase 2 Area</u>

- *The entire Phase 2 area designated Liquefaction Prone Area (ECA 5)*
- *The northern and eastern portion of the Phase 2 area designated Landfill Buffer (Historical – ECA 7).*

i. Approximately how many people would reside or work in the completed project?

The project would not contain any residential units; therefore, no people would reside in the completed projects under Phase 1 or Phase 2.

The proposed T-91 Uplands Redevelopment is part of the larger T-91 property which currently provides employment for approximately 400 year-round workers. Seasonal employment at T-91 also fluctuates considerably depending on the number of cruise ships and fishing vessels at berth. It is assumed that the proposed T-91 Uplands Redevelopment could provide a total of approximately 300 new jobs; consisting of approximately 100 jobs under Phase 1 and approximately 200 jobs under Phase 2 (Note that the actual number of jobs would be determined by eventual tenants).

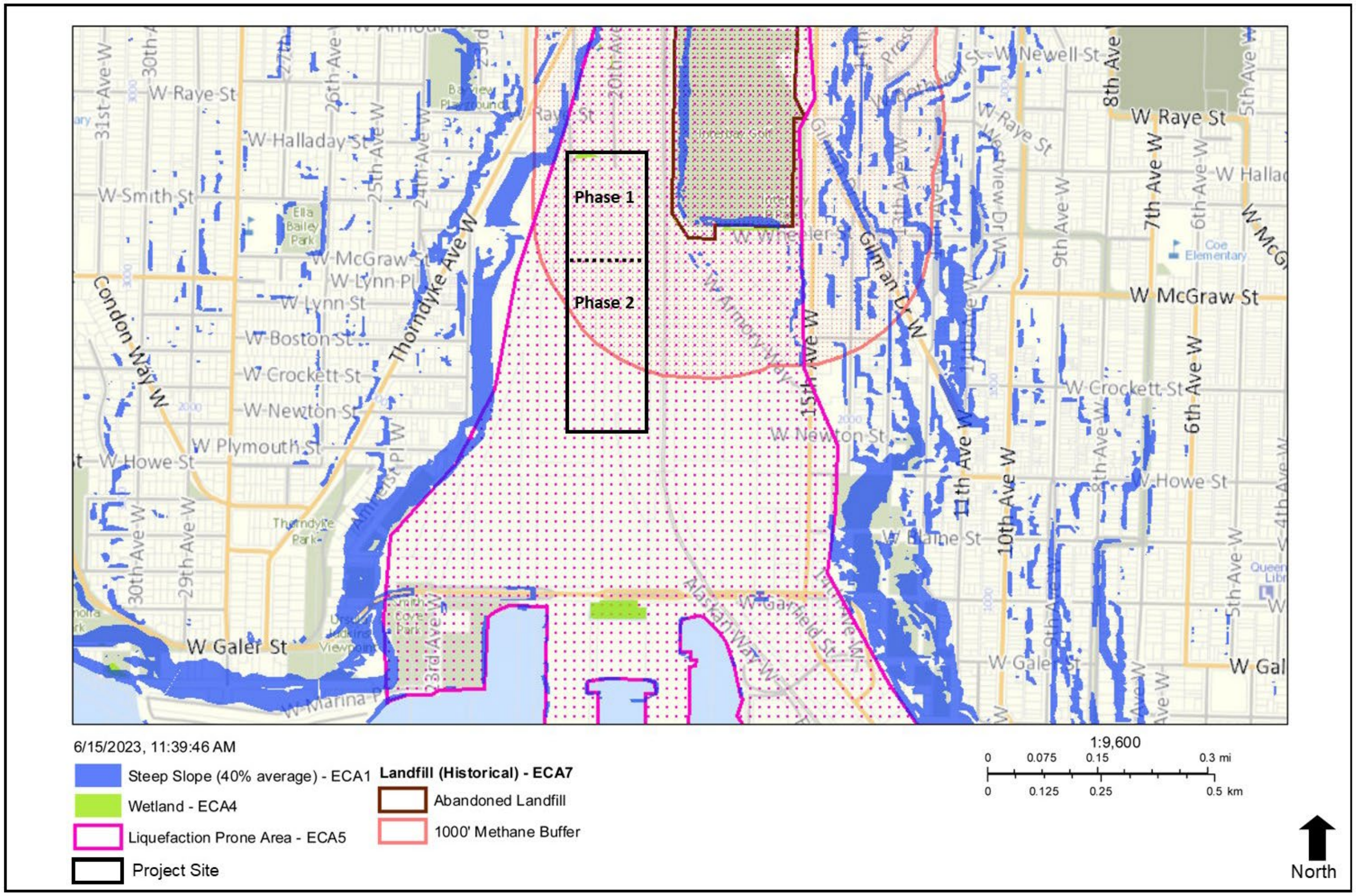
j. Approximately how many people would the completed project displace?

The completed development under Phase 1 and Phase 2 of the T-91 Uplands Redevelopment would not displace any people.

k. Proposed measures to avoid or reduce displacement impacts, if any:

No displacement impacts would occur and no avoidance measures are necessary.

T-91 Uplands Redevelopment Project
Environmental Checklist



Source: City of Seattle and EA Engineering, 2023.

EA Engineering, Science, and Technology, Inc., PBC

Figure 4

Environmentally Critical Areas Map

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The T-91 Uplands Redevelopment (Phase 1 and Phase 2) is compatible with existing and projected land uses and plans; therefore no measures would be necessary.

m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any:

The T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas) is not located near agricultural or forest lands; therefore no measures would be necessary.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

No housing units would be provided under either Phase 1 or Phase 2 of the T-91 Uplands Redevelopment.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

No housing presently exists onsite and none would be eliminated.

c. Proposed measures to reduce or control housing impacts, if any:

No housing impacts would occur under the T-91 Uplands Redevelopment (Phase 1 and Phase 2); therefore no measures would be necessary.

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

The existing structures on the T-91 Uplands Redevelopment site (including the Phase 1 and Phase 2 areas) and proposed building heights under Phase 1 and Phase 2 are described below.

<u>Phase 1</u>

Under Phase 1 of the T-91 Uplands Redevelopment, three buildings would be constructed in the Phase 1 area. Consistent with the IG1 U/45 zoning, the height of the proposed Phase 1 buildings would be a maximum of 45 feet. The existing building and the portion of the other building in the southern portion of the Phase 1 area are single-story at a height of approximately 44 feet.

Phase 2

Under Phase 2 of the T-91 Uplands Redevelopment, one building would be constructed in the Phase 2 area. Consistent with the IG1 U/45 zoning, the height of the proposed Phase 2 building would be a maximum of 45 feet. The existing buildings in the Phase 2 area are single-story at a height of approximately 44 feet.

Proposed buildings under both Phase 1 and Phase 2 of the T-91 Upland Redevelopment would be warehouse/industrial use composed of concrete tilt-up construction type III-B. The building would be single-story core and shell, with opportunity for future tenant improvements under separate permit. Roofs would be either mass timber or steel framing, with clerestory windows.

b. What views in the immediate vicinity would be altered or obstructed?

Visual simulations were prepared to evaluate the potential view conditions with the proposed T-91 Uplands Redevelopment (Phase 1 and Phase 2), *in accordance with applicable City of Seattle policies related to views from specific City viewpoints and parks, views of historic landmarks, views of the Space Needle, and views from scenic routes (see **Appendix D**).*

*There are no views from specific City viewpoints and parks, views of historic landmarks, or views of the Space Needle that could be blocked by the proposed development under Phase 1 or Phase 2 of the T-91 Uplands Redevelopment. Therefore, the focus of the analysis is views from publicly available viewpoints in the vicinity of the Phase 1 and Phase 2 areas. Six viewpoints from the surrounding area to proposed redevelopment under Phase 1 and Phase 2 of the T-91 Uplands Redevelopment are evaluated, including two viewpoints from the east (Soundview Terrace Park and Interbay P-Patch), two viewpoints from the north (Elliott Bay Trail and 21st Ave. W), one viewpoint from the west (Ella Baily Park), and one viewpoint from the south (Magnolia Bridge) are evaluated. See **Appendix D** for the visual simulations.*

*As shown in the visual simulations presented in **Appendix D**, under Phase 1 and Phase 2 of the T-91 Uplands Redevelopment, the visual density of the Phase 1 and Phase 2 areas would appear greater from the viewpoints than under existing conditions. Development under Phase 1 and Phase 2 would represent a continuation of existing maritime development surrounding the site, and the overall character of the view would not be significantly altered. The view toward the Phase 1 and Phase 2 areas would continue to be of an urban maritime setting. There are no views of Mount Rainier, the Olympic or Cascade Mountains, the downtown skyline, or major bodies of water that would be blocked by proposed development under either Phase 1 or Phase 2 of the T-91 Upland Redevelopment Project*

c. Proposed measures to reduce or control aesthetic impacts, if any:

No significant aesthetic/views impacts are anticipated from Phase 1 and Phase 2 of the T-91 Uplands Redevelopment; therefore no measures would be necessary.

11. Light and Glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

At times during the construction process, area lighting of the construction sites under Phase 1 and Phase 2 (to meet safety requirements) may be necessary, which will be noticeable proximate to the Phase 1 and Phase 2 areas. In general, however, light and glare from construction under the proposed T-91 Uplands Redevelopment (Phase 1 and Phase 2) is not anticipated to adversely affect adjacent land uses.

Once operational, interior and exterior building lighting could at times be visible from adjacent land uses and streets. The amount of light and associated glare is not expected to differ substantially from that which presently occurs from other buildings/structures of similar height to the north of the Phase 1 area and south of the Phase 2 area. Stationary sources of light would include interior lighting, building and parking lighting; pedestrian-level façade lighting; and security lighting.

Sources of glare would also include any glazed building façade materials. Solar panels would have an anti-glare coating.

Shadows

Seattle's SEPA policies aim to "minimize or prevent light blockage and the creation of shadows on open spaces most used by the public."[7] *Areas of the City outside Downtown that are protected include:*

- *publicly-owned parks;*
- *public schoolyards;*
- *private schools which allow public use of schoolyards during non-school hours; and*
- *publicly owned street ends in shoreline areas.*

There are no protected open space areas that are proximate to the T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas) where the development could block light or cast shadows. During certain times of the day, the proposed T-91 Uplands Redevelopment would result in shadows cast on the portion of the Elliott Bay Trail to the immediate east of the Phase 1 and Phase 2 areas.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

No light or glare safety hazards or view interferences are anticipated under the T-91 Uplands Redevelopment (Phase 1 and Phase 2).

[7] SMC 25.05.675 Q2.

c. What existing off-site sources of light or glare may affect your proposal?

Off-site sources of light or glare associated with rail use and golf course uses to the east and northeast, and maritime uses to the south are not anticipated to affect the proposed T-91 Uplands Redevelopment (Phase 1 and Phase 2).

d. Proposed measures to reduce or control light and glare impacts, if any:

No significant long-term light or glare-related environmental impacts are anticipated, including for users of the Elliott Bay Trail, because of the proposed T-91 Uplands Redevelopment (Phase 1 and Phase 2); therefore no measures are necessary. However, the following measures would help to reduce overall light and glare from Phase 1 and Phase 2 of the T-91 Uplands Redevelopment as they relate to uses in the vicinity. These proposed measures apply to redevelopment under proposed Phase 1 and Phase 2.

- *Excessively-reflective surfaces (i.e. mirrored glass, or polished metals) that go beyond what is required to meet energy-related code provisions would be minimized on the exterior of buildings.*
- *Pedestrian-scale lighting would be provided consistent with code, function and safety requirements. Exterior lighting would include fixtures to direct the light downward and/or upward and away from off-site land uses.*
- *New exterior lighting would be provided by light fixtures with well shielded sources that have precise optical control to reduce impacts to vicinity properties.*

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

Park and recreation facilities currently on T-91 include the Elliott Bay Trail, a pedestrian/bicycle trail, varying from 6 to 20 feet wide, that meanders along the east and west edges of the Port-owned portion of the Terminal. The trail originates from the south in Myrtle Edwards Park, passes under the Magnolia Bridge and utilizes a narrow pedestrian/bike bridge over rail tracks onto the site. The trail continues northerly where it passes immediately east of the T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas), connects to 20th Avenue W and 21st Avenue W. The trail then continues along the western edge of the Terminal where it terminates at the Elliott Bay Marina and Smith Cove.

Smith Cove Park, a one-acre passive park is located at the southern end of T-91 south of the T-91 Uplands Redevelopment site (including Phase 1 and Phase 2 areas). This park contains seating areas (viewing areas for the waterfront) and restrooms.

A greenbelt, referred to as the Magnolia Greenbelt, is located along the westerly boundary of T-91, west of the T-91 Uplands Redevelopment site (including Phase 1 and Phase 2 areas).

A number of parks and recreational facilities are located in the vicinity of the T-91 Uplands Redevelopment site (within short driving or walking distance) that are owned *and operated by the City of Seattle. A description of existing park and recreational facilities within approximately two miles of the T-91 Uplands Redevelopment (Phase 1 and Phase 2 areas) are identified in* ***Table 4****.*

TABLE 4
EXISTING PARKS AND RECREATIONAL FACILITIES

Parks / Recreational Facilities	***Acreage***	***Type / Facilities / Use***
Parks		
Smith Cove Park	*1 ac.*	*Passive park with waterfront view seating, restrooms*
Interbay Athletic Complex	*7.4 ac.*	*Golf course, baseball facilities, soccer stadium, P-patch*
Bayview Playfield	*4.6 ac.*	*Baseball fields, basketball, play area, picnic tables*
Thorndyke Park	*1.4 ac.*	*woods*
Magnolia Park	*12.10 ac.*	*Play area, trails, woods, picnic tables, tennis*
Magnolia Playfield and Center	*15.26 ac.*	*Community Center, playfields, tennis, play area*
Magnolia Greenbelt (public portion)	*2.7 ac.*	*Wooded area*
Kinnear Park	*14.10 ac.*	*Play area, trails, woods, picnic tables, tennis*
Marshall Park	*0.78 ac.*	*Water view, benches*
Parson's Garden	*0.40 ac.*	*Gardens*
West Queen Anne Playfield	*6.2 ac.*	*Play area, ballfields*
32nd Avenue W Boat Launch		*Hand carry boat launch*
Soundview Terrace	*0.30 ac.*	*Picnic tables*
Southwest Queen Anne Greenbelt	*N/A*	*Wooded Area*
Trails		
Elliott Bay Trail	*N/A*	*Pedestrian/bicycle trail*
Queen Anne Boulevard	*N/A*	*Walkway/landscaped boulevard linking several viewpoints*

Source: EA Engineering, Science, and Technology, Inc., PBC, 2023.

b. Would the proposed project displace any existing recreational uses? If so, describe.

The T-91 Uplands Redevelopment (Phase 1 and Phase 2) would not displace any existing recreational uses.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

No significant recreation impacts are anticipated, and no measures to reduce or control impacts are necessary for the T-91 Uplands Redevelopment (Phase 1 and Phase 2).

13. Historic and Cultural Preservation

A detailed Cultural Resources Assessment was prepared for the T-91 Uplands Redevelopment by CRC in June 2021 and is on-file with the Port of Seattle (see ***Appendix E****). The following responses summarize the findings in this report.*

a. **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, state, or local preservation registers located on or near the site? If so, specifically describe.**

Five register-listed historic properties are located within one mile of the T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas), including the Admiral's House (2001 W Garfield Street), the Magnolia Public Library (2801 34th Avenue W), the Seattle Public Library-Queen Anne Branch (400 W Garfield Street), the Queen Anne Pubic School (515 W Galer Street), and the Stuart Residence and Gardens (619 W Comstock Street). Each of these properties are listed in the National Register of Historic Places (NRHP) and the Washington Heritage Register (WHR). The closest listed Seattle Landmarks are Magnolia Elementary School (located approximately 0.4 miles to the west of the T-91 Uplands Redevelopment site) and the Admiral's House (located approximately 0.5 miles to the southwest of site). The proposed T-91 Uplands Redevelopment (Phase 1 and Phase 2) is not anticipated to adversely affect nearby historic properties (see ***Appendix E*** *for details).*

b. **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.**

Potential impacts to cultural resources with the proposed T-91 Uplands Redevelopment were evaluated in the Cultural Resources Report (see ***Appendix E****). Below are summaries of the ethnographic and historic context of T-91 Uplands site (Phase 1 and Phase 2 areas) and the potential for archeological sites.*

Ethnographic Context

Archeological sites dating to the middle- to late-Holocene (approximately 8,000 to 3,000 years before present) are more commonly found in the region due to the stabilization of sea levels and in recent millennia, regional population increases. Harvest of and occupation near littoral resources – activities that often produced sizeable shell middens – emerged approximately 4,500 year before present. Early components of the West Point site (located 2.5 miles to the northwest) date to this period. The T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas) is located within the ancestral homelands of the Southern Lushootsheed-speaking Duwamish peoples, whose territory stretched along the shorelines of Lake Union, Elliott Bay, Lake Washington and Lake Sammamish. The territory of a Duwamish group known as Shilsholamish centered on Smith Cove and Salmon Bay. Several named places have been recorded in the vicinity of the project. These places are described and illustrated further in ***Appendix E****.*

Historic Context

In 1855, Native leaders representing the Duwamish, Suquamish and other groups from central Puget Sound signed the Treaty of Point Elliott which ceded title to Native lands in exchange for small reservations and preservation of hunting and fishing rights. Removal of Native peoples from Seattle opened vast tracts of land for Euro-American settlement *and development, including Dr. Henry Allen Smith who staked a 160-acre claim in the lowlands between Magnolia and Queen Anne near the cove that now bears his name. Other early settlers arrived in the Interbay and Magnolia areas in the 1850s and quickly established logging and farming operations. In 1889, the Great Northern Railroad constructed new rail lines to the Pacific Coast and reached Everett in 1892 and its western terminus at Smith Cove in 1893. The Port of Seattle, established in 1911, purchased existing infrastructure at Smith Cove from the Great Northern Railway and built the Smith Cove Waterway and Piers 40 and 41 (now Piers 90 and 91). These investments spurred additional industrial development and immigration to Interbay and Magnolia. In 1941 as part of mobilization efforts ahead of the United States entry into World War II, the US Navy purchased the piers, facilities and adjacent land at Smith Cove and the uplands that comprise the proposed T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas) were developed as an open storage yard. In 1970 most naval activities were transferred to the Naval Supply Center in Bremerton and in 1974 the Port of Seattle purchased 198 acres at Smith Cove, including the piers and upland areas. Since then, Smith Cove has supported construction of the Trans-Alaska pipeline, import of Japanese seafood and Datsun/Nissan automobiles, seafood processing industries, light manufacturing, open storage and home ports of several cruise lines.*

Potential for Archaeological Sites

*A review of archaeological records indicates that two archaeological sites have been recorded within one mile of the T-91 Uplands Redevelopment (Phase 1 and Phase 2 areas) site. Both of these sites are located at a distance where potential impacts from the proposed development under Phase 1 and Phase 2 of the T-91 Uplands Redevelopment would not be anticipated (see **Appendix E** for details). A review of historical, archaeological, and environmental datasets, along with the results of a field investigation, suggest that the proposed project activities would be moderately likely to encounter archaeological materials at the site. The DAHP statewide predictive model classifies the project location as very high risk for archaeological sites, while the King County predictive model describes the location as low to moderate sensitivity. However, because field investigations were limited to photo-documentation due to the presence of impervious surfaces and commercial/industrial operations, the Cultural Resources Report recommended that subsurface testing be conducted before the initiation of ground disturbing activities under Phase 1 and Phase 2. Subsurface testing would provide further information about the depth and horizontal extent of fill, the presence of precontact or postcontact archaeological sites, and the potential for project activities to disturb cultural resources. Since subsurface testing would require additional disturbance of contaminated soils and would only result in a potential decrease in the extent of archaeological monitoring, The Port is foregoing additional testing and will engage a qualified firm to develop and implement an archaeological monitoring plan for all ground disturbance during construction.*

*Groundwater and Soil Environmental Investigation Report has been completed since the Cultural Resources report (see **Appendix C**). Fill extends from the ground surface to about 10 to 14 feet below ground, where most excavation would occur. The foundations for the Phase 1 and Phase 2 buildings would require either shallow foundations or possibly deep foundation (piles) to achieve necessary strength to support the buildings. The deep foundation would consist of augercast piles or driven steel piles. Shallow foundations would consist of rammed aggregate piers or stone columns.*

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

Potential impacts to historic and cultural resources were assessed by reviewing available project information, local environmental and cultural information and historical maps, as well as a site survey. Archaeological and historic data from the Washington State Department of Archaeology and Historic Preservation (DAHP) and the Washington Information System for Architectural and Archaeological Records Data (WISSARD) was reviewed. Archaeological predictive models were also reviewed, including the DAHP statewide predictive model and the King County archaeological sensitivity model. Contact was made with cultural resources staff of the Duwamish Tribe organization, Muckleshoot Indian Tribe, Snoqualmie Indian Nation, the Suquamish Tribe, and the Tulalip Tribe on a technical staff-to-technical staff basis to inquire about project-related cultural information or concerns. The Suquamish Tribe responded and they did not have any specific concerns or comments regarding the project at this time. On April 7, 2017, a field investigation was conducted, consisting of a surface survey and photo documentation of Phase 1 and Phase 2 area conditions and existing structures anticipated to be impacted by proposed redevelopment (see ***Appendix E*** *for details).*

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

The following proposed measure applies to redevelopment under both Phase 1 and Phase 2 of the T-91 Upland Redevelopment Project.

- *The Port of Seattle will engage a qualified firm to develop and implement an archaeological monitoring plan for ground disturbance during construction.*
- *In the event that resources of potential cultural or archaeological significance are encountered during construction, work will be stopped immediately and agencies with jurisdiction will be contacted, including the City of Seattle and DAHP. The Port will abide by and implement recommendations of the agencies for protecting any discovered cultural and archeological resources and a final written report of the discovery will be completed.*

14. Transportation

A detailed Transportation and Parking Memorandum was prepared for the T-91 Uplands Redevelopment by PH Consulting in December 2022 (see ***Appendix F****). The following responses summarize the findings in this report.*

a. Identify public streets and highways serving the site or affected geographic area and describe the proposed access to the existing street system. Show on site plans, if any.

Vehicular access to the T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas) is provided from two gated access points. The East Gate is the primary access point and access is provided via the intersection of Alaskan Way E and Elliott Ave over the Galer Street Flyover. The West Gate is typically only used when cruise ships are in port and is accessed via the Magnolia Bridge on/off ramps on the western edge of the bridge at 23rd Avenue W; traffic from the Magnolia neighborhood to the west cannot directly access the West Gate. Vehicles traveling to the project site use various public streets, including key roadways in the project vicinity such as: Elliott Avenue W, 15th Avenue W, the Magnolia Bridge, Garfield Street, Thorndyke Avenue W, 20th Avenue W, and W Dravus Street.

b. Is site or affected geographic area currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

King County Metro provides bus transportation near T-91 as part of Rapid Ride Line D and bus routes 15, 17, 18, 24, 31, 32, and 33. Routes 15, 17, 18, 31, 32, and Rapid Ride Line D travel along Elliot Avenue W and 15th Avenue W within walking distance to the East Gate. Lines 24 and 33 travel along Elliott Avenue and over the Magnolia Bridge within walking distance of the East Gate or West Gate.

c. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

Pedestrian and bicycle access to the Phase 1 and Phase 2 areas of site is provided from the two main site access points: the East Gate and the West Gate. The Elliott Bay Trail is located adjacent to the north, east and west sides of the T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas) and is an approximately 3.4-mile-long asphalt trail/path that connects downtown Seattle to the south with the Magnolia neighborhood to the north.

The proposed T-91 Uplands Redevelopment (Phase 1 and Phase 2) does not include any new or improvements to existing public roads, streets, pedestrian, bicycle or state transportation facilities. The Transportation Impact Analysis Report identified recommendations for improvements to onsite pedestrian and bicycle circulation that should be considered with the project, including: reopening the North Gate to allow pedestrian and bicycle access (no vehicle access), provide a circulatory pedestrian and bicycle walkway within the site and along the perimeter fence, and provide an ADA compliant walkway through the East Gate to connect the Elliott Bay Trail crossing to the start of the striped pedestrian walkway (see ***Appendix F*** *for details).*

d. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

The T-91 Uplands Redevelopment site is located in proximity to Elliott Bay (to the south) and associated water transportation operations, as well as the BNSF railway lines which *are located to the east. However, it is not anticipated that Phase 1 or Phase 2 of the T-91 Uplands Redevelopment would directly utilize water or rail transportation.*

e. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

*Vehicular trips and future traffic conditions with the development of the proposed T-91 Uplands Redevelopment (Phase 1 and Phase 2 assuming the potential mezzanine space) were analyzed in the Traffic Impact Analysis report (**Appendix F**). Trip generation under Phase 1 and Phase 2 of the T-91 Uplands Redevelopment is provide below[8].*

Phase 1

Development under Phase 1 of the T-91 Uplands Redevelopment is anticipated to generate approximately 708 daily vehicle trips, including 91 trips during the AM Peak Hour and 99 trips during the PM Peak Hour.

Phase 2

Development under Phase 2 of the T-91 Uplands Redevelopment (including the removal of the existing buildings) is anticipated to generate approximately 1,106 daily vehicle trips, including 170 trips during AM Peak Hour and 252 trips during the PM Peak Hour.

Entire Project

With the development of Phase 2 (including the removal of the existing buildings), it is anticipated that the site would have a total net new trip generation of approximately 1,814 daily vehicle trips, including 261 trips during the AM Peak Hour and 351 trips during the PM Peak Hour.

Because the T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas) is located in an urban environment, some transit, pedestrian and bicycle trips would be anticipated. To account for these other transportation options, further calculations of vehicle trips were completed to account for mode shares for transit, pedestrians and bicycles. Based on those assumptions for mode shares, the total vehicle trips for Phase 1 and 2 of the project would be approximately 1,499 daily vehicle trips (including approximately 585 under Phase 1 and approximately 914 under Phase 2), including 215 trips during the AM Peak Hour and 290 trips during the PM Peak Hour.

[8] *The trip generation estimate is based on methodology from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition*

Traffic operations were analyzed at 12 intersections, including:

- *15th Avenue NW & NW Market Street;*
- *15th Avenue W & Gilman Drive W;*
- *15th Avenue W & W Garfield Street;*
- *Elliott Avenue W & W Galer Street;*
- *Elliott Avenue W & W Galer Street Flyover;*
- *Elliott Avenue W & Prospect Street;*
- *Elliott Avenue W & W Mercer Place;*
- *W Mercer Street & Queen Anne Avenue N;*
- *W Mercer Street & 1st Avenue N;*
- *Alaskan Way W & W Galer Street Flyover;*
- *Pier 90 & Uplands Road / East Gate (internal to Port); and,*
- *Magnolia Bridge & 23rd Avenue W / West Gate.*

*The transportation analysis shows that the proposed T-91 Uplands Redevelopment (Phase 1 and Phase 2) is not anticipated to have a significant impact on traffic operations at any of the study area intersections (see **Appendix F** for details).*

f. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

The T-91 Uplands Redevelopment (Phase 1 or Phase 2) would not interfere with, or be affected by the movement of agricultural and forest products on the roadway network near the site area.

g. Proposed measures to reduce or control transportation impacts, if any.

No impacts are anticipated under Phase 1 or Phase 2 of the T-91-Uplands Redevelopment; therefore no measures would be necessary.

*The Transportation Impact Analysis Report identified recommendations for improvements to onsite pedestrian and bicycle circulation that could be considered under both Phase 1 and Phase 2 of the T-91 Uplands Redevelopment (see **Appendix F** for details). The recommended potential pedestrian improvements include:*

- *Reopening the North Gate to allow pedestrian and bicycle access (no vehicle access).*
- *Provide a circulatory pedestrian and bicycle walkway within the site and along the perimeter fence.*
- *Provide an ADA compliant walkway through the East Gate to connect the Elliott Bay Trail crossing to the start of the striped pedestrian walkway.*

15. Public Services

a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.

While the potential increase in employees and visitors associated with Phase 1 and Phase 2 of the proposed T-91 Uplands Redevelopment could result in incrementally greater demand for emergency services such as fire, it is anticipated that adequate service capacity is available within the Interbay area and city as a whole to preclude the need for additional public facilities/services.

b. Proposed measures to reduce or control direct impacts on public services, if any.

It is not anticipated that the T-91 Uplands Redevelopment (Phase 1 and Phase 2) would result in substantial increased need for public services; therefore no measures would be necessary.

16. Utilities

a. Circle utilities currently available at the site: <u>electricity</u>, <u>natural gas</u>, <u>water</u>, <u>refuse service</u>, <u>telephone</u>, <u>sanitary sewer</u>, septic system, other.

All utilities are currently available at the T-91 Uplands Redevelopment site (Phase 1 and Phase 2 areas) and have adequate capacity to serve the proposed phased redevelopment.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity that might be needed.

Utilities and providers (in parentheses) proposed for the T-91 Uplands Redevelopment (Phase 1 and Phase 2) would include the following:

- *Water – New domestic water connections and fire service connections to existing infrastructure at the Port (Seattle Public Utilities).*
- *Sewer – New side sewer connections to existing infrastructure at the Port (Seattle Public Utilities).*
- *Stormwater – Phase 1 municipal stormwater permit (Port of Seattle Marine Stormwater Utility).*
- *Telecommunications – New telecommunications connections to existing infrastructure at the Port (Comcast, Lumen).*
- *Electrical – New electrical feed from existing infrastructure at the Port (Seattle City Light).*
- *Refuse/Recycling Service – The Port of Seattle is required to comply with U.S. Coast Guard regulations (33 CFR 158) in maintaining a Certificate of Adequacy (COA). A COA is required for facilities which receive oceangoing tankers, or any other ocean-going ship of 400 gross tons or more, carrying oily mixtures, oceangoing ships carrying NLSs (Noxious, Liquid Substances) fishing vessels*

which offload more than 500,000 pounds of fish per year. Tenants and Terminal users are currently responsible for arranging waste services through third party vendors specific to their corresponding Leased Premises or designated use areas.

C. SIGNATURES

The above answers are true and complete to the best of my knowledge. I understand the lead agency is relying on them to make its decision.

Signature:

Laura D. Wolfe, Senior Environmental Program Manager

Date submitted:

July 10, 2023

Appendix A

Greenhouse Gas Emissions Worksheet

City of Seattle Department of Planning and Development
SEPA GHG Emissions Worksheet
Version 1.7 12/26/07

Introduction
The Washington State Environmental Policy Act (SEPA) requires environmental review of development proposals that may have a significant adverse impact on the environment. If a proposed development is subject to SEPA, the project proponent is required to complete the SEPA Checklist. The Checklist includes questions relating to the development's air emissions. The emissions that have traditionally been considered cover smoke, dust, and industrial and automobile emissions. With our understanding of the climate change impacts of GHG emissions, the City of Seattle requires the applicant to also estimate these emissions.

Emissions created by Development
GHG emissions associated with development come from multiple sources:

- The extraction, processing, transportation, construction and disposal of materials and landscape disturbance (Embodied Emissions)
- Energy demands created by the development after it is completed (Energy Emissions)
- Transportation demands created by the development after it is completed (Transportation Emissions)

GHG Emissions Worksheet
This GHG Emissions Worksheet has been developed to assist applicants in answering the SEPA Checklist question relating to GHG emissions. The worksheet was originally developed by King County, but the City of Seattle and King County are working together on future updates to maintain consistency of methodologies across jurisdictions.

The SEPA GHG Emissions worksheet estimates all GHG emissions that will be created over the life span of a project. This includes emissions associated with obtaining construction materials, fuel used during construction, energy consumed during a buildings operation, and transportation by building occupants.

Using the Worksheet
1. Descriptions of the different residential and commercial building types can be found on the second tabbed worksheet ("Definition of Building Types"). If a development proposal consists of multiple projects, e.g. both single family and multi-family residential structures or a commercial development that consists of more than on type of commercial activity, the appropriate information should be estimated for each type of building or activity.

2. For paving, estimate the total amount of paving (in thousands of square feet) of the project.

3. The Worksheet will calculate the amount of GHG emissions associated with the project and display the amount in the "Total Emissions" column on the worksheet. The applicant should use this information when completing the SEPA checklist.

4. The last three worksheets in the Excel file provide the background information that is used to calculate the total GHG emissions.

5. The methodology of creating the estimates is transparent; if there is reason to believe that a better estimate can be obtained by changing specific values, this can and should be done. Changes to the values should be documented with an explanation of why and the sources relied upon.

6. Print out the "Total Emissions" worksheet and attach it to the SEPA checklist. If the applicant has made changes to the calculations or the values, the documentation supporting those changes should also be attached to the SEPA checklist.

T-91 Uplands Redevelopment Project - Phase 1

Section I: Buildings

Type (Residential) or Principal Activity (Commercial)	# Units	Square Feet (in thousands of square feet)	Emissions Per Unit or Per Thousand Square Feet (MTCO2e) Embodied	Energy	Transportation	Lifespan Emissions (MTCO2e)
Single-Family Home............................	0		98	672	792	**0**
Multi-Family Unit in Large Building	0		33	357	766	**0**
Multi-Family Unit in Small Building	0		54	681	766	**0**
Mobile Home.......................................	0		41	475	709	**0**
Education		0.0	39	646	361	**0**
Food Sales		0.0	39	1,541	282	**0**
Food Service		0.0	39	1,994	561	**0**
Health Care Inpatient		0.0	39	1,938	582	**0**
Health Care Outpatient		0.0	39	737	571	**0**
Lodging		0.0	39	777	117	**0**
Retail (Other Than Mall).......................		0.0	39	577	247	**0**
Office		0.0	39	723	588	**0**
Public Assembly		0.0	39	733	150	**0**
Public Order and Safety		0.0	39	899	374	**0**
Religious Worship		0.0	39	339	129	**0**
Service		0.0	39	599	266	**0**
Warehouse and Storage		0.0	39	352	181	**0**
Other		134.3	39	1,278	257	**211412**
Vacant		0.0	39	162	47	**0**

Section II: Pavement..........................

Pavement..		0.00				**0**

Total Project Emissions: **211412**

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T-91 Uplands Redevelopment Project - Phase 2

Section I: Buildings

Type (Residential) or Principal Activity (Commercial)	# Units	Square Feet (in thousands of square feet)	Emissions Per Unit or Per Thousand Square Feet (MTCO2e) Embodied	Energy	Transportation	**Lifespan Emissions (MTCO2e)**
Single-Family Home............................	0		98	672	792	**0**
Multi-Family Unit in Large Building	0		33	357	766	**0**
Multi-Family Unit in Small Building	0		54	681	766	**0**
Mobile Home..	0		41	475	709	**0**
Education		0.0	39	646	361	**0**
Food Sales		0.0	39	1,541	282	**0**
Food Service		0.0	39	1,994	561	**0**
Health Care Inpatient		0.0	39	1,938	582	**0**
Health Care Outpatient		0.0	39	737	571	**0**
Lodging		0.0	39	777	117	**0**
Retail (Other Than Mall)........................		0.0	39	577	247	**0**
Office		0.0	39	723	588	**0**
Public Assembly		0.0	39	733	150	**0**
Public Order and Safety		0.0	39	899	374	**0**
Religious Worship		0.0	39	339	129	**0**
Service		0.0	39	599	266	**0**
Warehouse and Storage		0.0	39	352	181	**0**
Other		327.0	39	1,278	257	**514755**
Vacant		0.0	39	162	47	**0**

Section II: Pavement..........................

Pavement...		0.00				**0**

Total Project Emissions: **514755**

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Definition of Building Types

Type (Residential) or Principal Activity (Commercial)	Description
Single-Family Home.................................	Unless otherwise specified, this includes both attached and detached buildings
Multi-Family Unit in Large Building	Apartments in buildings with more than 5 units
Multi-Family Unit in Small Building	Apartments in building with 2-4 units
Mobile Home..	
Education	Buildings used for academic or technical classroom instruction, such as elementary, middle, or high schools, and classroom buildings on college or university campuses. Buildings on education campuses for which the main use is not classroom are included in the category relating to their use. For example, administration buildings are part of "Office," dormitories are "Lodging," and libraries are "Public Assembly."
Food Sales	Buildings used for retail or wholesale of food.
Food Service	Buildings used for preparation and sale of food and beverages for consumption.
Health Care Inpatient	Buildings used as diagnostic and treatment facilities for inpatient care.
Health Care Outpatient	Buildings used as diagnostic and treatment facilities for outpatient care. Doctor's or dentist's office are included here if they use any type of diagnostic medical equipment (if they do not, they are categorized as an office building).
Lodging	Buildings used to offer multiple accommodations for short-term or long-term residents, including skilled nursing and other residential care buildings.
Retail (Other Than Mall)...........................	Buildings used for the sale and display of goods other than food.
Office	Buildings used for general office space, professional office, or administrative offices. Doctor's or dentist's office are included here if they do not use any type of diagnostic medical equipment (if they do, they are categorized as an outpatient health care building).
Public Assembly	Buildings in which people gather for social or recreational activities, whether in private or non-private meeting halls.
Public Order and Safety	Buildings used for the preservation of law and order or public safety.
Religious Worship	Buildings in which people gather for religious activities, (such as chapels, churches, mosques, synagogues, and temples).
Service	Buildings in which some type of service is provided, other than food service or retail sales of goods
Warehouse and Storage	Buildings used to store goods, manufactured products, merchandise, raw materials, or personal belongings (such as self-storage).
Other	Buildings that are industrial or agricultural with some retail space; buildings having several different commercial activities that, together, comprise 50 percent or more of the floorspace, but whose largest single activity is agricultural, industrial/ manufacturing, or residential; and all other miscellaneous buildings that do not fit into any other category.
Vacant	Buildings in which more floorspace was vacant than was used for any single commercial activity at the time of interview. Therefore, a vacant building may have some occupied floorspace.

Sources: ....

Residential
2001 Residential Energy Consumption Survey
Square footage measurements and comparisons
http://www.eia.doe.gov/emeu/recs/sqft-measure.html

Commercial
Commercial Buildings Energy Consumption Survey (CBECS),
Description of CBECS Building Types
http://www.eia.doe.gov/emeu/cbecs/pba99/bldgtypes.html

Embodied Emissions Worksheet

Section I: Buildings

Type (Residential) or Principal Activity (Commercial)	# thousand sq feet/ unit or building	Life span related embodied GHG missions (MTCO2e/ unit)	Life span related embodied GHG missions (MTCO2e/ thousand square feet) - See calculations in table below
Single-Family Home................................	2.53	98	39
Multi-Family Unit in Large Building	0.85	33	39
Multi-Family Unit in Small Building	1.39	54	39
Mobile Home...	1.06	41	39
Education	25.6	991	39
Food Sales	5.6	217	39
Food Service	5.6	217	39
Health Care Inpatient	241.4	9,346	39
Health Care Outpatient	10.4	403	39
Lodging	35.8	1,386	39
Retail (Other Than Mall)..........................	9.7	376	39
Office	14.8	573	39
Public Assembly	14.2	550	39
Public Order and Safety	15.5	600	39
Religious Worship	10.1	391	39
Service	6.5	252	39
Warehouse and Storage	16.9	654	39
Other	21.9	848	39
Vacant	14.1	546	39

Section II: Pavement............................

All Types of Pavement...........................			50

	Columns and Beams	Intermediate Floors	Exterior Walls	Windows	Interior Walls	Roofs	Total Embodied Emissions (MTCO2e)	Total Embodied Emissions (MTCO2e/ thousand sq feet)
Average GWP (lbs CO2e/sq ft): Vancouver, Low Rise Building	5.3	7.8	19.1	51.2	5.7	21.3		
Average Materials in a 2,272-square foot single family home	0.0	2269.0	3206.0	285.0	6050.0	3103.0		
MTCO2e	0.0	8.0	27.8	6.6	15.6	30.0	88.0	38.7

Sources

All data in black text — King County, DNRP. Contact: Matt Kuharic, matt.kuharic@kingcounty.gov

Residential floorspace per unit — 2001 Residential Energy Consumption Survey (National Average, 2001)
Square footage measurements and comparisons
http://www.eia.doe.gov/emeu/recs/sqft-measure.html

Floorspace per building — EIA, 2003 Commercial Buildings Energy Consumption Survey (National Average, 2003)
Table C3. Consumption and Gross Energy Intensity for Sum of Major Fuels for Non-Mall Buildings, 2003
http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/2003set9/2003excel/c3.xls

Average GWP (lbs CO2e/sq ft): Vancouver, Low Rise Building — Athena EcoCalculator
Athena Assembly Evaluation Tool v2.3- Vancouver Low Rise Building
Assembly Average GWP (kg) per square meter
http://www.athenasmi.ca/tools/ecoCalculator/index.html
Lbs per kg 2.20
Square feet per square meter 10.76

Average Materials in a 2,272-square foot single family home — Buildings Energy Data Book: 7.3 Typical/Average Household
Materials Used in the Construction of a 2,272-Square-Foot Single-Family Home, 2000
http://buildingsdatabook.eren.doe.gov/?id=view_book_table&TableID=2036&t=xls
See also: NAHB, 2004 Housing Facts, Figures and Trends, Feb. 2004, p. 7.

Average window size — Energy Information Administration/Housing Characteristics 1993
Appendix B, Quality of the Data. Pg. 5.
ftp://ftp.eia.doe.gov/pub/consumption/residential/rx93hcf.pdf

Pavement Emissions Factors
MTCO2e/thousand square feet of asphalt or concrete pavement 50 (see below)

Embodied GHG Emissions……………………Worksheet Background Information

Buildings
Embodied GHG emissions are emissions that are created through the extraction, processing, transportation, construction and disposal of building materials as well as emissions created through landscape disturbance (by both soil disturbance and changes in above ground biomass).

Estimating embodied GHG emissions is new field of analysis; the estimates are rapidly improving and becoming more inclusive of all elements of construction and development.

The estimate included in this worksheet is calculated using average values for the main construction materials that are used to create a typical family home. In 2004, the National Association of Home Builders calculated the average materials that are used in a typical 2,272 square foot single-family household. The quantity of materials used is then multiplied by the average GHG emissions associated with the life-cycle GHG emissions for each material.

This estimate is a rough and conservative estimate; the actual embodied emissions for a project are likely to be higher. For example, at this stage, due to a lack of comprehensive data, the estimate does not include important factors such as landscape disturbance or the emissions associated with the interior components of a building (such as furniture).

King County realizes that the calculations for embodied emissions in this worksheet are rough. For example, the emissions associated with building 1,000 square feet of a residential building will not be the same as 1,000 square feet of a commercial building. However, discussions with the construction community indicate that while there are significant differences between the different types of structures, this method of estimation is reasonable; it will be improved as more data become available.

Additionally, if more specific information about the project is known, King County recommends two online embodied emissions calculators that can be used to obtain a more tailored estimate for embodied emissions: www.buildcarbonneutral.org and www.athenasmi.ca/tools/ecoCalculator/.

Pavement
Four recent life cycle assessments of the environmental impacts of roads form the basis for the per unit embodied emissions of pavement. Each study is constructed in slightly different ways; however, the aggregate results of the reports represent a reasonable estimate of the GHG emissions that are created from the manufacture of paving materials, construction related emissions, and maintenance of the pavement over its expected life cycle. For specifics, see the worksheet.

Special Section: Estimating the Embodied Emissions for Pavement

Four recent life cycle assessments of the environmental impacts of roads form the basis for the per unit embodied emissions of pavement. Each study is constructed in slightly different ways; however, the aggregate results of the reports represent a reasonable estimate of the GHG emissions that are created from the manufacture of paving materials, construction related emissions, and maintenance of the pavement over its expected life cycle.

The results of the studies are presented in different units and measures; considerable effort was undertaken to be able to compare the results of the studies in a reasonable way. For more details about the below methodology, contact matt.kuharic@kingcounty.gov.

The four studies, Meil (2001), Park (2003), Stripple (2001) and Treolar (2001) produced total GHG emissions of 4-34 MTCO2e per thousand square feet of finished paving (for similar asphalt and concrete based pavements). This estimate does not including downstream maintenance and repair of the highway. The average (for all concrete and asphalt pavements in the studies, assuming each study gets one data point) is ~17 MTCO2e/thousand square feet.

Three of the studies attempted to thoroughly account for the emissions associated with long term maintenance (40 years) of the roads. Stripple (2001), Park et al. (2003) and Treolar (2001) report 17, 81, and 68 MTCO2e/thousand square feet, respectively, after accounting for maintenance of the roads.

Based on the above discussion, King County makes the conservative estimate that 50 MTCO2e/thousand square feet of pavement (over the development's life cycle) will be used as the embodied emission factor for pavement until better estimates can be obtained. This is roughly equivalent to 3,500 MTCO2e per lane mile of road (assuming the lane is 13 feet wide).

It is important to note that these studies estimate the embodied emissions for roads. Paving that does not need to stand up to the rigors of heavy use (such as parking lots or driveways) would likely use less materials and hence have lower embodied emissions.

Sources:
Meil, J. A Life Cycle Perspective on Concrete and Asphalt Roadways: Embodied Primary Energy and Global Warming Potential. 2006. Available: http://www.cement.ca/cement.nsf/eee9ec7bbd630126852566c40052107b/6ec79dc8ae03a782852572b90061b914/$FILE/ATTK0WE3/athena%20report%20Feb.%202%202007.pdf

Park, K, Hwang, Y., Seo, S., M.ASCE, and Seo, H. , "Quantitative Assessment of Environmental Impacts on Life Cycle of Highways," Journal of Construction Engineering and Management , Vol 129, January/February 2003, pp 25-31, (DOI: 10.1061/(ASCE)0733-9364(2003)129:1(25)).

Stripple, H. Life Cycle Assessment of Road. A Pilot Study for Inventory Analysis. Second Revised Edition. IVL Swedish Environmental Research Institute Ltd. 2001. Available: http://www.ivl.se/rapporter/pdf/B1210E.pdf

Treloar, G., Love, P.E.D., and Crawford, R.H. Hybrid Life-Cycle Inventory for Road Construction and Use. Journal of Construction Engineering and Management. P. 43-49. January/February 2004.

Energy Emissions Worksheet

Type (Residential) or Principal Activity (Commercial)	Energy consumption per building per year (million Btu)	Carbon Coefficient for Buildings	MTCO2e per building per year	Floorspace per Building (thousand square feet)	MTCE per thousand square feet per year	MTCO2e per thousand square feet per year	Average Building Life Span	Lifespan Energy Related MTCO2e emissions per unit	Lifespan Energy Related MTCO2e emissions per thousand square feet
Single-Family Home............................	107.3	0.108	11.61	2.53	4.6	16.8	57.9	672	266
Multi-Family Unit in Large Building	41.0	0.108	4.44	0.85	5.2	19.2	80.5	357	422
Multi-Family Unit in Small Building	78.1	0.108	8.45	1.39	6.1	22.2	80.5	681	489
Mobile Home...	75.9	0.108	8.21	1.06	7.7	28.4	57.9	475	448
Education	2,125.0	0.124	264.2	25.6	10.3	37.8	62.5	16,526	646
Food Sales	1,110.0	0.124	138.0	5.6	24.6	90.4	62.5	8,632	1,541
Food Service	1,436.0	0.124	178.5	5.6	31.9	116.9	62.5	11,168	1,994
Health Care Inpatient	60,152.0	0.124	7,479.1	241.4	31.0	113.6	62.5	467,794	1,938
Health Care Outpatient	985.0	0.124	122.5	10.4	11.8	43.2	62.5	7,660	737
Lodging	3,578.0	0.124	444.9	35.8	12.4	45.6	62.5	27,826	777
Retail (Other Than Mall).......................	720.0	0.124	89.5	9.7	9.2	33.8	62.5	5,599	577
Office	1,376.0	0.124	171.1	14.8	11.6	42.4	62.5	10,701	723
Public Assembly	1,338.0	0.124	166.4	14.2	11.7	43.0	62.5	10,405	733
Public Order and Safety	1,791.0	0.124	222.7	15.5	14.4	52.7	62.5	13,928	899
Religious Worship	440.0	0.124	54.7	10.1	5.4	19.9	62.5	3,422	339
Service	501.0	0.124	62.3	6.5	9.6	35.1	62.5	3,896	599
Warehouse and Storage	764.0	0.124	95.0	16.9	5.6	20.6	62.5	5,942	352
Other	3,600.0	0.124	447.6	21.9	20.4	74.9	62.5	27,997	1,278
Vacant	294.0	0.124	36.6	14.1	2.6	9.5	62.5	2,286	162

Sources

All data in black text — King County, DNRP. Contact: Matt Kuharic, matt.kuharic@kingcounty.gov

Energy consumption for residential buildings
2007 Buildings Energy Data Book: 6.1 Quad Definitions and Comparisons (National Average, 2001)
Table 6.1.4: Average Annual Carbon Dioxide Emissions for Various Functions
http://buildingsdatabook.eren.doe.gov/
Data also at: http://www.eia.doe.gov/emeu/recs/recs2001_ce/ce1-4c_housingunits2001.html

Energy consumption for commercial buildings and Floorspace per building
EIA, 2003 Commercial Buildings Energy Consumption Survey (National Average, 2003)
Table C3. Consumption and Gross Energy Intensity for Sum of Major Fuels for Non-Mall Buildings, 2003
http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/2003set9/2003excel/c3.xls

Note: Data in plum color is found in both of the above sources (buildings energy data book and commercial buildings energy consumption survey).

Carbon Coefficient for Buildings
Buildings Energy Data Book (National average, 2005)
Table 3.1.7. 2005 Carbon Dioxide Emission Coefficients for Buildings (MMTCE per Quadrillion Btu)
http://buildingsdatabook.eere.energy.gov/?id=view_book_table&TableID=2057
Note: Carbon coefficient in the Energy Data book is in MTCE per Quadrillion Btu.
To convert to MTCO2e per million Btu, this factor was divided by 1000 and multiplied by 44/12.

Residential floorspace per unit
2001 Residential Energy Consumption Survey (National Average, 2001)
Square footage measurements and comparisons
http://www.eia.doe.gov/emeu/recs/sqft-measure.html

average lief span of buildings, estimated by replacement time method

	Single Family Homes	Multi-Family Units in Large and Small Buildings	All Residential Buildings	
New Housing Construction, 2001	1,273,000	329,000	1,602,000	
Existing Housing Stock, 2001	73,700,000	26,500,000	100,200,000	
Replacement time:	57.9	80.5	62.5	(national average, 2001)

Note: Single family homes calculation is used for mobile homes as a best estimate life span.
Note: At this time, KC staff could find no reliable data for the average life span of commercial buildings.
Therefore, the average life span of residential buildings is being used until a better approximation can be ascertained.

Sources:

New Housing Construction, 2001
Quarterly Starts and Completions by Purpose and Design - US and Regions (Excel)
http://www.census.gov/const/quarterly_starts_completions_cust.xls
See also: http://www.census.gov/const/www/newresconstindex.html

Existing Housing Stock, 2001
Residential Energy Consumption Survey (RECS) 2001
Tables HC1:Housing Unit Characteristics, Million U.S. Households 2001
Table HC1-4a. Housing Unit Characteristics by Type of Housing Unit, Million U.S. Households, 2001
Million U.S. Households, 2001
http://www.eia.doe.gov/emeu/recs/recs2001/hc_pdf/housunits/hc1-4a_housingunits2001.pdf

Transportation Emissions Worksheet

Type (Residential) or Principal Activity (Commercial)	# people/ unit or building	# thousand sq feet/ unit or building	# people or employees/ thousand square feet	vehicle related GHG emissions (metric tonnes CO2e per person per year)	MTCO2e/ year/ unit	MTCO2e/ year/ thousand square feet	Average Building Life Span	Life span transportation related GHG emissions (MTCO2e/ per unit)	Life span transportation related GHG emissions (MTCO2e/ thousand sq feet)
Single-Family Home................................	2.8	2.53	1.1	4.9	13.7	5.4	57.9	792	313
Multi-Family Unit in Large Building	1.9	0.85	2.3	4.9	9.5	11.2	80.5	766	904
Multi-Family Unit in Small Building	1.9	1.39	1.4	4.9	9.5	6.8	80.5	766	550
Mobile Home...	2.5	1.06	2.3	4.9	12.2	11.5	57.9	709	668
Education	30.0	25.6	1.2	4.9	147.8	5.8	62.5	9247	361
Food Sales	5.1	5.6	0.9	4.9	25.2	4.5	62.5	1579	282
Food Service	10.2	5.6	1.8	4.9	50.2	9.0	62.5	3141	561
Health Care Inpatient	455.5	241.4	1.9	4.9	2246.4	9.3	62.5	140506	582
Health Care Outpatient	19.3	10.4	1.9	4.9	95.0	9.1	62.5	5941	571
Lodging	13.6	35.8	0.4	4.9	67.1	1.9	62.5	4194	117
Retail (Other Than Mall)...........................	7.8	9.7	0.8	4.9	38.3	3.9	62.5	2394	247
Office	28.2	14.8	1.9	4.9	139.0	9.4	62.5	8696	588
Public Assembly	6.9	14.2	0.5	4.9	34.2	2.4	62.5	2137	150
Public Order and Safety	18.8	15.5	1.2	4.9	92.7	6.0	62.5	5796	374
Religious Worship	4.2	10.1	0.4	4.9	20.8	2.1	62.5	1298	129
Service	5.6	6.5	0.9	4.9	27.6	4.3	62.5	1729	266
Warehouse and Storage	9.9	16.9	0.6	4.9	49.0	2.9	62.5	3067	181
Other	18.3	21.9	0.8	4.9	90.0	4.1	62.5	5630	257
Vacant	2.1	14.1	0.2	4.9	10.5	0.7	62.5	657	47

Sources

All data in black text — King County, DNRP. Contact: Matt Kuharic, matt.kuharic@kingcounty.gov

people/ unit — Estimating Household Size for Use in Population Estimates (WA state, 2000 average)
Washington State Office of Financial Management
Kimpel, T. and Lowe, T. Research Brief No. 47. August 2007
http://www.ofm.wa.gov/researchbriefs/brief047.pdf
Note: This analysis combines Multi Unit Structures in both large and small units into one category;
the average is used in this case although there is likely a difference

Residential floorspace per unit — 2001 Residential Energy Consumption Survey (National Average, 2001)
Square footage measurements and comparisons
http://www.eia.doe.gov/emeu/recs/sqft-measure.html

employees/thousand square feet — Commercial Buildings Energy Consumption Survey commercial energy uses and costs (National Median, 2003)
Table B2 Totals and Medians of Floorspace, Number of Workers, and Hours of Operation for Non-Mall Buildings, 2003
http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/2003set1/2003excel/b2.xls

Note: Data for # employees/thousand square feet is presented by CBECS as square feet/employee.
In this analysis employees/thousand square feet is calculated by taking the inverse of the CBECS number and multiplying by 1000.

vehicle related GHG emissions

Estimate calculated as follows (Washington state, 2006)_

56,531,930,000	2006 Annual WA State Vehicle Miles Traveled	
		Data was daily VMT. Annual VMT was 365*daily VMT.
		http://www.wsdot.wa.gov/mapsdata/tdo/annualmileage.htm
6,395,798	2006 WA state population	
		http://quickfacts.census.gov/qfd/states/53000.html
8839	vehicle miles per person per year	
0.0506	gallon gasoline/mile	
		This is the weighted national average fuel efficiency for all cars and 2 axle, 4 wheel light trucks in 2005. This includes pickup trucks, vans and SUVs. The 0.051 gallons/mile used here is the inverse of the more commonly known term “miles/per gallon” (which is 19.75 for these cars and light trucks).
		Transportation Energy Data Book. 26th Edition. 2006. Chapter 4: Light Vehicles and Characteristics. Calculations based on weighted average MPG efficiency of cars and light trucks.
		http://cta.ornl.gov/data/tedb26/Edition26_Chapter04.pdf
		Note: This report states that in 2005, 92.3% of all highway VMT were driven by the above described vehicles.
		http://cta.ornl.gov/data/tedb26/Spreadsheets/Table3_04.xls
24.3	lbs CO2e/gallon gasoline	
		The CO2 emissions estimates for gasoline and diesel include the extraction, transport, and refinement of petroleum as well as their combustion.
		Life-Cycle CO2 Emissions for Various New Vehicles. RENew Northfield.
		Available: http://renewnorthfield.org/wpcontent/uploads/2006/04/CO2%20emissions.pdf
		Note: This is a conservative estimate of emissions by fuel consumption because diesel fuel,
2205		with a emissions factor of 26.55 lbs CO2e/gallon was not estimated.
4.93	lbs/metric tonne	
	vehicle related GHG emissions (metric tonnes CO2e per person per year)	

average lief span of buildings, estimated by replacement time method — See Energy Emissions Worksheet for Calculations

Commercial floorspace per unit — EIA, 2003 Commercial Buildings Energy Consumption Survey (National Average, 2003)
Table C3. Consumption and Gross Energy Intensity for Sum of Major Fuels for Non-Mall Buildings, 2003
http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/2003set9/2003excel/c3.xls

Appendix B

Critical Areas Report

SUBMITTED TO:
Mackenzie
500 Union Street, Suite 410
Seattle, WA 98101

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CRITICAL AREAS REPORT

Terminal 91 Uplands Development Project

SEATTLE, WASHINGTON

February 2, 2023

Shannon & Wilson No: 103083-103

SHANNON & WILSON

Submitted To: Mackenzie
500 Union Street, Suite 410
Seattle, WA 98101
Attn: Ms. Rachel Hedlof

Subject: CRITICAL AREAS REPORT, TERMINAL 91 UPLANDS DEVELOPMENT PROJECT, SEATTLE, WASHINGTON

Shannon & Wilson prepared this report and participated in this project for the Port of Seattle as a subconsultant to Mackenzie. Our work has been conducted under an agreement with Mackenzie dated March 18, 2022, under Prime Agreement Number P-00320624 with the Port of Seattle dated February 18, 2022, and amended June 1, 2022. This report presents the wetland delineation and other critical areas identified within the project area and was prepared by the undersigned.

We appreciate the opportunity to be of service to you on this project. If you have questions concerning this report, or we may be of further service, please contact us.

Sincerely,

SHANNON & WILSON

Amy Summe, PWS
Associate, Senior Biologist/Permit Specialist

AJS:SCC/ajs

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1 INTRODUCTION

Shannon & Wilson was contracted as a subconsultant to Mackenzie by the Port of Seattle (Port) to complete a critical areas report for Phase 1 and Phase 2 of the Terminal 91 (T91) Uplands Development Project (Project). T91 is a 152-acre multi-use site with waterfront facilities on Elliott Bay that service fishing, commercial, and military vessels and a variety of upland operations that support those uses. Phase 1 and Phase 2 are intended to result in up to 400,000 square feet of new buildings suited for industrial use, and are located in the northeast corner of T91.

The emphasis of this critical areas report will be on a previously identified wetland that is partially on Port property and partially on City of Seattle (City) right-of-way at the north end of the T91 site, and outside of the Project area (Figure 1). For this reason, the wetland was partially delineated as needed to identify the boundary of the buffer as it extends into the Project area. However, this report will also briefly acknowledge the other potential critical areas (fish and wildlife habitat conservation areas, geologic and steep slope erosion hazard areas, flood-prone areas, and abandoned landfills) and refer to specialized technical reports as applicable.

2 PROJECT LOCATION AND SETTING

The proposed Project is located on Port property in the City, on all or portions of parcels 277160-0650, 232503-9046, 766620-1146, 766620-1516, 766620-1530, and 232503-9018 (Township 25N, Range 3E, East ½ Section 23) (Figure 1). The BNSF and Union Pacific Railroad lines are on the east side of T91 and the Project; the Elliott Bay Trail runs along the north, east, and west sides of T91; and the nearest road access points are at 21st Avenue West and 20th Avenue West at the north end of T91 and the Project.

3 WETLANDS

3.1 Background Information Review

Background information pertaining to the Project site and the previously identified wetland was collected and reviewed prior to the wetland delineation fieldwork. These information sources are summarized in Exhibit 3-1.

Exhibit 3-1: Background Information Review Findings

Information	Key Findings
Halladay Vactor Decant Facility Site Wetland Delineation and Stormwater Assessment Report (Seattle Public Utilities, 2009)	Seattle Public Utilities (SPU) delineated a wetland at the north end of T91, primarily located in City right-of-way (ROW) at SPU's Halladay Vactor Decant Facility. At the time, it was rated as a Tidal Fresh Water Category IV wetland with a 50-foot buffer. The wetland supported primarily emergent vegetation and was tidally influenced at high tides through a 36-inch-diameter stormwater outfall at the west end of the wetland. The City did not retain the data sheets or wetland rating form that accompanied the 2009 report.
Critical Areas Map (City of Seattle, 2021)	This map does not show a wetland at the north end of T91. However, it does show potential slide and steep slope areas in and near the Port-owned greenbelt on the west side of T91, a liquefaction zone underlying the T91 Project area, and a Project location within a 1,000-foot buffer of an abandoned landfill (see discussions in Sections 5 and 7).
Seattle Department of Construction & Inspections GIS map viewer (City of Seattle, 2022)	A wetland is shown at the north end of T91, primarily in the City ROW next to the Halladay Vactor Decant Facility. Same location as mapped in the SPU report described above. The map viewer also shows potential and known slide and steep slope areas in and near the Port-owned greenbelt on the west side of T91, a liquefaction zone underlying T91, and a Project location in a 1,000-foot buffer of an abandoned landfill (see discussions in Sections 5 and 7).
U.S. Department of Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) (USFWS, 2022)	According to USFWS NWI, a palustrine unconsolidated bottom permanently flooded excavated wetland (PUBHx) with a fringe of temporarily flooded scrub-shrub wetland usually located in drainages and created by an excavation (PSSAx) is located at the north end of T91 in the same location as the wetland shown in the City sources. Based on older aerial photos, however, and as described in the SPU 2009 report, this wetland was not created by excavation, but is a remnant of the old Smith Cove estuary and mud flats that was surrounded by fill.
U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey interactive mapping system (USDA NRCS, 2022)	The USDA NRCS maps the previously identified wetland and the Project area as Urban Land, 0 to 5% slopes. Urban land is not identified as a hydric soil.
Washington State Department of Natural Resources (WDNR) Wetlands of High Conservation Value Map Viewer (WDNR, 2022)	The WDNR Wetlands of High Conservation Value map does not identify high-value wetlands within the Project area.
Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) on the Web (WDFW, 2022)	The WDFW PHS maps the area shown on NWI as PSSAx as a priority wetland. No other priority habitats or species are identified in the Project area.
Northwest Indian Fisheries Commission (NWIFC) Statewide Integrated Fish Distribution (NWIFC, 2022)	This mapping resource does not identify any streams or fish use in the Project area.

In addition to the above resources, monthly totals and departures from normal precipitation data were collected from the Sea-Tac Airport station (U.S. National Oceanic and Atmospheric Administration [NOAA], 2022) for the three months preceding the late-May 2022 site visit. According to the Sea-Tac station data, monthly precipitation totals demonstrated slightly wetter than normal conditions for the three-month period preceding the site visit (Exhibit 3-2).

Exhibit 3-2: Three-Month Precipitation Analysis for 2022

Month	30% Chance Will Have		Precipitation (inches)	Condition (Dry, Normal, Wet)	Condition Value[1]	Weighted Value	Product (Condition Value x Weighted Value)
	Less Than	More Than					
May	1.27	2.32	3.82	Wet	3	3	9
April	1.81	3.24	2.71	Normal	2	2	4
March	2.93	4.28	3.32	Normal	2	1	2
						Sum	15[2]

NOTES:

Source: NOAA Regional Climate Centers, Weather Station: SEA-TAC Airport, Period of Record: 1981-2010 (NOAA Regional Climate Centers, 2022)

Table methodology adapted from NRCS Engineering Field Handbook, Chapter 19 (U.S. Department of Agriculture Natural Resources Conservation Service [NRCS], 1997)

1 Condition Value: Dry = 1, Normal = 2, Wet = 3

2 If sum is 6-9, then period has been drier than normal; if sum is 10-14, then period has been normal; and if sum is 15-18, then period has been wetter than normal.

3.2 Methodology

Shannon & Wilson conducted the wetland delineation fieldwork on May 23, 2022. Wetlands were identified using methods described in the 1987 *Corps Wetland Delineation Manual* (U.S. Army Corps of Engineers [Corps], 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (U.S. Army Engineer Research and Development Center, 2010). Appendix A includes a description of the methodology.

Wetland areas were determined using the triple-parameter approach, which considers vegetation types, soil conditions, and hydrologic conditions. Areas were considered to be wetland if they displayed the following wetland indicators: (a) dominant plant species that are considered hydrophytic by the accepted classification indicators, (b) soils that are considered hydric under the federal definition, and (c) indications of wetland hydrology based on federal definition.

Data plots were characterized within wetland and upland plant community types to help describe the general conditions at the site. The 2022 data is provided in Appendix B.

Wetland boundaries were flagged with pink "wetland boundary" flagging and wetland data plots were identified with yellow flagging with red polka dots.

3.3 Results

The previously identified wetland near the Project, on SPU's Halladay Vactor Decant Facility to the north, was delineated on May 23, 2022. The only other vegetated areas within 200 feet of the Project are small portions of the Port-owned greenbelt to the west. These areas were also reviewed on May 23, 2022, and no wetlands were identified.

3.3.1 Wetland

The west, south, and east boundaries of one wetland (Wetland A) was delineated within the Project area (Figure 2). A 1936 aerial photograph (King County, 2022) shows that much of the T91 area and the wetland were once part of the Smith Cove estuary and mud flats. The location and boundaries are generally consistent with the City's (2021 and 2022), USFWS's (2022), and WDFW's (2022) map resources and nearly identical to the 2009 wetland delineation completed by SPU. Wetland A is a long, narrow depression, generally sloping gradually downhill from east to west, with steep sideslopes (Exhibit 3-3). The wetland is composed of two cells. The smaller cell at the east end is about 18 inches higher than the western cell and separated from the western cell by a berm that leaves only a narrow swale connecting the two areas (Figure 2).

Exhibit 3-3: Views of Dense Herbaceous Vegetation and Sparsely Vegetated Areas in the West Cell of Wetland A

Wetland A (approximately 0.06 acre) is a Palustrine, Scrub-Shrub, Seasonally Flooded-Saturated and a Palustrine, Emergent, Permanently Flooded-Seasonally Flooded-Saturated wetland according to the Cowardin System, as described in *Classification of Wetlands and Deepwater Habitats of the United States* (Federal Geographic Data Committee, 2013). Hydrology sources to Wetland A include a high water table, precipitation, surface flows from adjacent upland areas, and observed and/or mapped stormwater inputs from surrounding development, two of which were documented in the field. Water was observed flowing out of a 6-inch-diameteter polyvinyl chloride (PVC) pipe located at the east end of the west cell, near the outlet of the swale connecting the east and west cells (Exhibit 3-4). No flow was observed exiting an approximately 10-inch-diameter concrete pipe that outlets on the southeast side of the west cell, which originates on the Port property to the south (Exhibit 3-4).


Exhibit 3-4: Views of 6-Inch-Diameter PVC Pipe Outlet into Wetland A Near Wetland Flag A14 (Left) and Approximately 10-Inch-Diameter Concrete Pipe Outlet into Wetland A Near Wetland Flag A12 (Right)

The wetland outlets through a 36-inch-diameter concrete pipe at the west end, which connects to a 48-inch-diameter stormwater main line that heads south and discharges into Smith Cove (Exhibit 3-5; KPFF, 2018; Appendix C). At the time of the site visit, flow through the wetland and entering the culvert outlet was slow and approximately 2 inches deep. Watermarks on the side of the culvert suggest that flows may occasionally be 4 to 6 inches deeper through the culvert. As noted in Section 3.2, precipitation in the three-month period preceding fieldwork was slightly wetter than normal.

The 2009 SPU study discovered that moderately high tides backed water up into the wetland, introducing some brackish water at the west end and supporting a vegetation community that included plants that were moderately sensitive to and moderately tolerant of salt. In the late 2010s, the Port installed a tide valve at the stormwater outlet into Elliott Bay, which eliminated the tidal influence on Wetland A and changed the vegetation and hydrology conditions from those described in the 2009 SPU report. Rating Figures A-1 and A-2 of Appendix D illustrate the vegetation community type and likely hydroperiods based on Shannon & Wilson’s May 2022 observation.

Exhibit 3-5: View of Wetland Outlet, 36-Inch Concrete Pipe, Partially Obscured by Bittersweet Nightshade and Himalayan Blackberry

Wetland A includes a central emergent/herbaceous vegetation community with some unvegetated pockets and a fringe of scrub-shrub vegetation. The emergent community includes bittersweet nightshade (a Weed of Concern[1]), reed canarygrass (a non-regulated Class B noxious weed), Canada thistle (a non-regulated Class C noxious weed), soft-stem bulrush, horsetail, lady fern, and some other grasses (*Agrostis* sp.), with Japanese knotweed (a non-regulated Class B noxious weed) on the edges. The surrounding shrub vegetation is primarily invasive Himalayan blackberry (a non-regulated Class C noxious weed). Refer to Rating Figure 1 of Appendix D for a visual representation of the vegetation strata.

Two data pits were recorded in the wetland (DP-1 and DP-2 in Appendix B), one in each cell of Wetland A. The western cell was a black organic soil consistent with the Histosol (A1) hydric soil indicator. The soil had a strong petroleum odor. The eastern, upper cell was primarily a black clay loam that transitioned to a gleyed silty clay, consistent with the Thick Dark Surface (A12) hydric soil indicator. Soils testing from a sample collection in the western cell near DP-1 showed an organic content of just over 88 percent (Appendix E). An upland data pit (DP-3) was primarily a brown to very dark brown loam lacking any redoximorphic features until the soil transitioned to sand at a depth of 16 inches.

Per Seattle Municipal Code (SMC) 25.09.160.A (City, 2017), Wetland A was rated using Washington State Department of Ecology's (Ecology's) *Washington State Wetland Rating System for Western Washington* (Hruby, 2014). Wetland A is characterized and rated as a

[1] King County's Noxious Weed List (2021) identifies Weeds of Concern (control encouraged); regulated Class A, B, and C weeds (control required); and non-regulated Class B and C weeds (control is recommended).

Depressional wetland, consistent with the Hydrogeomorphic Classification System (Brinson, 1993; see rating form in Appendix D). Wetland A received a wetland rating of Category III with a low habitat score (4 points) (Hruby, 2014).

The rationale for the rating is outlined below.

- Wetland A was assigned a high water quality functions score (9 points) due to the modest coverage of persistent vegetation, presence of organic soils, and seasonal inundation in over half the wetland, all of which help filter stormwater. Additionally, the receipt of untreated stormwater, surrounding pollutant-generating land use, and proximity to 303(d)-listed waters provides the wetland opportunity to remove pollutants that benefit society.
- Wetland A received a moderate hydrologic functions score (6 points) due to its limited storage capacity and moderately sized contributing basin. The surrounding developed area and associated excess runoff increase the wetland's potential to help mitigate downgradient flooding; however, the receiving waterbody (Puget Sound) does not have flooding problems related to volumes of freshwater inputs.
- Wetland A received a low habitat functions score (4 points) due to its large proportion of surrounding high-intensity land use, lack of high-value nearby habitat, and limited habitat within the wetland.

3.3.2 Buffer

The vegetated portions of Wetland A's buffer are enclosed within a gated and locked chain-link fence surrounding SPU's Halladay Vactor Decant Facility, except for a row of landscape trees lining both sides of the Elliott Bay Trail to the south (see Figure 3 and Exhibit 3-6). The buffer surrounding Wetland A is dominated by invasive weeds, including the Himalayan blackberry and Japanese knotweed already noted in the outer portion of the wetland, but also poison hemlock (regulated Class B noxious weed), English ivy (non-regulated Class C noxious weed), Scotch broom (non-regulated Class B noxious weed), butterfly bush (non-regulated Class B noxious weed), Roberts geranium (non-regulated Class B noxious weed), and English holly (Weed of Concern).

The blackberry- and knotweed-dominated vegetated buffer on the north side of the wetland is interrupted by SPU's gravel access drive to the decant facility (right image in Exhibit 3-6). The vegetated buffer along the south side of the wetland, closest to the Project, also contains extensive giant horsetail and a patch of snowberry (Exhibit 3-6). Several English hawthorn trees are also present.

Exhibit 3-6: Views of Wetland A's Buffer Facing West from the Southeast Side of the Wetland (Left) and Facing East Down the SPU Access Drive from the Northwest Side of the Wetland (Right)

The remaining part of the buffer to the south is the paved Elliott Bay Trail (visible on the left side of the left image in Exhibit 3-4), that wraps around the west, north and east sides of T91, and then the chain-link fence-enclosed paved and developed area of T91. The trail is popular with joggers, walkers, and cyclists. The uses in the T91 area within the regulatory buffer are parking and an electrical substation that will continue to serve the Project. The portion of the buffer west of the SPU fence includes the terminus of 21st Avenue West, which ends at a gate into T91.

4 FISH AND WILDLIFE HABITAT CONSERVATION AREAS

The City's SMC 25.09.012.D designates seven different features that qualify as regulated fish and wildlife habitat conservation areas (FWHCAs). Based on a field and desktop review of the site conditions, City critical areas maps (2021 and 2022), WDFW's PHS on the Web map viewer (2022), and the NWIFC's Statewide Integrated Fish Distribution map viewer (2022), no part of the Project area and adjacent wetland contain characteristics that qualify them for regulation as a FWHCA.

FWHCAs are not addressed further in this report.

5 GEOLOGIC AND STEEP SLOPE EROSION HAZARD AREAS

The City's SMC 25.09.012.A designates geologic hazard areas (liquefaction-prone areas, landslide-prone areas, peat settlement-prone areas, seismic hazards areas, and volcanic hazard areas) and steep slope erosion hazard areas as regulated critical areas. The City's critical areas maps (2021 and 2022) show that the Project area and adjacent wetland are underlain by liquefaction prone soils (see Exhibit 5-1). Steep slopes and potential landslide areas are also mapped along the west side of T91, encroaching a small distance into the Project area.

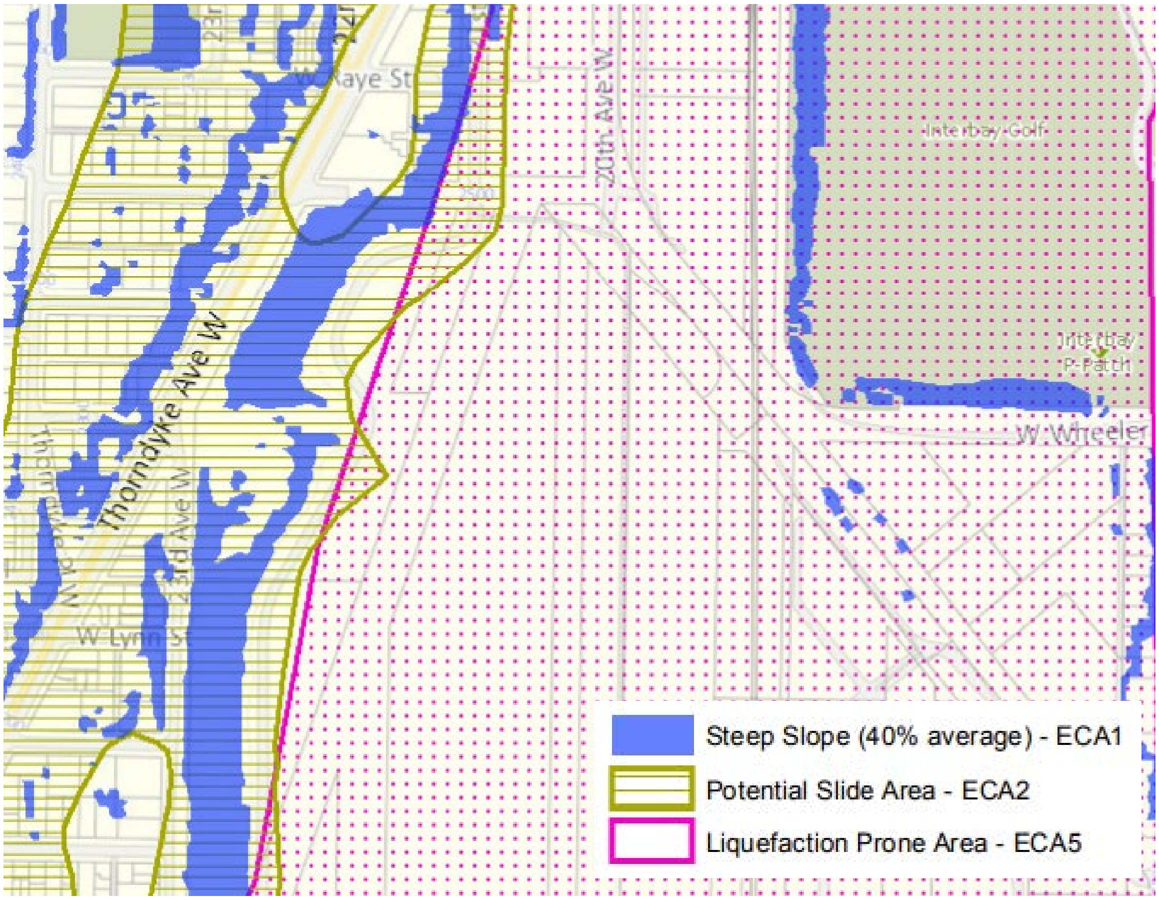

Exhibit 5-1: Screenshot of the City's GIS Map Viewer Showing Geologic and Steep Slope Erosion Hazard Areas (City of Seattle, 2022)

These geologic and steep slope erosion hazard areas are identified and evaluated in the Project's preliminary geotechnical report (Shannon & Wilson, 2022a), and will not be discussed further in this report.

6 FLOOD-PRONE AREAS

The City's SMC 25.09.012.B designates flood-prone areas as regulated critical areas. Those areas are defined as: "those areas that would likely be covered with or carry water as a result of a 100 year flood event, or that would have a one percent or greater chance of being covered with or of carrying water in any given year based on current circumstances or maximum development permitted under existing zoning. This includes areas defined as areas of special flood hazard in Section 25.06.030 and areas mapped by Seattle Public Utilities." A portion of the T91 site is mapped by the Federal Emergency Management Agency (FEMA) as Zone VE, which is a "coastal flood zone with velocity hazard (wave action)" with a base flood elevation of 13 feet North American Vertical Datum 1988 (FEMA, 2020). The Project area, however, does not contain any flood-prone areas mapped either by FEMA or the City (2021 and 2022), and so this critical areas type will not be discussed further in this report.

7 ABANDONED LANDFILLS

Abandoned landfills and areas within 1,000 feet of methane-producing landfills are designated as a critical area by the City under SMC 25.09.012.E. The Project is not on an abandoned landfill. However, the closest abandoned landfill is the Interbay Landfill, located east of the rail lines abutting the east side of the Project (Seattle-King County Department of Public Health, 1984), less than 1,000 feet from the Project. The City's critical areas maps (2021 and 2022) also show that all of Phase 1 and approximately half of the Phase 2 areas are within the 1,000-foot abandoned landfill buffer (Exhibit 7-1).

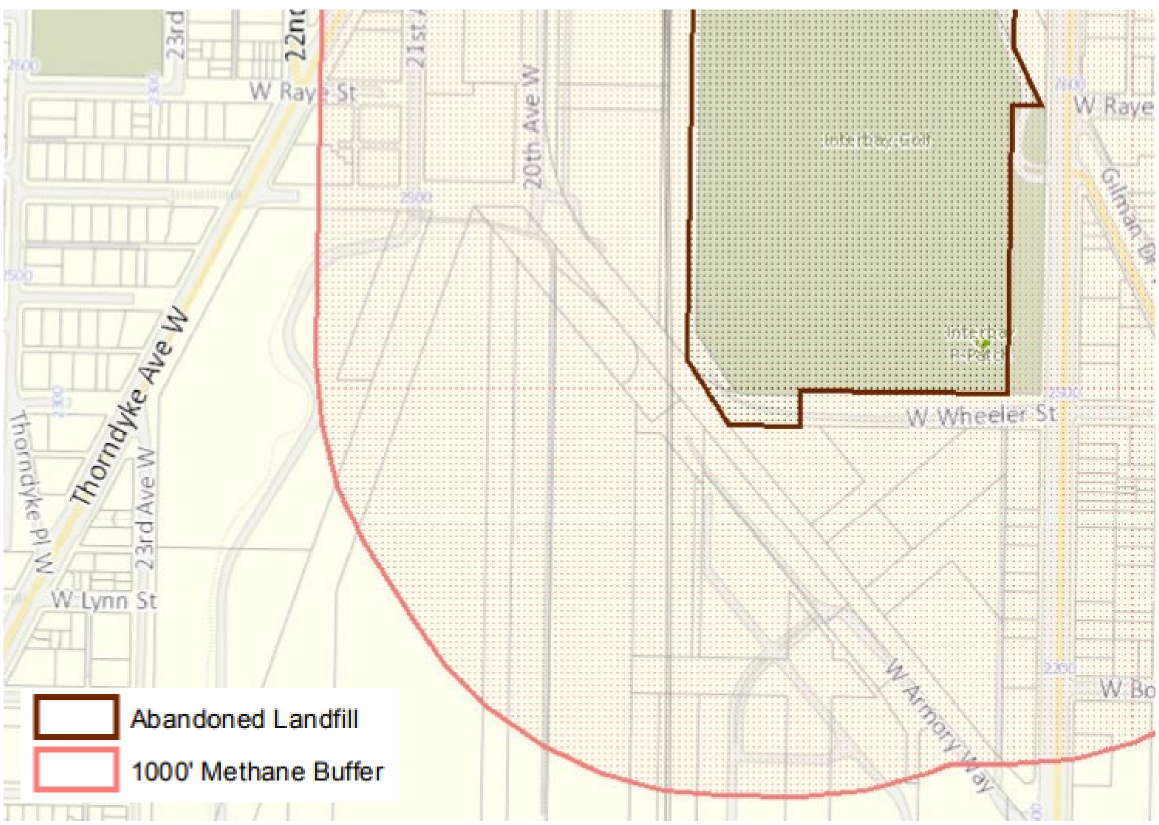

Exhibit 7-1: Screenshot of the City's GIS Map Viewer Showing the Abandoned Landfill and Its Buffer (City of Seattle, 2022)

That abandoned landfill critical area and standards that apply to developments in the abandoned landfill buffer are discussed in the Project's preliminary subsurface environmental investigation (Shannon & Wilson, 2022b), and will not be discussed further in this report.

8 REGULATORY REVIEW

Several federal, state, and local regulations apply to development proposals in and/or near critical areas. A summary of applicable regulatory implications is given below.

8.1 City of Seattle

The City regulates impacts to critical areas under Chapter 25.09 SMC, Regulations for Environmentally Critical Areas. The City assigns standard wetland buffer widths based on wetland rating category and habitat points. Per SMC 225.09.160.A, Wetland A was rated using Ecology's *Washington State Wetland Rating System for Western Washington* (Hruby, 2014), and is a Category III wetland (Appendix D). The City's SMC 25.09.160.B requires Category III wetlands with a habitat score of 4 points to maintain a 60-foot standard buffer.

The proposed Project will not directly impact Wetland A. Based on preliminary plans for redevelopment of the Project area, no new structures, changes in use, or other improvements are proposed that would adversely modify the buffer. The only alteration within the buffer of Wetland A is the beneficial replacement of 2,300 square feet of pavement with native shrubs and groundcovers, including a number of species that provide fruits and flowers attractive to hummingbirds and songbirds. This proposed improvement to the buffer is consistent with SMC 25.09.070.A. and -C., which require that removed impervious surface areas or other disturbed areas within a buffer that will not be used for the development be planted with native trees and vegetation.

If future plans include currently unanticipated modifications in the buffer, the following exemptions, exceptions, or requirements may be relevant.

- SMC 25.09.045 – Exemptions

  E. Distance from environmentally critical area or buffer. If the Director determines based on the distance between the proposed development and the environmentally critical area that the proposed action will occur far enough away from any environmentally critical area or buffer on the parcel that it will not temporarily or permanently encroach within, alter, or increase the impact to the environmentally critical area or buffer then the proposed action is exempt.

F. Maintenance and repair, or interior renovation and interior structural alteration or window, siding, or roof replacement of existing development if:

1. It does not increase the size of the development as determined by the plan view of the project;
2. It does not increase the impact to, including construction impacts, encroach further within, or further alter an environmentally critical area or buffer; and
3. In any five-year period starting from the effective date of the ordinance introduced as Council Bill 118853, the exterior structural alteration to the existing structure is less than 50 percent, not including window, siding, or roof replacement.

- SMC 25.09.160 – Development standards for wetlands and wetland buffers

B.3. Degraded buffers. If a buffer is degraded due to the lack of trees and vegetation, the presence of invasive or non-native species and/or the presence of impervious surface or other development, the Director shall require that:

a. The degraded portion of the buffer be restored by removing existing impervious surface and existing nonnative and invasive plant species, and replanting with native trees and vegetation, and providing a five-year monitoring and maintenance plan consistent with the requirements of subsection 25.09.065.D; or
b. The standard buffer width listed in Table A for 25.09.160 be increased or other conditions be placed on the development on a case-by-case basis when necessary to protect wetland functions and values based on best available science and local conditions if it is determined that:

1) A larger buffer is necessary to maintain viable populations or critical habitat of State or federally listed threatened or endangered species living within the subject wetland(s) boundaries;
2) The adjacent land is susceptible to severe erosion, and erosion control measures otherwise required in Section 25.09.080 will not effectively prevent adverse wetland impacts; or
3) A larger buffer maintains connections between other nearby wetlands, flood prone areas, and/or fish and wildlife habitat conservation areas.

- SMC 25.09.300 – Environmentally critical area exception

A.2. Public projects. If development in an environmentally critical area or buffer is necessary to accommodate a public facility or public utility, the Director may grant an exception permitting the public facility or public utility using the following criteria in lieu of subsections 25.09.300.C and 25.09.300.D:

a. No reasonable alternative location will accommodate the facility or utility, as demonstrated by an analysis of appropriate alternative locations provided by the applicant or the Director;
b. Mitigation sequencing under Section 25.09.065 is applied to the siting, design,

and construction of the facility or utility;
c. All requirements of subsections 25.09.300.A.1, 25.09.300.B, 25.09.300.E, and 25.09.300.F apply; and
d. In granting an exception to the development standards in Sections 25.09.090, 25.09.160, and 25.09.200 the Director shall apply the mitigation standards in Section 25.09.065 when imposing any conditions.

According to Christy Carr, Senior Environmental Analyst at Seattle Department of Construction and Inspections (personal communication, June 27, 2022), requirements to restore a degraded buffer per SMC 25.09.160.B.3, above, only apply if an otherwise prohibited development activity is proposed within the buffer that is not addressed by the exemptions identified in SMC 25.09.045. If final plans for the Project include such an activity in the buffer, then an environmentally critical area exception may be pursued as outlined in SMC 25.09.300.A.2, above.

8.2 State Regulations

8.2.1 Washington State Department of Ecology

Ecology has been authorized to implement Section 401 of the Clean Water Act (CWA) for Water Quality Certification in Washington for most projects that require Corps permits under CWA Section 404 (see Section 8.3). Typically, projects requiring a CWA Section 404 permit also require a CWA Section 401 Water Quality Certification. The purpose of the certification process is to ensure that federally permitted activities comply with the federal CWA, state water quality laws, and any other applicable state laws. Some general requirements for Section 401, if it is required, include pollution spill prevention and response measures, disposal of excavated or dredged material in upland areas, use of fill material that does not compromise water quality, clear identification of construction boundaries, and provision for site access to the permitting agency for inspection. The Project will not directly impact the wetland so a Section 401 Water Quality Certification will not be required.

Projects that may disturb more than one acre of land or that might result in a discharge to a waterbody that exceeds water quality standards are also required to obtain coverage under the National Pollutant Discharge Elimination System's (NPDES's) Construction Stormwater General Permit. Ecology administers the NPDES program under the state's Water Pollution Control Act and the federal CWA.

8.2.2 State Environmental Policy Act

The State Environmental Policy Act (SEPA) requires that state and local agencies review proposals to identify environmental impacts. A SEPA checklist is required to evaluate the

Project's impacts and to determine the significance of the impacts. The Port will be the SEPA lead for the Project.

8.3 Federal Regulations

The Corps' CWA Section 404 review process is required for projects involving discharges of dredge or fill materials into the waters of the United States, including streams and non-isolated wetlands. Any proposed impact located within a jurisdictional wetland or stream would require either a Nationwide Permit or an Individual Permit from the Corps. The delineated wetland is hydrologically connected to Puget Sound through a stormwater system, and therefore the delineated wetland is considered a water of the United States. The Project is not anticipated to discharge any dredge or fill material into Wetland A and therefore no Corps permit will be required.

Projects that require or trigger a federal permit from the Corps would also require approval under the Endangered Species Act, Magnuson-Stevens Fishery Conservation and Management Act, and National Historic Preservation Act.

9 CONCLUSION

This report documents critical areas (as defined by Chapter 25.09 SMC) within the Project area, focusing on an off-site wetland whose buffer extends into the Project area. Other geologic and steep slope erosion hazard areas and/or their buffers and the buffer of an abandoned landfill are also present in the Project area, and this report refers to the appropriate technical documents prepared by other subject experts at Shannon & Wilson. Based on preliminary plans, the Project will not adversely affect Wetland A directly and will enhance its buffer through removal of pavement and installation of native shrubs and groundcovers. This conclusion may need to be revisited based on final plans and if Project stormwater management changes the quantity or quality of any runoff that contributes to Wetland A hydrology.

10 CLOSURE

The findings and conclusions documented in this report have been prepared for specific application to this project and have been developed in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in the area, and in accordance with the terms and conditions set forth in our agreement. The conclusions and recommendations presented in this report are professional opinions based on interpretation of information currently available to us and are made within the operational scope, budget, and schedule constraints of this project. No warranty, express or implied, is made. Shannon & Wilson has prepared the enclosed document, "Important Information About Your Wetland Delineation/ Mitigation and/or Stream Classification Report," to assist you and others in understanding the use and limitations of our reports.

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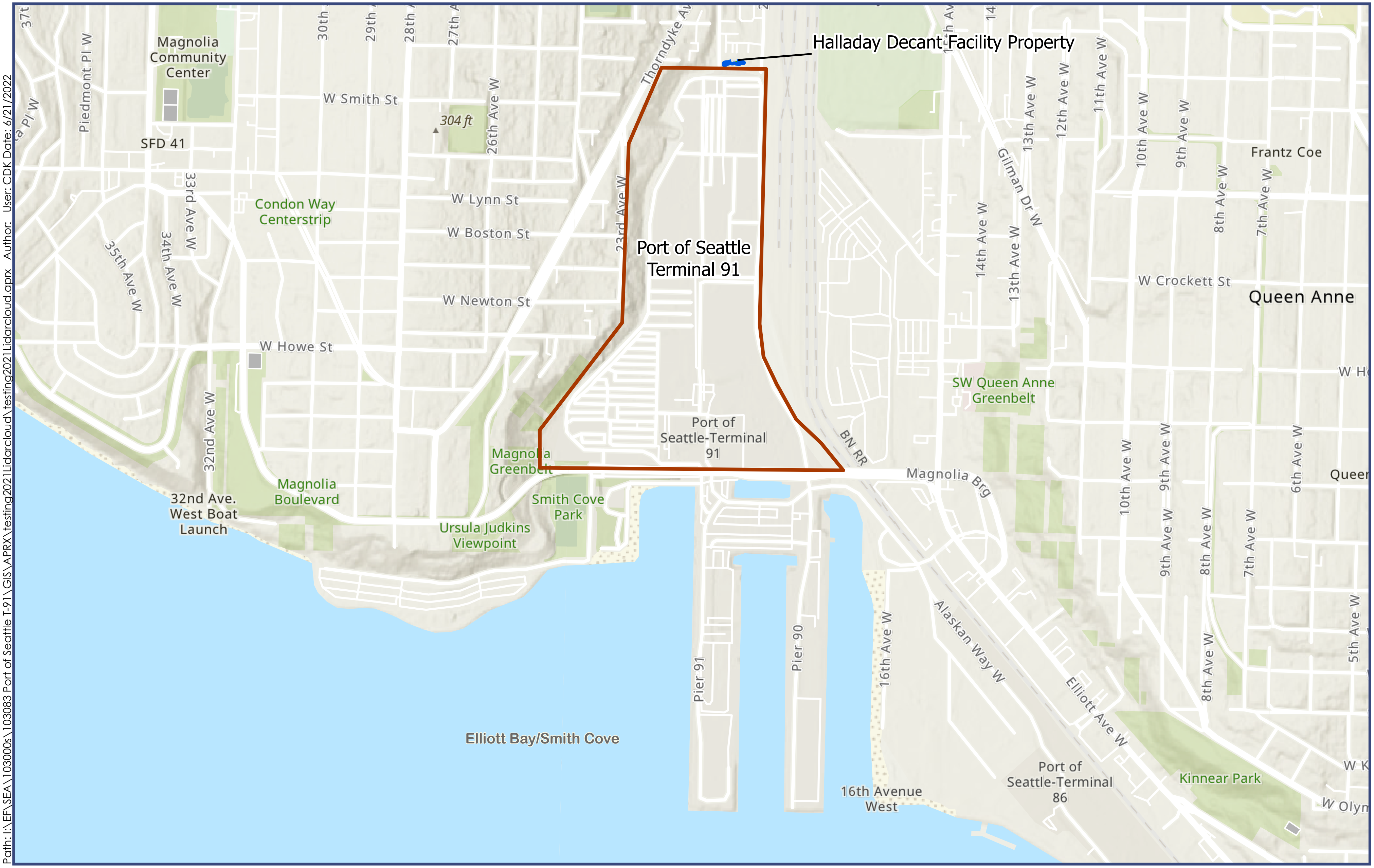

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103083

February 2023

Vicinity Map

Figure 1

0 20 Feet

N

Notes:
1. Elevation source is LiDAR from King County West, 2021. Vertical Datum NAVD88, units US ft.
2. Wetland flags were hung by Shannon & Wilson on May 23, 2022 and surveyed by Port of Seattle on June 2, 2022

February 2023

Wetland Delineation Map

Figure 2

103083

Path: I:\EF\SEA\1030000s\103083 Port of Seattle T-91\GIS\APRX\testing2021Lidarcloud\testing2021Lidarcloud.aprx Author: User: CDK Date: 6/21/2022

February 2023

60-Foot Wetland Buffer

Figure 3

103083

APPENDIX A: WETLAND DELINEATION METHODOLOGY

Appendix A

Wetland Delineation Methodology

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Exhibit

Exhibit A-1 Plant Indicator Status A-2

A.1 INTRODUCTION

The triple-parameter approach, as required in the U.S. Army Corps of Engineers' (the Corps') 1987 *Corps of Engineers Wetland Delineation Manual* and the Corps' 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0) was used to identify and delineate the wetlands on the site described in this report. The triple-parameter approach requires that vegetation, soils, and hydrology are each evaluated to determine the presence or absence of wetlands. An area is considered to be a wetland if each of the following is met: (a) dominant hydrophytic vegetation is present in the area, (b) the soils in the area are hydric, and (c) the necessary hydrologic conditions within the area are met.

A determination of wetland presence was made by conducting a Routine Delineation. Corresponding upland and wetland plots were recorded to characterize surface and subsurface conditions and more accurately determine the boundaries of on-site wetlands.

A.2 WETLAND VEGETATION

Hydrophytic plants are plant species specially adapted for saturated and/or anaerobic conditions. These species can be found in areas where there is a significant duration and frequency of inundation, which produces permanently or periodically saturated soils. Hydrophytic species, due to morphological, physiological, and reproductive adaptations, have the ability to grow, effectively compete, reproduce, and thrive in anaerobic soil. Indicators of hydrophytic vegetation are based on the wetland indicator status of plant species on the national wetland plant list (Lichvar and others, 2016). Plants are categorized as Obligate (OBL), Facultative Wetland (FACW), Facultative (FAC), Facultative Upland (FACU), or Upland (UPL). Species in the facultative categories (FACW, FAC, and FACU) are recognized as occurring in both wetlands and non-wetlands to varying degrees. Most wetlands are dominated mainly by species rated as OBL, FACW, or FAC (Exhibit A-1).

Exhibit A-1: Plant Indicator Status

Plant Indicator Status Categories
Obligate Wetland (OBL) – Plants that almost always occur in wetlands.
Facultative Wetland (FACW) – Plants that usually occur in wetlands but may occur in non-wetlands.
Facultative (FAC) – Plants that occur in wetlands or non-wetlands.
Facultative Upland (FACU) – Plants that usually occur in non-wetlands but may occur in wetlands.
Obligate Upland (UPL) – Plants that almost never occur in wetlands.

Source: Lichvar and others, 2016

The approximate percentage of absolute cover for each of the different plant species occurring within the tree, sapling/shrub, woody vine, and herbaceous strata was determined. Trees within a 30-foot radius; sapling/shrubs and woody vines within a 15-foot radius; and herbaceous species within a 5-foot radius of each data point were identified and noted. However, where site conditions merited it, the dimensions of the tree, sapling/shrub, woody vine, and herbaceous strata were modified.

The dominance test is the primary hydrophytic vegetation indicator and it is used in all wetland delineations. Dominant plant species are considered to be those that, when cumulatively totaled in descending order of absolute percent cover, exceed 50% of the total absolute cover for each vegetative stratum. Any additional species individually representing 20% or greater of the total absolute cover for each vegetative strata are also considered dominant. Hydrophytic vegetation is considered to be present when greater than 50% of the dominant plant species within the area had an indicator status of OBL, FACW, or FAC.

If a plant community does not meet the dominance test in areas where hydric soils and wetland hydrology are present, vegetation is reevaluated using the prevalence index, plant morphological adaptations for living in wetlands, and/or abundance of bryophytes (e.g., mosses) adapted to living in wetlands. The prevalence index is a weighted average that takes into account the abundance of all plant species within the sampling area to determine if hydrophytic vegetation is more or less prevalent. Using the prevalence index, all plants within the sampling area are grouped by wetland indicator status and absolute percent cover is summed for each group. Total cover for each indicator status group is weighted by the following multipliers: OBL=1, FACW=2, FAC=3, FACU=4, UPL=5. The prevalence index is calculated by dividing the sum of the weighted totals by the sum of total cover in the sampling area. A prevalence index of 3.0 or less indicates that hydrophytic vegetation is present.

APPENDIX A: WETLAND DELINEATION METHODOLOGY

A.3 HYDRIC SOILS

Hydric soils are defined as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (U.S. Department of Agriculture [USDA] Soil Conservation Service [SCS], 1994). Repeated periods of saturation and inundation for more than a few days, in combination with soil microbial activity, causes depletion in oxygen (anaerobic conditions) and results in delayed decomposition of organic matter and reduction of iron, manganese, and sulfur elements. As a result of these processes, most hydric soils develop distinctive characteristics observable in the field during both wet and dry periods (Vasilas and others, 2018). These characteristics may be exhibited as an accumulation of organic matter; bluish-gray, green-gray, or low chroma and high value soil colors; mottling or other concentrations of iron and manganese; and/or hydrogen sulfide odor similar to a rotten egg smell.

The USDA Natural Resources Conservation Service developed official hydric soil indicators as summarized in *Field Indicators of Hydric Soils in the United States* (Vasilas and others, 2018). These indicators were developed to assist in delineation of hydric soils and are based predominantly on hydric soils near the margins of wetlands. Some hydric soils, including soils within the wettest parts of wetlands, may lack any of the approved hydric soil indicators. If a hydric soil indicator is present, the soil is determined to be hydric. If no hydric soil indicator is present, additional site information is used to assess whether the soil meets the definition of hydric soil.

Identification of hydric soils was aided through observation of surface hydrologic characteristics and indicators of wetland hydrology (e.g., drainage patterns). Soil characteristics were observation at several data points, placed both inside and outside the wetland. Holes were dug with a shovel to the depth needed to document an indicator or to confirm the absence of hydric soil indicators. Soil organic content was estimated visually and texturally. Soil colors were examined in the field immediately after sampling. Dry soils were moistened. Soil colors were determined through analysis of the hue, value, and chroma best represented in the Munsell® Soil Color Chart (Munsell Color, 2000).

A.4 WETLAND HYDROLOGY

Wetland hydrology is determined by observable evidence that inundation or soil saturation have occurred during a significant portion of the growing season repeatedly over a period of years so that wet condition have been sufficient to produce wetland vegetation and hydric soils. Wetland hydrology indicators give evidence of a continuing wetland hydrologic regime. Wetland hydrology criteria were considered to be satisfied if it appeared that wetland hydrology was present for at least 5 to 12.5% (12 to 31 days) of the growing season. The growing season in western Washington is typically considered to be from March 1 to October 31 (244 days). However, the growing season is considered to have begun when: (a) evidence of plant growth has begun on two non-evergreen vascular plants, and (b) the soil reaches a temperature of 41 degrees Fahrenheit at a depth of 12 inches. The Seattle District Corps of Engineers requires 14 consecutive days of inundation or saturation for wetland hydrology to be considered present.

Wetland hydrology was evaluated by direct visual observation of surface inundation or soil saturation in data plots. The area near each data point was examined for indicators of wetland hydrology. Wetland hydrology indicators are categorized as primary or secondary based on their estimated reliability. Wetland hydrology was considered present if there was evidence of one primary indicator or at least two secondary indicators.

Some primary indicators include surface water, a shallow water table or saturated soils observed within 12 inches of the surface, dried watermarks, drift lines, sediment deposits, water-stained leaves, and algal mat/crust. Some secondary indicators include a water table within 12 to 24 inches of the surface during the dry season; drainage patterns; a landscape position in a depression, drainage, or fringe of a water body; and a shallow restrictive layer capable of perching water within 12 inches of the surface.

A.5 DISCLAIMER

This methodology was prepared for reference use only and is not intended to replace the 1987 *Corps Wetland Delineation Manual* or the Corps' 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0).

A.6 REFERENCES

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Appendix B

Wetland Delineation Data Forms

Western Mountains, Valleys, and Coast Region

APPENDIX B: WETLAND DELINEATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Halladay Decant Facility / T-91 Master Plan City/County: Seattle/King Sampling Date: 5/23/2022
Applicant/Owner: Port of Seattle State: WA Sampling Point: DP-1
Investigator(s): Amy Summe, PWS/ Sarah Corbin PWS Section, Township, Range: T25N/R03E/S23
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave Slope (%): flat
Subregion (LRR): NW Forest Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: Urban Land 0-5% Slopes NWI classification: PUBHx and PSSAx
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes** ☒ **No** ☐
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: **In Wetland A**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
50% = _____, 20% = _____	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Rubus armeniacus*	35	yes	FAC
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
50% = 17.5, 20% = 7	35	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Cirsium arvense*	10	no	FAC
2. *Solanum dulcamara*	50	yes	FAC
3. *Agrostis sp.*	trace	no	FAC
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
50% = 30, 20% = 12	60	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
50% = _____, 20% = _____	0	= Total Cover	
% Bare Ground in Herb Stratum 40			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x1 =	_____
FACW species	_____	x2 =	_____
FAC species	_____	x3 =	_____
FACU species	_____	x4 =	_____
UPL species	_____	x5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks:

Project Site: Halladay Decant Facility / T-91 Master Plan

SOIL

Sampling Point: DP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 2/2	100					muck	
1-17+	10YR 2/1	100					muck	with pockets of silt

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☒ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks: Heavy VOC/petroleum odor in soil pit and hydrogen sulfide odor adjacent to area.
Lab analysis revealed 88% organic content and 20.5% clay.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☒ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☒ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):	-
Water Table Present?	Yes ☒	No ☐	Depth (inches):	8
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	surface

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Halladay Decant Facility / T-91 Master Plan City/County: Seattle/King Sampling Date: 5/23/2022

Applicant/Owner: Port of Seattle State: WA Sampling Point: DP-2

Investigator(s): Amy Summe, PWS/ Sarah Corbin PWS Section, Township, Range: T25N/R03E/S23

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave Slope (%): flat

Subregion (LRR): NW Forest Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Urban Land 0-5% Slopes NWI classification: PUBHx and PSSAx

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** **Yes** ☒ **No** ☐
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	

Remarks: **In Wetland A, upgradient of berm. Area connects to wetland via narrow swale/channel.**

VEGETATION – Use scientific names of plants

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30)			
1. _____			
2. _____			
3. _____			
4. _____			
50% = _____, 20% = _____	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Rubus armeniacus*	20	yes	FAC
2. _____			
3. _____			
4. _____			
5. _____			
50% = 10, 20% = 4	20	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Equisetum telmateia*	5	yes	FACW
2. *Reynoutria japonica*	10	yes	FACU
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = 7.5, 20% = 3	15	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. _____			
2. _____			
50% = _____, 20% = _____	0	= Total Cover	
% Bare Ground in Herb Stratum 95			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	67	(A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	_____	x1 =	_____
FACW species	_____	x2 =	_____
FAC species	_____	x3 =	_____
FACU species	_____	x4 =	_____
UPL species	_____	x5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks: Knotweed growing at wetland boundary.

Project Site: Halladay Decant Facility / T-91 Master Plan

SOIL

Sampling Point: DP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 2/2	100					cl loam	clay loam
1-14	10YR 2/1	100					cl loam	"
14-17	N 4/	97	7.5YR 4/4	3	C	M	si clay	silty clay

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☒ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks: The upper 1 inch contained accumulated leaf litter and other partiallly decomposed organic material. Soil meets the criteria of the Thick Dark Surface (A12) hydric soil indicator but for the upper one inch of duff/soil-like material and in our best professional judgment is a hydric soil.

No odors present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☒ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): -

Water Table Present? Yes ☒ No ☐ Depth (inches): 11

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): 9

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Halladay Decant Facility / T-91 Master Plan   City/County: Seattle/King   Sampling Date: 5/23/2022

Applicant/Owner: Port of Seattle   State: WA   Sampling Point: DP-3

Investigator(s): Amy Summe, PWS/ Sarah Corbin PWS   Section, Township, Range: T25N/R03E/S23

Landform (hillslope, terrace, etc.): _____   Local relief (concave, convex, none): convex   Slope (%): flat

Subregion (LRR): NW Forest   Lat: _____   Long: _____   Datum: _____

Soil Map Unit Name: Urban Land 0-5% Slopes   NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** **Yes** ☐ **No** ☒
Hydric Soil Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	

Remarks: **Upgradient (SE) of Wetland A, in historic fill area.**

VEGETATION – Use scientific names of plants

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
50% = _____, 20% = _____	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Rubus armeniacus*	10	yes	FAC
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
50% = 5, 20% = 2	10	= Total Cover	
Herb Stratum (Plot size: 5)			
1. *Equisetum telmateia*	95	yes	FACW
2. *Reynoutria japonica*	15	no	FACU
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
50% = 55, 20% = 22	110	= Total Cover	
Woody Vine Stratum (Plot size: 15)			
1. *Hedera helix*	95	yes	FACU
2. _____	_____	_____	_____
50% = 47.5, 20% = 19	95	= Total Cover	
% Bare Ground in Herb Stratum 5			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	67	(A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	_____	x1 =	_____
FACW species	_____	x2 =	_____
FAC species	_____	x3 =	_____
FACU species	_____	x4 =	_____
UPL species	_____	x5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☒ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks:

Project Site: Halladay Decant Facility / T-91 Master Plan

SOIL

Sampling Point: DP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 2/2	100					loam	
14-16	10YR 3/2	100					loam	
16-19+	10YR 2/2	99	5YR 3/3	1	C	M	sand	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks: Small metal debris and "cookie dough"/ mixed appearance throughout upper 16 inches. Suggests fill activity. No odor present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	-
Water Table Present?	Yes	☐	No	☒	Depth (inches):	-
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	-

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

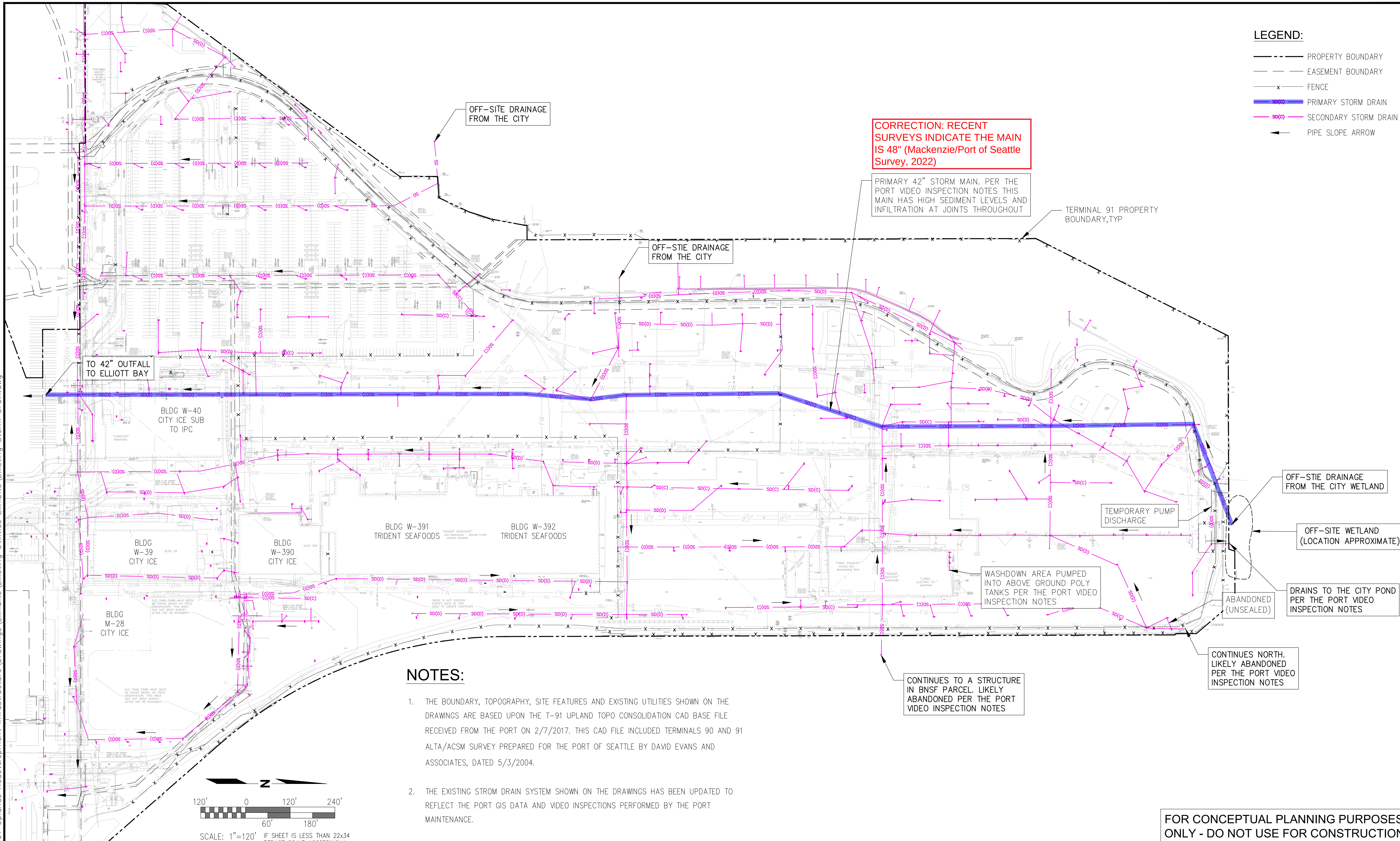
Appendix C

Existing Storm Drain Plan

APPENDIX C: EXISTING STORM DRAIN PLAN

CONTENTS

- Exhibit B.3 of the Terminal 91 Uplands Utility Infrastructure Study (KPFF)



NOTES:

1. THE BOUNDARY, TOPOGRAPHY, SITE FEATURES AND EXISTING UTILITIES SHOWN ON THE DRAWINGS ARE BASED UPON THE T-91 UPLAND TOPO CONSOLIDATION CAD BASE FILE RECEIVED FROM THE PORT ON 2/7/2017. THIS CAD FILE INCLUDED TERMINALS 90 AND 91 ALTA/ACSM SURVEY PREPARED FOR THE PORT OF SEATTLE BY DAVID EVANS AND ASSOCIATES, DATED 5/3/2004.

2. THE EXISTING STROM DRAIN SYSTEM SHOWN ON THE DRAWINGS HAS BEEN UPDATED TO REFLECT THE PORT GIS DATA AND VIDEO INSPECTIONS PERFORMED BY THE PORT MAINTENANCE.

FOR CONCEPTUAL PLANNING PURPOSES ONLY - DO NOT USE FOR CONSTRUCTION

Plotted: Nov 16, 2017 – 5:09pm asargsyan Layout: Existing Storm
M:\2016\1600161 POS T91 Uplands Redevelopment Infrastructure\Drawings\Exhibits\Existing Utilities Exhibits\Existing Storm Drain.dwg

kpff
1601 5th Avenue, Suite 1300
Seattle, Washington 98101
(206) 382-0600 Fax (206) 382-0500

Port of Seattle

NO.	DATE	BY	REVISION

TERMINAL 91 INFRASTRUCTURE STUDY
PORT OF SEATTLE, WA

EXHIBIT B.3
EXISTING STORM DRAIN PLAN

DRAWN: AS	PROJECT NO.: 1600161
DESIGN:	SCALE: AS SHOWN
CHECKED:	DATE: 12/01/2017
DRAWING NO.	

Appendix D

Wetland Rating Form – Western Washington

APPENDIX D: WETLAND RATING FORM – WESTERN WASHINGTON

RATING SUMMARY – Western Washington

Name of wetland (or ID #): __Wetland A - Halladay Decant Facility__ Date of site visit: _5/24/22_

Rated by_Amy Summe/Sarah Corbin_ Trained by Ecology?_x_ Yes ___No Date of training_2015_

HGM Class used for rating_Depressional_ Wetland has multiple HGM classes?___Y _x_N

NOTE: Form is not complete without the figures requested *(figures can be combined)*.
Source of base aerial photo/map __GoogleEarth/ESRI__

OVERALL WETLAND CATEGORY _III_ (based on functions_x_ or special characteristics___)

1. Category of wetland based on FUNCTIONS

_______**Category I** – Total score = 23 - 27

_______**Category II** – Total score = 20 - 22

___x___**Category III** – Total score = 16 - 19

_______**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
			Circle the appropriate ratings	
Site Potential	(H) M L	H (M) L	H M (L)	
Landscape Potential	(H) M L	(H) M L	H M (L)	
Value	(H) M L	H M (L)	H (M) L	**TOTAL**
Score Based on Ratings	9	6	4	19

Score for each function based on three ratings
(order of ratings is not important)

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	**I II**
Wetland of High Conservation Value	**I**
Bog	**I**
Mature Forest	**I**
Old Growth Forest	**I**
Coastal Lagoon	**I II**
Interdunal	**I II III IV**
None of the above	X

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	A-1
Hydroperiods	D 1.4, H 1.2	A-2
Location of outlet *(can be added to map of hydroperiods)*	D 1.1, D 4.1	A-2
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	A-2
Map of the contributing basin	D 4.3, D 5.3	A-3
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	A-3
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	A-4
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	A-5

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants *(can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

   NO – go to 2 **YES** – the wetland class is **Tidal Fringe** – go to 1.1

   1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

   NO – Saltwater Tidal Fringe (Estuarine) **YES – Freshwater Tidal Fringe**
   If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is Saltwater Tidal Fringe it is an* ***Estuarine*** *wetland and is not scored. This method* ***cannot*** *be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a Flats wetland, use the form for ***Depressional*** *wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?
   __The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
   __At least 30% of the open water area is deeper than 6.6 ft (2 m).

   NO – go to 4 **YES –** The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?
   ___The wetland is on a slope (*slope can be very gradual*),
   ___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
   ___The water leaves the wetland **without being impounded**.

   NO – go to 5 **YES –** The wetland class is **Slope**

   NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?
   ___The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
   ___The overbank flooding occurs at least once every 2 years.

Wetland name or number A

NO – go to 6 **YES** – The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

If you are still unable to determine which of the above criteria apply to your wetland, or if you have ***more than 2 HGM classes*** *within a wetland boundary, classify the wetland as Depressional for the rating.*

DEPRESSIONAL AND FLATS WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	2
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*. Yes = 4 No = 0	4
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed, plants > 95% of area points = 5 Wetland has persistent, ungrazed, plants > ½ of area points = 3 Wetland has persistent, ungrazed plants > $^{1}/_{10}$ of area points = 1 Wetland has persistent, ungrazed plants < $^{1}/_{10}$ of area points = 0	3
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0	4
Total for D 1 Add the points in the boxes above	13

Rating of Site Potential If score is: _X_ **12-16 = H** ____**6-11 = M** ____**0-5 = L** *Record the rating on the first page*

D 2.0. Does the landscape have the potential to support the water quality function of the site?	
D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	1
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source _hydrocarbon contamination Yes = 1 No = 0	1
Total for D 2 Add the points in the boxes above	3

Rating of Landscape Potential If score is: _X_ **3 or 4 = H** ____**1 or 2 = M** ____**0 = L** *Record the rating on the first page*

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	1
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes = 1 No = 0	1
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (*answer YES if there is a TMDL for the basin in which the unit is found*)? Yes = 2 No = 0	0
Total for D 3 Add the points in the boxes above	2

Rating of Value If score is: _X_ **2-4 = H** ____**1 = M** ____**0 = L** *Record the rating on the first page*

Wetland name or number _A___

DEPRESSIONAL AND FLATS WETLANDS **Hydrologic Functions** - Indicators that the site functions to reduce flooding and stream degradation	
D 4.0. Does the site have the potential to reduce flooding and erosion?	
D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outletpoints = 2 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	2
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	3
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire wetland is in the Flats class points = 5	3
Total for D 4 Add the points in the boxes above	8

Rating of Site Potential If score is:____**12-16 = H** _X__**6-11 = M** ____**0-5 = L** *Record the rating on the first page*

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?	
D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	1
Total for D 5 Add the points in the boxes above	3

Rating of Landscape Potential If score is:_X_**3 = H** ____**1 or 2 = M** ____**0 = L** *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?	
D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): • Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2 • Surface flooding problems are in a sub-basin farther down-gradient. points = 1 Flooding from groundwater is an issue in the sub-basin. points = 1 The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* ______________ points = 0 There are no problems with flooding downstream of the wetland. Discharges to Sound points = 0	0
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for D 6 Add the points in the boxes above	0

Rating of Value If score is:____**2-4 = H** ____**1 = M** _X_**0 = L** *Record the rating on the first page*

Wetland name or number __A__

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

____Aquatic bed — 4 structures or more: points = 4
__X__Emergent — 3 structures: points = 2
__X__Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points = 1
____Forested (areas where trees have > 30% cover) — 1 structure: points = 0

If the unit has a Forested class, check if:

____The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon

Score: 1

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

__X__Permanently flooded or inundated — 4 or more types present: points = 3
__X__Seasonally flooded or inundated — 3 types present: points = 2
____Occasionally flooded or inundated — 2 types present: points = 1
__X__Saturated only — 1 type present: points = 0
____Permanently flowing stream or river in, or adjacent to, the wetland
____Seasonally flowing stream in, or adjacent to, the wetland
____**Lake Fringe wetland** — **2 points**
____**Freshwater tidal wetland** — **2 points**

Score: 2

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2.

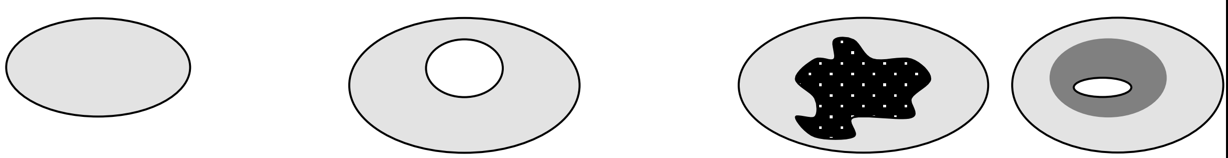
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

If you counted: > 19 species — points = 2
5 - 19 species — points = 1
< 5 species — points = 0

Score: 1

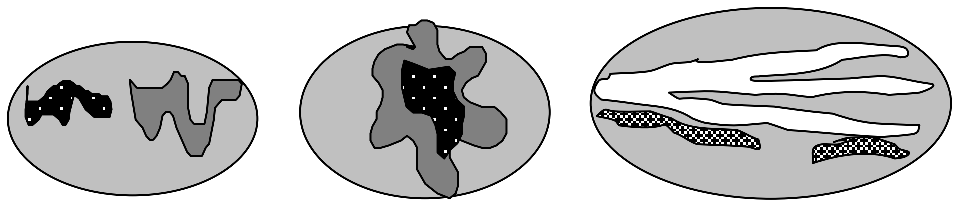
H 1.4. Interspersion of habitats

Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*



None = 0 points **Low** = 1 point **Moderate** = 2 points

All three diagrams in this row are **HIGH** = 3points



Score: 2

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ____Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ____Standing snags (dbh > 4 in) within the wetland _X_Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) _X_Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* no beaver, possible muskrat denning oppt. ____At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ____Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	2
Total for H 1 — Add the points in the boxes above	8

Rating of Site Potential If score is:___**15-18 = H** _X_**7-14 = M** ___**0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 0 + [(% moderate and low intensity land uses)/2] 0 = 0 % If total accessible habitat is: > $^1/_3$ (33.3%) of 1 km Polygon — points = 3 20-33% of 1 km Polygon — points = 2 10-19% of 1 km Polygon — points = 1 < 10% of 1 km Polygon — points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 1 + [(% moderate and low intensity land uses)/2] 1 = 2 % Undisturbed habitat > 50% of Polygon — points = 3 Undisturbed habitat 10-50% and in 1-3 patches — points = 2 Undisturbed habitat 10-50% and > 3 patches — points = 1 Undisturbed habitat < 10% of 1 km Polygon — points = 0	0
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use — points = (- 2) ≤ 50% of 1 km Polygon is high intensity — points = 0	-2
Total for H 2 — Add the points in the boxes above	-2

Rating of Landscape Potential If score is:___**4-6 = H** ___**1-3 = M** _X_**< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: — points = 2 — It has 3 or more priority habitats within 100 m (see next page) — It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) — It is mapped as a location for an individual WDFW priority species — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) within 100 m — points = 1 Site does not meet any of the criteria above — points = 0	0

Rating of Value If score is:___**2 = H** ___**1 = M** _X_**0 = L** *Record the rating on the first page*

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

— **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number A

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	Category
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No - Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 2.2** No – Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes **= Category I** No **= Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes **– Contact WNHP/WDNR and go to SC 2.4** No **= Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes **= Category I** No **= Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to **SC 3.3** No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** No = **Is not a bog**	**Cat. I**

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). Yes = **Category I** No = **Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^1/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	

June 2022

Cowardin Class And 150-Foot Buffer

Rating Figure A-1

SHANNON & WILSON

103083-002

T-91 Uplands Development Project
Port of Seattle
Seattle, WA

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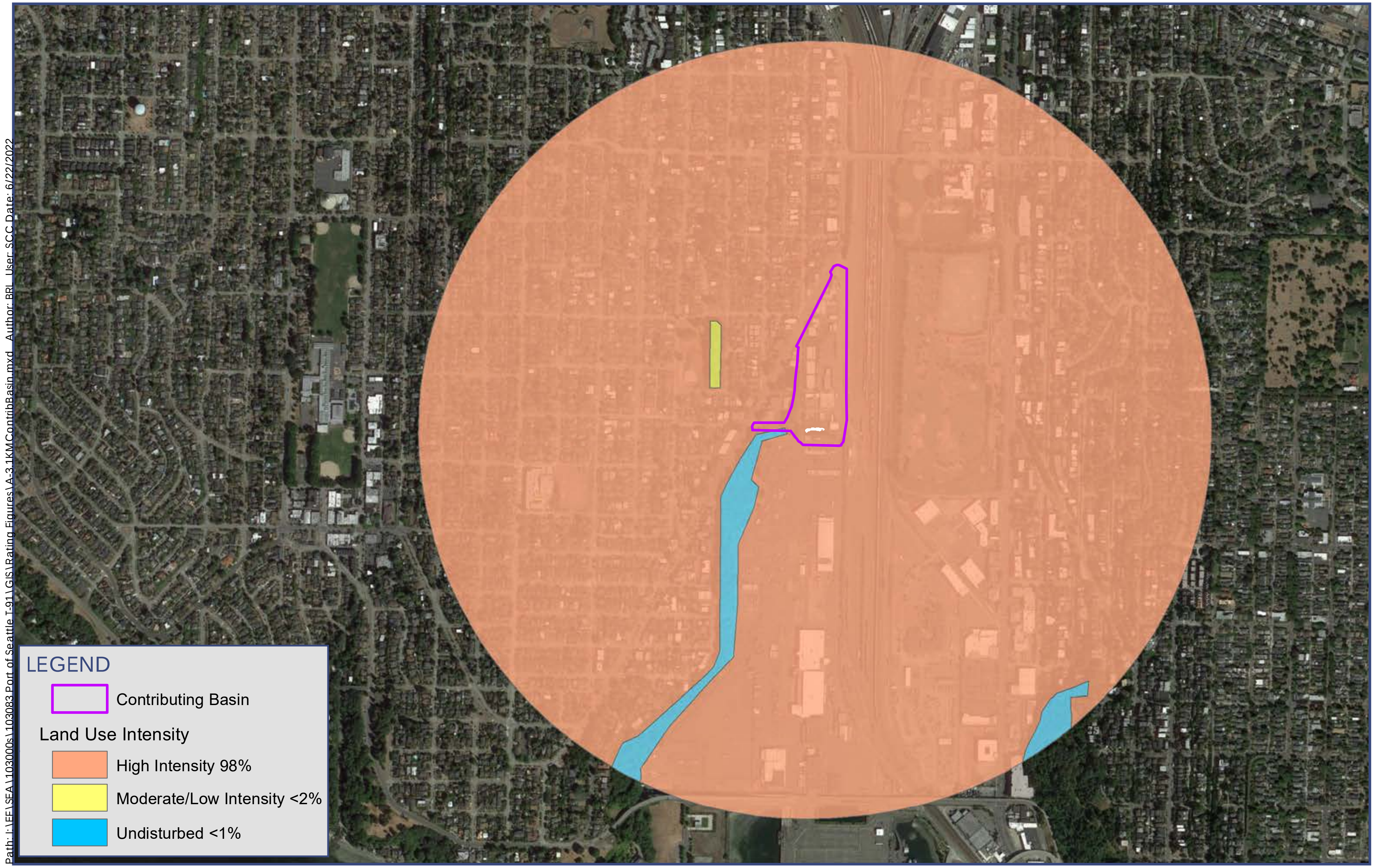
June 2022

Hydroperiods

Rating Figure A-2



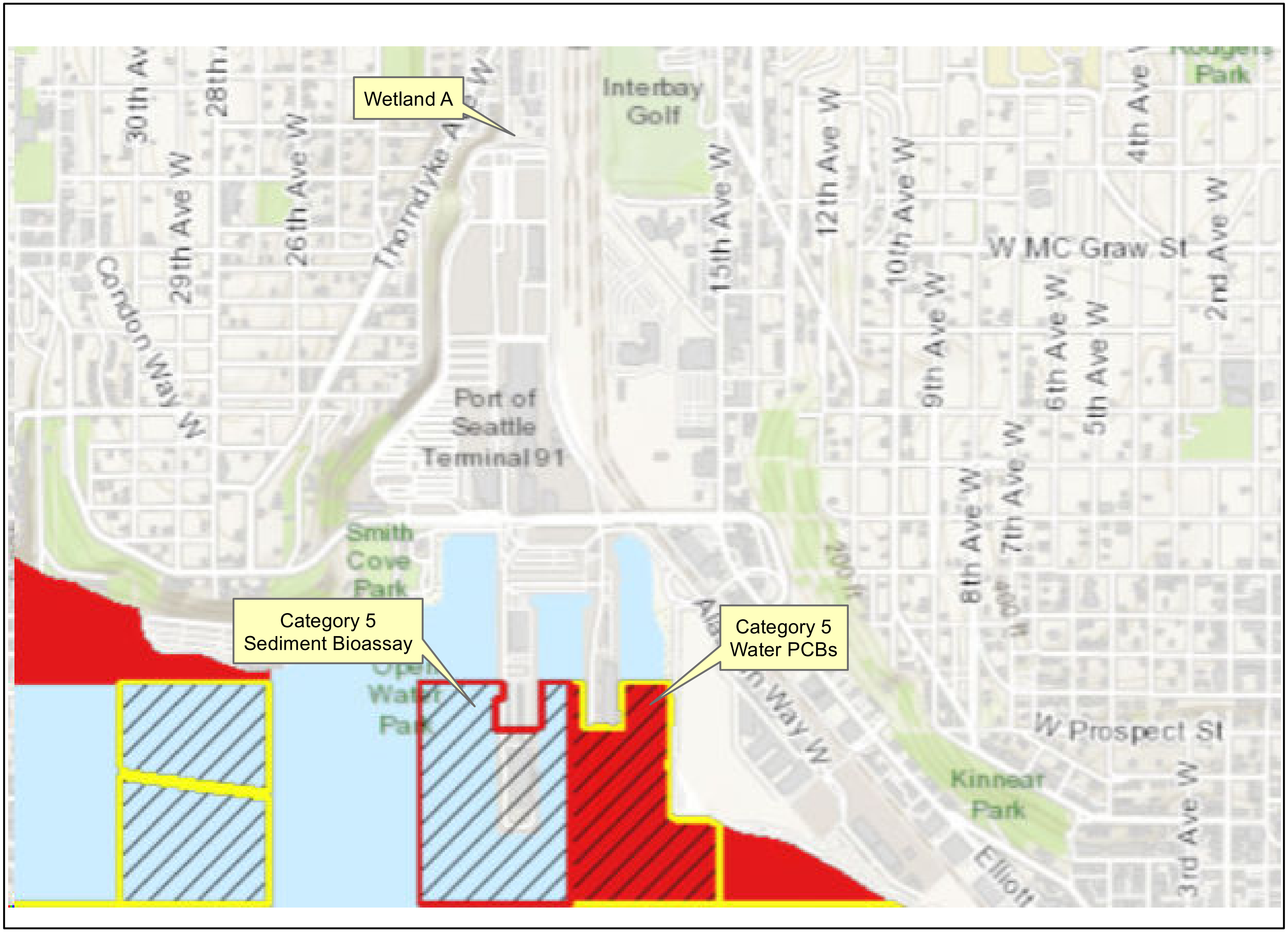
Notes:

1. Contributing basin based on drainage area documented in the 2009 Seattle Public Utilities Halladay Vactor Decant Facility Site Wetland Delineation and Stormwater Assessment Report (SPU, 2009) and Exhibit F.5 from the 2018 Terminal 91 Uplands Utility Infrastructure Study (KPFF, 2018).

June 2022

1 Kilometer Land Use Intensity and Contributing Basin

Rating Figure A-3



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Notes:

1. The Category 5 sediments and waters are located 0.85 mile from Wetland A.

June 2022

303(d) Listings

Rating Figure A-4

DEPARTMENT OF ECOLOGY State of Washington

King County

Ecology homepage > Water & Shorelines > Water improvement > Total Maximum Daily Load process > Directory of projects > King County

Water quality improvement projects

Select the waterbody or pollutant name to find more information about the specific project.

Waterbody Name(s)	Pollutant(s)	Status
Bear-Evans Creek Basin	Fecal Coliform	EPA approved
Bear-Evans Creek Basin	Dissolved Oxygen Temperature	EPA approved
Cottage Lake	Total Phosphorus	EPA approved
Duwamish and Lower Green River	Ammonia-N	EPA approved
Duwamish and Green River	Pollutant loading	Working with technical advisory group
Fauntleroy Creek	Fecal Coliform	EPA approved
Fenwick Lake	Total Phosphorus	EPA approved
Green River and Newaukum Creek	Dissolved Oxygen Temperature	EPA approved
Issaquah Creek Basin	Fecal Coliform	EPA approved
Lake Sawyer	Total Phosphorus	EPA approved
Little Bear Creek	Fecal Coliform	EPA approved
Newaukum Creek	Bacteria	Under development
North Creek	Fecal Coliform	EPA approved and Has an implementation plan
Pipers Creek	Fecal Coliform	EPA approved
Sammamish River	Dissolved Oxygen Temperature	Under development
Snoqualmie River	Ammonia-N BOD (5-day) Fecal Coliform	EPA approved
Snoqualmie River	Temperature	EPA approved and Has an implementation plan
Soos Creek	Fecal Coliform	Under Development
Soos Creek	Aquatic Habitat Dissolved Oxygen Temperature	Under Development

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APPENDIX E: LABORATORY SOIL TEST RESULTS

Appendix E

Laboratory Soil Test Results

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Jun 27 2022
Shannon & Wilson
400 n. 34th St
Suite 100
Seattle, WA 98103
Attention: SARAH CORBIN

Dear SARAH CORBIN:

Enclosed please find the analytical data for your PORT T-91 DECANT FACILITY DELIN. project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
S-1	Soil	22-A009390	Sand/Silt/Clay, CONV, OM std mth

Your sample was received on Thursday, June 9, 2022. At the time of receipt, the sample was logged in and properly maintained prior to the subsequent analysis.

The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,

Aaron W. Young
Vice President

Project #: 103083-002
PO Number: 103083-002

BACT = Bacteriological	MET = Metals	NUT=Nutrients	MIN=Minerals
CONV = Conventionals	ORG = Organics	DEM=Demand	

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

ANALYSIS REPORT

Shannon & Wilson
400 n. 34th St
Seattle, WA 98103
Attention: SARAH CORBIN
Project Name: PORT T-91 DECANT FACILITY DELIN.
Project #: 103083-002
PO Number: 103083-002
All results reported on a dry weight basis.

Date Received: 06/09/22
Date Reported: 6/27/22

AMTEST Identification Number **22-A009390**
Client Identification **S-1**
Sampling Date **05/23/22**

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Solids	44.0	%		0.1	SM 2540G	FG	06/10/22
Organic Matter	88.4	%			SM 2540G	FG	06/13/22

Sand, Silt and Clay

PARAMETER	SIZE	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Sand	0.053-2.0 mm	25.8	%		0.10	ASTM D422	SF	06/15/22
Sand breakdown								
- Very Coarse Sand	1.0-2.0 mm	3.50	%		0.10	ASTM D422	SF	06/15/22
- Coarse Sand	0.5-1.0 mm	4.70	%		0.10	ASTM D422	SF	06/15/22
- Medium Sand	0.25-0.5 mm	5.90	%		0.10	ASTM D422	SF	06/15/22
- Fine Sand	0.125-0.25 mm	6.30	%		0.10	ASTM D422	SF	06/15/22
- Very Fine Sand	0.053-0.125 mm	5.40	%		0.10	ASTM D422	SF	06/15/22
Silt	0.004-0.053 mm	52.3	%		0.10	ASTM D422	SF	06/15/22
Clay	< 0.004 mm	20.5	%		0.10	ASTM D422	SF	06/15/22
Silt & Clay	< 0.053 mm	72.7	%		0.10	ASTM D422	SF	06/15/22
Gravel	> 2.0 mm	1.50	%		0.10	ASTM D422	SF	06/15/22
Soil Texture = Silt Loam								

Aaron W. Young
Vice President

Important Information

About Your Wetland Delineation/Mitigation and/or Stream Assessment Report

IMPORTANT INFORMATION

IMPORTANT INFORMATION

A WETLAND/STREAM REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

Wetland delineation/mitigation and stream classification reports are based on a unique set of project-specific factors. These typically include the general nature of the project and property involved, its size and configuration, historical use and practice, the location of the project on the site and its orientation, and the level of additional risk the client assumed by virtue of limitations imposed upon the exploratory program. The jurisdiction of any particular wetland/stream is determined by the regulatory authority(ies) issuing the permit(s). As a result, one or more agencies will have jurisdiction over a particular wetland or stream with sometimes confusing regulations. It is necessary to involve a consultant who understands which agency(ies) has jurisdiction over a particular wetland/stream and what the agency(ies) permitting requirements are for that wetland/stream. To help reduce or avoid potential costly problems, have the consultant determine how any factors or regulations (which can change subsequent to the report) may affect the recommendations.

Unless your consultant indicates otherwise, your report should not be used:

- If the size or configuration of the proposed project is altered.
- If the location or orientation of the proposed project is modified.
- If there is a change of ownership.
- For application to an adjacent site.
- For construction at an adjacent site or on site.
- Following floods, earthquakes, or other acts of nature.

Wetland/stream consultants cannot accept responsibility for problems that may develop if they are not consulted after factors considered in their reports have changed. Therefore, it is incumbent upon you to notify your consultant of any factors that may have changed prior to submission of our final report.

Wetland boundaries identified and stream classifications made by Shannon & Wilson are considered preliminary until validated by the U.S. Army Corps of Engineers (Corps) and/or the local jurisdictional agency. Validation by the regulating agency(ies) provides a certification, usually written, that the wetland boundaries verified are the boundaries that will be regulated by the agency(ies) until a specified date, or until the regulations are modified, and that the stream has been properly classified. Only the regulating agency(ies) can provide this certification.

MOST WETLAND/STREAM "FINDINGS" ARE PROFESSIONAL ESTIMATES.

Site exploration identifies wetland/stream conditions at only those points where samples are taken and when they are taken, but the physical means of obtaining data preclude the determination of precise conditions. Consequently, the information obtained is intended to be sufficiently accurate for design but is subject to interpretation. Additionally, data derived through sampling and subsequent laboratory testing are extrapolated by the consultant who then renders an opinion about overall conditions, the likely reaction to proposed construction activity, and/or appropriate design. Even under optimal circumstances, actual conditions may differ from those thought to exist because no consultant, no matter how qualified, and no exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock, and time. Nothing can be done to prevent the unanticipated, but steps can be taken to help reduce their impacts. For this reason, most experienced owners retain

IMPORTANT INFORMATION

their consultants through the construction or wetland mitigation/stream classification stage to identify variances, conduct additional evaluations that may be needed, and recommend solutions to problems encountered on site.

WETLAND/STREAM CONDITIONS CAN CHANGE.

Since natural systems are dynamic systems affected by both natural processes and human activities, changes in wetland boundaries and stream conditions may be expected. Therefore, delineated wetland boundaries and stream classifications cannot remain valid for an indefinite period of time. The Corps typically recognizes the validity of wetland delineations for a period of five years after completion. Some city and county agencies recognize the validity of wetland delineations for a period of two years. If a period of years has passed since the wetland/stream report was completed, the owner is advised to have the consultant reexamine the wetland/stream to determine if the classification is still accurate.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or water fluctuations may also affect conditions and, thus, the continuing adequacy of the wetland/stream report. The consultant should be kept apprised of any such events and consulted to determine if additional evaluation is necessary.

THE WETLAND/STREAM REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when plans are developed based on misinterpretation of a wetland/stream report. To help avoid these problems, the consultant should be retained to work with other appropriate professionals to explain relevant wetland, stream, geological, and other findings, and to review the adequacy of plans and specifications relative to these issues.

DATA FORMS SHOULD NOT BE SEPARATED FROM THE REPORT.

Final data forms are developed by the consultant based on interpretation of field sheets (assembled by site personnel) and laboratory evaluation of field samples. Only final data forms are customarily included in a report. These data forms should not, under any circumstances, be drawn for inclusion in other drawings, because drafters may commit errors or omissions in the transfer process. Although photographic reproduction eliminates this problem, it does nothing to reduce the possibility of misinterpreting the forms. When this occurs, delays, disputes, and unanticipated costs are frequently the result.

To reduce the likelihood of data from misinterpretation, contractors, engineers, and planners should be given ready access to the complete report. Those who do not provide such access may proceed under the mistaken impression that simply disclaiming responsibility for the accuracy of information always insulates them from attendant liability. Providing the best available information to contractors, engineers, and planners helps prevent costly problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because a wetland delineation/stream classification is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in written transmittals. These are not exculpatory clauses designed to foist the consultant's liabilities onto someone else; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

THERE MAY BE OTHER STEPS YOU CAN TAKE TO REDUCE RISK.

Your consultant will be pleased to discuss other techniques or designs that can be employed to mitigate the risk of delays and to provide a variety of alternatives that may be beneficial to your project.

Contact your consultant for further information.

Appendix C

Environmental Investigation Work Plan

SUBMITTED TO:
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BY:
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GROUNDWATER AND SOIL ENVIRONMENTAL INVESTIGATION REPORT

Terminal 91 – Phase 1 and Phase 2 Areas

SEATTLE, WASHINGTON

SHANNON & WILSON

February 16, 2023
Shannon & Wilson No: 103083-003

Submitted To: Mackenzie Engineering, Inc.
500 Union Street, Suite 410
Seattle, WA 98101
Attn: Ms. Rachel Hedlof

Subject: GROUNDWATER AND SOIL ENVIRONMENTAL INVESTIGATION REPORT, TERMINAL 91 – PHASE 1 AND PHASE 2 AREAS, SEATTLE, WASHINGTON

Shannon & Wilson prepared this Environmental Investigation Report and participated in this project as a subconsultant to Mackenzie Engineering, Inc. Work was authorized on June 1, 2022, as part of Fee Modification #1 to Service Directive #1, Port of Seattle Contract #P-00320624.

We appreciate the opportunity to be of service to you on this project. If you have questions concerning this report, or we may be of further service, please contact us.

Sincerely,

SHANNON & WILSON

David J. Randall
Senior Environmental Scientist

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µg/L	microgram per liter
°C	degrees Celsius
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
cPAHs	carcinogenic polycycle aromatic hydrocarbons
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
IDW	investigation-derived waste
mg/kg	milligram per kilogram
MTCA	Model Toxics Control Act
NWTPH-Dx	Northwest Total Petroleum Hydrocarbon-Diesel Extended
NWTPH-Gx	Northwest Total Petroleum Hydrocarbon-Gasoline Extended
PAHs	polycyclic aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PID	photoionization detector
Port	Port of Seattle
RCRA	Resource Conservation and Recovery Act
Site	Terminal 91 property
TEF	toxicity equivalency factor
TPH	total petroleum hydrocarbons
UST	underground storage tank
VOCs	volatile organic compounds

1 INTRODUCTION

1.1 Project Information

The Port of Seattle (Port) is planning redevelopment of portions of Terminal 91, located in the Interbay neighborhood of Seattle, Washington. Redevelopment would involve two construction phases. Both the Phase 1 and Phase 2 areas are situated in the northeast corner of the Terminal 91 property (Site). Previous investigations conducted at the Site identified petroleum hydrocarbon-related soil and groundwater contamination. Work recently completed in 2020 by Wood Environment & Infrastructure Solutions, Inc. further delineated diesel-range hydrocarbon contamination in the groundwater in the Phase 1 area.

This report presents the results of groundwater and soil sampling performed in the redevelopment area by Shannon & Wilson. Figure 1 shows the general location of the proposed project. Based on preliminary design information, the Phase 1 and Phase 2 areas are roughly 100,000 square feet and 200,000 square feet in size, respectively. The overall project site is relatively flat; the Phase 1 area currently consists of an asphalt parking lot, and the Phase 2 area is currently paved with asphalt or concrete and includes several structures present in the northern portion.

1.2 Purpose and Scope of Services

The purpose of this environmental investigation was to assess contaminant conditions in the Phase 1 and Phase 2 areas.

The information presented in this report can be used in the planning and execution of the redevelopment of the two areas by identifying contaminated soil and groundwater that may require special handling if excavated or otherwise generated during construction, such as by construction dewatering. The information from our investigation will help to identify disposal sites for soils and discharge options for potential construction dewatering, and allow for the planning of occupational health and safety protection of site workers.

As outlined in the Environmental Investigation Work Plan prepared by Shannon & Wilson, the scope of services included the following:

- In the Phase 1 area, we sampled groundwater in monitoring wells MW-1, MW-2, and MW-3 to verify the presence of diesel-range hydrocarbon contamination initially detected in MW-2 by Wood in 2020, and to further characterize potential impacts and groundwater flow dynamics.

- To assess potential soil impacts in the Phase 2 area, a total of 18 borings were advanced to approximately 15 feet below ground surface (bgs). Up to two soil samples were collected from each boring.
- In 6 of the 18 borings advanced in the Phase 2 area, shallow groundwater monitoring wells were installed and sampled to assess potential impacts and groundwater flow dynamics.
- Select soil and groundwater samples were submitted to the analytical laboratory for analytical testing for petroleum hydrocarbons and other potential contaminants of interest, including metals, polychlorinated biphenyls (PCBs), volatile organic compounds, and polycyclic aromatic hydrocarbons (PAHs).
- Generated soil and groundwater investigation-derived waste (IDW) was stored in 55-gallon drums and properly disposed of off-site.

Field methodology, procedures, and the analytical results are presented below in Sections 2 through 4. The locations of all the completed borings and monitoring wells are shown in Figure 2.

1.3 Site Background

A review of previous investigations and available historical documents was completed and presented in the Environmental Investigation Work Plan prepared for the project. Following is a summary of previous investigations. Additional information is presented in the Environmental Investigation Work Plan.

Between 2007 and 2020, several subsurface soil and groundwater investigations were completed in the Phase 1 and Phase 2 areas for the purpose of characterization prior to previously planned construction and development projects. Specifically, soil and groundwater investigations were conducted around historic features as identified in a U.S. Environmental Protection Agency (EPA) Brownfields Assessment (Pinnacle Geosciences, Inc., 2007). Some of the features identified in the previous investigations included the Building-136 gasoline underground storage tank (UST) area, an incinerator and incinerator UST area, a drum storage area, the so-called Red Label Storage Area, and Area of Contamination (AOC) 2 – Former Navy Fuel Station and the adjacent BNSF Rail Yard. In addition, fill material of an unknown source was historically used at the site.

Investigations focused on these areas as part of a proposed infrastructure upgrade project in northern portion of the Phase 2 area, along with a limited soil and groundwater investigation completed in the Phase 1 area.

Adjacent properties to the east and northeast of the Phase 1 area and east of the Phase 2 area include Seattle Public Utilities Halladay Decant Facility, the BNSF tracks and Balmer the Interbay Railroad Yards, and the former Interbay Sanitary Landfill. Over the years, numerous spills of diesel fuel have been documented along the BNSF tracks and associated with the Balmer and Interbay rail yards. Diesel- and lube-oil-range hydrocarbons, along with total arsenic, were detected in the groundwater during the 2020 investigation completed in the Phase 1 area, and the petroleum likely is representative of contamination that migrated onto the Port property from the railroad. Arsenic is likely and artifact of redox conditions due to the petroleum contamination. Contaminants associated with the former landfill may include halogenated volatile organic compounds (VOCs), priority pollutant metals, PAHs, and pesticides. In addition, the Phase 1 area and approximately half of the Phase 2 area are located within the 1,000-foot methane buffer zone that currently surrounds the landfill as defined in the City of Seattle's Critical Areas Ordinance.

2 FIELD EXPLORATION METHODOLOGY

Between August 10 and 22, 2022, Shannon & Wilson field representatives completed field activities, as outlined in the Investigation Work Plan. These activities included the collection of groundwater samples from three existing monitoring wells located in the Phase 1 area, along with the completion of up to 18 direct-push explorations in the Phase 2 area. Monitoring wells were installed at 6 of the 18 locations. Up to two soil samples were collected from each of the explorations and one groundwater sample was collected from each of the newly installed monitoring wells.

Prior to the start of field activities, Shannon & Wilson contacted the Washington Utility Notification Center and placed a call before you dig request. We also contacted Mark Bell with the Port and contracted with Applied Professional Services of North Bend, Washington, to clear the 18 proposed borings within the Phase 2 area for utilities.

2.1 Phase 1 Area Monitoring Well Sampling

In the Phase 1 area, groundwater samples were collected from monitoring wells MW-1, MW-2, and MW-3. These wells were previously installed by Wood. The location of all the existing Wood wells in the Phase 1 area is presented in Figure 2.

Prior to groundwater sampling, the wells were inspected for the presence of a floating free-product layer and the depth to groundwater was measured at each location. In addition, to assess for potential landfill gas migration from the former Interbay Landfill, a combustible gas meter was used to monitor for the presence of methane in each of the well boxes in the Phase I area. The combustible gas meter did not detect methane gas in any of the well boxes; however, methane readings were collected from inside each of the well casing that ranged from 0.3% in MW-5 to 8.0% in MW-1.

Groundwater samples were collected from the three existing monitoring wells using low-flow sample procedures with a peristaltic pump and disposable high-density polyethylene tubing at each location. Each monitoring well was purged at a relatively slow, steady rate until field parameters including pH, conductivity, turbidity, dissolved oxygen, and total dissolved solids had reached relatively constant values or at least three well casing volumes of water had been removed. Field parameters were measured with a YSI 556 Handheld Multiparameter fitted with a flow-through cell. Stabilization was considered complete during sampling when all the parameters were with in ±10% for three consecutive readings.

Once field parameters had stabilized, the flow-through cell was disconnected and the sample containers were filled directly from the high-density polyethylene tubing. The groundwater was placed into laboratory-supplied glassware sequentially with the most volatile target analytes collected first. This was conducted to decrease analyte volatility and to minimize the loss of the analyte through volatilization when exposed to the atmosphere. The laboratory containers were then sealed in plastic bags and placed in a cooler with ice and maintained at approximately 4 degrees Celsius (°C) for transport. Sample information was recorded on chain of custody (COC) forms and the samples were transported under COC procedures to Fremont Analytical.

All reusable sampling equipment that came in contact with the monitoring wells or samples was decontaminated prior to each use and in between sampling at each monitoring wells prior to groundwater sampling.

For purposes of this report, the collected groundwater samples were identified as P1-MW-1, P1-MW-2, and P1-MW-3.

Field measurements, including the depth to groundwater and methane readings recorded during the investigation, are presented in Appendix A. Groundwater IDW generated during sampling was placed into a 55-gallon drum and stored onsite prior to pick up and disposal as arranged by Shannon & Wilson.

2.2 Phase 2 Area Direct-Push Sampling

Soil sampling was completed in the Phase 2 area using direct-push methods at each of the 18 exploration locations. As part of the investigation, monitoring wells were installed at 6 of the 18 locations. The explorations were designated as P2-GP-1 through P2-GP-12 and at the locations were monitoring wells were installed as P2-MW-1 through P2-MW-6. Additional information regarding the installation and sampling of the monitoring wells is discussed below.

At each location, the direct-push explorations were completed using a truck-mounted geoprobe. The geoprobe advances a 2-inch-diameter, 4-foot-long probe sampler using percussive force by driving the direct-push sampler into the undisturbed soil. The probe sampler was fitted with removable plastic sampling (sleeve) tubes that were advanced into the subsurface and retrieved. The direct-push equipment relies on static weight combined with percussion as the energy for advancement of a tool string (series of hollow rods).

Soil samples were collected continuously from the ground surface to the total depth of the exploration, approximately 15 feet bgs. With the exception of one location, P2-GP-3, up to two subsurface soil samples were collected from each exploration. A third sample was collected from geoprobe boring P2-GP-3. The geoprobe activities were completed by Holt Services of Edgewood, Washington, under subcontract agreement with Shannon & Wilson.

A field representative from Shannon & Wilson was present during the direct-push sampling to document and retrieve representative soil samples for laboratory testing and classification. Upon retrieval of the soil, the plastic tube was sliced open. Soil samples collected from each exploration were also field-screened for the potential presence of contamination using visual and olfactory observations along with a photoionization detector (PID) fitted with an 11.7 eV lamp. PID measurements were collected during the push probe explorations to screen for volatile organic vapors such as gasoline and solvents. Typically, decaying organics can also potentially elevate PID measurements. PID measurements were obtained by passing the instrument directly over the soil column removed via the push probe. Soil classification, PID measurements, and other observations were noted on soil boring logs presented in Appendix B. Periodic screening for methane using the combustible gas meter was conducted during the investigation. Readings were taken from each of the soil tubes and in and around the geoprobe boring as a safety precaution. No detectable readings of methane were observed during drilling.

Shallow soil samples were generally collected at depths ranging from 0.6 foot bgs to 1.8 feet bgs. A second soil sample was collected at the approximate depth of the groundwater-soil interface in each exploration, which generally ranged from 5.4 feet bgs to 7.5 feet bgs. Based on field screening and presence of wood with a creosote odor, a third sample was collected from exploration P2-GP-3 at approximately 13.5 feet bgs.

The samples collected for laboratory analysis were placed into laboratory-supplied glassware. Each sample was collected and containerized sequentially with the most volatile target analytes collected first. The Shannon & Wilson field representative collected the environmental soil samples by first donning a pair of disposable nitrile gloves and using a disposable sample plunger we collected sample aliquots to deposit them in two laboratory-supplied and pre-weighed volatile organic analysis vials in accordance with the EPA Method 5035 sampling procedure. A stainless steel spoon was used to fill a clean, laboratory-supplied, 8-ounce sample jar. The jar was filled in lifts and compacted to reduce pore and headspace for volatile losses. Upon completion of sampling, the samples were sealed in plastic bags and placed in to a cooler and maintained on ice at 4°C. Sample information was recorded on COC forms and the samples were transported under COC procedures to Fremont Analytical of Seattle, Washington.

2.3 Phase 2 Area Monitoring Well Installation and Sampling

As part of the investigation in the Phase 2 area, 6 of the 18 explorations, P2-MW-1 through P2-MW-6, were completed as 2-inch-diameter monitoring wells following the completion of the soil classification and sampling. Each exploration was advanced to approximately 15 feet bgs at each location.

The wells were constructed using a standard 2-inch-diameter Schedule 40 polyvinyl chloride casing pre-packed well screen. Each pre-pack well screen contained a sand pack medium held in place by a mesh screen secured to the outside of the well casing. Ten- (10-) foot well screen intervals were installed in each well at intervals ranging from approximately 3 to 5 feet bgs to 13 to 15 feet bgs. Each well was completed with a 2-foot bentonite seal and a concrete set flush mount monument and capped with a 2-inch expandable locking cap. The wells were completed in compliance with the Washington State standards for resource protection wells (Washington Administrative Code 173-162).

Well construction information and diagrams for each of the six wells is presented in Appendix B. The location of the wells are depicted in Figure 2.

Following the installation of the wells, a Shannon & Wilson field representative developed each well using a pump-and-surge method with tubing and a surge block. The static water level was measured both before and after development. Before development, each well was inspected for the presence of floating free-product. No floating free-product layer was observed in any of the wells. Development was considered complete when the entire screened interval had been surged and little to no sediment remained at the bottom of the well (when the bottom of the well field hard when measured with a tagline). Groundwater IDW generated during development was placed in 55-gallon drum and stored at the site in designated area prior to pick up and disposal. Groundwater IDW generated during sampling was placed into a 55-gallon drum and temporarily stored onsite.

Groundwater sampling was initiated at least 48 hours after well development was completed. Before sampling, the wells were again inspected for the presence of floating free-product layer. No free-product layers were present in any of the wells.

As with the groundwater sampling in the Phase I area, groundwater sampling was conducted using low-flow sample procedures with a peristaltic pump and disposable high-density polyethylene tubing at each location. Each monitoring well was purged until parameters stabilized and then the sample containers filled directly from the tubing. The laboratory containers were then sealed in plastic bags and placed in a cooler with ice and maintained at approximately 4°C for transport. Sample information was recorded on COC forms and the samples were transported under COC procedures to Fremont Analytical.

All reusable sampling equipment that came in contact with the monitoring wells or samples was decontaminated prior to each use and in between sampling at each well. The depth to groundwater was measured at each location during sampling. Table A-1 in Appendix A provides the depth to groundwater for each monitoring well. The depth to groundwater is presented in Figure 2.

As with other IDW, groundwater IDW generated during sampling was placed in to a 55-gallon drum and temporarily stored onsite until pickup and disposal as arranged by Shannon & Wilson.

3 ANALYTICAL METHOD

A total of 37 soil samples and 9 groundwater samples were collected for analytical analysis. Soil samples were selected for analysis based on field screening results and/or depth to groundwater (the interval directly above groundwater being considered the mostly likely to be impacted in the absence of field indications of contamination). A single groundwater sample was collected from three wells in the Phase 1 area and from each of the wells installed as part of this investigation in the Phase 2 area. Table 1 provides a sample summary for each of the samples collected during the investigation.

3.1 Groundwater

Groundwater samples collected in the Phase 1 area were analyzed for the following:

- Diesel- and lube-oil-range organics using the Northwest Total Petroleum Hydrocarbon-Diesel Extended (NWTPH-Dx) method, with and without the silica gel preparation method, and

- Total and Dissolved Priority Pollutant metals (arsenic, antimony, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc) by EPA Methods 200.8/7470A or equivalent.

Groundwater samples collected in the Phase 2 area were analyzed for the following:

- Diesel- and lube-oil-range organics using the NWTPH-Dx method;
- Gasoline-range organics and benzene, toluene, ethylbenzene, and xylenes (BTEX) using the NWTPH-Gasoline Extended (Gx);
- Total and Dissolved Priority Pollutant metals (arsenic, antimony, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc) by EPA Methods 200.8/7470A or equivalent;
- VOCs by EPA Method 8260;
- PCBs by EPA Method 8082; and
- PAHs using EPA Method 8270D-SIM.

3.2 Soil

Each soil sample collected from the borings in the Phase 2 area were analyzed for the following:

- Diesel- and lube-oil-range organics using the NWTPH-Dx method;
- Gasoline-range organics and BTEX using the NWTPH-Gx method;
- Resource Conservation and Recovery Act (RCRA) 8 metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) plus copper, nickel, and zinc by EPA Methods 200.8/7470A or equivalent;
- VOCs by EPA Method 8260;
- PCBs by EPA Method 8082; and
- PAHs using EPA Method 8270-SIM.

These analytes were chosen based on history of the Phase 1 and Phase 2 areas and previous environmental investigations conducted. The groundwater samples collected in the Phase 1 area were analyzed for diesel- and heavy-oil-range TPH to verify the presence of hydrocarbon contamination initially detected in 2020.

Groundwater samples collected from monitoring wells in the Phase 2 area were analyzed for analytes typically required by regulatory agencies for discharge to a combined or storm sewer. The soil samples were analyzed to provide information that could be useful in identifying soils requiring special handling and disposal and for health and safety purposes.

4 GROUNDWATER AND SOIL ANALYTICAL RESULTS

Analytical results of the groundwater and soil samples collected during the investigation are presented in Tables 2 through 6. Table-2 provide summaries of the detected groundwater analytical results for the Phase 1 and Phase 2 areas. Tables-3 through 6 provide summaries of the detected soil analytical results for the Phase 2 area. The analytical results were compared to the Model Toxics Control Act (MTCA) (Washington Administrative Code Chapter 173-340) Method A and Method B unrestricted-use groundwater and soil cleanup levels. These are standard cleanup levels that can be used to assist in the off-site disposal of excess materials and liquids that maybe generated during the redevelopment of the Phase 1 and Phase 2 areas.

Analytical Laboratory Reports are presented in Appendix C

4.1.1 Groundwater Results

The groundwater analytical results are presented in Table 2. A discussion of the detected parameters is summarized below for the Phase 1 and Phase 2 areas. Where no criterion is established under MTCA Method A for a parameter, MTCA Method B values are used:

4.1.1.1 Phase 1 Area Results (MW-1, MW-2, and MW-3)

- Diesel-range petroleum hydrocarbons were detected in each of the monitoring wells sampled in the Phase 1 area. Diesel was detected at concentrations of 180 micrograms per liter (µg/L) in MW-1, 1,410 µg/L in MW-2, and 346 µg/L in MW-3 at each well. The detected concentrations exceeded the Method A cleanup level of 500 µg/L in the sample collected from MW-2 only.
- All three groundwater samples in the Phase 1 area were also analyzed using the silica gel cleanup method. Diesel was detected at concentrations of 97.5 µg/L in MW-1, 686 µg/L in MW-2, and 109 µg/L in MW-3 at each well. The detected concentrations exceeded the Method A cleanup level of 500 µg/L in the sample collected from MW-2 only. Because the diesel concentration was significantly higher in the sample not subjected to silica gel cleanup, it suggests that the hydrocarbons are degraded and a significant portion of the diesel-range hydrocarbons found are polar metabolites from biodegradation.
- No lube-oil-range petroleum hydrocarbons were detected in any of the groundwater samples collected in the Phase 1 area.
- Of the analyzed total and dissolved Priority Pollutant Metals, antimony, beryllium, cadmium, lead, mercury, selenium, silver, thallium, and zinc were not detected in the total phase (i.e., no filtering to remove suspended sediment). Beryllium, cadmium,

copper, lead, mercury, selenium, silver, thallium, and zinc were detected in the dissolved phase where filtered to removed suspended sediment.

- Dissolved antimony was only detected in the sample collected from MW-3 at a concentration of 0.32 µg/L. The detected concentration was well below the Method B cleanup level of 6.4 µg/L.
- Total arsenic was detected at concentrations of 4.74 µg/L, 34.6 µg/L, and 11.5 µg/L in groundwater samples collected from MW-1, MW-2, and MW-3, respectively. The detected concentrations in MW-2 and MW-3 both exceed the Method A cleanup level of 8 µg/L but are considered representative of naturally occurring background concentrations.
- Dissolved arsenic was detected at concentrations of 4.4 µg/L, 34 µg/L, and 12.2 µg/L in groundwater samples collected from MW-1, MW-2, and MW-3, respectively. The detected concentrations in MW-2 and MW-3 both exceed the Method A cleanup level of 8 µg/L but again, are considered representative of naturally occurring background concentrations.
- Total chromium was only detected in the sample collected from MW-1 at a concentration of 1.75 µg/L. The detected concentration was well below the Method B cleanup level of 50 µg/L.
- Dissolved chromium was detected at concentrations of 1.71 µg/L, 1.67 µg/L, and 1.84 µg/L in groundwater samples collected from MW-1, MW-2, and MW-3, respectively. None of the detected concentrations exceed the Method A cleanup level of 50 µg/L.
- Total copper was only detected in the sample collected from MW-1 at a concentration of 3.14 µg/L. The detected concentration was well below the Method B cleanup level of 640 ug/L.

4.1.1.2 Phase 2 Area Results (P2-MW-1, P2-MW-2, P2-MW-3 P2-MW-4, P2-MW-5, and P2-MW-6)

- Diesel-range petroleum hydrocarbons were detected in groundwater samples collected from four of the six monitoring wells in the Phase 2 area. Diesel was detected at concentrations of 147 µg/L in P2-MW-1, 1,410 µg/L in P2-MW-4, 155 µg/L in P2-MW-5, and 1,680 µg/L in P2-MW-6. Detected concentrations at two of the wells exceeded the Method A cleanup level of 500 µg/L.
- No lube-oil-range petroleum hydrocarbons were detected in any of the groundwater samples collected in the Phase 2 area.
- No gasoline-range petroleum hydrocarbons were detected in any of the groundwater samples collected in the Phase 2 area.
- No PCBs were detected in any of the groundwater samples collected in the Phase 2 area.
- Of the analyzed total and dissolved Priority Pollutant Metals, antimony, beryllium, cadmium, mercury, selenium, silver, and thallium were not detected in the total metals

phase. Beryllium, cadmium, copper, lead, mercury, selenium, silver, thallium, and zinc were not found in the dissolved metals phase.

- Dissolved antimony was detected in three of the six samples collected. It was detected at concentrations of 0.35 µg/L (P2-MW-1:GW), 0.381 µg/L (P2-MW-3:GW), and 0.428 µg/L (P2-MW-6:GW). The detected concentrations were well below the Method B cleanup level of 6.4 µg/L.
- Total arsenic was detected in all six samples collected from monitoring wells in the Phase 2 area. It was detected at concentrations of 12.3 µg/L (P2-MW-1:GW), 26.7 µg/L (P2-MW-2:GW), 3.82 µg/L (P2-MW-3:GW), 1.28 µg/L (P2-MW-4:GW), 6.32 µg/L (P2-MW-5:GW), and 149 µg/L (P2-MW-6:GW). The detected concentration collected from monitoring wells P2-MW-1, P2-MW-2, and P2-MW-6 exceed the Method A cleanup level of 8 µg/L.
- Dissolved arsenic was detected in all six samples collected from monitoring wells in the Phase 2 area. It was detected at concentrations of 11.2 µg/L (P2-MW-1:GW), 30.9 µg/L (P2-MW-2:GW), 3.42 µg/L (P2-MW-3:GW), 1.1 µg/L (P2-MW-4:GW), 7.33 µg/L (P2-MW-5:GW), and 141 µg/L (P2-MW-6:GW). The detected concentrations collected from monitoring wells P2-MW-1, P2-MW-2, and P2-MW-6 exceed the Method A cleanup level of 8 µg/L. Again, we consider these concentrations indicative of naturally occurring background.
- Total chromium was only detected in two of the six samples collected. It was detected at concentrations of 24.1 µg/L (P2-MW-1:GW) and 1.01 µg/L (P2-MW-2:GW). The detected concentrations were well below the Method B cleanup level of 50 µg/L.
- Dissolved chromium was detected at in one of the six samples collected at a concentration of 0.752, 1.67, and 1.84 µg/L in groundwater samples collected from monitoring well P2-MW-5. The detected concentration was well below the Method B cleanup level of 50 µg/L
- Total copper was only detected in the sample collected from P2-MW-1 at a concentration of 38.6 µg/L. The detected concentration was well below the Method B cleanup level of 640 µg/L.
- Total lead was detected in two of the six samples collected. It was detected at concentrations of 21.9 µg/L (P2-MW-1:GW) and 1.39 µg/L (P2-MW-6:GW) in samples collected from monitoring wells P2-MW-1 and P2-MW-6 in the Phase 2 area. The detected concentration collected from monitoring well P2-MW-1 exceeded the Method A cleanup level of 15 µg/L.
- Total nickel was detected in two of the six samples collected from the monitoring wells in the Phase 2 area. Nickel was detected at concentrations of 37.4 µg/L (P2-MW-1:GW) and 3.21 µg/L (P2-MW-2:GW). The detected concentrations were well below the Method B cleanup level of 320 µg/L.
- Dissolved nickel was detected in three of the six samples collected from the groundwater in the Phase 2 area. Nickel was detected at concentrations of 3.46 µg/L

(P2-MW-1:GW), 2.31 µg/L (P2-MW-2:GW), and 2.24 ug/L (P2-MW-6:6). The detected concentrations were well below the Method B cleanup level of 320 µg/L.

- Total zinc was detected in three of the six samples collected from the monitoring wells in the Phase 2 area. Zinc was detected at concentrations of 62.2 µg/L (P2-MW-1:GW), 3.39 µg/L (P2-MW-4:GW), and 4.07 µg/L (GP-2-MW-6:GW). The detected concentrations were well below the Method B cleanup level of 4,800 µg/L.

- With the exception of chloroform, no other VOCs were detected in any of the groundwater samples collected in the Phase 2 area. Chloroform was detected in at a concentration of 0.975 µg/L in the groundwater sample collected from monitoring well P2-MW-1. The detected concentration does not exceed the Method B cleanup level of 80 µg/L.
- PAHs, including naphthalene, acenaphthene, phenanthrene, anthracene, and fluoranthene, were detected in the groundwater samples collected in the Phase 2 area.
  - Naphthalene was detected at concentrations of 0.151 µg/L (P2-MW-3:GW), 0.211 µg/L (P2-MW-4:GW), and 4.07 µg/L (P2-MW-6:GW). The detected concentrations did not exceed the Method A cleanup level of 160 µg/L.
  - Acenaphthene was detected at concentrations of 0.555 µg/L (P2-MW-4:GW) and 0.499 µg/L (P2-MW-6:GW). The detected concentrations did not exceed the Method B cleanup level of 480 µg/L.
  - Phenanthrene was detected at concentrations of 0.131 µg/L (P2-MW-3:GW), 0.191 µg/L (P2-MW-4:GW), and 0.102 µg/L (P2-MW-6:GW). Currently, the Washington State Department of Ecology (Ecology) does not have a cleanup level established for Phenanthrene.
  - Anthracene was detected at concentrations of 0.105 µg/L (P2-MW-4:GW) and 0.149 µg/L (P2-MW-6:GW). The detected concentrations did not exceed the Method B cleanup level of 2,4000 µg/L.
  - Fluoranthene was detected at a concentration of 0.123 µg/L (P2-MW-4:GW) in the groundwater sample collected from monitoring well P2-MW-4:GW. The detected concentration did not exceed the Method B cleanup level of 640 µg/L.

Figure 3 shows the location of each of the monitoring wells sampled during the project and associated total petroleum hydrocarbon and arsenic analytical detections per location.

4.1.2 Soil Results

The soil analytical results are presented in Tables 3 through 6 and a breakdown of the detected parameters is summarized below. Where no criterion is established under MTCA Method A for a parameter, MTCA Method B values are used:

- Diesel-range petroleum hydrocarbons were only detected in one of the 37 soil samples collected in the Phase 2 area. It was detected in sample P2-GP-3:13.5 (boring P2-GP-3) at a concentration of 163 milligrams per kilogram (mg/kg). The detected concentration did not exceed the Method A cleanup level of 2,000 mg/kg.

- Lube-oil-range petroleum hydrocarbons were detected in 10 of the 37 samples collected in the Phase 2 area. The detected concentrations ranged from 28.9 mg/kg (P2-MW-4:6.0) to 4,070 mg/kg (P2-GP-11:1.6). With the expectation of the sample collected from boring P2-GP-11, all the other detections did not exceed the Method A cleanup level of 2,000 mg/kg. Lube oil was detected in the following borings:
  - P2-MW-1 (P2-MW-1:0.8),
  - P2-MW-2 (P2-MW-2:0.6),
  - P2-MW-4 (P2-MW-4:1.0 and P2-MW-4:6.0),
  - P2-MW-6 (P2-MW-6:1.0 and P2-MW-6:5.6),
  - P2-GP-3 (P2-GP-3:1.1),
  - P2-GP-4 (P2-GP-4:1.0), and
  - P2-GP-11 (P2-GP-11:1.6).
- Of the 37 samples analyzed for the presence of gasoline-range petroleum hydrocarbons, gasoline was detected in five of the samples collected. One of the samples (P2-GP-3:13.5) contained gasoline at a concentration of 5,730 mg/kg, which exceeds the Method A cleanup level of 100 mg/kg. The four other samples had concentrations ranging from 3.01 mg/kg (P2-MW-4:1.0) to 7.19 mg/kg (P2-MW-6:1.0). Gasoline was detected in the following borings:
  - P2-MW-4 (P2-MW-4:1.0 and P2-MW-4:6.0),
  - P2-MW-5 (P2-MW-5:1.8),
  - P2-MW-6 (P2-MW-6:1.0), and
  - P2-GP-3 (P2-GP-3:13.5).
- No PCBs were detected in any of the samples analyzed for the investigation.
- Low-level concentrations of VOCs were detected in 6 of the 37 samples collected in the Phase 2 area. The list of detected VOCs by boring:
  - 1,2,4-Trimethylbenzene (P2-MW-4, P2-MW-5, P2-MW-6, and P2-GP-3),
  - Chloromethane (P2-MW-2, P2-GP-11),
  - n-Propylbenzene (P2-MW-6),
  - 1,3,5-Trimethylbenzene (P2-MW-6),
  - Naphthalene (P2-MW-6:1.0 and P2-GP-3),
  - Toluene (P2-MW-5, P2-MW-6),
  - m,p-Xylenes (P2-MW-4, P2-MW-5, P2-MW-6, and P2-GP-3), and
  - o-Xylenes (P2-MW-4, P2-MW-5, P2-MW-6).
- None of the detected VOCs in any of the samples, with the exception of chloromethane and naphthalene, exceeded an available Method A or B cleanup level. Naphthalene was

detected at a concentration of 2,590 mg/kg in sample P2-GP-3:13.5. The detected concentration exceeds the Method A cleanup level of 5 mg/kg. Currently, Ecology does not have a cleanup level established for chloromethane.

- Low levels concentrations of arsenic, barium, chromium, copper, lead, nickel, and zinc were detected in all 37 of the soil samples analyzed from the Phase 2 area borings. Low-level concentrations of cadmium, mercury, selenium, and silver were detected in the following borings:
  - Cadmium (P2-MW-1, P2-MW-4, P2-MW-6, P2-GP-3, P2-GP-10, P2-GP-11, and P2-GP-12),
  - Mercury (P2-MW-4, P2-MW-6, P2-GP-10, P2-GP-11, and P2-GP-12),
  - Selenium (P2-MW-5 and P2-GP-3), and
  - Silver (P2-MW-5, P2-MW-6, and P2-GP-10).
- All of the metals detected concentrations, with the exception of arsenic in sample P2-GP-3:1.1, were below available Method A or B cleanup levels. Arsenic was detected in sample P2-GP-3:1.1 (boring P2-GP-3) at a concentration of 29.9 mg/kg, which exceeds the Method A cleanup level of 20 mg/kg and the naturally occurring background range of 7 mg/kg.
- PAHs, including carcinogenic polycyclic aromatic hydrocarbons (cPAHs), were detected in 21 of the 37 soil samples analyzed in Phase 2 area in the following borings:
  - P2-MW-1 (P2-MW-1:0.8 and P2-MW-1:5.6),
  - P2-MW-2 (P2-MW-2:0.6),
  - P2-MW-4 (P2-MW-4:1.0 and P2-MW-4:6.0),
  - P2-MW-5 (P2-MW-5:1.8),
  - P2-MW-6 (P2-MW-6:1.0 and P2-MW-6:5.6),
  - P2-GP-1 (P2-GP-1:1.0),
  - P2-GP-2 (P2-GP-2:1.0),
  - P2-GP-3 (P2-GP-3:13.5),
  - P2-GP-5 (P2-GP-5:0.8 and P2-GP-5:5.8),
  - P2-GP-6 (P2-GP-6:0.8 and P2-GP-6:5.7),
  - P2-GP-9 (P2-GP-9:5.0),
  - P2-GP-10 (P2-GP-10:1.0 and P2-GP-10:5.9),
  - P2-GP-11 (P2-GP-11:1.6), and
  - P2-GP-12 (P2-GP-12:0.7 and P2-GP-12:5.5).
- Only benzo(a)pyrene (cPAHs) and naphthalene are regulated under MTCA. The PAH analytical results are presented in Table 5.
- Table 6 provides the toxicity equivalency factor (TEF) analysis of the individual cPAH constituents. The TEF method is used to adjust the concentrations of individual cPAHs

such that they are relative in toxicity to benzo(a)pyrene, which is the most carcinogenic of the PAHs. The individual cPAH concentrations are then added together for comparison with the MTCA cleanup level for benzo(a)pyrene.

- Naphthalene was detected at a concentration of 12.6 mg/kg in sample P2-GP-3:6.3 from boring P2-GP-3. The detected concentration exceeds the Method A cleanup level of 5 mg/kg. Benzo(a)pyrene was detected at concentrations of 0.3 mg/kg in sample P2-MW-1:0.8 (boring P2-MW-1), 0.12 mg/kg in sample P2-MW-2:0.6 (boring P2-MW-2), 0.24 mg/kg in sample P2-MW-4:1.0 (boring P2-MW-4), 0.8 mg/kg in sample P2-MW-6:1.0 (boring P2-MW-6), 0.5 mg/kg in sample 0.8 mg/kg in sample P2-GP-3 :13.5 (boring P2-GP-3), and 0.2 mg/kg in sample P2-GP-5:5.8 (boring P2-GP-5). The detected concentration exceeds the Method A cleanup level of 0.1 mg/kg.

Figure 4 shows the location of each of the geoprobes completed for the project and associated diesel-, lube-oil- and gasoline-range hydrocarbons; VOC; and metals analytical detections per location.

Figure 5 shows the location of each of the geoprobes completed for the project and associated PAH analytical detections per location.

Upon receipt of the laboratory analytical results, data validation was completed. Copies of the data validation reports for the groundwater and soil analytical results can be found in Appendix C along with copies of the Fremont Analytical groundwater and soil laboratory reports.

5 DISPOSAL OF INVESTIGATION-DERIVED WASTE

IDW generated during the sampling including soil, decontamination fluids, purge and development water were placed into 55-gallon drums temporarily stored at site pending disposal. On October 18, 2022, ACTenviro of Tacoma, Washington, under subcontract agreement to Shannon & Wilson, removed four drums of solids and liquids as non-hazardous. The drums were taken to the Chemical Waste Management Facility in Arlington, Oregon. Disposal documentation from ACTenviro is provided in Appendix D.

6 CONCLUSIONS

Based on the limited groundwater and soil data collected during this investigation, we offer the following conclusions for the Phase 1 and Phase 2 areas.

6.1 Phase 1 Area – Groundwater

Monitoring well MW-2 was resampled during this investigation to verify the presence of diesel-range petroleum hydrocarbon contamination initially detected in 2020. At that time, the detected concentration exceeded the diesel Method A cleanup level at a concentration of 1,300 ug/L (Wood, 2021). Two additional wells, MW-1 and MW-3, were also resampled during the investigation. All three groundwater samples were analyzed using the NWTPH-Dx method, along with the diesel silica gel cleanup method (see Ecology, 2022) and for total and dissolved priority pollutant metals.

Diesel was detected in all three samples. It only exceeded the Method A cleanup level in monitoring well MW-2. In addition, the sample from MW-2 analyzed with the silica gel cleanup method also exceeded the cleanup level. As previously stated, because the diesel concentration was significantly higher in the sample not subjected to silica gel cleanup, it suggests that the hydrocarbons are degraded and a significant portion of the diesel-range hydrocarbons found are polar metabolites from biodegradation.

Total and dissolved arsenic were present in all three samples exceeding its Method A cleanup level in MW-2 and MW-3 . We consider the arsenic concentrations to be indicative of naturally occurring background, possibly mobilized as the result of reduced geochemical conditions caused by the degradation of petroleum hydrocarbons as substantiated by the presence of polar diesel-range metabolites (Ecology, 2018).

The resampling confirmed the presence of diesel-range hydrocarbon contamination in the groundwater at MW-2 where it was not initially detected during the investigation completed by Wood in 2020. The sampling also identified the presence of diesel-range hydrocarbon in monitoring wells MW-1 and MW-3. At this time, the source of the contamination is unknown in the groundwater at each location, but in the case of MW-1, it may likely be associated with an off-site upgradient source like the adjacent BNSF rail corridor where spills have occurred. Again, because the diesel concentration was significantly higher in the sample not subjected to silica gel cleanup, it suggests that the hydrocarbons are degraded and a significant portion of the diesel-range hydrocarbons found are polar metabolites from biodegradation.

6.2 Phase 2 Area – Soil

Lube-oil-range petroleum hydrocarbons are present in the shallow subsurface soils in the Phase 2 area. The majority of the detected concentrations are below the Method A cleanup level with the exception of one geoprobe location (P2-GP-1l) that exceeded the cleanup level.

Gasoline-range petroleum hydrocarbons and VOCs were present at several locations in the Phase 2 area in shallow subsurface soils and at samples collected at the soil-water interface. Gasoline exceeded the Method A cleanup level at one geoprobe location, P2-GP-3, at depth of 13.5 feet bgs where wood with a creosote odor was encountered. Where detected, none of the VOCs exceeded an available regulatory criterion.

Diesel-range petroleum hydrocarbons were only detected in the 13.5 feet bgs sample collected from geoprobe boring P2-GP-3. The detected concentration did not exceed a regulatory criteria.

Elevated levels of PAHs, including cPAHs, were detected in the shallow subsurface soils and at the soil water interface in the Phase 2 area. Benzo(a)pyrene was detected in six of the samples collected at concentrations that exceed the Method A cleanup level. TEF results corroborated the initial Benzo(a)pyrene analysis. Naphthalene was detected at one location P2-GP-3 at 13.5 feet bgs at a concentration that exceeded the Method A cleanup level.

Numerous total metals were detected in the samples collected from the subsurface soils in the Phase 2 area. With the exception of total arsenic in the sample collected from geoprobe location P2-GP-3 at depth of 1.1 feet bgs, all of the detected metal concentrations were below available regulatory criteria. Total arsenic was detected at concentration that exceeded the Method A cleanup level in the sample collected form P2-GP-3.

No PCBs were detected in any of the samples analyzed in the Phase 2 area.

6.3 Phase 2 Area – Groundwater

A total of six monitoring wells were installed and sampled during this investigation. Diesel-range petroleum hydrocarbons were detected in four of the six groundwater samples collected with concentrations in two samples exceeding the Method A cleanup level.

Total and dissolved arsenic were detected in all six of the samples collected from each of the monitoring wells. Three of the six samples exceeded arsenic's Method A cleanup level. We interpret these concentrations to be an artifact of the petroleum in groundwater and the reducing conditions created by that (see Ecology, 2018). Total lead was detected in one groundwater sample at concentration that exceeded its Method A cleanup level. Low-level concentrations of PAHs were detected in three of the six samples collected from the monitoring wells. Where PAHs were detected in the groundwater, they were also detected in the soils at each of those locations.

7 RECOMMENDATIONS

The soils encountered during the investigation in the Phase 2 area would likely fall into one of two categories, which include the following:

1. Category 1 / 2 Soils – Soils containing detectable levels of petroleum hydrocarbons, VOCs, PAHS, PCBs, and/or metals that are below MCTA Method A or B cleanup levels.
2. Problem Waste – Soils that contains one or more contaminant(s) at concentrations that exceed the MTCA Method A or B cleanup levels.

For the disposal and handling purposes, soils generated during the redevelopment will likely be a mix of Category 1 / 2 Soils, and Problem Waste. Different disposal options apply to each of the two categories of soil present.

Excavated soils that would be considered Category 1 / 2 Soils may be disposed of at Land Reclamation Facility. Such facilities may accept Category 1 / 2 Soils with low concentrations of hydrocarbon contaminants. Under certain conditions Category 1 / 2 soils may also be reused onsite as specified in the Guidance for Remediation of Petroleum Contaminated site (Ecology, 2016).

Soils that are considered Problem Waste will need to be disposed of at a RCRA Subtitle D Landfill such as Rabanco's Roosevelt Landfill in Eastern Washington or Chemical Waste Management's Columbia Ridge Landfill in Arlington, Oregon.

During this investigation, impacted groundwater was confirmed to be present in the Phase 1 area and encountered in the Phase 2 area. The presence of this impacted groundwater indicates that it will need to be managed during redevelopment of the site. Construction dewatering activities that generate a waste stream will likely need treatment prior to discharge to sanitary sewer systems or surface waters.

All of the Phase 1 area and approximately half of the Phase 2 area are located in the City-defined 1,000-foot methane buffer zone around the former Interbay landfill. Areas within 1,000 feet of methane-producing landfills may be susceptible to accumulations of hazardous levels of methane gas in enclosed spaces. Methane barriers or appropriate ventilation may be required in these areas as specified in Title 22, Subtitle I of Seattle's Municipal Building Code and Seattle-King County Health Department regulations.

A passive venting system and/or a vapor barrier is recommended for development of on-site structures proposed within this buffer. Vapor mitigation features may need to be installed to prevent methane migration into underground or ground-level enclosed areas.

Alternatively, a licensed engineer could also evaluate the site and certify that landfill gas will not be an issue.

8 LIMITATIONS

Shannon & Wilson has prepared this report in a professional manner, using that level of skill and care normally exercised for similar projects under similar conditions by reputable and competent environmental consultants currently practicing in the area. Shannon & Wilson is not responsible for conditions or consequences arising from relevant facts that were concealed, withheld, or not fully disclosed at the time the report was prepared. We also note that the facts and conditions referenced in this report may change over time, and that the conclusions and recommendations set forth here are applicable to the facts and conditions as described only at the time of this report. We believe that the conclusions stated here are factual, but no guarantee is made or implied.

This report was prepared for the exclusive use of Port of Seattle, Mackenzie Engineering, Inc. and your respective representatives, and in no way guarantees that any agency or its staff will reach the same conclusions as Shannon & Wilson. Shannon & Wilson has prepared the enclosed, "Important Information About Your Environmental Report," to help you and others in understanding our reports.

9 REFERENCES

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Table 1: Sampling Summary

Exploration Designation / Monitoring Well	Location	Fremont Laboratory Report No.	Date Sampled	Exploration Method	Depth (feet bgs)	NWTPH-Dx		NWTPH-Dx Silica Gel	NWTPH-Gx		PCBs		PAHs		VOCs		RCRA 8 Metals	Priority Pollutant Metals*
						Soil	Water	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water	Soil	Water
MW-1	Phase 1 Area	2208252	8/17/2022	NA			1	1										2
MW-2	Phase 1 Area	2208252	8/17/2022	NA			1	1										2
MW-3	Phase 1 Area	2208252	8/17/2022	NA			1	1										2
P2-MW-1	Phase 2 Area	2208184 / 2208281	8/11/2022 / 8/18/2022	Direct push boring	15	2	1		2	1	2	1	2	1	2	1	2	2
P2-MW-2	Phase 2 Area	2208184 / 2208281	8/11/2022 / 8/18/2022	Direct push boring	15	2	1		2	1	2	1	2	1	2	1	2	2
P2-MW-3	Phase 2 Area	2208332 / 2208416	8/22/2022 / 8/26/2022	Direct push boring	15	2	1		2	1	2	1	2	1	2	1	2	2
P2-MW-4	Phase 2 Area	2208158 / 2208252	8/10/2022 / 8/17/2022	Direct push boring	15	2	1		2	1	2	1	2	1	2	1	2	2
P2-MW-5	Phase 2 Area	2208191 / 2208281	8/12/2022 / 8/18/2022	Direct push boring	15	2	1		2	1	2	1	2	1	2	1	2	2
P2-MW-6	Phase 2 Area	2208158 / 2208281	8/10/2022 / 8/18/2022	Direct push boring	15	2	1		2	1	2	1	2	1	2	1	2	2
P2-GP-1	Phase 2 Area	2208184	8/11/2022	Direct push boring	15	2			2		2		2		2		2	
P2-GP-2	Phase 2 Area	2208184	8/11/2022	Direct push boring	15	2			2		2		2		2		2	
P2-GP-3	Phase 2 Area	2208191	8/12/2022	Direct push boring	15	3			3		3		3		3		3	
P2-GP-4	Phase 2 Area	2208184	8/11/2022	Direct push boring	15	2			2		2		2		2		2	
P2-GP-5	Phase 2 Area	2208332	8/22/2022	Direct push boring	15	2			2		2		2		2		2	
P2-GP-6	Phase 2 Area	2208332	8/22/2022	Direct push boring	15	2			2		2		2		2		2	
P2-GP-7	Phase 2 Area	2208332	8/22/2022	Direct push boring	15	2			2		2		2		2		2	
P2-GP-8	Phase 2 Area	2208184	8/11/2022	Direct push boring	15	2			2		2		2		2		2	
P2-GP-9	Phase 2 Area	2208191	8/12/2022	Direct push boring	15	2			2		2		2		2		2	
P-2-GP-10	Phase 2 Area	2208158	8/10/2022	Direct push boring	15	2			2		2		2		2		2	
P-2-GP-11	Phase 2 Area	2208191	8/12/2022	Direct push boring	15	2			2		2		2		2		2	
P-2-GP-12	Phase 2 Area	2208158	8/10/2022	Direct push boring	15	2			2		2		2		2		2	
					Total Number of Analyzed Samples:	37	9	3	37	6	37	6	37	6		6	37	18

NOTES:
* Analyzed for both total and dissolved metals.
Numbers indicate total number of samples collected and analyzed per boring
Priority Pollutant metals include silver, arsenic, beryllium, cadmium, chromium, copper, mercury, nickel, lead, antimony, selenium, thallium, and zinc.
bgs = below ground surface; NWTPH-Dx = Northwest Total Petroleum Hydrocarbons as Diesel Extended; NWTPH-Gx = Northwest Total Petroleum Hydrocarbons as Gasoline; PAHs = polycyclic aromatic hydrocarbons; PCBs = polychlorinated biphenyls; VOCs = volatile organic compounds

Table 2: Groundwater Analytical Results

Monitoring Well	Sample Number	Sample Date	Total Petroleum Hydrocarbons					Volatile Organic Compounds		Priority Pollutant Metals (Total and Dissolved)														Polycyclic Aromatic Hydrocarbon					PCBs
			Diesel	Oil	Gasoline	Oil (SG)	Diesel (SG)	Benzene	Chloroform	Phase	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Zinc	Naphthalene	Acenaphthene	Phenanthrene	Anthracene	Fluoranthene	
Groundwater Results (µg/L)																													
Phase 1 Area																													
MW-1	MW-1:GW	8/17/2022	**180**	<99.3	--	<99.3	**97.5**	--	--	T	<1.00	**4.74**	<0.200	<0.200	**1.75**	**3.14**	<0.500	<0.100	<3.00	<5.00	<0.250	<0.200	<2.50	--	--	--	--	--	--
										D	<0.25	**4.4**	<0.25	<0.125	**1.71**	<2.0	<0.500	<0.100	<1.30	<1.90	<0.350	<0.0500	<3.80						
MW-2	MW-2:GW	8/17/2022	**1410**	<95.0	--	<95.0	**686**	--	--	T	<2.00	**34.6**	<0.400	<0.400	<2.00	<4.00	<0.500	<0.100	<6.00	<10.0	<0.500	<0.400	<5.00	--	--	--	--	--	--
										D	<0.25	**34**	<0.25	<0.125	**1.67**	<2.0	<0.500	<0.100	<1.30	<1.90	<0.350	<0.0500	<3.80						
MW-3	MW-3:GW	8/17/2022	**346**	<96.8	--	<96.8	**109**	--	--	T	<5.00	**11.5**	<1.00	<1.00	<5.00	<10.0	<2.50	<0.100	<15.0	<25.0	<1.25	<1.00	<12.5	--	--	--	--	--	--
										D	**0.32**	**12.2**	<0.25	<0.125	**1.84**	<2.0	<0.500	<0.100	<1.30	<1.90	<0.350	<0.0500	<3.80						
Phase 2 Area																													
P2-MW-1	P2-MW-1:GW	8/18/2022	**147**	<94.1	<50.0	--	--	<0.440	**0.975**	T	<5.00	**12.3**	<1.00	<1.00	**24.1**	**38.6**	**21.9**	<0.100	**37.4**	<25.0	<1.25	<1.00	**62.2**	<0.0967	<0.0967	<0.0967	<0.0967	<0.0967	<0.0654
										D	**0.35**	**11.2**	<0.25	<0.125	<0.750	<2.0	<0.500	<0.100	**3.46**	<1.90	<0.350	<0.0500	<3.80						
P2-MW-2	P2-MW-2:GW	8/18/2022	<94.6	<94.6	<50.0	--	--	<0.440	<0.500	T	<1.00	**26.7**	<0.200	<0.200	**1.01**	<2.00	<0.500	<0.100	**3.21**	<5.00	<0.250	<0.200	<2.50	<0.0981	<0.0981	<0.0981	<0.0981	<0.0981	<0.0646
										D	<0.25	**30.9**	<0.25	<0.125	<0.750	<2.0	<0.500	<0.100	**2.31**	<1.90	<0.350	<0.0500	<3.80						
P2-MW-3	P2-MW-3:GW	8/26/2022	<93.9	<93.9	<50.0	--	--	<0.440	<0.500	T	<1.00	**3.82**	<0.200	<0.200	1.01	<2.00	<0.500	<0.100	<3.00	<5.00	<0.250	<0.200	<2.50	**0.151**	<0.0993	**0.131**	<0.0993	<0.0993	<0.0656
										D	**0.381**	**3.42**	<0.25	<0.125	<0.750	<2.0	<0.500	<0.100	<1.30	<1.90	<0.350	<0.0500	<3.80						
P2-MW-4	P2-MW-4:GW	8/17/2022	**1,140**	<94.6	<50.0	--	--	<0.440	<0.500	T	<1.00	**1.28**	<0.200	<0.200	<1.00	<2.00	<0.500	<0.100	<3.00	<5.00	<0.250	<0.200	**3.39**	**0.211**	**0.555**	**0.191**	**0.105**	**0.123**	<0.0651
										D	<0.25	**1.1**	<0.25	<0.125	<0.750	<2.0	<0.500	<0.100	<1.30	<1.90	<0.350	<0.0500	<3.80						
P2-MW-5	P2-MW-5:GW	8/18/2022	**155**	<96.0	<50.0	--	--	<0.440	<0.500	T	<5.00	**6.32**	<1.00	<1.00	<5.00	<10.0	<2.50	<0.100	<15.0	<25.0	<1.25	<1.00	<12.5	<0.104	<0.104	<0.104	<0.104	<0.104	<0.0654
										D	<0.25	**7.33**	<0.25	<0.125	**0.752**	<2.0	<0.500	<0.100	<1.30	<1.90	<0.350	<0.0500	<3.80						
P2-MW-6	P2-MW-6:GW	8/18/2022	**1,680**	<97.9	<50.0	--	--	<0.440	<0.500	T	<1.00	**149**	<0.200	<0.200	<1.00	<2.00	**1.39**	<0.100	<3.00	<5.00	<0.250	<0.200	**4.07**	**0.148**	**0.499**	**0.102**	**0.149**	<0.102	<0.0653
										D	**0.428**	**141**	<0.25	<0.125	<0.750	<2.0	<0.500	<0.100	**2.24**	<1.90	<0.350	<0.0500	<3.80						
		MTCA Method A	500	500	800/1,000	500	500	5	NA		NA	8	NA	5	50	NA	15	2	NA	NA	NA	NA	NA	160	NA	NA	NA	NA	0.1
		MTCA Method B	NA	NA	NA	NA	NA	32	80		6.4	4.8	32	8	48/24,000	640	NA	NA	320	80	80	0.16	4,800	160	480	NA	2,400	640	0.022

NOTES:
- = not analyzed
< = not detected above indicated laboratory reporting limit
Shaded text indicates concentrations exceeds cleanup criterion.
MTCA = Model Toxics Control Act; NA = Not Available; PCBs = polychlorinated biphenyls; TCLP = Toxicity Characteristic Leachate Procedure; µg/L = micrograms per liter, SG = Silica Gel Cleanup

Table 3: Soil Analytical Results - Total Petroleum Hydrocarbons, PCBs, and Volatile Organic Compounds

Boring / Geoprobe Number	Sample Number	Sample Depth (ft)	Sample Date	Total Petroleum Hydrocarbons				Total PCBs	Volatile Organic Compounds									
				Diesel	Lube Oil	Total Petroleum Hydrocarbons	Gasoline		Benzene	1,2,4-Trimethylbenzene	Chloromethane	n-Propylbenzene	1,3,5-Trimethylbenzene	Naphthalene	Toluene	Ethylbenzene	m,p-Xylenes	o-Xylenes
Soil Results (mg/kg)																		
P2-MW-1	P2-MW-1:0.8	0.8'	08/11/22	<50.4	**1,370**	**1,370**	<4.39	<0.0477	<0.0176	<0.0220	<0.0703	<0.0264	<0.0220	<0.0878	<0.0264	<0.0220	<0.0439	<0.0220
P2-MW-1	P2-MW-1:5.6	5.6'	08/11/22	<62.0	<124	<186	<6.46	<0.0563	<0.0258	<0.0323	<0.103	<0.0388	<0.0323	<0.129	<0.0388	<0.0323	<0.0646	<0.0323
P2-MW-2	P2-MW-2:0.6	0.6'	08/11/22	<46.1	**1,650**	**1,650**	<4.99	<0.0460	<0.0200	<0.0250	**0.136**	<0.0299	<0.0250	<0.0998	<0.0299	<0.0250	<0.0499	<0.0250
P2-MW-2	P2-MW-2:3.0	3.0	08/11/22	<55.0	<110	<165	<4.20	<0.0550	<0.0168	<0.0210	<0.0671	<0.0252	<0.0210	<0.0839	<0.0252	<0.0210	<0.0420	<0.0210
P2-MW-3	P2-MW-3:0.8	0.8'	08/22/22	<50.7	<101	<152	<5.42	<0.0482	<0.0217	<0.0271	<0.0868	<0.0325	<0.0271	<0.108	<0.0325	<0.0271	<0.0542	<0.0271
P2-MW-3	P2-MW-3:5.6	5.6'	08/22/22	<53.1	<106	<159	<5.14	<0.0514	<0.0206	<0.0257	<0.0823	<0.0309	<0.0257	<0.103	<0.0309	<0.0257	<0.0514	<0.0257
P2-MW-4	P2-MW-4:1.0	1.0'	08/10/22	<11.0	**374**	**374**	**3.01**	<0.0497	<0.0156	**0.00832**	<0.0623	<0.0234	<0.0195	<0.0779	<0.0234	<0.0195	**0.0147**	**0.00858**
P2-MW-4	P2-MW-4:6.0	6.0'	08/10/22	<12.7	**28.9**	<37.3	**4.35**	<0.0511	<0.0189	<0.0236	<0.0754	<0.0283	<0.0236	<0.0943	<0.0283	<0.0236	<0.0471	<0.0236
P2-MW-5	P2-MW-5:1.8	1.8'	08/12/22	<45.2	<90.3	<135	**4.92**	<0.0497	<0.0195	**0.0479**	<0.0779	<0.0292	<0.0244	<0.0974	**0.0516**	<0.0244	**0.0721**	**0.0502**
P2-MW-5	P2-MW-5:7.5	7.5'	08/12/22	<60.4	<121	<181	<5.03	<0.0597	<0.0201	<0.0251	<0.0804	<0.0302	<0.0251	<0.101	<0.0302	<0.0251	<0.0503	<0.0251
P2-MW-6	P2-MW-6:1.0	1.0'	08/10/22	<11.0	**297**	**297**	**7.19**	<0.0503	<0.0329	**0.032**	<0.0329	**0.0109**	**0.0126**	**0.0543**	**0.0299**	<0.00664	**0.0475**	**0.0255**
P2-MW-6	P2-MW-6:5.6	5.6'	08/10/22	<10.8	**36.8**	**36.8**	<1.41	<0.0505	<0.0141	<0.0176	<0.0141	<0.0212	<0.0176	<0.0706	<0.0212	<0.0176	<0.0353	<0.0176
P2-GP-1	P2-GP-1:1.0	1.0'	08/11/22	<53.1	**1,890**	**1,890**	<5.35	<0.0490	<0.0214	<0.0268	<0.0857	<0.0321	<0.0268	<0.107	<0.0321	<0.0268	<0.0535	<0.0268
P2-GP-1	P2-GP-1:5.4	5.4'	08/11/22	<56.2	<112	<169	<4.33	<0.0575	<0.0173	<0.0216	<0.0693	<0.0260	<0.0216	<0.0866	<0.0260	<0.0216	<0.0433	<0.0216
P2-GP-2	P2-GP-2:1.0	1.o'	08/11/22	<53.7	<107	<161	<5.88	<0.0503	<0.0235	<0.0294	<0.0941	<0.0353	<0.0294	<0.118	<0.0353	<0.0294	<0.0588	<0.0294
P2-GP-2	P2-GP-2:6.7	6.7'	08/11/22	<54.9	<110	<165	<4.23	<0.0501	<0.0169	<0.0212	<0.0677	<0.0254	<0.0212	<0.0847	<0.0254	<0.0212	<0.0423	<0.0212
P2-GP-3	P2-GP-3:1.1	1.1'	08/12/22	<49.4	**265**	**265**	<5.80	<0.0468	<0.0232	<0.0290	<0.0927	<0.0348	<0.0290	<0.116	<0.0348	<0.0290	<0.0580	<0.0290
P2-GP-3	P2-GP-3:6.3	6.3'	08/12/22	<54.3	<109	<163	<4.33	<0.0465	<0.0173	<0.0216	<0.0692	<0.0260	<0.0216	<0.0865	<0.0260	<0.0216	<0.0433	<0.0216
P2-GP-3	P2-GP-3:13.5	13.5'	08/12/22	**163**	<117	<176	**5,730**	<0.0536	<18.8	**14.1**	<75.4	<28.3	<23.5	**2,590**	<28.3	<23.5	**5.68**	<23.5
P2-GP-4	P2-GP-4:1.0	1.0'	08/11/22	<52.3	**226**	**226**	<5.43	<0.0541	<0.0217	<0.0272	<0.0869	<0.0326	<0.0272	<0.109	<0.0326	<0.0272	<0.0543	<0.0272
P2-GP-4	P2-GP-4:6.2	6.2'	08/11/22	<56.4	<113	<169	<4.87	<0.0524	<0.0195	<0.0244	<0.0779	<0.0292	<0.0244	<0.0974	<0.0292	<0.0244	<0.0487	<0.0244
P2-GP-5	P2-GP-5:0.8	0.8'	08/22/22	<53.1	<106	<159	<4.33	<0.0541	<0.0173	<0.0217	<0.0693	<0.0260	<0.0217	<0.0866	<0.0260	<0.0217	<0.0433	<0.0217
P2-GP-5	P2-GP-5:5.8	5.8'	08/22/22	<60.8	<122	<183	<4.70	<0.0571	<0.0188	<0.0235	<0.0752	<0.0282	<0.0235	<0.0940	<0.0282	<0.0235	<0.0470	<0.0235
P2-GP-6	P2-GP-6:0.8	0.8'	08/22/22	<52.8	<106	<158	<5.07	<0.0521	<0.0203	<0.0253	<0.0811	<0.0304	<0.0253	<0.101	<0.0304	<0.0253	<0.0507	<0.0253
P2-GP-6	P2-GP-6:5.7	5.7'	08/22/22	<58.8	<118	<178	<4.78	<0.0578	<0.0191	<0.0239	<0.0764	<0.0287	<0.0239	<0.0955	<0.0287	<0.0239	<0.0478	<0.0239
P2-GP-7	P2-GP-7:0.9	0.9'	08/22/22	<50.3	<101	<151	<4.83	<0.0499	<0.0193	<0.0241	<0.0773	<0.0290	<0.0241	<0.0966	<0.0290	<0.0241	<0.0483	<0.0241
P2-GP-7	P2-GP-7:5.5	5.5'	08/22/22	<63.4	<127	<190	<5.37	<0.0635	<0.0215	<0.0269	<0.0860	<0.0322	<0.0269	<0.107	<0.0322	<0.0269	<0.0537	<0.0269
P2-GP-8	P2-GP-8:1.1	1.1'	08/11/22	<47.2	<94.4	<142	<5.26	<0.0448	<0.0210	<0.0263	<0.0842	<0.0316	<0.0263	<0.105	<0.0316	<0.0263	<0.0526	<0.0263
P2-GP-8	P2-GP-8:5.2	5.2'	08/11/22	<54.9	<110	<165	<4.28	<0.0484	<0.0171	<0.0214	<0.0685	<0.0257	<0.0214	<0.0856	<0.0257	<0.0214	<0.0428	<0.0214
P2-GP-9	P2-GP-9:5.0	5.0'	08/12/22	<50.1	<100	<150	<4.76	<0.0491	<0.0190	<0.0238	<0.0761	<0.0286	<0.0238	0.642	<0.0286	<0.0238	<0.0476	<0.0238
P2-GP-9	P2-GP-9:6.3	6.3'	08/12/22	<54.5	<109	<164	<2.98	<0.0529	<0.0119	<0.0149	<0.0477	<0.0179	<0.0149	<0.0597	<0.0179	<0.0149	<0.0298	<0.0149
P2-GP-10	P2-GP-10:1.0	1.0'	08/10/22	<10.7	<20.7	<31.3	<1.73	<0.045	<0.0174	<0.0217	<0.0173	<0.0260	<0.0217	<0.0868	<0.0260	<0.0217	<0.0434	<0.0217
P2-GP-10	P2-GP-10:5.9	5.9'	08/10/22	<11.8	<22.8	<34.7	<1.72	<0.0463	<0.0172	<0.0215	<0.0172	<0.0258	<0.0215	<0.0860	<0.0258	<0.0215	<0.0430	<0.0215

Table 3: Soil Analytical Results - Total Petroleum Hydrocarbons, PCBs, and Volatile Organic Compounds

Boring / Geoprobe Number	Sample Number	Sample Depth (ft)	Sample Date	Total Petroleum Hydrocarbons				Total PCBs	Volatile Organic Compounds									
				Diesel	Lube Oil	Total Petroleum Hydrocarbons	Gasoline		Benzene	1,2,4-Trimethylbenzene	Chloromethane	n-Propylbenzene	1,3,5-Trimethylbenzene	Naphthalene	Toluene	Ethylbenzene	m,p-Xylenes	o-Xylenes
P2-GP-11	P2-GP-11:1.6	1.6'	08/12/22	<47.8	**4,070**	**4,070**	<5.31	<0.0461	<0.0212	<0.0265	<0.0849	<0.0318	<0.0265	<0.106	<0.0318	<0.0265	<0.0531	<0.0265
P2-GP-11	P2-GP-11: 6.5	6.5'	08/12/22	<54.4	<109	<163	<3.94	<0.0509	<0.0158	<0.0197	**0.106**	<0.0236	<0.0197	<0.0788	<0.0236	<0.0197	<0.0394	<0.0197
P2-GP-12	P2-GP-12:0.7	0.7'	08/10/22	<10.8	<20.8	<31.6	<1.99	<0.0485	<0.0199	<0.0249	<0.0199	<0.0299	<0.0249	<0.0995	<0.0299	<0.0249	<0.0498	<0.0249
P2-GP-12	P2-GP-12:5.5	5.5'	08/10/22	<13.0	<25.1	<38.0	<1.59	<0.0578	<0.0160	<0.0199	<0.0159	<0.0239	<0.0199	<0.0798	<0.0239	<0.0199	<0.0399	<0.0199
MTCA Method A (Unrestricted Use)				2000	2000	2000	30/100	1	0.03	NA	NA	NA	NA	5	7	6	9	9
MTCA Method A (Industrial Use)				2000	2000	2000	30/100	1	0.03	NA	NA	NA	NA	5	7	6	9	9
MTCA Method B (Direct Contact)				NA	NA	NA	NA	0.5	320	800	NA	8,000	800	1,600	6,400	8,000	16,000	16,000

< = not detected above indicated laboratory reporting limit

BTEX = benzene, toluene, ethylbenzene, and xylenes; mg/kg = milligrams per kilogram; MTCA = Model Toxics Control Act; PCBs = polychlorinated biphenyls; TCLP = Toxicity Characteristic Leachate Procedure; µg/L = micrograms per liter

Table 4: Soil Analytical Results - Total Metals

Boring / Geoprobe Number	Sample Number	Sample Depth (ft)	Sample Date	Total Metals										
				Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc
Soil Results (mg/kg)														
P2-MW-1	P2-MW-1:0.8	0.8'	08/11/22	**1.69**	**21.4**	**0.176**	**18.1**	**79.1**	**9.15**	<0.263	**29.3**	<0.160	<0.120	**66**
P2-MW-1	P2-MW-1:5.6	5.6'	08/11/22	**13.6**	**55.2**	<0.202	**29.6**	**12.8**	**1.98**	<0.309	**44.7**	<0.202	<0.151	**30.4**
P2-MW-2	P2-MW-2:0.6	0.6'	08/11/22	**3.74**	**40.3**	<0.155	**22.2**	**49.4**	**26.2**	<0.250	**25.3**	<0.155	<0.116	**48.5**
P2-MW-2	P2-MW-2:3.0	3.0	08/11/22	**3.19**	**74.4**	<0.182	**31.1**	**14.3**	**5.59**	<0.272	**41.7**	<0.182	<0.136	**38.8**
P2-MW-3	P2-MW-3:0.8	0.8'	08/22/22	**1.82**	**35.2**	<0.158	**25.4**	**9.66**	**20.6**	<0.252	**37.4**	<0.158	<0.118	**33.5**
P2-MW-3	P2-MW-3:5.6	5.6'	08/22/22	**1.62**	**35.4**	<0.180	**24.7**	**10.2**	**1.76**	<0.275	**41.3**	<0.180	<0.135	**25.2**
P2-MW-4	P2-MW-4:1.0	1.0'	08/10/22	**3.15**	**108**	**0.163**	**22.9**	**58.3**	**87.8**	**0.0309**	**33.2**	<0.172	<0.129	**83.2**
P2-MW-4	P2-MW-4:6.0	6.0'	08/10/22	**1.58**	**31.6**	**0.0536**	**20.9**	**10.8**	**2.52**	**0.0156**	**37.1**	<0.176	<0.132	**24.5**
P2-MW-5	P2-MW-5:1.8	1.8'	08/12/22	**5.07**	**11.8**	<0.171	**23.3**	**99.2**	**5.97**	<0.265	**34.5**	<0.171	**0.757**	**64.4**
P2-MW-5	P2-MW-5:7.5	7.5'	08/12/22	**4.16**	**91.8**	<0.193	**40.6**	**23.9**	**9.76**	<0.273	**55.5**	**0.207**	<0.145	**44.1**
P2-MW-6	P2-MW-6:1.0	1.0'	08/10/22	**3.05**	**93.7**	**0.223**	**16.8**	**55.3**	**30.9**	**0.0346**	**26.7**	<0.157	**0.0429**	**91.6**
P2-MW-6	P2-MW-6:5.6	5.6'	08/10/22	**17.8**	**31.6**	**0.0848**	**19.4**	**8.88**	**1.32**	**0.0122**	**33.6**	<0.176	<0.132	**22**
P2-GP-1	P2-GP-1:1.0	1.0'	08/11/22	**1.43**	**31.2**	<0.177	**14.5**	**90.4**	**4.04**	<0.263	**24.6**	<0.177	<0.133	**34.2**
P2-GP-1	P2-GP-1:5.4	5.4'	08/11/22	**3.85**	**83.1**	<0.177	**37.3**	**17.2**	**2.74**	<0.287	**47.9**	<0.177	<0.133	**35.8**
P2-GP-2	P2-GP-2:1.0	1.o'	08/11/22	**3.29**	**81.3**	<0.174	**36.2**	**22.3**	**4.85**	<0.263	**43**	<0.174	<0.130	**43.5**
P2-GP-2	P2-GP-2:6.7	6.7'	08/11/22	**2.46**	**61.3**	<0.178	**35.7**	**16.5**	**4.31**	<0.285	**39.5**	<0.178	<0.134	**35.3**
P2-GP-3	P2-GP-3:1.1	1.1'	08/12/22	**29.9**	**69.9**	**0.215**	**23.5**	**68.5**	**24.1**	<0.262	**29.5**	**0.169**	<0.123	**85.8**
P2-GP-3	P2-GP-3:6.3	6.3'	08/12/22	**2.27**	**29.2**	<0.168	**24**	**9.88**	**1.43**	<0.261	**33.8**	<0.168	<0.126	**24.8**
P2-GP-3	P2-GP-3:13.5	13.5'	08/12/22	**5.9**	**27.3**	<0.199	**26.3**	**15.6**	**19.6**	<0.299	**29.9**	<0.199	<0.149	**46.7**
P2-GP-4	P2-GP-4:1.0	1.0'	08/11/22	**0.75**	**9.97**	<0.175	**16.9**	**90.5**	**3.6**	<0.256	**34.3**	<0.175	<0.132	**41.8**
P2-GP-4	P2-GP-4:6.2	6.2'	08/11/22	**1.55**	**30.2**	<0.177	**18.1**	**9.16**	**1.5**	<0.261	**30.6**	<0.177	<0.133	**21.9**
P2-GP-5	P2-GP-5:0.8	0.8'	08/22/22	**2.7**	**68.1**	<0.174	**30.5**	**22.1**	**4.47**	<0.276	**43**	<0.174	<0.130	**36.3**
P2-GP-5	P2-GP-5:5.8	5.8'	08/22/22	**3.95**	**89.4**	<0.182	**46.9**	**32**	**7.67**	<0.304	**59**	<0.182	<0.136	**54.5**
P2-GP-6	P2-GP-6:0.8	0.8'	08/22/22	**2.49**	**52.4**	<0.168	**29**	**33.9**	**2.99**	<0.247	**41.8**	<0.168	<0.126	**34.3**
P2-GP-6	P2-GP-6:5.7	5.7'	08/22/22	**3.11**	**65.1**	<0.179	**26.8**	**15.9**	**6.26**	<0.274	**31.7**	<0.179	<0.134	**37.2**
P2-GP-7	P2-GP-7:0.9	0.9'	08/22/22	**1.78**	**34.8**	<0.163	**23.9**	**9.45**	**1.29**	<0.238	**36.5**	<0.163	<0.122	**24.8**
P2-GP-7	P2-GP-7:5.5	5.5'	08/22/22	**6.83**	**137**	<0.197	**63.4**	**41.2**	**5.72**	<0.314	**78.3**	<0.197	<0.148	**1.73**
P2-GP-8	P2-GP-8:1.1	1.1'	08/11/22	**1.21**	**26.4**	<0.162	**15.1**	**8.21**	**1.39**	<0.255	**27.2**	<0.162	<0.122	**19.4**
P2-GP-8	P2-GP-8:5.2	5.2'	08/11/22	**1.27**	**28.5**	<0.175	**18.4**	**9.28**	**1.45**	<0.275	**35.2**	<0.175	<0.131	**24.4**
P2-GP-9	P2-GP-9:5.0	5.0'	08/12/22	**6.42**	**39.7**	<0.155	**24**	**10.8**	**2.05**	<0.238	**34.4**	<0.155	<0.117	**29**
P2-GP-9	P2-GP-9:6.3	6.3'	08/12/22	**1.27**	**26**	<0.178	**21.9**	**8.35**	**1.27**	<0.288	**33.1**	<0.178	<0.134	**22.5**
P2-GP-10	P2-GP-10:1.0	1.0'	08/10/22	**1.59**	**34.5**	**0.0551**	**26.6**	**24.5**	**1.38**	**0.0095**	**37**	<0.141	**0.0363**	**25.9**

Table 4: Soil Analytical Results - Total Metals

Boring / Geoprobe Number	Sample Number	Sample Depth (ft)	Sample Date	Total Metals Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc
P2-GP-10	P2-GP-10:5.9	5.9'	08/10/22	**1.44**	**31.7**	**0.0398**	**31.8**	**9.19**	**1.33**	**0.00709**	**37.6**	<0.160	<0.120	**22.7**
P2-GP-11	P2-GP-11:1.6	1.6'	08/12/22	**7.44**	**44.6**	**0.162**	**26.4**	**37.2**	**22.5**	<0.238	**37.1**	<0.159	<0.119	**64.1**
P2-GP-11	P2-GP-11: 6.5	6.5'	08/12/22	**2.6**	**38.9**	<0.183	**29.7**	**11.7**	**1.78**	<0.272	**41.9**	<0.183	<0.137	**30**
P2-GP-12	P2-GP-12:0.7	0.7'	08/10/22	**2.5**	**31.8**	**0.0559**	**19.5**	**10.2**	**3.29**	**0.00862**	**31.6**	<0.159	<0.119	**27.6**
P2-GP-12	P2-GP-12:5.5	5.5'	08/10/22	**1.54**	**36**	**0.0414**	**18.7**	**8.2**	**1.51**	**0.0103**	**31.6**	<0.171	<0.129	**23.5**
			MTCA Method A (Unrestricted Use)	20	NA	2	19/2,000	NA	250	2	NA	NA	NA	NA
			MTCA Method A (Industrial Use)	20	NA	2	19/2,000	NA	1,000	2	NA	NA	NA	NA
			MTCA Method B (Direct Contact)	24	16,000	80	240/120,000	3,200	NA	NA	1,600	400	400	24,000

< = not detected above indicated laboratory reporting limit

BTEX = benzene, toluene, ethylbenzene, and xylenes; mg/kg = milligrams per kilogram; MTCA = Model Toxics Control Act; PCBs = polychlorinated biphenyls; TCLP = Toxicity Characteristic Leachate Procedure; µg/L = micrograms per liter

Table 5: Polycyclic Aromatic Hydrocarbon Analytical Results

Boring/Well Number:	P2-MW-1	P2-MW-1	P2-MW-2	P2-MW-2	P2-MW-3	P2-MW-3	P2-MW-4	P2-MW-4	P2-MW-5	P2-MW-5	P2-MW-6
Sample Number:	P2-MW-1:0.8	P2-MW-1:5.6	P2-MW-2:0.6	P2-MW-2:3.0	P2-MW-3:0.8	P2-MW-3:5.6	P2-MW-4:1.0	P2-MW-4:6.0	P2-MW-5:1.8	P2-MW-5:5.7	P2-MW-6:1.0
Sample Depth:	0.8'	5.6'	0.6'	3.0'	0.8'	5.6'	1.0'	6.0'	1.8'	5.7'	1.0'
Sample Date:	8/11/2022	8/11/2022	8/11/2022	8/11/2022	8/22/2022	8/22/2022	8/10/2022	8/10/2022	8/12/2022	8/12/2022	8/10/2022
Polycyclic Aromatic Hydrocarbons (µg/kg)											
Naphthalene	<21.2	<25.6	<19.8	<23.3	< 20.5	<22.3	**17.2**	< 21.1	< 21.1	<23.6	**41.9**
2-Methylnaphthalene	<21.5	<25.6	**70.6**	<23.3	< 20.5	<22.3	**24.6**	< 21.1	< 21.1	<23.6	**34.5**
1-Methylnaphthalene	<21.3	<25.6	**54.7**	<23.3	< 20.5	<22.3	**20**	< 21.1	< 21.1	<23.6	**24.1**
Acenaphthylene	<21.2	<25.6	**22.2**	<23.3	< 20.5	<22.3	**13.8**	< 21.1	< 21.1	<23.6	**75.2**
Acenaphthene	<21.2	<25.6	<19.8	<23.3	< 20.5	<22.3	**3.99**	< 21.1	< 21.1	<23.6	**54.3**
Fluorene	<21.2	<25.6	<19.8	<23.3	< 20.5	<22.3	**2.99**	< 21.1	< 21.1	<23.6	**33.1**
Phenanthrene	**53.6**	<51.2	**81.3**	<46.5	<41.0	<44.6	**64.3**	<42.1	<42.1	<47.2	**280**
Anthracene	< 42.4	<51.2	<39.6	<46.5	<41.0	<44.6	**26.3**	<42.1	<42.1	<47.2	**80.8**
Fluoranthene	**104**	<51.2	<39.6	<46.5	<41.0	<44.6	**220**	<42.1	**68**	<47.2	**636**
Pyrene	**131**	<51.2	<39.6	<46.5	<41.0	<44.6	**258**	<42.1	**57**	<47.2	**691**
Benzo[g,h,i]perylene	**412**	<25.6	**54.4**	<23.3	< 20.5	<22.3	**160**	<21.1	**28**	<23.6	**536**
Carcinogenic Polycyclic Aromatic Hydrocarbons (µg/kg)											
benzo(a)anthracene	**84**	<25.6	**80.6**	<23.3	< 20.5	<22.3	**153**	**6.59**	**26.7**	<23.6	**434**
chrysene	**151**	<51.2	**135**	<46.5	<41.0	<44.6	**159**	<21.1	<42.1	<47.2	**501**
benzo(b)fluoranthene	**497**	**37.1**	<19.8	<23.3	< 20.5	<22.3	**255**	**4.17**	**54.7**	<23.6	**1,080**
benzo(k)fluoranthene	**173**	<25.6	<19.8	<23.3	< 20.5	<22.3	**88.1**	<21.1	< 21.1	<23.6	**282**
benzo(a)pyrene	**348**	<25.6	**117**	<23.3	< 20.5	<22.3	**246**	<21.1	**33.4**	<23.6	**809**
indeno[1,2,3-cd]pyrene	**272**	<51.2	**49**	<46.5	<41.0	<44.6	**125**	< 42.1	<42.1	<47.2	**488**
dibenzo[a,h]anthracene	**70.5**	<51.2	**54.4**	<46.5	<41.0	<44.6	**32.5**	< 42.1	<42.1	<47.2	**152**
Total cPAH TEQ (See Table 6)	**459**	**24.4**	**139**	<46.5	<41.0	<44.6	**313**	**17.1**	**47.0**	<47.2	**1058**

NOTES:
Bold text indicates detected analyte.
Shaded text indicates concentrations exceeds cleanup criterion.

cPAH = carcinogenic polycyclic aromatic hydrocarbon; CUL = cleanup level; MTCA = Model Toxics Control Act; NE = not established; TEQ = toxicity equivalent quotient; µg/kg = micrograms per kilogram

Table 5: Polycyclic Aromatic Hydrocarbon Analytical Results

Boring/Well Number:	P2-MW-6	P2-GP-1	P2-GP-1	P2-GP-2	P2-GP-2	P2-GP-3	P2-GP-3	P2-GP-3	P2-GP-4	P2-GP-4	P2-GP-5
Sample Number:	P2-MW-6:5.6	P2-GP-1:1.0	P2-GP-1:5.4	P2-GP-2:1.0	P2-GP-2:6.7	P2-GP-3:1.1	P2-GP-3:6.3	P2-GP-3:13.5	P2-GP-4:1.0	P2-GP-4:6.2	P2-GP-5:0.8
Sample Depth:	5.6'	1.0'	5.4'	1.0'	6.7'	1.1'	6.3'	13.5'	1.0'	6.2'	0.8'
Sample Date:	8/10/2022	8/11/2022	8/11/2022	8/11/2022	8/11/2022	8/12/2022	8/12/2022	8/12/2022	8/10/2022	8/10/2022	8/22/2022
Polycyclic Aromatic Hydrocarbons (µg/kg)											
Naphthalene	**4.67**	<21.8	<23.1	<21.8	<19.5	<19.6	<21.6	**12,600**	<21.7	<21.7	<21.3
2-Methylnaphthalene	**4.42**	<21.8	<23.1	<21.8	<19.5	<19.6	<21.6	**5,740**	<21.7	<22.6	<21.3
1-Methylnaphthalene	**3.46**	<21.8	<23.1	<21.8	<19.5	<19.6	<21.6	**3,480**	<21.7	<22.6	<21.3
Acenaphthylene	**5.61**	<21.8	<23.1	<21.8	<19.5	<19.6	<21.6	**133**	<21.7	<22.6	<21.3
Acenaphthene	**4.54**	<21.8	<23.1	<21.8	<19.5	<19.6	<21.6	**7,120**	<21.7	<22.6	<21.3
Fluorene	**3.35**	<21.8	<23.1	<21.8	<19.5	<19.6	<21.6	**6,370**	<21.7	<22.6	<21.3
Phenanthrene	**29.3**	<43.6	<46.2	<43.5	<39.0	<39.1	<43.2	**18,300**	<43.4	<45.2	<42.7
Anthracene	**6.28**	<43.6	<46.2	<43.5	<39.0	<39.1	<43.2	**2,230**	<43.4	<45.2	<42.7
Fluoranthene	**61.7**	<43.6	<46.2	**50.1**	<39.0	<39.1	<43.2	**9,340**	<43.4	<45.2	**72.9**
Pyrene	**66.2**	<43.6	<46.2	**53.1**	<39.0	<39.1	<43.2	**6,420**	<43.4	<45.2	**83**
Benzo[g,h,i]perylene	**39.8**	<21.8	<23.1	<21.8	<19.5	<19.6	<21.6	**118**	<21.7	<22.6	**36.2**
Carcinogenic Polycyclic Aromatic Hydrocarbons (µg/kg)											
benzo(a)anthracene	**37**	<21.8	<23.1	<21.8	<19.5	<19.6	<21.6	**1,750**	<21.7	<22.6	**29.7**
chrysene	**40.2**	<43.6	<46.2	<43.5	<39.0	<39.1	<43.2	**1,590**	<43.4	<45.2	**61.5**
benzo(b)fluoranthene	**83.2**	**26.9**	<23.1	<21.8	<19.5	<19.6	<21.6	**969**	<21.7	<22.6	**73.1**
benzo(k)fluoranthene	**23.8**	<21.8	<23.1	<21.8	<19.5	<19.6	<21.6	**328**	<21.7	<22.6	**24.4**
benzo(a)pyrene	**60.5**	<21.8	<23.1	<21.8	<19.5	<19.6	<21.6	**574**	<21.7	<22.6	**42.8**
indeno[1,2,3-cd]pyrene	**35.6**	<43.6	<46.2	<43.5	<39.0	<39.1	<43.2	**127**	<43.4	<45.2	<42.7
dibenzo[a,h]anthracene	**10.4**	<43.6	<46.2	<43.5	<39.0	<39.1	<43.2	<44.3	<43.4	<45.2	<42.7
Total cPAH TEQ (See Table 6)	**79.9**	**20.3**	<46.2	<43.5	<39.0	<39.1	<43.2	**908**	<43.4	<45.2	**60.4**

NOTES:
Bold text indicates detected analyte.

Shaded text indicates concentrations exceeds cleanup criterion.

cPAH = carcinogenic polycyclic aromatic hydrocarbon; CUL = cleanup level; MTCA = Model Toxics Control Act; NE = not established; TEQ = toxicity equivalent quotient; µg/kg = micrograms per kilogram

Table 5: Polycyclic Aromatic Hydrocarbon Analytical Results

Boring/Well Number:	P2-GP-5	P2-GP-6	P2-GP-6	P2-GP-7	P2-GP-7	P2-GP-8	P2-GP-8	P2-GP-9	P2-GP-9	P2-GP-10	P2-GP-10
Sample Number:	P2-GP-5:5.8	P2-GP-6:0.8	P2-GP-6:5.7	P2-GP-7:0.9	P2-GP-7:5.5	P2-GP-8:1.1	P2-GP-8:5.2	P2-GP-9:5.0	P2-GP-9:6.3	P2-GP-10:1.0	P2-GP-10:5.9
Sample Depth:	5.8'	0.8'	5.7'	0.9'	5.5'	1.1'	5.2'	5.0'	6.3'	1.0'	5.9'
Sample Date:	8/22/2022	8/22/2022	8/22/2022	8/22/2022	8/22/2022	8/10/2022	8/10/2022	8/12/2022	8/12/2022	8/10/2022	8/10/2022
Polycyclic Aromatic Hydrocarbons (µg/kg)											
Naphthalene	<24.1	<21.1	<23.0	<19.8	<25.1	<19.2	<21.6	**62.5**	<19.6	<19.3	<19.9
2-Methylnaphthalene	<24.1	<21.1	<23.0	<19.8	<25.1	<19.2	<21.6	**96.3**	<19.6	<19.3	<19.9
1-Methylnaphthalene	<24.1	<21.1	<23.0	<19.8	<25.1	<19.2	<21.6	**50.9**	<19.6	<19.3	<19.9
Acenaphthylene	<24.1	<21.1	**32.2**	<19.8	<25.1	<19.2	<21.6	<18.5	<19.6	<19.3	<19.9
Acenaphthene	<24.1	<21.1	<23.0	<19.8	<25.1	<19.2	<21.6	**245**	<19.6	<19.3	<19.9
Fluorene	<24.1	<21.1	<23.0	<19.8	<25.1	<19.2	<21.6	**298**	<19.6	<19.3	<19.9
Phenanthrene	**48.7**	<42.3	<45.9	<39.5	<50.2	<38.5	<43.1	**1120**	<39.3	**6.85**	**7.7**
Anthracene	<48.3	<42.3	<45.9	<39.5	<50.2	<38.5	<43.1	**84.8**	<39.3	< 38.7	< 39.8
Fluoranthene	**267**	<42.3	**130**	<39.5	<50.2	<38.5	<43.1	**622**	<39.3	< 38.7	**10.2**
Pyrene	**621**	<42.3	**134**	<39.5	<50.2	<38.5	<43.1	**424**	<39.3	**14.2**	< 39.8
Benzo[g,h,i]perylene	**144**	<21.1	**47.3**	<19.8	<25.1	<19.2	<21.6	<18.5	<19.6	**3.62**	**2.62**
Carcinogenic Polycyclic Aromatic Hydrocarbons (µg/kg)											
benzo(a)anthracene	**170**	<21.1	**52.8**	<19.8	<25.1	<19.2	<21.6	**94.1**	<19.6	**9.51**	**7.69**
chrysene	**311**	<42.3	**99.3**	<39.5	<50.2	<38.5	<43.1	**86.4**	<39.3	< 38.7	< 39.8
benzo(b)fluoranthene	**413**	**30.6**	**110**	<19.8	<25.1	<19.2	<21.6	**65.8**	<19.6	**7.68**	**5.27**
benzo(k)fluoranthene	**125**	<21.1	**110**	<19.8	<25.1	<19.2	<21.6	**20.3**	<19.6	<19.3	<19.9
benzo(a)pyrene	**208**	**24.9**	**56**	<19.8	<25.1	<19.2	<21.6	**38.4**	<19.6	**6.51**	**4.0**
indeno[1,2,3-cd]pyrene	**165**	<42.3	**52.4**	<39.5	<50.2	<38.5	<43.1	<37.0	<39.3	< 38.7	< 39.8
dibenzo[a,h]anthracene	**56.5**	<42.3	<45.9	<39.5	<50.2	<38.5	<43.1	<37.0	<39.3	< 38.7	< 39.8
Total cPAH TEQ (See Table 6)	**304**	**34.5**	**91.8**	<39.5	<50.2	<38.5	<43.1	**61.0**	<39.3	**13.3**	**10.5**

NOTES:
Bold text indicates detected analyte.
Shaded text indicates concentrations exceeds cleanup criterion.

cPAH = carcinogenic polycyclic aromatic hydrocarbon; CUL = cleanup level; MTCA = Model Toxics Control Act; NE = not established; TEQ = toxicity equivalent quotient; µg/kg = micrograms per kilogram

Table 5: Polycyclic Aromatic Hydrocarbon Analytical Results

Boring/Well Number:	P2-GP-11	P2-GP-11	P2-GP-12	P2-GP-12	MTCA Method A CUL for Unrestricted Land Use
Sample Number:	P2-GP-11:1.6	P2-GP-11:6.5	P2-GP-12:0.7	P2-GP-12:5.5	
Sample Depth:	1.6'	6.5'	0.7'	5.5'	
Sample Date:	8/12/2022	8/12/2022	8/10/2022	8/10/2022	
Polycyclic Aromatic Hydrocarbons (µg/kg)					
Naphthalene	<20.5	<20.5	<20.1	<19.8	5000
2-Methylnaphthalene	<20.5	<20.5	<20.1	<19.8	NE
1-Methylnaphthalene	<20.5	<20.5	<20.1	<19.8	NE
Acenaphthylene	<20.5	<20.5	<20.1	<19.8	NE
Acenaphthene	<20.5	<20.5	<20.1	<19.8	NE
Fluorene	<20.5	<20.5	<20.1	<19.8	NE
Phenanthrene	<40.9	<41.0	<40.2	< 39.7	NE
Anthracene	<40.9	<41.0	<40.2	< 39.7	NE
Fluoranthene	**45.1**	<41.0	<40.2	< 39.7	NE
Pyrene	**43.9**	<41.0	<40.2	< 39.7	NE
Benzo[g,h,i]perylene	**49.4**	<20.5	**2.81**	<19.8	NE
Carcinogenic Polycyclic Aromatic Hydrocarbons (µg/kg)					
benzo(a)anthracene	**21.9**	<20.5	**6.34**	**4.58**	NE
chrysene	<40.9	<41.0	<40.2	< 39.7	NE
benzo(b)fluoranthene	<20.5	<20.5	**3.64**	<19.8	NE
benzo(k)fluoranthene	<20.5	<20.5	<20.1	<19.8	NE
benzo(a)pyrene	**34**	<20.5	**2.94**	<19.8	100
indeno[1,2,3-cd]pyrene	<40.9	<41.0	<40.2	< 39.7	NE
dibenzo[a,h]anthracene	<40.9	<41.0	<40.2	< 39.7	NE
Total cPAH TEQ (See Table 6)	**42.5**	<41.0	**9.2**	**16.5**	100

NOTES:
Bold text indicates detected analyte.

Shaded text indicates concentrations exceeds cleanup criterion.

cPAH = carcinogenic polycyclic aromatic hydrocarbon; CUL = cleanup level; MTCA = Model Toxics Control Act; NE = not established; TEQ = toxicity equivalent quotient; µg/kg = micrograms per kilogram

Table 6: Toxicity Equivalency Factor Adjusted Polycyclic Aromatic Hydrocarbon Concentrations

Total cPAH TEQ Calculation for Sample P2-MW-1:0.8				
Analyte	Result (µg/Kg)	Method Detection Limit (µg/Kg)	Toxicity Equivalency Factor	Adjusted Concentration[1] (µg/Kg)
benzo(a)anthracene	**84**	21.2	0.1	8.4
chrysene	**151**	42.4	0.01	1.51
benzo(b)fluoranthene	**497**	21.2	0.1	49.7
benzo(k)fluoranthene	**173**	21.2	0.1	17.3
benzo(a)pyrene	**348**	21.2	1	348
indeno[1,2,3-cd]pyrene	**272**	42.4	0.1	27.2
dibenzo[a,h]anthracene	**70.5**	42.4	0.1	7.05
Total cPAH TEQ[2]				**459.16**
MTCA Method A Cleanup Level for Unrestricted Land Use				100.00

Total cPAH TEQ Calculation for Sample P2-MW-1:5.6				
Analyte	Result (µg/Kg)	Method Detection Limit (µg/Kg)	Toxicity Equivalency Factor	Adjusted Concentration[1] (µg/Kg)
benzo(a)anthracene	ND	25.6	0.1	1.28
chrysene	ND	51.2	0.01	0.256
benzo(b)fluoranthene	**37.1**	25.6	0.1	3.71
benzo(k)fluoranthene	ND	25.6	0.1	1.28
benzo(a)pyrene	ND	25.6	1	12.8
indeno[1,2,3-cd]pyrene	ND	51.2	0.1	2.56
dibenzo[a,h]anthracene	ND	51.2	0.1	2.56
Total cPAH TEQ[2]				**24.4**
MTCA Method A Cleanup Level for Unrestricted Land Use				100.00

Total cPAH TEQ Calculation for Sample P2-MW-2:0.6				
Analyte	Result (µg/Kg)	Method Detection Limit (µg/Kg)	Toxicity Equivalency Factor	Adjusted Concentration[1] (µg/Kg)
benzo(a)anthracene	**80.6**	19.8	0.1	8.06
chrysene	**135**	39.6	0.01	1.35
benzo(b)fluoranthene	ND	19.8	0.1	0.99
benzo(k)fluoranthene	ND	19.8	0.1	0.99
benzo(a)pyrene	**117**	19.8	1	117
indeno[1,2,3-cd]pyrene	**49**	39.6	0.1	4.9
dibenzo[a,h]anthracene	**54.4**	39.6	0.1	5.44
Total cPAH TEQ[2]				**138.73**
MTCA Method A Cleanup Level for Unrestricted Land Use				100.00

Total cPAH TEQ Calculation for Sample P2-MW-4:1.0				
Analyte	Result (µg/Kg)	Method Detection Limit (µg/Kg)	Toxicity Equivalency Factor	Adjusted Concentration[1] (µg/Kg)
benzo(a)anthracene	**153**	20.2	0.1	15.3
chrysene	**159**	40.2	0.01	1.59
benzo(b)fluoranthene	**255**	20.2	0.1	25.5
benzo(k)fluoranthene	**88.1**	20.2	0.1	8.81
benzo(a)pyrene	**246**	20.2	1	246
indeno[1,2,3-cd]pyrene	**125**	40.2	0.1	12.5
dibenzo[a,h]anthracene	**32.5**	40.2	0.1	3.25
Total cPAH TEQ[2]				**313.0**
MTCA Method A Cleanup Level for Unrestricted Land Use				100.00

Total cPAH TEQ Calculation for Sample P2-MW-4:6.0				
Analyte	Result (µg/Kg)	Method Detection Limit (µg/Kg)	Toxicity Equivalency Factor	Adjusted Concentration[1] (µg/Kg)
benzo(a)anthracene	**6.59**	21.1	0.1	0.659
chrysene	ND	42.1	0.01	0.2105
benzo(b)fluoranthene	**4.17**	21.1	0.1	0.417
benzo(k)fluoranthene	ND	21.1	0.1	1.055
benzo(a)pyrene	ND	21.1	1	10.55
indeno[1,2,3-cd]pyrene	ND	42.1	0.1	2.105
dibenzo[a,h]anthracene	ND	42.1	0.1	2.105
Total cPAH TEQ[2]				**17.1**
MTCA Method A Cleanup Level for Unrestricted Land Use				100.00

Total cPAH TEQ Calculation for Sample P2-MW-5:1.8				
Analyte	Result (µg/Kg)	Method Detection Limit (µg/Kg)	Toxicity Equivalency Factor	Adjusted Concentration[1] (µg/Kg)
benzo(a)anthracene	**26.7**	21.1	0.1	2.67
chrysene	ND	42.1	0.01	0.2105
benzo(b)fluoranthene	**54.7**	21.1	0.1	5.47
benzo(k)fluoranthene	ND	21.1	0.1	1.055
benzo(a)pyrene	33.4	21.1	1	33.4
indeno[1,2,3-cd]pyrene	ND	42.1	0.1	2.105
dibenzo[a,h]anthracene	ND	42.1	0.1	2.105
Total cPAH TEQ[2]				**47.0**
MTCA Method A Cleanup Level for Unrestricted Land Use				100.00

Total cPAH TEQ Calculation for Sample P2-MW-6:1.0				
Analyte	Result (µg/Kg)	Method Detection Limit (µg/Kg)	Toxicity Equivalency Factor	Adjusted Concentration[1] (µg/Kg)
benzo(a)anthracene	**434**	20.1	0.1	43.4
chrysene	**501**	40.1	0.01	5.01
benzo(b)fluoranthene	**1,080**	20.1	0.1	108
benzo(k)fluoranthene	**282**	20.1	0.1	28.2
benzo(a)pyrene	**809**	20.1	1	809
indeno[1,2,3-cd]pyrene	**488**	40.1	0.1	48.8
dibenzo[a,h]anthracene	**152**	40.1	0.1	15.2
Total cPAH TEQ[2]				**1057.6**
MTCA Method A Cleanup Level for Unrestricted Land Use				100.00

Total cPAH TEQ Calculation for Sample P2-MW-6:5.6				
Analyte	Result (µg/Kg)	Method Detection Limit (µg/Kg)	Toxicity Equivalency Factor	Adjusted Concentration[1] (µg/Kg)
benzo(a)anthracene	**37**	19.8	0.1	3.7
chrysene	**40.2**	39.6	0.01	0.402
benzo(b)fluoranthene	**83.2**	19.8	0.1	8.32
benzo(k)fluoranthene	**23.8**	19.8	0.1	2.38
benzo(a)pyrene	**60.5**	19.8	1	60.5
indeno[1,2,3-cd]pyrene	**35.6**	39.6	0.1	3.56
dibenzo[a,h]anthracene	**10.4**	39.6	0.1	1.04
Total cPAH TEQ[2]				**79.9**
MTCA Method A Cleanup Level for Unrestricted Land Use				100.00

Total cPAH TEQ Calculation for Sample P2-GP-1:1.0				
Analyte	Result (µg/Kg)	Method Detection Limit (µg/Kg)	Toxicity Equivalency Factor	Adjusted Concentration[1] (µg/Kg)
benzo(a)anthracene	ND	21.8	0.1	1.09
chrysene	ND	43.6	0.01	0.218
benzo(b)fluoranthene	**26.9**	21.8	0.1	2.69
benzo(k)fluoranthene	ND	21.8	0.1	1.09
benzo(a)pyrene	ND	21.8	1	10.9
indeno[1,2,3-cd]pyrene	ND	43.6	0.1	2.18
dibenzo[a,h]anthracene	ND	43.6	0.1	2.18
Total cPAH TEQ[2]				**20.35**
MTCA Method A Cleanup Level for Unrestricted Land Use				100.00

Total cPAH TEQ Calculation for Sample P2-GP-3:13.5				
Analyte	Result (µg/Kg)	Method Detection Limit (µg/Kg)	Toxicity Equivalency Factor	Adjusted Concentration[1] (µg/Kg)
benzo(a)anthracene	**1,750**	21.6	0.1	175
chrysene	**1,590**	44.3	0.01	15.9
benzo(b)fluoranthene	**969**	21.6	0.1	96.9
benzo(k)fluoranthene	**328**	21.6	0.1	32.8
benzo(a)pyrene	**574**	21.6	1	574
indeno[1,2,3-cd]pyrene	**127**	44.3	0.1	12.7
dibenzo[a,h]anthracene	ND	21.6	0.1	1.08
Total cPAH TEQ[2]				**908.4**
MTCA Method A Cleanup Level for Unrestricted Land Use				100.00

Total cPAH TEQ Calculation for Sample P2-GP-5:0.8				
Analyte	Result (µg/Kg)	Method Detection Limit (µg/Kg)	Toxicity Equivalency Factor	Adjusted Concentration[1] (µg/Kg)
benzo(a)anthracene	**29.7**	21.3	0.1	2.97
chrysene	**61.5**	42.7	0.01	0.615
benzo(b)fluoranthene	**73.1**	21.3	0.1	7.31
benzo(k)fluoranthene	**24.4**	21.3	0.1	2.44
benzo(a)pyrene	**42.8**	21.3	1	42.8
indeno[1,2,3-cd]pyrene	ND	42.7	0.1	2.135
dibenzo[a,h]anthracene	ND	42.7	0.1	2.135
Total cPAH TEQ[2]				**60.41**
MTCA Method A Cleanup Level for Unrestricted Land Use				100.00

Total cPAH TEQ Calculation for Sample P2-GP-5:5.8				
Analyte	Result (µg/Kg)	Method Detection Limit (µg/Kg)	Toxicity Equivalency Factor	Adjusted Concentration[1] (µg/Kg)
benzo(a)anthracene	**170**	24.1	0.1	17
chrysene	**311**	48.3	0.01	3.11
benzo(b)fluoranthene	**413**	24.1	0.1	41.3
benzo(k)fluoranthene	**125**	24.1	0.1	12.5
benzo(a)pyrene	**208**	24.1	1	208
indeno[1,2,3-cd]pyrene	**165**	48.3	0.1	16.5
dibenzo[a,h]anthracene	**56.5**	48.3	0.1	5.65
Total cPAH TEQ[2]				**304.1**
MTCA Method A Cleanup Level for Unrestricted Land Use				100.00

Total cPAH TEQ Calculation for Sample P2-GP-6:0.8				
Analyte	Result (µg/Kg)	Method Detection Limit (µg/Kg)	Toxicity Equivalency Factor	Adjusted Concentration[1] (µg/Kg)
benzo(a)anthracene	ND	21.1	0.1	1.055
chrysene	ND	42.3	0.01	0.2115
benzo(b)fluoranthene	**30.6**	21.1	0.1	3.06
benzo(k)fluoranthene	ND	21.1	0.1	1.055
benzo(a)pyrene	**24.9**	21.1	1	24.9
indeno[1,2,3-cd]pyrene	ND	42.3	0.1	2.115
dibenzo[a,h]anthracene	ND	42.3	0.1	2.115
Total cPAH TEQ[2]				**34.5**
MTCA Method A Cleanup Level for Unrestricted Land Use				100.00

Total cPAH TEQ Calculation for Sample P2-GP-6:5.7				
Analyte	Result (µg/Kg)	Method Detection Limit (µg/Kg)	Toxicity Equivalency Factor	Adjusted Concentration[1] (µg/Kg)
benzo(a)anthracene	**52.8**	23	0.1	5.28
chrysene	**99.3**	45.9	0.01	0.993
benzo(b)fluoranthene	**110**	23	0.1	11
benzo(k)fluoranthene	**110**	23	0.1	11
benzo(a)pyrene	**56**	23	1	56
indeno[1,2,3-cd]pyrene	**52.4**	45.9	0.1	5.24
dibenzo[a,h]anthracene	ND	45.9	0.1	2.295
Total cPAH TEQ[2]				**91.8**
MTCA Method A Cleanup Level for Unrestricted Land Use				100.00

Total cPAH TEQ Calculation for Sample P2-GP-9:5.0				
Analyte	Result (µg/Kg)	Method Detection Limit (µg/Kg)	Toxicity Equivalency Factor	Adjusted Concentration[1] (µg/Kg)
benzo(a)anthracene	**94.1**	18.5	0.1	9.41
chrysene	**86.4**	37	0.01	0.864
benzo(b)fluoranthene	**65.8**	18.5	0.1	6.58
benzo(k)fluoranthene	**20.3**	18.5	0.1	2.03
benzo(a)pyrene	**38.4**	18.5	1	38.4
indeno[1,2,3-cd]pyrene	ND	37	0.1	1.85
dibenzo[a,h]anthracene	ND	37	0.1	1.85
Total cPAH TEQ[2]				**60.98**
MTCA Method A Cleanup Level for Unrestricted Land Use				100.00

Total cPAH TEQ Calculation for Sample P2-GP-10:1.0				
Analyte	Result (µg/Kg)	Method Detection Limit (µg/Kg)	Toxicity Equivalency Factor	Adjusted Concentration[1] (µg/Kg)
benzo(a)anthracene	**9.51**	19.3	0.1	0.951
chrysene	ND	38.7	0.01	0.1935
benzo(b)fluoranthene	**7.68**	19.3	0.1	0.768
benzo(k)fluoranthene	ND	19.3	0.1	0.965
benzo(a)pyrene	**6.51**	19.3	1	6.51
indeno[1,2,3-cd]pyrene	ND	38.7	0.1	1.935
dibenzo[a,h]anthracene	ND	38.7	0.1	1.935
Total cPAH TEQ[2]				**13.3**
MTCA Method A Cleanup Level for Unrestricted Land Use				100.00

Total cPAH TEQ Calculation for Sample P2-GP-10:5.9				
Analyte	Result (µg/Kg)	Method Detection Limit (µg/Kg)	Toxicity Equivalency Factor	Adjusted Concentration[1] (µg/Kg)
benzo(a)anthracene	**7.69**	19.9	0.1	0.769
chrysene	ND	39.8	0.01	0.199
benzo(b)fluoranthene	**5.27**	19.9	0.1	0.527
benzo(k)fluoranthene	ND	19.9	0.1	0.995
benzo(a)pyrene	**4**	19.9	1	4
indeno[1,2,3-cd]pyrene	ND	39.8	0.1	1.99
dibenzo[a,h]anthracene	ND	39.8	0.1	1.99
Total cPAH TEQ[2]				**10.5**
MTCA Method A Cleanup Level for Unrestricted Land Use				100.00

Total cPAH TEQ Calculation for Sample P2-GP-11:1.6				
Analyte	Result (µg/Kg)	Method Detection Limit (µg/Kg)	Toxicity Equivalency Factor	Adjusted Concentration[1] (µg/Kg)
benzo(a)anthracene	**21.9**	20.5	0.1	2.19
chrysene	ND	40.9	0.01	0.2045
benzo(b)fluoranthene	ND	20.5	0.1	1.025
benzo(k)fluoranthene	ND	20.5	0.1	1.025
benzo(a)pyrene	**34**	20.5	1	34
indeno[1,2,3-cd]pyrene	ND	40.9	0.1	2.045
dibenzo[a,h]anthracene	ND	40.9	0.1	2.045
Total cPAH TEQ[2]				**42.5**
MTCA Method A Cleanup Level for Unrestricted Land Use				100.00

Total cPAH TEQ Calculation for Sample P2-GP-12:0.7				
Analyte	Result (µg/Kg)	Method Detection Limit (µg/Kg)	Toxicity Equivalency Factor	Adjusted Concentration[1] (µg/Kg)
benzo(a)anthracene	**6.34**	20.1	0.1	0.634
chrysene	ND	40.2	0.01	0.201
benzo(b)fluoranthene	**3.64**	20.1	0.1	0.364
benzo(k)fluoranthene	ND	20.1	0.1	1.005
benzo(a)pyrene	**2.94**	20.1	1	2.94
indeno[1,2,3-cd]pyrene	ND	40.2	0.1	2.01
dibenzo[a,h]anthracene	ND	40.2	0.1	2.01
Total cPAH TEQ[2]				**9.2**
MTCA Method A Cleanup Level for Unrestricted Land Use				100.00

Total cPAH TEQ Calculation for Sample P2-GP-12:5.5				
Analyte	Result (µg/Kg)	Method Detection Limit (µg/Kg)	Toxicity Equivalency Factor	Adjusted Concentration[1] (µg/Kg)
benzo(a)anthracene	**4.58**	19.8	0.1	0.458
chrysene	ND	39.7	0.01	0.1985
benzo(b)fluoranthene	ND	19.8	0.1	0.99
benzo(k)fluoranthene	ND	19.8	0.1	0.99
benzo(a)pyrene	ND	19.8	1	9.9
indeno[1,2,3-cd]pyrene	ND	39.7	0.1	1.985
dibenzo[a,h]anthracene	ND	39.7	0.1	1.985
Total cPAH TEQ[2]				**16.5**
MTCA Method A Cleanup Level for Unrestricted Land Use				100.00

NOTES:
1 For detected compounds, calculated as the detected concentration multiplied by the compound's TEF.
For compounds that are ND, calculated as 1/2 of the MDL multiplied by the compound's TEF.
2 Sum of the TEF adjusted concentration for each cPAH.
Shaded text indicates concentrations exceeds cleanup criterion.
< = not detected above the MDL
cPAH = carcinogenic polycyclic aromatic hydrocarbon; MDL = Method Detection Limit; mg/kg = milligrams per kilogram; MTCA = Model Toxics Control Act;
ND = not detected; TEF = toxicity equivalency factor; TEQ = toxic equivalent concentration

0 2,000 4,000

Approximate Scale in Feet

Groundwater and Soil Environmental Investigation Report
Phase 1 and Phase 2 Areas
Port of Seattle Terminal - 91
Seattle, Washington

VICINITY MAP

February 2023 103083-103

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FIG. 1

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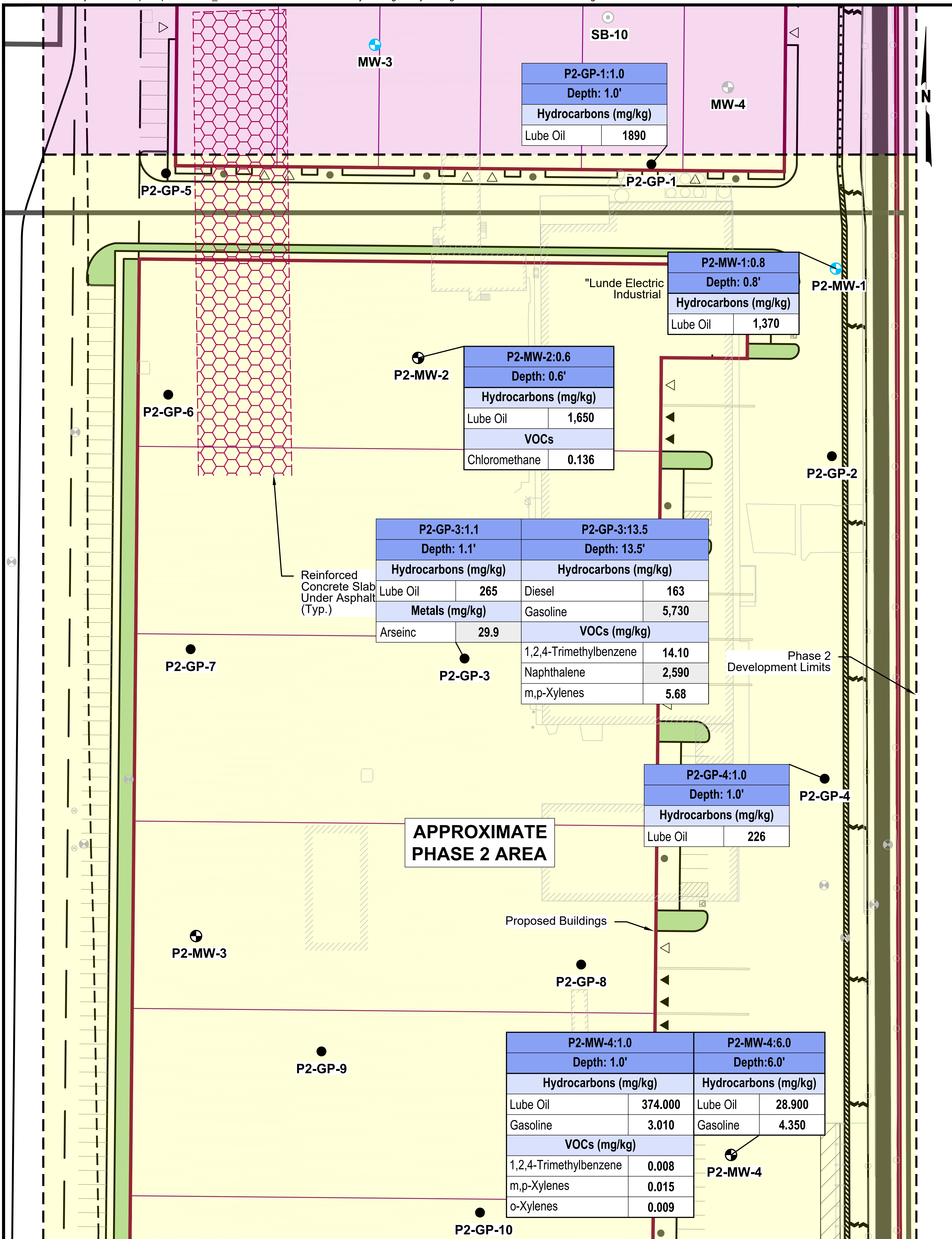
Filename: C:\Users\jrs\CAD Group Dropbox\JDrive_SEA\103083\103\103083-103 Analytics.dwg Layout: Figure 4-1 Date: 02-13-2023 Login: JRS



MATCHLINE FIGURE 2, SHEET 3 of 3

LEGEND

P-1-GP-1 ●	Boring Designation and Approximate Location
P-1-MW-1	Monitoring Well Designation and Approximate Location
29.9	Exceedance of a Regulatory Criteria
VOCs	Voltatile Organic Compounds
mg/kg	Milligrams per Kilogram

NOTE

Figure adapted from file *201-Site plan-Port Option-With Base.dwg*, "Port of Seattle, T-91UPLANDS DEVELOPMENT, Sheet A1.1," dated 10/12/2022.

0 60 120

Scale in Feet

FIG. 4
Sheet 1 of 2

Groundwater and Soil Environmental Investigation Report
Phase 1 and Phase 2 Areas
Port of Seattle Terminal - 91
Seattle, Washington

DETECTED SOIL ANALYTICAL RESULTS

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FIG. 2
Sheet 1 of 2

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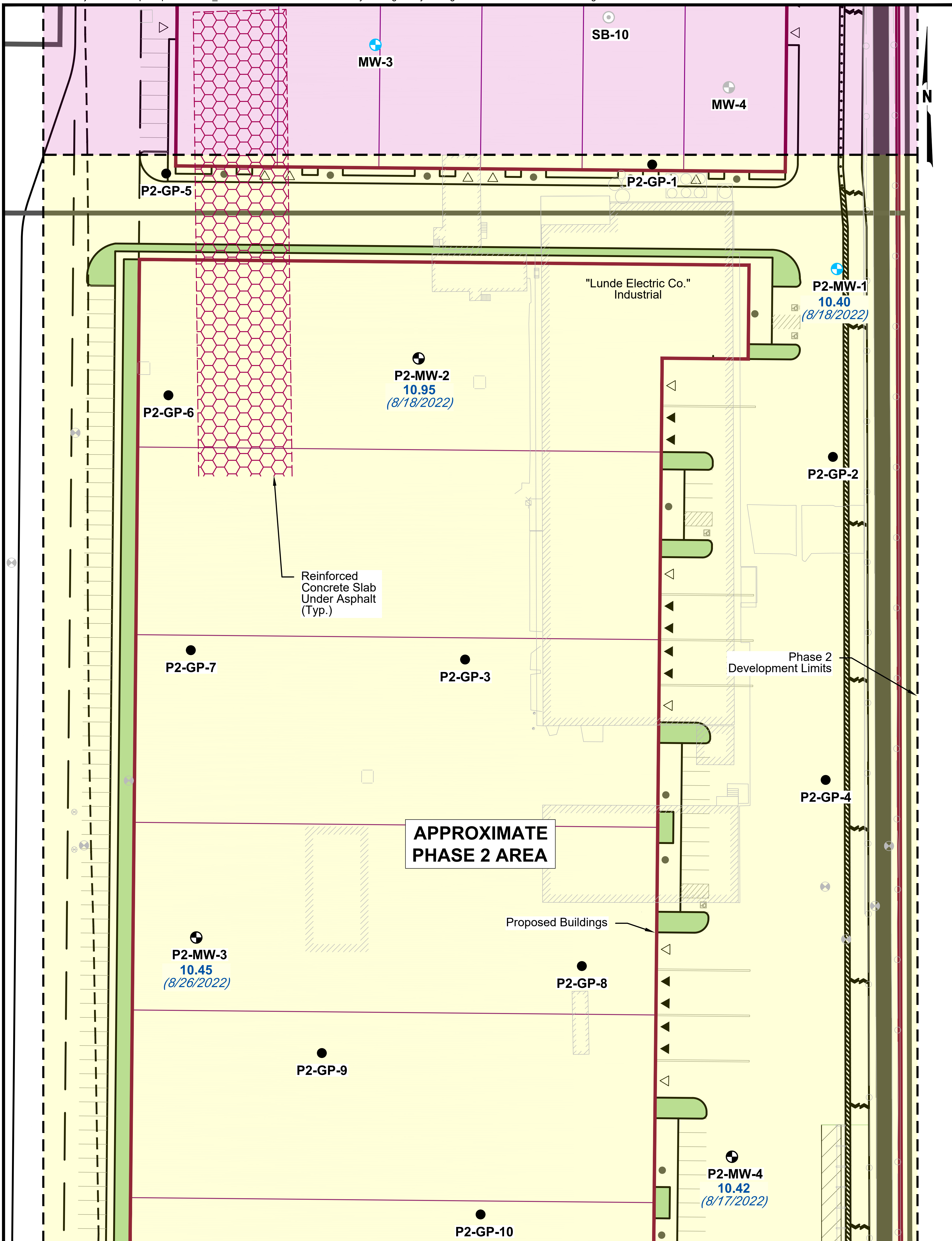

MATCHLINE FIGURE 2, SHEET 3 of 3

LEGEND

P-1-GP-1 ● Boring Designation and Approximate Location

P-1-MW-1 Monitoring Well Designation and Approximate Location

10.40 (8/18/2022) Groundwater Elevation (NAVD88) and Sample Date

NOTE

Figure adapted from file *201-Site plan-Port Option-With Base.dwg*, "Port of Seattle, T-91UPLANDS DEVELOPMENT, Sheet A1.1," dated 10/12/2022.

0 60 120

Scale in Feet

Groundwater and Soil Environmental Investigation Report
Phase 1 and Phase 2 Areas
Port of Seattle Terminal - 91
Seattle, Washington

EXPLORATIONS AND MONITORING WELL LOCATIONS PHASE 2

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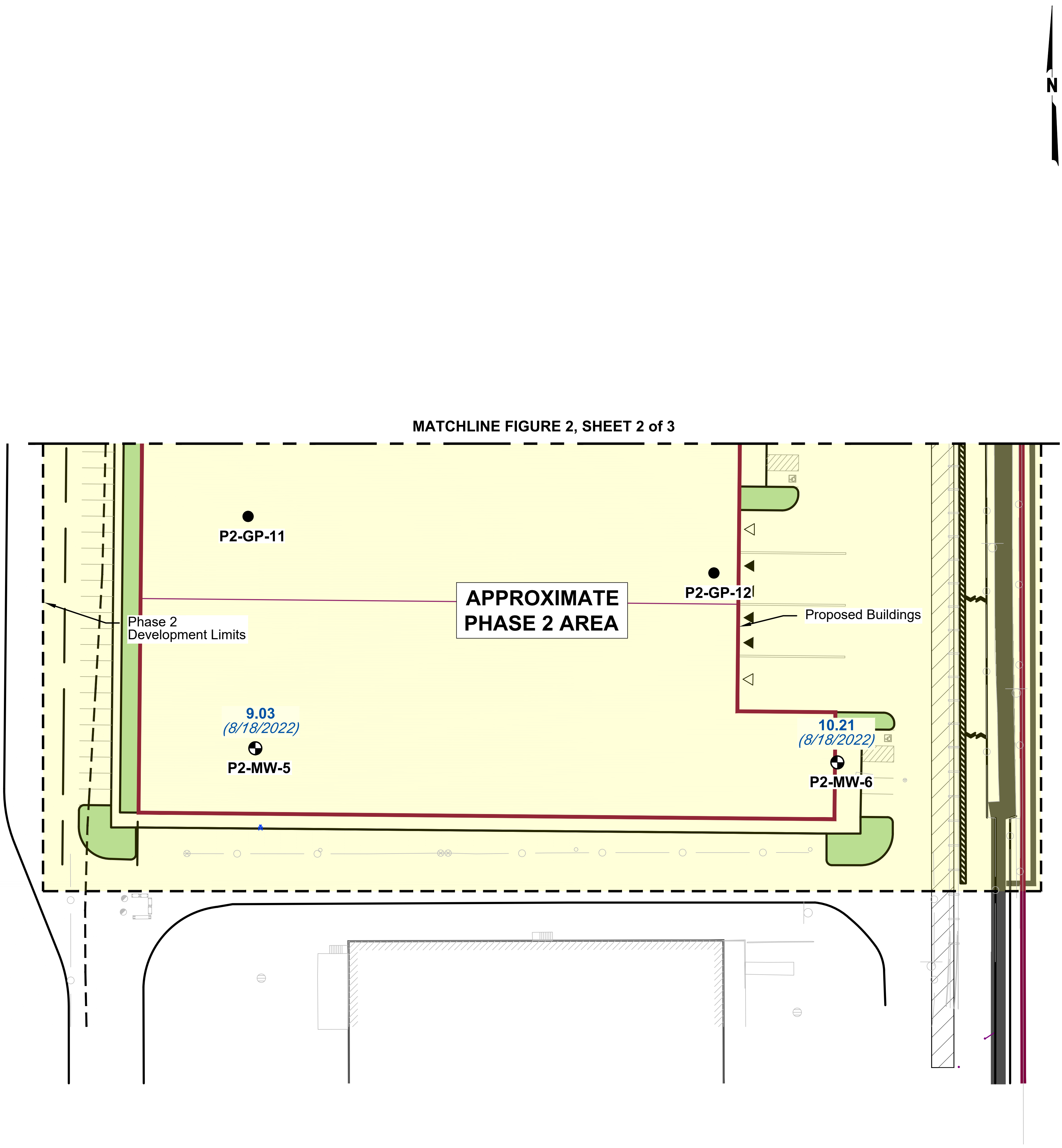
FIG. 2
Sheet 2 of 3

FIG. 2 Sheet 2 of 3



LEGEND

P-1-GP-1 ●	Boring Designation and Approximate Location
P-1-MW-1	Monitoring Well Designation and Approximate Location
9.03 (8/18/2022)	Groundwater Elevation (NAVD88) and Sample Date

NOTE

Figure adapted from file *201-Site plan-Port Option-With Base.dwg*, "Port of Seattle, T-91UPLANDS DEVELOPMENT, Sheet A1.1," dated 10/12/2022.

0 60 120

Scale in Feet

Groundwater and Soil Environmental Investigation Report
Phase 1 and Phase 2 Areas
Port of Seattle Terminal - 91
Seattle, Washington

EXPLORATIONS AND MONITORING WELL LOCATIONS PHASE 2

February 2023 103083-103

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 2
Sheet 3 of 3

FIG. 2
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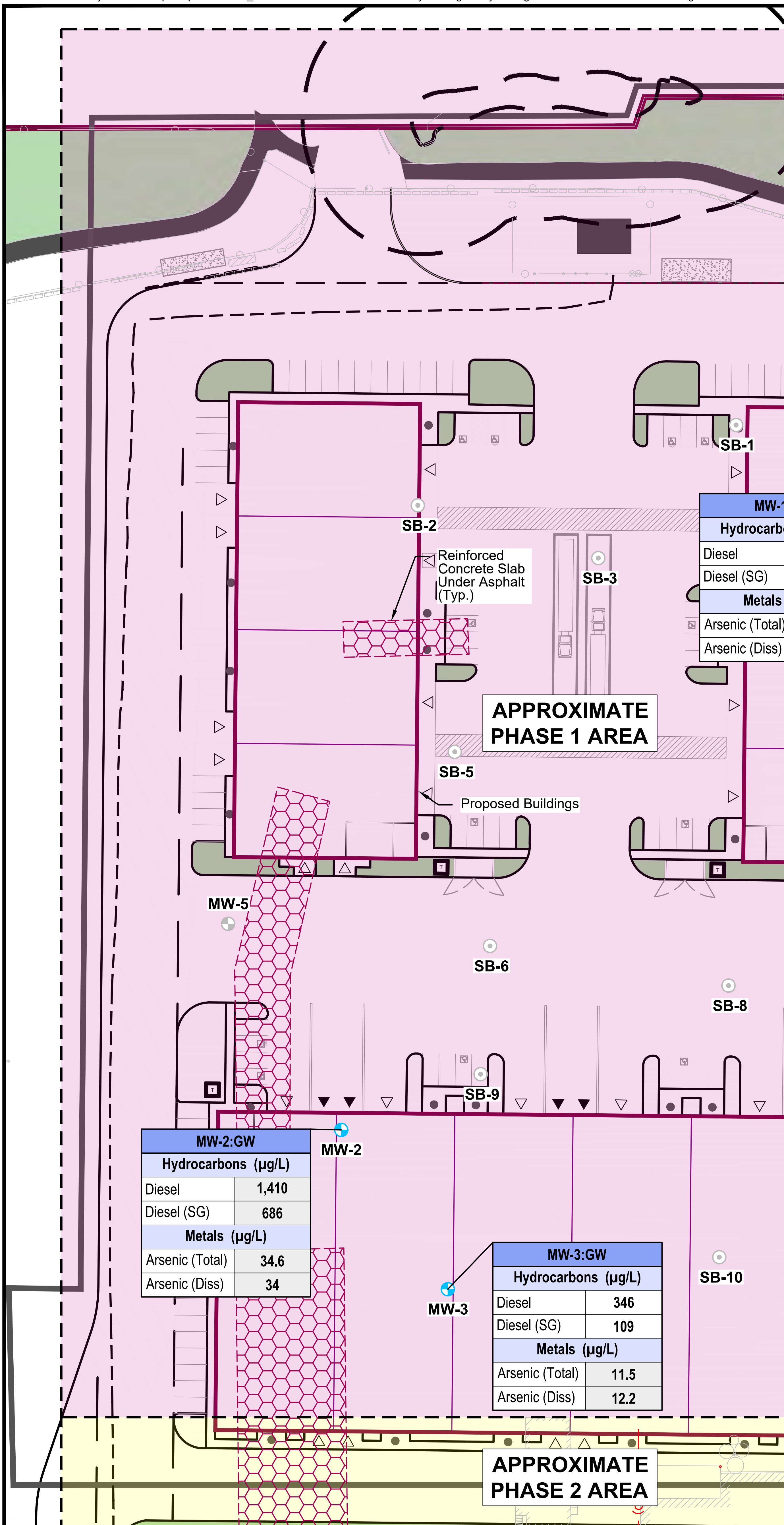
Filename: C:\Users\jrs\CAD Group Dropbox\JDrive_SEA\103083\103\103083-103 Analytics.dwg Layout: Figure 3-1 Date: 02-13-2023 Login: JRS



LEGEND

MW-1 Monitoring Well Designation and Approximate Location *(Wood, 2021)*

MW-1 2021 Wood Monitoring Well to be Sampled

SB-1 Soil Boring Designation and Approximate Location *(Wood, 2021)*

11.5	Exceedance of a Regulatory Criteria
Diss	Dissolved
SG	Silica Gel
µg/L	Micrograms per Liter

NOTE

Figure adapted from file *201-Site plan-Port Option-With Base.dwg*, "Port of Seattle, T-91UPLANDS DEVELOPMENT, Sheet A1.1," dated 10/12/2022.

Groundwater and Soil Environmental Investigation Report
Phase 1 and Phase 2 Areas
Port of Seattle Terminal - 91
Seattle, Washington

TOTAL PETROLEUM HYDROCARBON AND ARSENIC DETECTED GROUNDWATER ANALYTICAL RESULT

February 2023 103083-103

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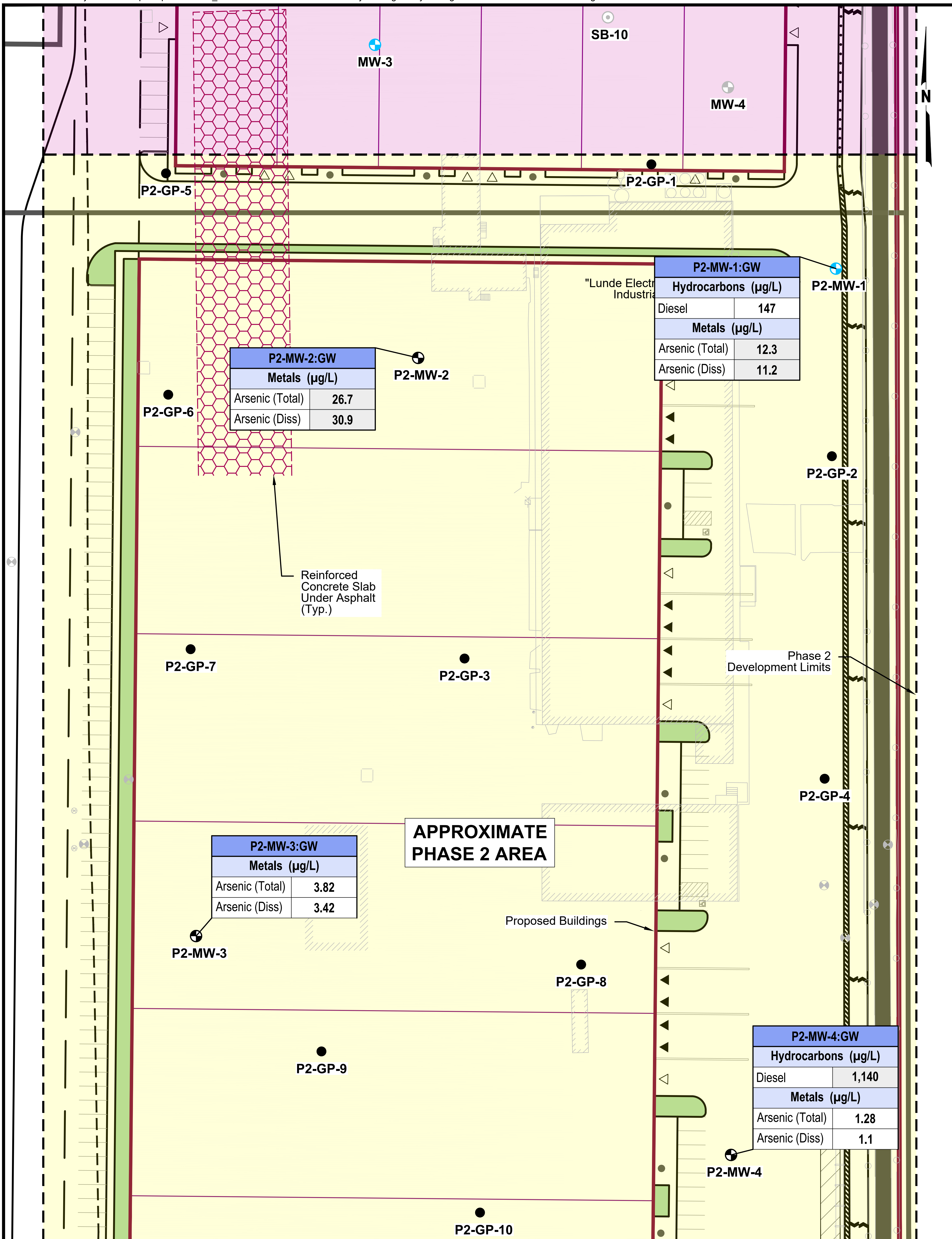
FIG. 3
Sheet 1 of 3

FIG. 3
Sheet 1 of 3

Filename: C:\Users\jrs\CAD Group Dropbox\JDrive_SEA\103083\103\103083-103 Analytics.dwg Layout: Figure 3-2 Date: 02-13-2023 Login: JRS



MATCHLINE FIGURE 2, SHEET 3 of 3

LEGEND

P-1-GP-1 ●	Boring Designation and Approximate Location
P-1-MW-1	Monitoring Well Designation and Approximate Location

11.5	Exceedance of a Regulatory Criteria
Diss	Dissolved
SG	Silica Gel
µg/L	Micrograms per Liter

NOTE

Figure adapted from file *201-Site plan-Port Option-With Base.dwg*, "Port of Seattle, T-91UPLANDS DEVELOPMENT, Sheet A1.1," dated 10/12/2022.

0 60 120

Scale in Feet

Groundwater and Soil Environmental Investigation Report
Phase 1 and Phase 2 Areas
Port of Seattle Terminal - 91
Seattle, Washington

TOTAL PETROLEUM HYDROCARBON AND ARSENIC DETECTED GROUNDWATER ANALYTICAL RESULT

February 2023 103083-103

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 3
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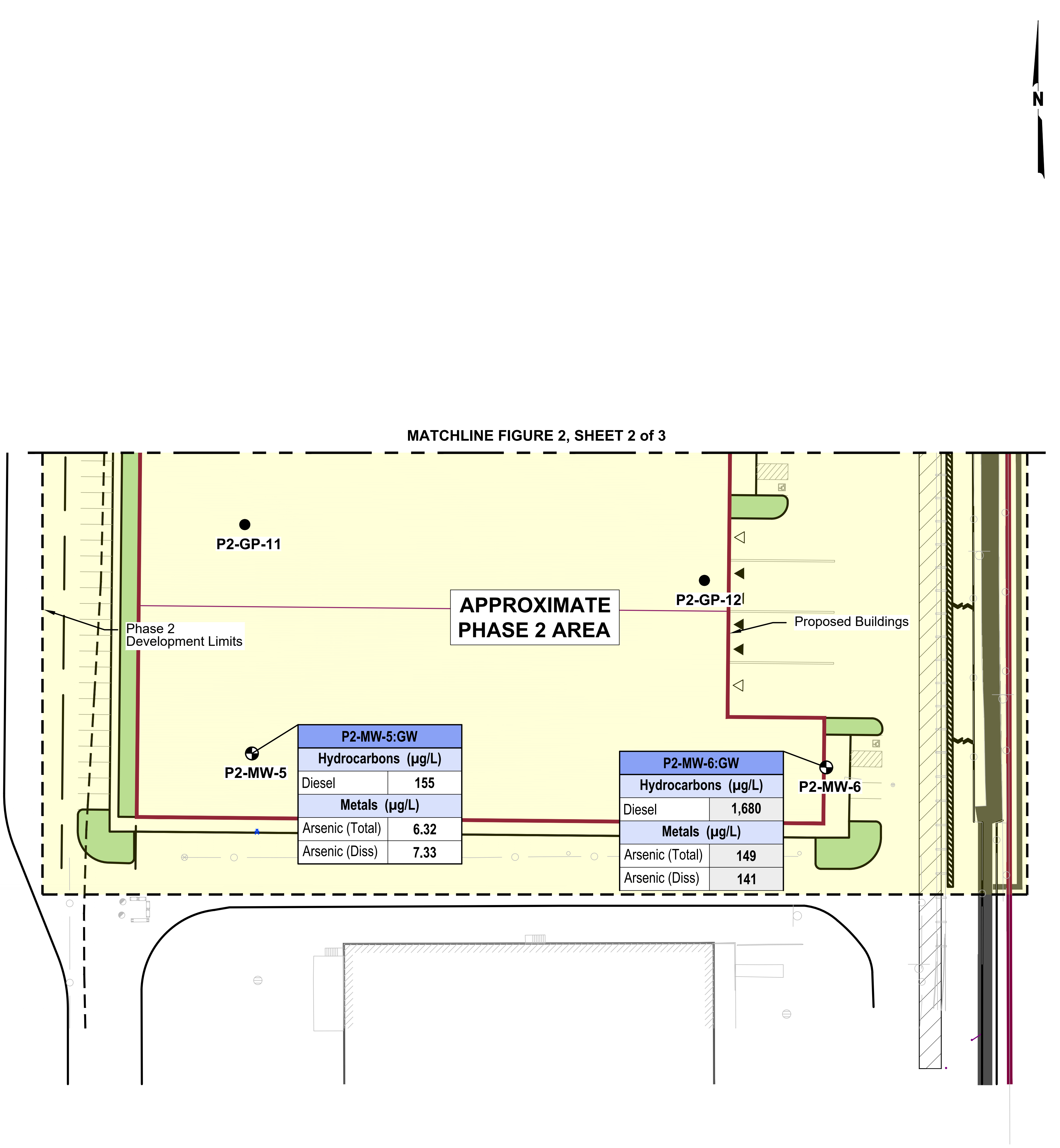
FIG. 3 Sheet 2 of 3

MATCHLINE FIGURE 2, SHEET 2 of 3



P2-MW-5:GW	
Hydrocarbons (µg/L)	
Diesel	155
Metals (µg/L)	
Arsenic (Total)	6.32
Arsenic (Diss)	7.33

P2-MW-6:GW	
Hydrocarbons (µg/L)	
Diesel	1,680
Metals (µg/L)	
Arsenic (Total)	149
Arsenic (Diss)	141

LEGEND

P-1-GP-1 ● Boring Designation and Approximate Location

P-1-MW-1 Monitoring Well Designation and Approximate Location

11.5	Exceedance of a Regulatory Criteria
Diss	Dissolved
SG	Silica Gel
µg/L	Micrograms per Liter

NOTE

Figure adapted from file *201-Site plan-Port Option-With Base.dwg*, "Port of Seattle, T-91UPLANDS DEVELOPMENT, Sheet A1.1," dated 10/12/2022.

0 60 120

Scale in Feet

Groundwater and Soil Environmental Investigation Report
Phase 1 and Phase 2 Areas
Port of Seattle Terminal - 91
Seattle, Washington

TOTAL PETROLEUM HYDROCARBON AND ARSENIC DETECTED GROUNDWATER ANALYTICAL RESULT

February 2023 103083-103

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GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 3
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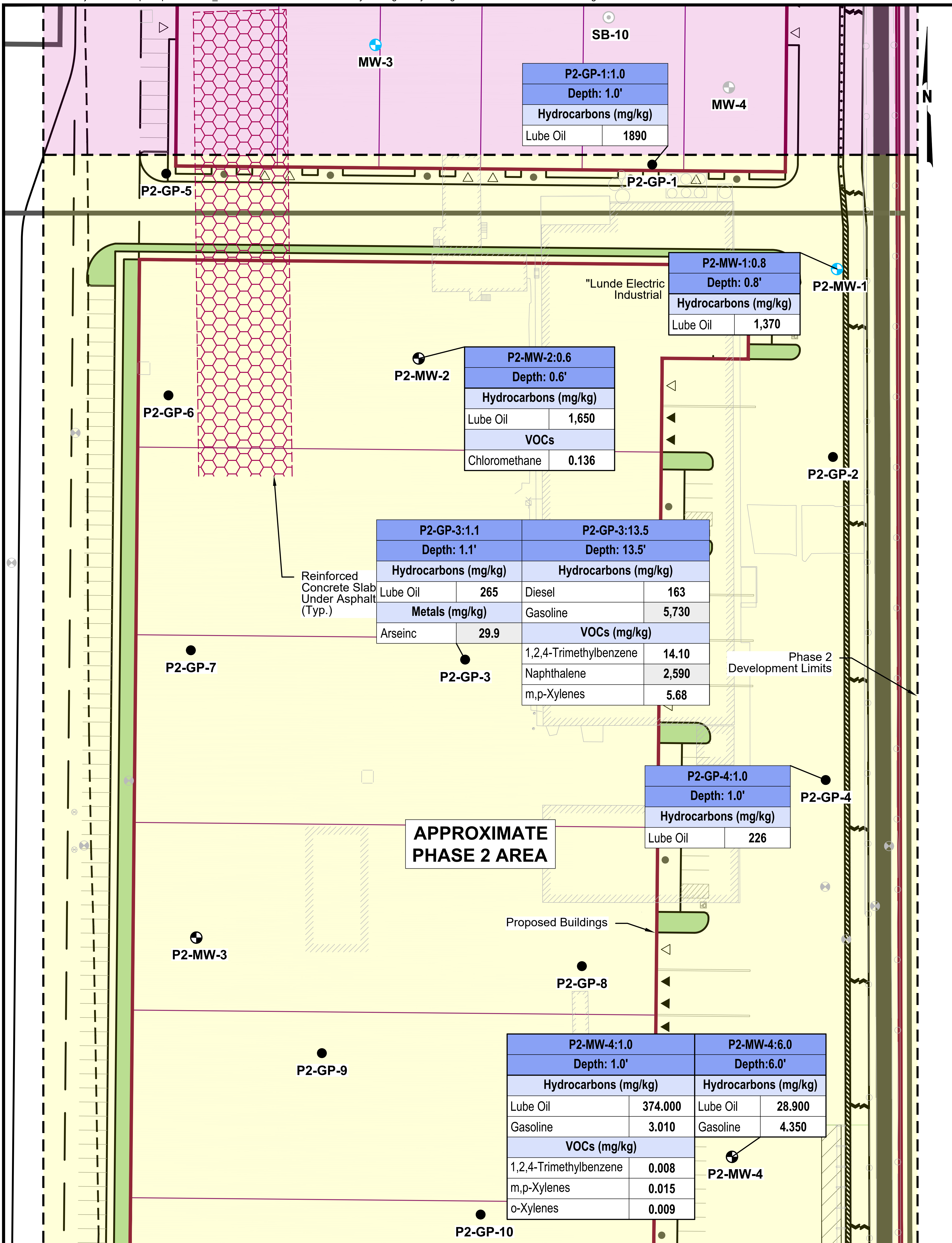


MATCHLINE FIGURE 2, SHEET 3 of 3

LEGEND

P-1-GP-1 ●	Boring Designation and Approximate Location
P-1-MW-1	Monitoring Well Designation and Approximate Location
29.9	Exceedance of a Regulatory Criteria
VOCs	Voltatile Organic Compounds
mg/kg	Milligrams per Kilogram

NOTE

Figure adapted from file *201-Site plan-Port Option-With Base.dwg*, "Port of Seattle, T-91UPLANDS DEVELOPMENT, Sheet A1.1," dated 10/12/2022.

0 60 120

Scale in Feet

Groundwater and Soil Environmental Investigation Report
Phase 1 and Phase 2 Areas
Port of Seattle Terminal - 91
Seattle, Washington

DETECTED SOIL ANALYTICAL RESULTS

February 2023 103083-103

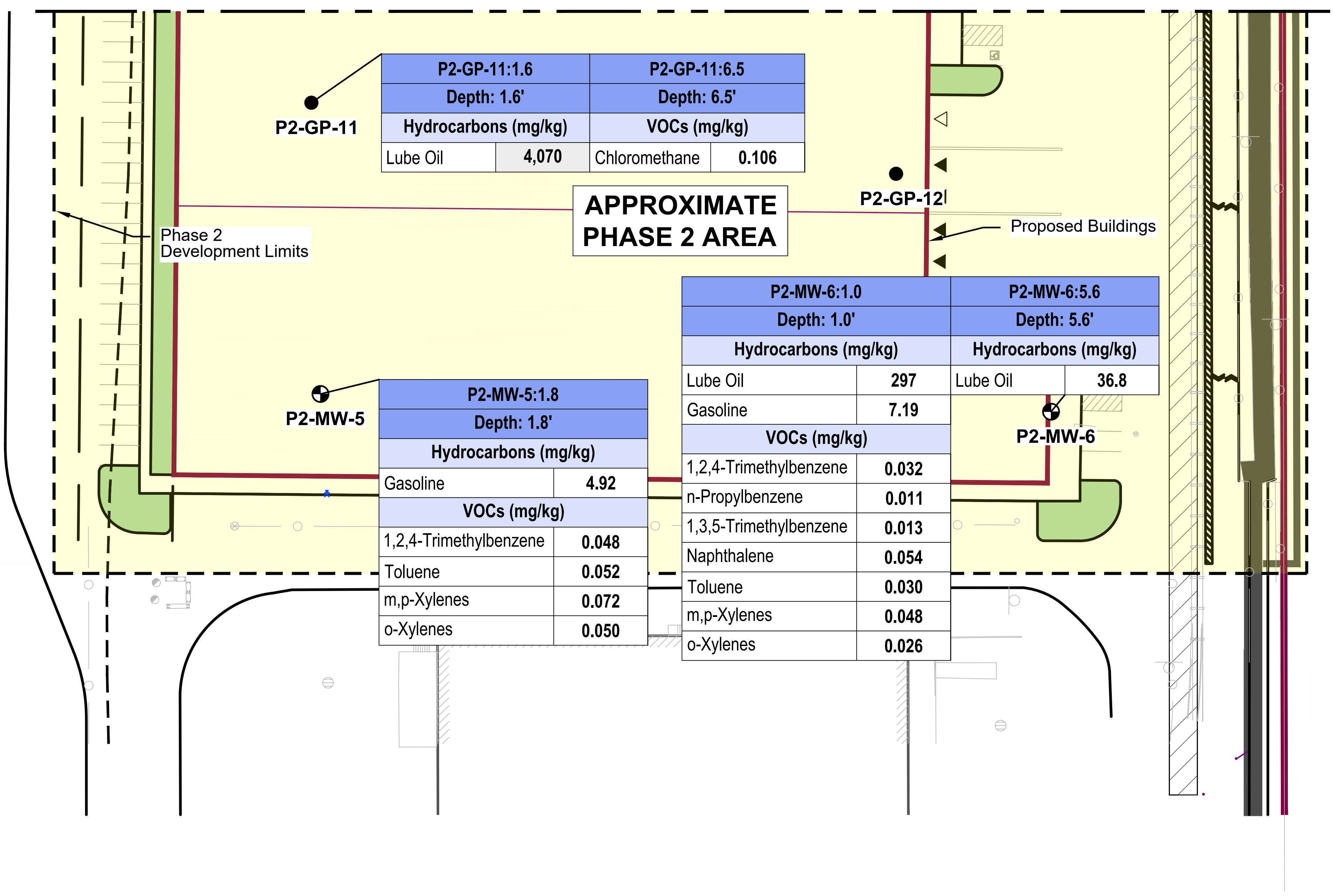
SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 4
Sheet 1 of 2

FIG. 4
Sheet 1 of 2

N

MATCHLINE FIGURE 2, SHEET 2 of 3



P2-GP-11:1.6		P2-GP-11:6.5	
Depth: 1.6'		Depth: 6.5'	
Hydrocarbons (mg/kg)		VOCs (mg/kg)	
Lube Oil	4,070	Chloromethane	0.106

P2-MW-6:1.0		P2-MW-6:5.6	
Depth: 1.0'		Depth: 5.6'	
Hydrocarbons (mg/kg)		Hydrocarbons (mg/kg)	
Lube Oil	297	Lube Oil	36.8
Gasoline	7.19		
VOCs (mg/kg)			
1,2,4-Trimethylbenzene	0.032		
n-Propylbenzene	0.011		
1,3,5-Trimethylbenzene	0.013		
Naphthalene	0.054		
Toluene	0.030		
m,p-Xylenes	0.048		
o-Xylenes	0.026		

P2-MW-5:1.8	
Depth: 1.8'	
Hydrocarbons (mg/kg)	
Gasoline	4.92
VOCs (mg/kg)	
1,2,4-Trimethylbenzene	0.048
Toluene	0.052
m,p-Xylenes	0.072
o-Xylenes	0.050

LEGEND

P-1-GP-1 ● Boring Designation and Approximate Location

P-1-MW-1 Monitoring Well Designation and Approximate Location

29.9 Exceedance of a Regulatory Criteria

VOCs Voltatile Organic Compounds

mg/kg Milligrams per Kilogram

NOTE

Figure adapted from file *201-Site plan-Port Option-With Base.dwg*, "Port of Seattle, T-91UPLANDS DEVELOPMENT, Sheet A1.1," dated 10/12/2022.

0 60 120

Scale in Feet

Groundwater and Soil Environmental Investigation Report
Phase 1 and Phase 2 Areas
Port of Seattle Terminal - 91
Seattle, Washington

DETECTED SOIL ANALYTICAL RESULTS

February 2023 103083-103

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 4
Sheet 2 of 2

FIG. 4
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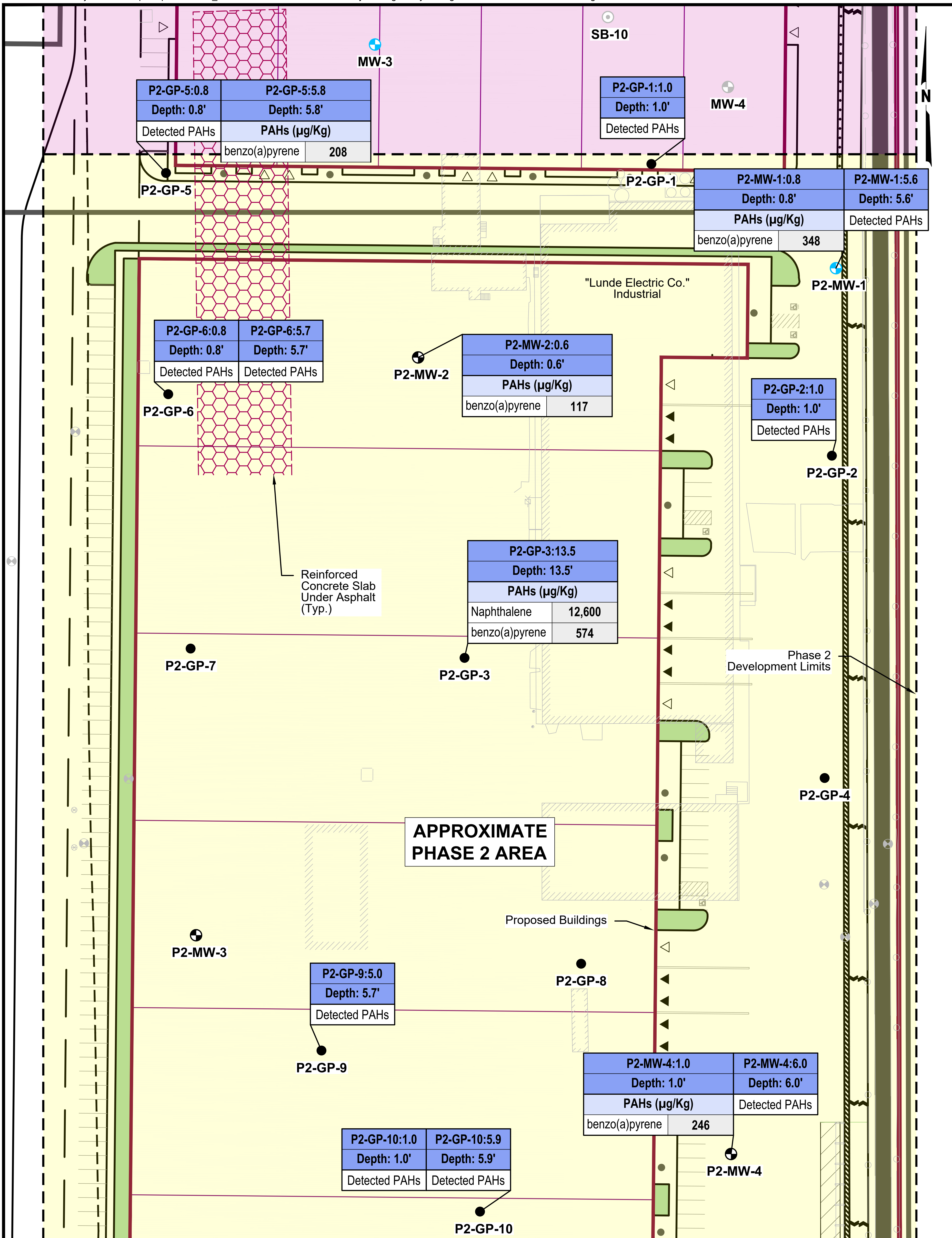

MATCHLINE FIGURE 2, SHEET 3 of 3

LEGEND

P-1-GP-1 ● Boring Designation and Approximate Location

P-1-MW-1 Monitoring Well Designation and Approximate Location

574 Exceedance of a Regulatory Criteria

PAHs Polycyclic Aromatic Hydrocarbons

µg/kg Micrograms per Kilogram

NOTE

Figure adapted from file *201-Site plan-Port Option-With Base.dwg*, "Port of Seattle, T-91UPLANDS DEVELOPMENT, Sheet A1.1," dated 10/12/2022.

0 60 120

Scale in Feet

Groundwater and Soil Environmental Investigation Report
Phase 1 and Phase 2 Areas
Port of Seattle Terminal - 91
Seattle, Washington

DETECTED POLYCYCLIC AROMATIC HYDROCARBON SOIL ANALYTICAL RESULTS

February 2023 103083-103

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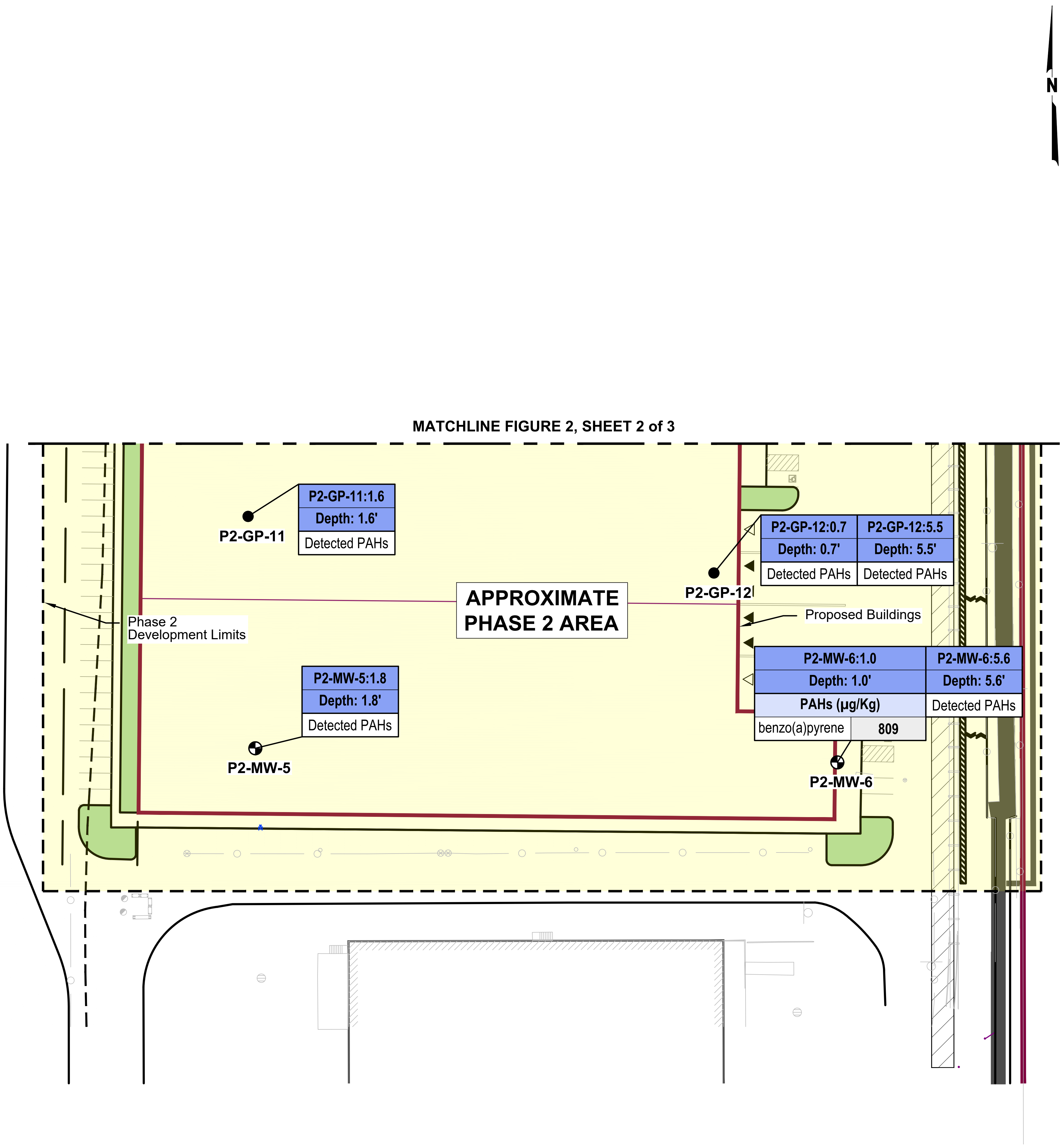
FIG. 5
Sheet 1 of 2

FIG. 5 Sheet 1 of 2



LEGEND

P-1-GP-1 ● Boring Designation and Approximate Location

P-1-MW-1 Monitoring Well Designation and Approximate Location

574	Exceedance of a Regulatory Criteria
PAHs	Polycyclic Aromatic Hydrocarbons
µg/kg	Micrograms per Kilogram

NOTE

Figure adapted from file *201-Site plan-Port Option-With Base.dwg*, "Port of Seattle, T-91UPLANDS DEVELOPMENT, Sheet A1.1," dated 10/12/2022.

0 60 120

Scale in Feet

Groundwater and Soil Environmental Investigation Report
Phase 1 and Phase 2 Areas
Port of Seattle Terminal - 91
Seattle, Washington

DETECTED POLYCYCLIC AROMATIC HYDROCARBON SOIL ANALYTICAL RESULTS

February 2023 103083-103

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 5
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Appendix D

Visual Simulations

DCG WATERSHED

T-91 UPLAND DEVELOPMENT - PHOTOPOINTS

Port of Seattle

April 2023

21A: 21ST AVE W

EXISTING

FUTURE PROJECT RENDERING - REALISTIC

KEY MAP

FUTURE PROJECT RENDERING - BUILDINGS HIGHLIGHTED

DCG WATERSHED

T-91 UPLAND DEVELOPMENT - PHOTOPOINTS

Port of Seattle

April 2023

EBP: ELLA BAILEY PARK

EXISTING

FUTURE PROJECT RENDERING - REALISTIC

KEY MAP

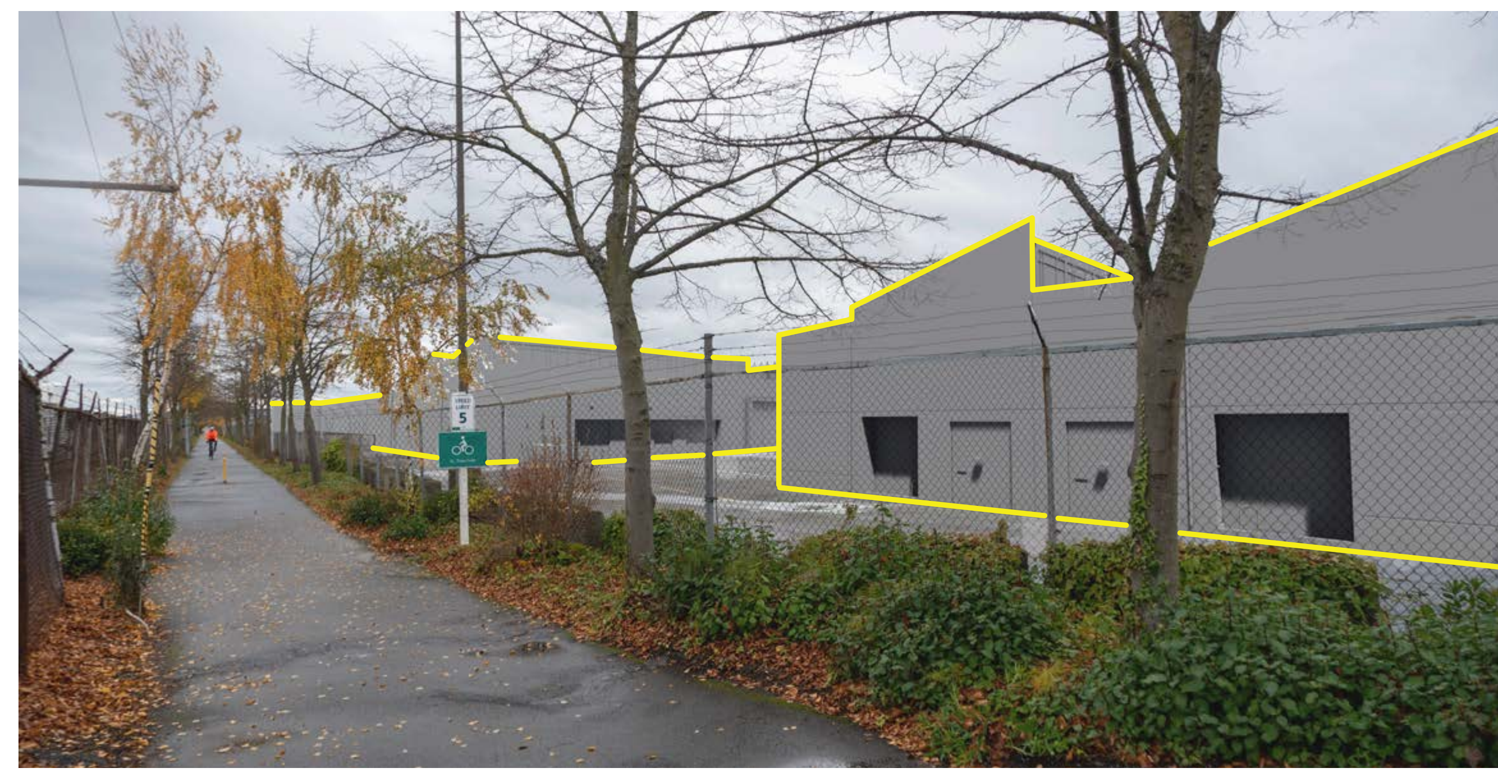
FUTURE PROJECT RENDERING - BUILDINGS HIGHLIGHTED

EBT: ELLIOT BAY TRAIL

EXISTING

FUTURE PROJECT RENDERING - REALISTIC

KEY MAP



FUTURE PROJECT RENDERING - BUILDINGS HIGHLIGHTED

IPP: INTERBAY P-PATCH

EXISTING

FUTURE PROJECT RENDERING - REALISTIC

KEY MAP

FUTURE PROJECT RENDERING - BUILDINGS HIGHLIGHTED

DCG WATERSHED

T-91 UPLAND DEVELOPMENT - PHOTOPOINTS

Port of Seattle

April 2023

MB: MAGNOLIA BRIDGE

EXISTING

FUTURE PROJECT RENDERING - REALISTIC

KEY MAP

FUTURE PROJECT RENDERING - BUILDINGS HIGHLIGHTED

EXISTING

FUTURE PROJECT RENDERING - REALISTIC

KEY MAP

FUTURE PROJECT RENDERING - BUILDINGS HIGHLIGHTED

Appendix E

Historic/Cultural Resources Analysis

On-file with the Port of Seattle

Appendix F

Transportation Impact Analysis

TERMINAL 91 UPLANDS DEVELOPMENT

TRAFFIC IMPACT ANALYSIS REPORT

April 25, 2023

Prepared for:

Port of Seattle
Terminal 91 Uplands
PO Box 1209
Seattle, WA 98111

4/25/23

Prepared by:

PH CONSULTING
Balanced Transportation Solutions

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Tacoma, WA 98405
O 253.267.8650

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Appendix D .... Collision Data

Appendix E .... Level of Service (LOS) Reports

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1.0 EXECUTIVE SUMMARY

Introduction:

This traffic impact analysis report was prepared to evaluate the redevelopment of the Uplands area of Terminal 91 (T91). The terminal provides space for industrial, maritime, and warehouse use, and also is used for cruise ship embarkment/disembarkment via the Smith Cove Cruise terminal. This development is anticipated to be constructed in two phases.

Phase 1 would initially construct 118,250 square feet of industrial space including warehousing and offices, with an expected build year of 2025. Future mezzanines may be installed of 16,010 square feet for a total square footage of 134,260 square feet. There will be partial demolition of Golden Alaska Building in Phase 1.

Phase 2 would demolish the rest of the Golden Alaska Building and would initially construct an additional 288,000 square feet of industrial space. Future mezzanines may be installed of 38,990 square feet for a total phase 2 added square footage of 326,990. To be conservative, credit for the Golden Alaska Building demolition is only accounted for in Phase 2.

The following time periods were analyzed for both the AM Peak and PM Peak periods:

a. Existing conditions (2022),
b. No-Build (2025),
c. Build Phase 1 Only (2025), supports initial Building Permit Application
d. No-Build (2032),
e. Build Phases 1 & 2 (2032), supports the Master Use Permit

The purpose of this report is to identify traffic impacts resulting from the modification of the proposed development, potential mitigation requirements, and evaluate site access issues and requirements.

Existing Area Conditions:

Vehicular access to the Uplands site is via specific gates, with the East Gate serving as the primary access point. Access to the East Gate is via the intersection of Alaskan Way W and Elliott Ave over the Galer St Flyover. The study intersections are listed below. Under Existing conditions, all intersections are operating at acceptable delay and Level of Service (LOS).

1. 15th Ave NW & NW Market St
2. 15th Ave W & Gilman Dr W
3. 15th Ave W & W Garfield St
4. Elliott Ave W & W Galer St
5. Elliott Ave W & W Galer St Flyover
6. Elliott Ave W & Prospect St
7. Elliott Ave W & W Mercer Pl
8. W Mercer St & Queen Anne Ave N
9. W Mercer St & 1st Ave N
10. Alaskan Way W & W Galer St Flyover
11. Pier 90 & Uplands Rd / East Gate (internal to Port)
12. Magnolia Bridge & 23rd Ave W / West Gate

There are currently two access points for pedestrians and bicyclists to enter/exit T91: the primary access point at the East Gate and the secondary access point near the West Gate. There are some gaps in the pedestrian network leading to these access points. The Elliott Bay Trail is a mixed-use 3.4-mile-long asphalt path that encircles T91 on the north, east and west sides. This trail connects to downtown Seattle to the south and the Magnolia neighborhood to the north. There are nine (9) bus routes that service T91.

Projected Traffic Conditions:

A growth rate was applied to the traffic volumes to reach the 2025 and 2032 study years. Pipeline project trips and fishing fleet trips were also added.

Project trips were generated using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition - Land Use Code (LUC) 140 for “Manufacturing”. PH Consulting (PH) approximated mode choice based on the Heffron Transportation Report, supported by the American Community Survey (ACS) data from the year 2020 for census track 58.04 as well as zip code 98119, which are where T91 is located. It is expected that approximately 73% of trips are by vehicle, 20% by transit, 4% by bike, and 3% by pedestrians.

PH used the U.S. Census Bureau’s *OnTheMap* Tool to identify the areas where employees of T91 lived in 2019 to distribute project trips through the transportation network. 21% of trips are expected to come from the North along 15th Ave W, 73% from the south, and 6% from surrounding neighborhoods. It is assumed that vehicles would continue to primarily use the East Gate.

Transportation Analysis:

For all No Build and Build scenarios for 2025 and 2032 conditions, the study intersections are expected to operate at acceptable delay and LOS. No mitigation is required. Left turn queues are expected to remain within reasonable lengths. The development will provide sufficient parking to meet City Code requirements.

To improve pedestrian and bike accessibility and circulation inside T91 with the addition of the Uplands Phase I development, the following recommendations should be considered:

- Reopen the North Gate to allow pedestrian and bicycle access (no vehicular access).
- Update web-based navigation applications, such as GoogleMaps, to direct transit users to stop at a location near the North Gate to access the Uplands area.
- Update web-based navigation applications, such as GoogleMaps to route passengers who wish to go to the cruise terminal at Smith Cove to be dropped off on Elliott Avenue W rather than on the Magnolia Bridge.
- Provide a circulatory pedestrian and bicycle walkway within Uplands and along the perimeter fence.
- Provide an ADA compliant walkway through the East Gate to connect the Elliott Bay Trail crossing to the start of striped pedestrian walkway past the gate.

2.0 INTRODUCTION

This Traffic Impact Analysis evaluates the development of the Uplands area of Terminal 91 (T91). This report has been prepared based on planning information provided by the Port of Seattle and with methods consistent with the City of Seattle Land Use Code, standard Institute of Transportation Engineers (ITE) Traffic Analysis practices, past accepted practices on similar projects, new Seattle Department of Construction and Inspections (SDCI) staff directed approaches, and engineering judgement.

2.1 Project Description

T91 is located at 2001 W Garfield St, to the Northwest of downtown Seattle. The terminal provides space for industrial, maritime, and warehouse use, and for cruise ship embarkment/disembarkment via the Smith Cove Cruise terminal. The site is located on Elliott Bay and is bordered by the Balmer Rail Yard (BNSF) to the east and Magnolia Bluff to the west. Two piers extend into Elliott Bay. The Uplands are located at the north end of T91, north of the Magnolia Bridge. T91 is shown in **Figure 2-1.**

This report considers modification of the current Uplands area to support various flexible tenant uses. Per the Port of Seattle this project “aims to preserve and enhance industrial land that contributes to local economic impact of maritime-focused operations, and diversify uses and assets, while balancing environmental, financial, and community stewardship goals of the Port of Seattle”. This development is anticipated to be constructed in two phases, with improvements shown in **Figure 2-2.**

The near-term improvements, Phase 1, would initially construct 118,250 square feet of industrial space including warehousing and offices, with an expected build year of 2025. Future mezzanines may be installed of 16,010 square feet for a total square footage of 134,260. There will also be partial demolition of the Golden Alaska Building in Phase 1.

The long-term improvements, Phase 2, would demolish the rest of the Golden Alaska Building and would initially construct an additional 288,000 square feet of industrial space. Future mezzanines may be installed of 38,990 square feet for a total phase 2 added square footage of 326,990. This would result in an initial total build-out of 406,250 square feet without mezzanines and a total build-out of 461,250 square feet with mezzanines. Phase 2 has a projected build year of 2030. To be conservative, credit for the building demolition will be associated with Phase 2 only. A full-size site plan is included in **Appendix A**. Note that the site plan shows the initial buildings only and does not reflect the mezzanine additions.

Figure 2-1: Site Vicinity Map (Source: Heffron Transportation)

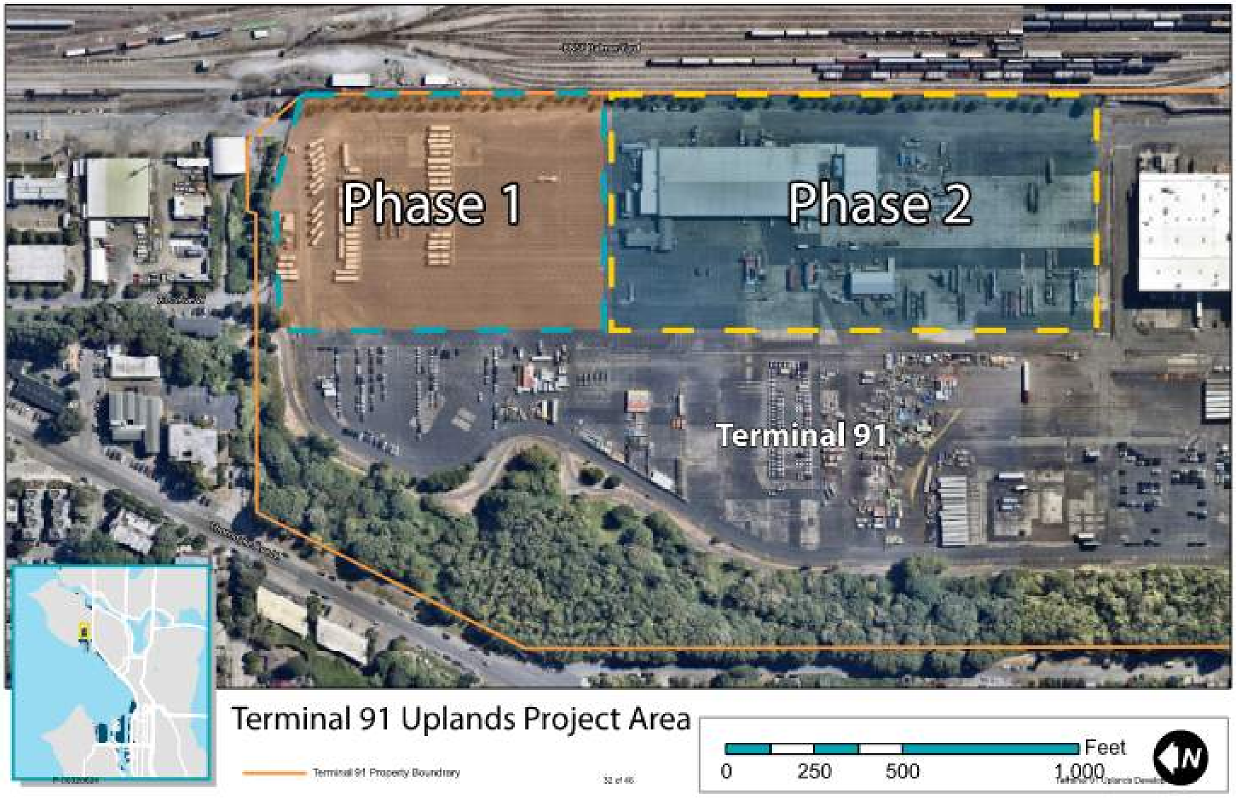

Figure 2-2: Site Phases of Development (Source: Port of Seattle)

2.2 Project Approach

The purpose of this report is to identify potential traffic impacts resulting from the modification of the proposed development of the Uplands area, potential mitigation requirements of public agencies, evaluate site access issues and requirements, and evaluate policies to assist with mode share and greenhouse gas emissions goals. An initial Build year for Phase 1 of 2025 was analyzed as well as a 10-year horizon timeframe of 2032.

The following time periods were analyzed:

1. Existing conditions (2022),
2. No-Build (2025),
3. Build Phase 1 Only (2025), supports initial Building Permit Application
4. No-Build (2032),
5. Build Phases 1 & 2 (2032), supports the Master Use Permit

The tasks listed below were completed to analyze the traffic conditions:

- Reviewed adopted planning documents to assess and describe existing conditions in the subject area,
- Collected new traffic data for the study intersections,
- Reviewed recent traffic studies completed for T91,
- Estimated background traffic volumes for the year 2025 and 2032,
- Reviewed various traffic analysis reports surrounding the Uplands development contributing to background traffic volumes,

- Completed trip generation and distribution for the AM and PM peak hour for the year 2025 and 2032,
- Conducted level of service (LOS) analysis for the time periods listed above,
- Assessed potential frontage improvement and offsite mitigation requirements, and
- Analyzed potential site access requirements and restrictions.

2.2.1 Intersection Operations Methodology

Intersection operations were evaluated in Synchro 11 using Highway Capacity Manual (HCM) 6th methodology whenever possible (HCM 2000 when HCM 6th methodology not applicable). Automobile delay and LOS are a measurement of intersection performance, with LOS A representing the lowest delay and LOS F representing the highest delay. For signalized intersections and all-way stop intersections, LOS is reported for the intersection overall to measure whether the LOS standard is met. For two-way or one-way stop-controlled intersections, LOS is reported and evaluated for individual movements.

The City of Seattle does not have a specific standard for LOS threshold. However, typically a minimum LOS standard is considered to be LOS D. If a project were to cause the LOS to degrade from an A, B, C, or D to an E or F, that would be considered a significant impact. The SDCI typically considers a project to have a significant impact if more than five (5) seconds of delay is added to an intersection operating at LOS E or F under the No Build condition.

2.3 Data and Information Sources

- *American Community Survey,* Northwest Seattle, US Census Bureau, Accessed November 29, 2022.
- *COVID-19 Multimodal Transportation System Performance Dashboard*, WSDOT, Accessed 2022.
- *Fishing fleet data,* Port of Seattle, information provided April 19, 2023.
- *Highway Capacity Manual* 6th Edition, Transportation Research Board, 2022.
- *OnTheMap* Tool, US Census Bureau, Accessed August 29, 2022.
- *Shaping Seattle: Property & Building Permits* Tool, Seattle Department of Planning and Development, Accessed November 30, 2022.
- *Terminal 91 - Access and Circulation Plan*, Heffron Transportation, February 21, 2022.
- *Terminal 91 Uplands Redevelopment – Existing Conditions Traffic Analysis*, Fehr & Peers, January 20, 2021.
- *T91 Uplands Redevelopment Infrastructure Study* – Traffic Analysis, Fehr & Peers, November 28, 2017.
- *Traffic Counts*, IDAX, September and November, 2022.
- *Trip Generation Manual* 11th Edition, ITE, 2021.
- *Trip Generation Handbook* 3rd Edition, ITE, 2017.

3.0 EXISTING AREA CONDITIONS

3.1 Study Area

The study area includes internal and external circulation areas related to the T91 Uplands project. Specific study intersections were selected based on proximity to the project site, nature of intersection usage, and number of new trips expected to travel through intersections in the area. This is described in more detail in section 4. After discussion with SDCI, 11 external intersections and one (1) internal intersection were selected to be studied as listed below and as shown on **Figure 3-1**.

13. 15th Ave NW & NW Market St
14. 15th Ave W & Gilman Dr W
15. 15th Ave W & W Garfield St
16. Elliott Ave W & W Galer St
17. Elliott Ave W & W Galer St Flyover
18. Elliott Ave W & Prospect St
19. Elliott Ave W & W Mercer Pl
20. W Mercer St & Queen Anne Ave N
21. W Mercer St & 1st Ave N
22. Alaskan Way W & W Galer St Flyover
23. Pier 90 & Uplands Rd / East Gate (internal to Port)
24. Magnolia Bridge & 23rd Ave W / West Gate

3.1 Vehicular Site Access

T91 is a facility that has limited access to the general public. Access to the site is via specific gates. **Figure 3-2** shows the current gate access points to T91 - primarily the West Gate and the East Gate.

The East Gate is the primary access point. Access to the East Gate is via the intersection of Alaskan Way W and Elliott Ave over the Galer St Flyover. Gate B is an internal gate accessed via the East Gate area. Gate B is only used on cruise days to prevent public vehicles from travelling into other parts of the terminal as the West Gate and East Gate are fully open on those days.

The West Gate is typically only used when cruise ships are in port under current conditions. It is accessed via the Magnolia bridge on/off ramps on the western end of the bridge at 23rd Ave W. These ramps only connect to the east. Traffic from the Magnolia neighborhood to the west cannot directly access the West Gate.

There used to be vehicular access at the north end of the Uplands area, referred to as the North Gate. Although this access is currently closed, there may be opportunities for multimodal access in the future.

Vehicles travelling to T91 use various public streets. **Table 3-1** shows key roadways that are used to access the project site, and includes details such as speed limits, street classifications, description of the lanes on each road, and non-motorized and transit facilities.

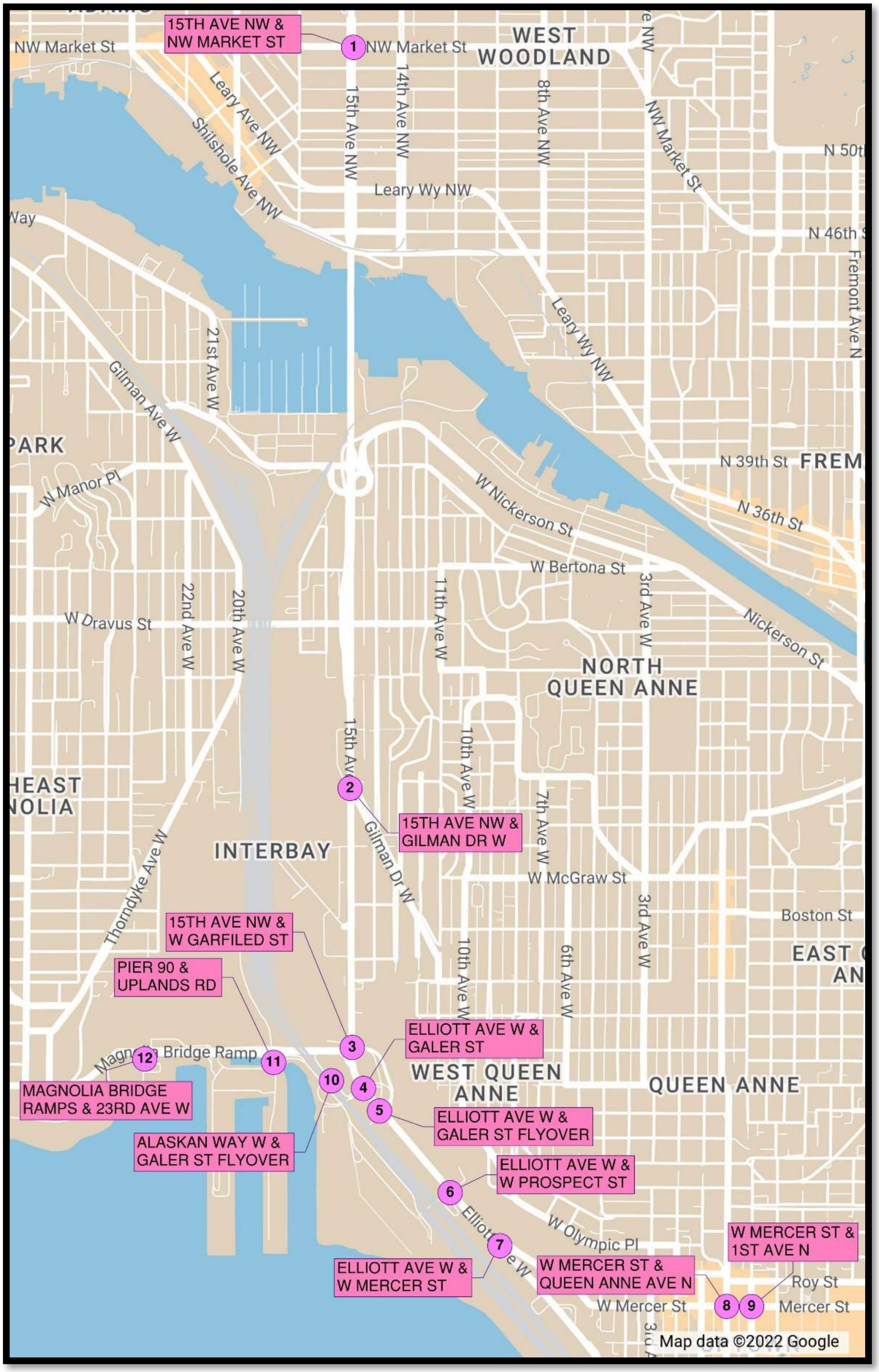

Figure 3-1: Study Intersections

Figure 3-2: Existing Site Access (Source: Heffron Transportation)

Table 3-1: Study Area Roadways (Source: Heffron Transportation)

Street	Classification(s) [a]	Speed Limit	Lanes	Non-Motorized and Transit Facilities
Elliott Avenue W / 15th Avenue W	Principal Arterial Major Truck Street Major Transit Street	30 mph south of Magnolia Bridge, 25 mph north of Magnolia Bridge	Between Ballard Bridge and about W Armour Street, 3 travel lanes each direction. Between W Armour Street and W Garfield Street, curb lane is designated as a BAT [b] lane during peak hours (7-9 A.M. and 3-7 P.M.). Between W Garfield Street and Harrison Street, parking is allowed in curb lane except southbound from 7 to 9 A.M. and northbound from 3 to 7 P.M. Curb lane becomes BAT Lane when parking is prohibited.	Sidewalks on both sides Ramps up to W Galer St Flyover connecting transit stops to T-91 BAT lanes in certain segments (see left). Bus stops every 2 to 4 blocks.
Magnolia Bridge / Garfield Street	Minor Arterial Major Transit Street	25 mph	1 to 2 travel lanes in each direction. No Parking.	Sidewalk on south side and intermittently on north side. Bus stops in middle of bridge.
Thorndyke Avenue W / 20th Avenue W	Minor Arterial Minor Transit Street	25 mph	1 travel lane each direction. Intermittent on-street parking both sides.	Sidewalks on both sides Bike lanes north of W Plymouth St. Bus stops every 2 to 3 blocks
W Dravus Street	Principal Arterial Minor Truck Street Minor Transit Street	25 mph	2 travel lanes in each direction. On-street parking on south side between 16th Avenue W and 17th Avenue W.	Sidewalks on both sides

a. *Sources: City of Seattle, Street Classification Map – www.seattle.gov/transportation/permits-and-services/interactive-maps, (Accessed, May 2022).*
b. *BAT stands for Business Access and Transit-only lane.*

3.2 Existing Traffic Volumes and Conditions

The Port of Seattle collected turning movement counts at five (5) of the study intersections on Thursday September 1st and Thursday September 8th, 2022 as part of annual traffic monitoring. PH Consulting (PH) collected the remaining seven (7) intersection turning movement counts on Tuesday, November 15th, 2022. Raw traffic counts are included in **Appendix C.**

Some volume balancing was completed. Existing conditions (year 2022) AM and PM traffic volumes are shown in **Figure 3-3** and **Figure 3-4**, respectively. Existing conditions traffic operations are summarized in **Table 3-2**. All intersections currently operate at acceptable LOS and delay. LOS reports are included in **Appendix E**.

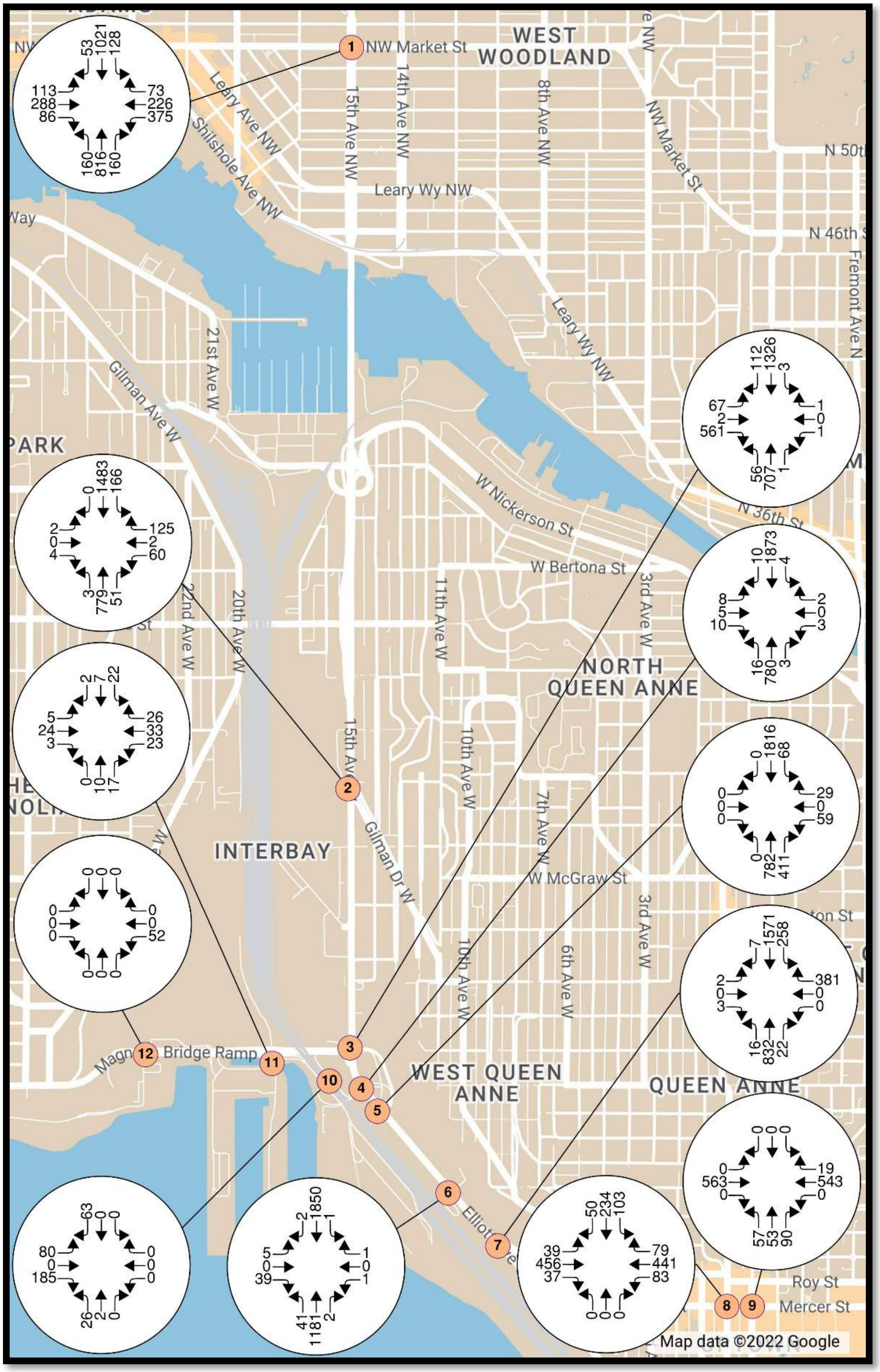

Figure 3-3: Existing AM Peak Hour Volumes

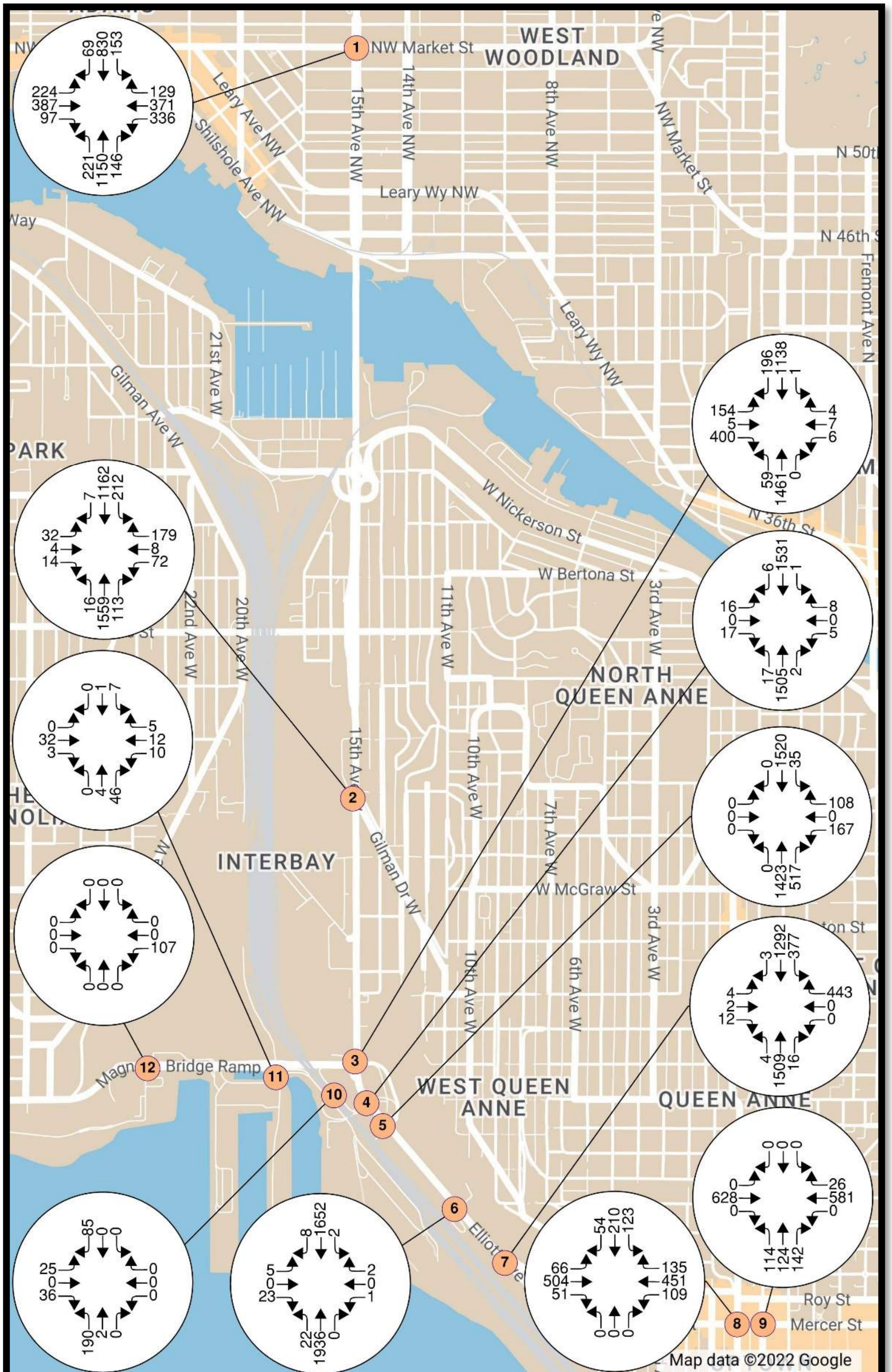

Figure 3-4: Existing PM Peak Hour Volumes

Table 3-2: Existing Conditions LOS and Delay

INTERSECTION		LOS	Delay (sec)	LOS	Delay (sec)
		AM Peak		PM Peak	
1.	15th Ave NW & NW Market St	D	44.8	D	48.9
2.	15th Ave W & Gilman Dr W	B	13.2	C	27.6
3.	15th Ave W & W Garfield St	A	4.0	A	6.7
4.	Elliott Ave W & W Galer St	A	4.2	A	7.5
5.	Elliott Ave W & W Galer St Flyover	A	7.4	C	21.8
6.	Elliott Ave W & Prospect St	A	6.7	A	5.7
7.	Elliott Ave W & W Mercer Pl	B	15.5	C	20.6
8.	W Mercer St & Queen Anne Ave N	B	17.3	B	17.8
9.	W Mercer St & 1st Ave N	A	7.4	B	10.5
10.	Alaskan Way W & W Galer St Flyover	A	8.5	B	17.0
11.	Pier 90 & Uplands Rd / East Gate (internal to Port)	A	7.8	A	7.2
12.	Magnolia Bridge & 23rd Ave W / West Gate	A	7.3	A	7.7

3.3 Collision History

Historic collisions at the study intersections were analyzed for the five-year period from May 2017 to 2022. Collision data was provided by WSDOT. **Table 3-3** summarizes the collision history at each of the study intersections.

Table 3-3: Collision Data

Intersection	No. Collisions	Severity			Ped. or Bike	Collision Type			
		Injury	Serious Injury	Fatality		Rear End	Side Swipe	Opp. Left Turn	Enter at Angle
15th Ave W/ NW Market St	27	9	2	1	3(P) 2(B)	11	7		3
15th Ave W / Gilman Drive	13	7			1 (B)	2	1	7	
15th Ave W / W Garfield St	9	2	2	1	1 (P)	1	1	2	
Elliott Ave W / W Galer St	6	4	1		1 (P)	3	1	1	
Elliott Ave W / W Galer St Flyover	3	2				2			1
Elliott Ave W and Prospect St	4	5				2		1	
Elliott Ave W / W Mercer Pl	16	9	1		2 (B)	6	3	3	2
Mercer St/ Queen Anne N	23	9	2		8 (P) 1(B)	5	4	1	2
Mercer St/ 1st Ave N	9	2	1		1(P)		2		5

Most collisions were vehicle only, but there were some collisions involving pedestrians and bicycles. Many collisions did not result in injuries, but several collisions resulted in severe injuries and two collisions resulted in fatalities. Raw crash data can be found in **Appendix D.**

3.4 Transit Service

King County Metro provides bus transportation near T91 by way of the RapidRide Line D and bus routes 15, 17, 18, 24, 31, 32, 33 provide access to the roads near the port. Lines 15, 17, 18, 31, 32 and D travel up Elliott Ave W and 15th Ave W, providing walking access to the East Gate. Lines 24 and 33 travel up Elliott and over the Magnolia Bridge providing walking access to the East Gate or the West Gate. The walking routes are discussed in more detail in section 3.5.
Table 3-4 shows details of the existing transit services that run near the terminal.

Sound Transit plans to build the Ballard Light Rail Extension in the coming years (anticipated 2037). The current preferred alternative proposes a stop in the vicinity of Elliott Ave W/Galer St/Magnolia Bridge. Although this project won't be completed during the planning horizon, it would be expected to have a significant impact on mode choice for people accessing T91.

Table 3-4: Existing Transit Service (Source: Heffron Transportation)

		Number of Buses	
Routes	Destinations Served	Weekday AM Commute Period [a]	Weekday PM Commute Period [b]
RapidRide D Line	Crown Hill, Ballard, Interbay, Uptown, and Downtown Seattle	To Downtown: 24 To Crown Hill: 20	To Downtown: 20 To Crown Hill: 24
15/17/18 [c]	Blue Ridge, Crown Hill, Sunset Hill, North Beach, Loyal Heights, Ballard, Seattle Center, and Downtown Seattle	To Downtown: 11 From Downtown: 0	To Downtown: 0 From Downtown: 11
24	Magnolia, Seattle Center, and Downtown Seattle	To Downtown: 9 To Magnolia: 6	To Downtown: 6 To Magnolia: 9
31	Children's Hospital, University District, Wallingford, Fremont, Seattle Pacific University, and Magnolia	To Magnolia: 6 To University District: 7	To Magnolia: 8 To University District: 8
32	Children's Hospital, University District, Wallingford, Fremont, Seattle Pacific University, and Seattle Center	To Seattle Center: 7 To University District: 7	To Seattle Center: 9 To University District: 8
33	Discovery Park, East Magnolia, Seattle Center, and Downtown Seattle	To Downtown: 6 To Discovery Park: 4	To Downtown: 6 To Discovery Park: 7
994 [d]	Downtown Seattle, Seattle Center, Magnolia, Ballard, University Prep, and Lakeside School	To Downtown: 0 To Lakeside School: 1	To Downtown: 1 To Lakeside School: 0

Source: King County Metro and OneBusAway, May 2022.
a. *AM commute service provided between ~6:00 A.M. and 9:00 A.M.*
b. *PM commute service provided between ~4:00 P.M. and 7:00 P.M.*
c. *Route(s) only operates during the weekday peak hours and only serves the peak direction of travel*
d. *Custom bus route designed to serve students at private schools in north Seattle. Only operates when school is in session.*

3.5 Pedestrians & Bicyclists

There are currently two access points for pedestrians and bicyclists to enter/exit T91: the primary access point at the East Gate/Main Gate and the secondary access point near the West Gate. The Elliott Bay Trail is a mixed-use 3.4-mile-long asphalt path that encircles T91 on the north, east and west sides. This trail connects to downtown Seattle to the south and the Magnolia neighborhood to the north.

The East Gate, shown in **Figure 3-5**, is the closest access point from the Elliot Avenue W corridor and its substantial transit service. To reach the gate from Elliott Avenue W, pedestrians must use a multiple switch-back ramp that connects from W Galer Street, east of the railroad tracks, onto the north side of the Galer Flyover. From there, a sidewalk connects to Alaskan Way and the Elliott Bay Trail. The Elliott Bay Trail crosses Alaskan Way W approximately 100 feet east of the gate. There is currently no sidewalk or marked walkway between the East Gate and the Elliott Bay Trail crossing.

The secondary access point near the West Gate requires access from the Magnolia Bridge deck. Across from the Anthony's Seafood Company building, there is a stairway on the south side of the bridge deck that connects to the ground level of the terminal and a painted walkway toward the west gate. Also on the south side of the bridge, there is an approximately 900-foot-long sidewalk along the bridge's eastbound on-ramp that leads to the intersection where the West Gate is located. The short distance to the gate from the on-ramp does not have marked crosswalks, sidewalks, or other pedestrian infrastructure. There is a bus stop on the Magnolia Bridge that provides access to these two routes to enter the west gate. However, this route is not accessible for those in wheelchairs. Also, passengers travelling in the westbound direction use the bus stop on the north side of the bridge and must cross to the south side with no pedestrian infrastructure to support this movement.

Once pedestrians or bicycles enter through the East Gate or descend the stairway to access the West Gate, there are continuous 4- to 8-foot-wide white painted pedestrian walkways that weave through the Short Fill area ultimately leading to the end of Pier 91 to the south and near the West Gate to the north. **Figure 3-6** shows the existing painted routes. At the East Gate, the walkway starts approximately 50 feet west of the gate. The existing walkways do not extend into the Uplands area from either the East Gate or the West Gate.

The North Gate is located adjacent to the proposed Uplands Phase 1 development area. It is currently closed and no vehicles or pedestrians are allowed to enter/exit. There is no painted walkway inside the gate and around the proposed development area. The North Gate has the potential to serve as the third access point for pedestrians and bicyclists.

Figure 3-5: East Gate – Looking West (Source: Heffron Transportation)

Figure 3-6: Painted Striped Pedestrian Routes (Source: Heffron Transportation)

4.0 PROJECTED TRAFFIC CONDITIONS

4.1 Traffic Growth

The anticipated opening year for the Phase 1 improvements (134,260 square feet) is 2025. The horizon year of 2032 was also studied, which would include both Phase 1 and Phase 2 improvements for a total development of 461,250 square feet. To be consistent with the *T91 Uplands Redevelopment Infrastructure Study – Traffic Analysis*[1] and the *Terminal 91 Access and Circulation Plan*, a compound growth rate of 0.5% was applied to the Existing year 2022 traffic volumes to get to the year 2025 baseline traffic volumes and the 2032 baseline traffic volumes.

4.2 Access Assumptions

Under current conditions, site access is primarily via the East Gate. The West Gate is typically only open when a Cruise Ship is in port. This section describes the assumptions for site access that were made in regard to project trip distribution. Site access regarding other access considerations is discussed in more detail in section 5. The existing access points are shown in **Figure 3-2** in section 3.

1 Fehr & Peers, November 28, 2017.

PH assumed that for the year 2025 and 2032 primary vehicular access for T91, including the Uplands, would be via the East Gate. This is a conservative assumption for the Elliott Ave W/W Galer St Flyover intersection as the most trips will pass through this intersection.

4.3 Project Site Traffic

4.3.1 Project Trip Generation

This site will be serving maritime manufacturing and the fishing industry with light industrial space that is flexible to be used by various tenants. The trip generation estimates for the proposed site for the AM Peak and PM Peak were based the methodology documented in the ITE *Trip Generation Manual*, 11th Edition. The trip generation was based on the trip rates for ITE land use code (LUC) 140 for “Manufacturing”.

Phase 1 will initially construct 118,250 square feet of industrial space including warehousing and offices, with an expected build year of 2025. Future mezzanines may be installed of 16,010 square feet for a total square footage of 134,260. There will be partial demolition of Golden Alaska Building in Phase 1. The future mezzanines were included in the trip generation analysis.

Phase 2 will demolish the rest of the Golden Alaska Building and would initially construct an additional 288,000 square feet of industrial space. Future mezzanines may be installed of 38,990 square feet for a total phase 2 added square footage of 326,990. This results in an initial total build-out of 406,250 square feet without mezzanines and a total build-out of 461,250 square feet with mezzanines. The future mezzanines were included in the trip generation analysis. Note that the site plan shown in **Appendix A** shows the initial buildings only and does not reflect the mezzanine additions.

The Golden Alaska building is 56,345 square feet and is most closely categorized as “Warehousing” (LUC 150). To be conservative, it is assumed that credit for this building removal will be associated with Phase 2 only.

The trip generation analysis yields net new vehicle trips entering and exiting the site and net new vehicle trips on the adjacent roadways and driveways during the analysis periods. The raw trips generated by the Uplands development for Phase 1 and Phase 2 are shown in **Table 4-1.**

Table 4-1: Initial Trip Generation

Project Stage	Land Use	Size (SF)	Daily Trips	AM Peak Hour			PM Peak Hour		
				Total	In	Out	Total	In	Out
Phase 1	Manufacturing	134,260	**708**	**91**	**69**	**22**	**99**	**31**	**69**
Phase 1 + Phase 2	Manufacturing	461,250	1941	291	221	70	384	119	265
Credit For Building Removal	Warehousing	56,345	127	30	23	7	33	9	24
Total Trips			**1814**	**261**	**198**	**63**	**351**	**110**	**241**

4.3.1 Mode Share

As this site is located in an urban environment, some transit, pedestrian, and bicycle trips can be expected. Based on the ITE Trip Generation Handbook, 3rd edition, the baseline average vehicle occupancy (AVO) for Manufacturing land use is 1.2. This factor was applied to the raw trip generation results to determine the approximate number of person trips associated with this development.

To approximate mode choices, PH reviewed the American Community Survey (ACS) data from the year 2020 for census track 58.04 as well as zip code 98119, which are where T91 is located. Based on the ACS data as well as the Heffron Transportation Report, it is expected that approximately 73% of trips will be made by vehicle, 20% by transit, 4% by bike, and 3% as pedestrians. According to Heffron Transportation, the AVO for this area is approximately 1.06, which was applied to the vehicle trips. **Table 4-2** shows the total trips expected by vehicle once transit, bike, and pedestrian trips are removed.

Table 4-2: Vehicle Trips Accounting for Mode Share

Project Phase	Daily Vehicle Trips	AM Peak Hour			PM Peak Hour		
		Total	In	Out	Total	In	Out
Phase 1 (Manufacturing)	**585**	**76**	**58**	**18**	**82**	**25**	**57**
Phase 1 + Phase 2 (Manufacturing)	1604	240	182	58	317	98	219
Credit (Warehousing)	105	25	19	6	28	7	20
Total Trips	**1499**	**215**	**163**	**52**	**290**	**91**	**199**

4.3.2 Project Site Trip Distribution

An evaluation was conducted to determine the distribution of the Uplands development network trips based on current employee commutes. PH used the U.S. Census Bureau's *OnTheMap* Tool to identify the areas where employees of T91 lived in 2019. Routes to T91 were estimated based on employee zip code. **Table 4-3** shows the estimated routes employees are expected to use based on this data.

Approximately 73% of traffic is expected to travel south along Elliott Avenue W to access Downtown Seattle, Lower Queen Anne, Highway 99, and northbound and southbound I-5. Approximately 21% of traffic is expected to travel north on 15th to travel to the northern neighborhoods of Seattle or cities north of Seattle. Some traffic is expected to come from the local area, such as Magnolia and Queen Anne, using the Magnolia Bridge or Gilman Dr. This accounts for approximately 6% of traffic.

Appendix B shows the expected trip distribution for the year 2025 (Phase 1 development only) and the year 2032 (Phase 1 and Phase 2 development).

Table 4-3: T91 Trip Distribution

Trip Distribution	Inbound Percent	Outbound Percent
To/From North of Project on 15th Ave W	**21%**	**21%**
North on 15th Ave W	18%	18%
W Nickerson St	3%	3%
To/From South of Project on Elliott Ave W	**73%**	**73%**
W Mercer St - To/From Queen Anne	1%	1%
W Mercer St - To/From SR-99	12%	12%
W Mercer St - To/From North on I-5	22%	22%
W Mercer St - To/From South on I-5	32%	16%
Denny Way - To South on I-5	0%	16%
Denny Way - To Downtown	2%	2%
South on Elliott Ave	2%	2%
South on Alaskan Way	2%	2%
Local Trips	**6%**	**6%**
To/From Magnolia	4%	4%
Gilman Dr W To/From Queen Anne	2%	2%
Total Percentage	**100%**	**100%**

4.4 Future No Build Traffic Conditions

Future year 2025 and future year 2032 traffic conditions were analyzed for the No Build traffic condition and the Build traffic condition.

4.4.1 2025 No Build Conditions

The 2025 No Build traffic condition is the future year traffic volume without the generated new trips from the proposed Uplands development. The No Build traffic condition represents baseline traffic growth from the existing year, plus background traffic, plus approved development pipeline trips.

Background traffic in this area is made up of various uses, including traffic related to the fishing fleet. The fishing fleet comprises a portion of the maritime uses at T91, and fishing fleet activity peaks in the fall, winter, and spring. Turning movement traffic data was collected for this project on three days in the fall of 2022. On these three specific days, there were different numbers of fishing vessels in Port at T91:

1. September 1, 2022
   - One (1) large fishing vessel in Port

2. September 8, 2022
    - Two (2) large fishing vessels in Port
    - One (1) research vessel in Port
3. November 15, 2022
    - 12 large fishing vessels in Port
    - Eight (8) small fishing vessels in Port
    - Two (2) large and eight (8) small fishing vessels anticipated but not in Port

This data show that for two data collection days, the majority of the fishing fleet was not in port and for one data collection day, approximately two thirds of the fleet was in port. To be conservative, estimated fishing fleet trips were added to the background traffic for the future conditions at all locations. PH used Heffron Transportation's fishing fleet traffic assumption of 500 daily trips. These trips were assumed to follow the same time of day traffic pattern as the other existing industrial traffic at the port and the Uplands development. **Table 4-4** shows the assumed fishing fleet traffic volumes. Trip distribution for the fishing fleet traffic is shown in **Appendix B**.

Table 4-4: Fishing Fleet Traffic

Percentage/Trips	Daily Trips	AM Peak Hour			PM Peak Hour		
		AM % of Total	In	Out	PM % of Total	In	Out
Percentage of Traffic		6%	78%	22%	3%	22%	78%
Fishing Fleet Trips	500	30	23	7	15	3	12

PH also added the Pipeline trips to the No Build conditions. Using the *Shaping Seattle* online tool, PH identified projects generating a significant number of trips in the project vicinity. Projects with available traffic studies were included and are listed below. PH collected the trip generation and distribution information for these projects from the traffic studies completed for each project and added these to the No Build network as appropriate. **Appendix B** includes tables showing the trip distribution for these Pipeline projects through the study intersections.

1. 2222 15th Ave W (168 Unit Apartment Building)
2. 2235 15th Ave W (44 Unit Apartment Building Plus 3 Live/Work Units)
3. 101 W Roy (132 Unit Apartment Building)
4. 300 W Republican (168 Unit Apartment Building)

The No Build Traffic volumes for the year 2025 are shown in **Figure 4-1 and Figure 4-2.**

4.4.2 2032 No Build Conditions

The same background fishing fleet traffic volumes and Pipeline project trips were added to the 2032 network as the 2025 network. PH did not identify any pipeline projects that applied to the year 2032 but not the year 2025. These traffic volume modifications are reflected in the 2032 No Build traffic volumes, shown in **Figure 4-3 and Figure 4-4**.

4.5 Future Build Traffic Conditions

4.5.1 2025 Build Traffic Conditions

The 2025 Build traffic conditions are the 2025 No Build traffic conditions with the trips generated by Phase 1 of the Uplands development added. The total 2025 AM Peak and PM Peak Build vehicle volumes are shown in **Figure 4-5 and Figure 4-6,** respectively.

4.5.2 2032 Build Traffic Conditions

The 2032 Build traffic conditions are the 2032 No Build traffic conditions with the trips generated by the full build out of the Uplands development (Phase 1 and 2) added. The total 2032 AM Peak and PM Peak Build vehicle volumes are shown in **Figure 4-7 and Figure 4-8,** respectively.

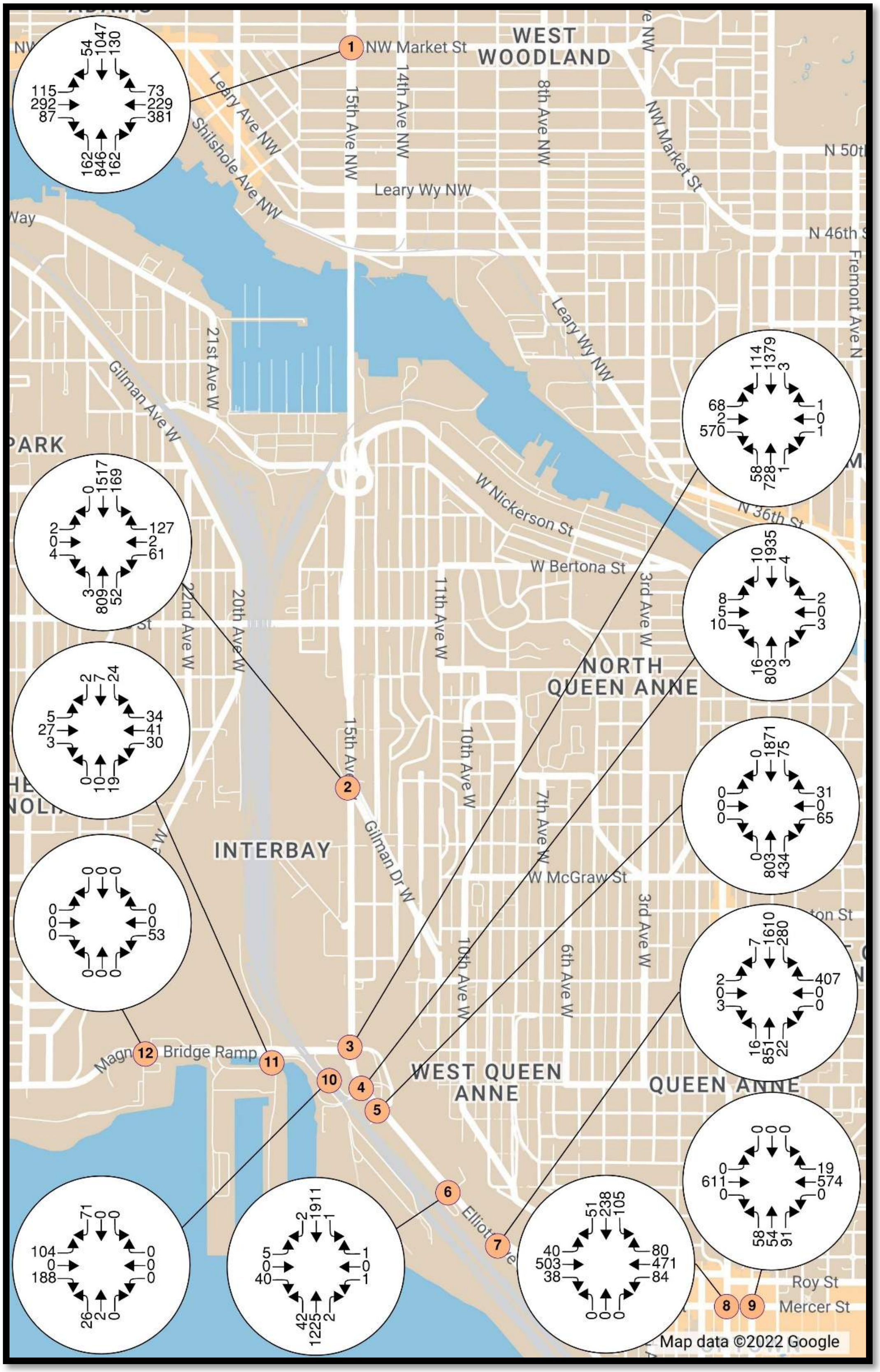

Figure 4-1: 2025 AM No Build Volumes

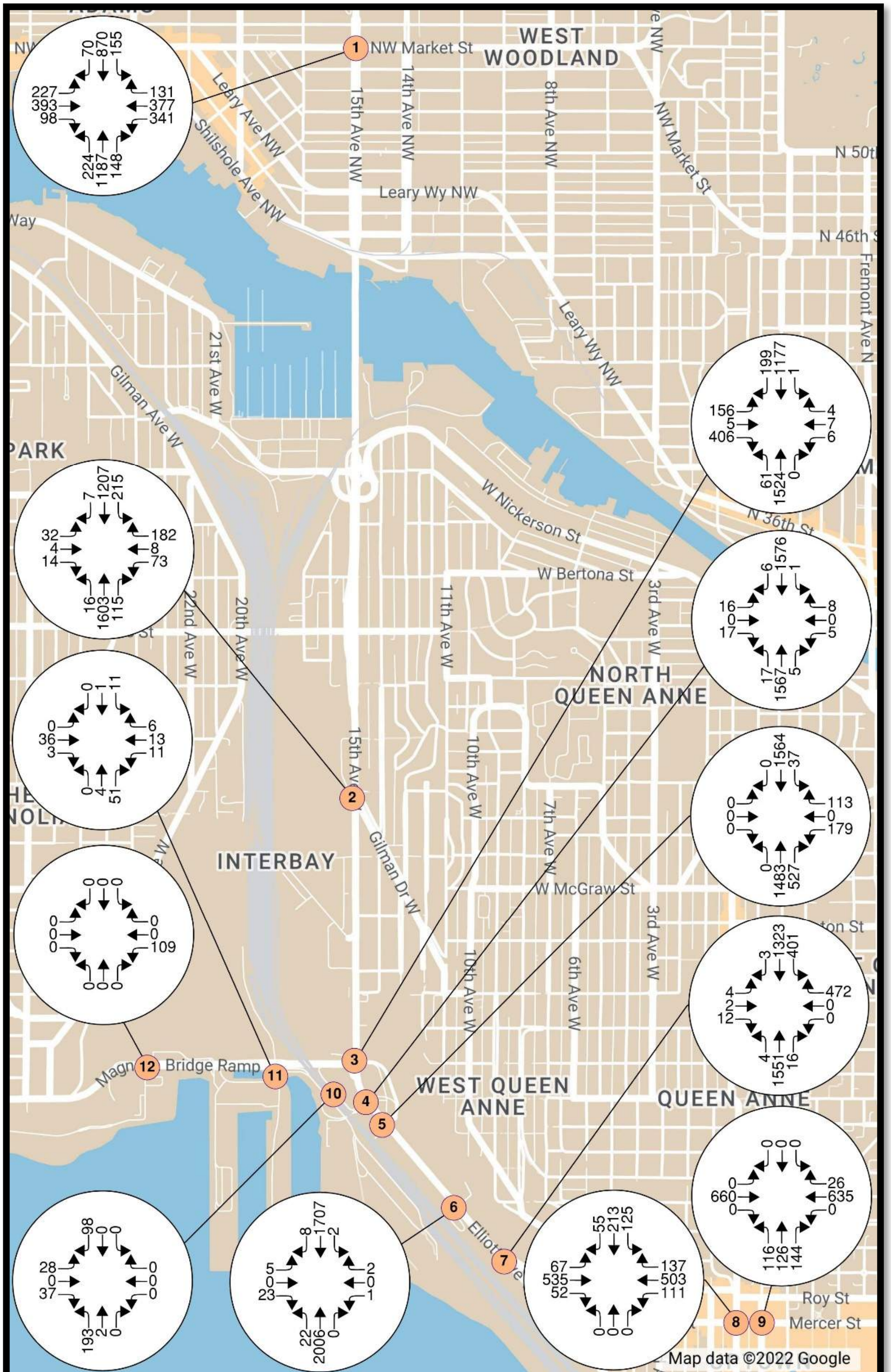

Figure 4-2: 2025 PM No Build Volumes

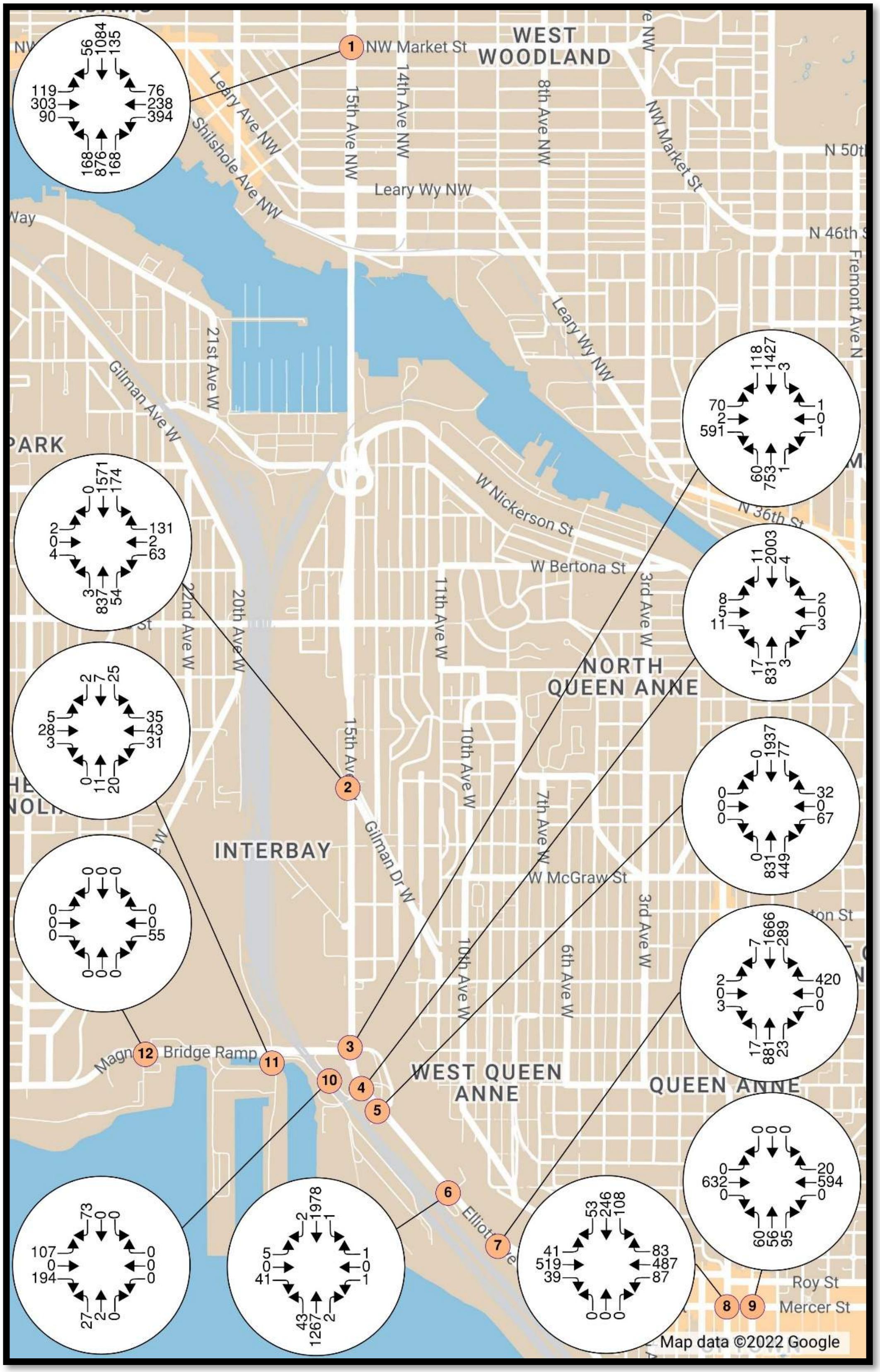

Figure 4-3: 2032 AM No Build Volumes

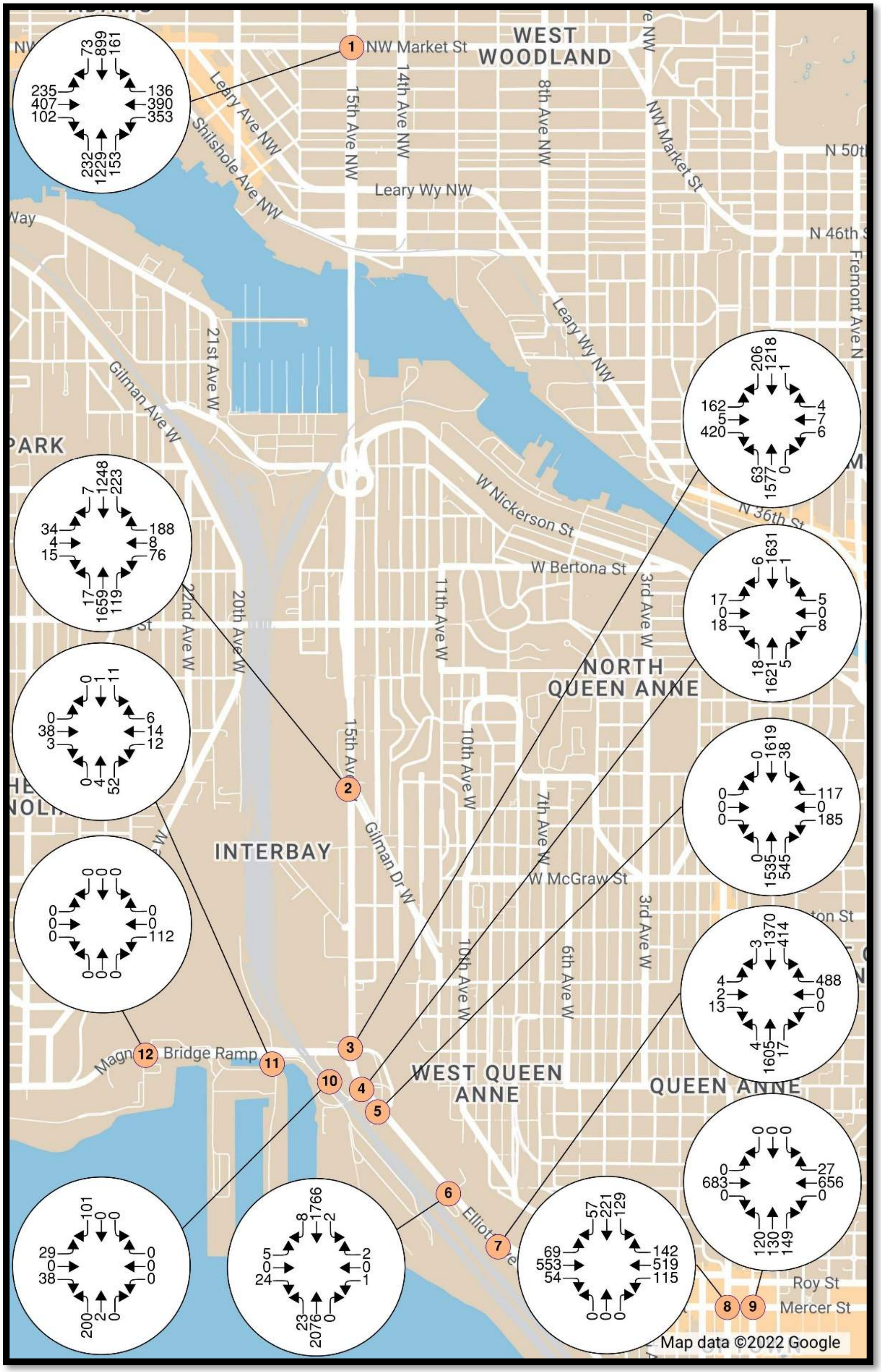

Figure 4-4: 2032 PM No Build Volumes

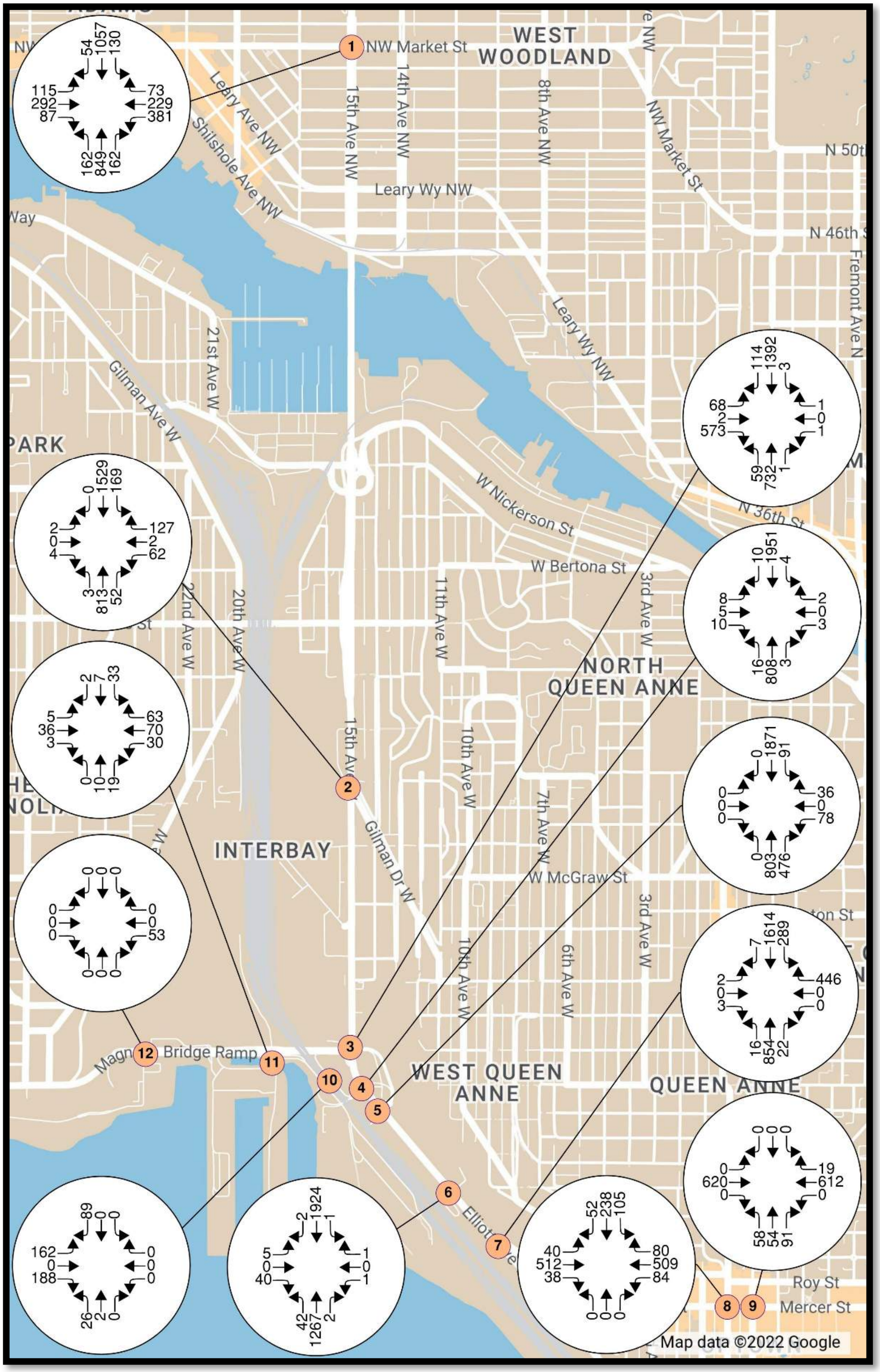

Figure 4-5: 2025 AM Build Volumes

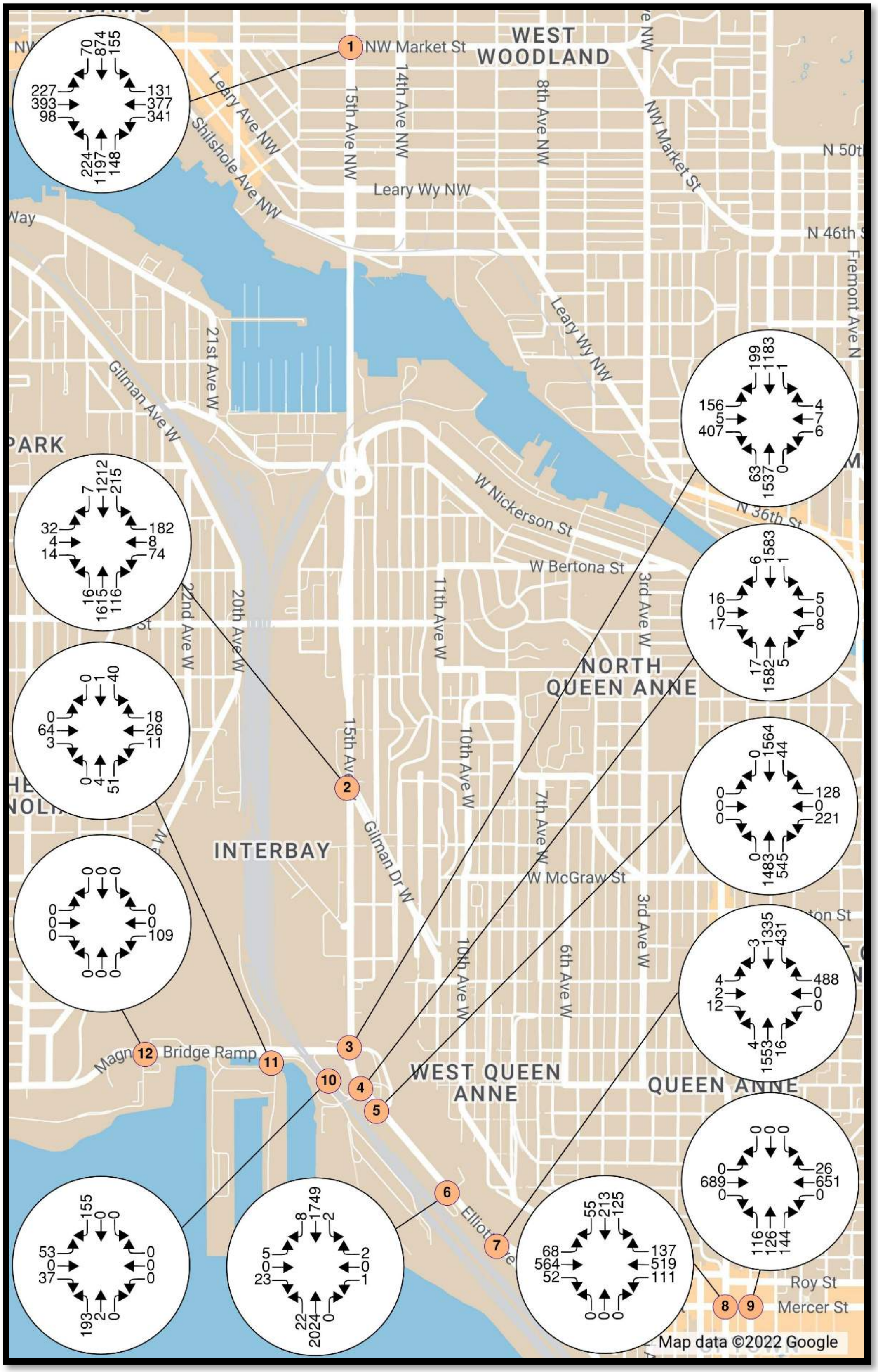

Figure 4-6: 2025 PM Build Volumes

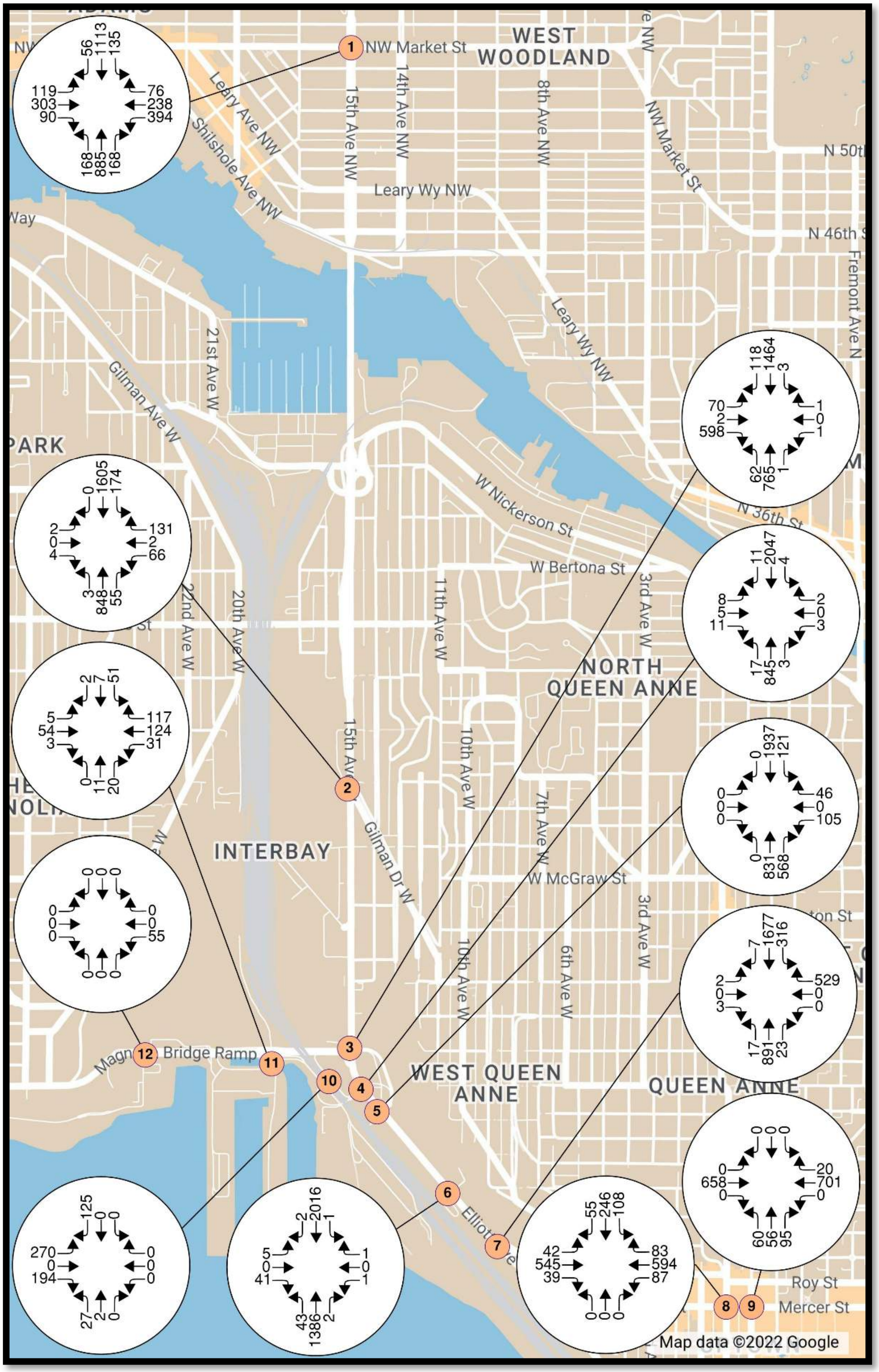

Figure 4-7: 2032 AM Build Volumes

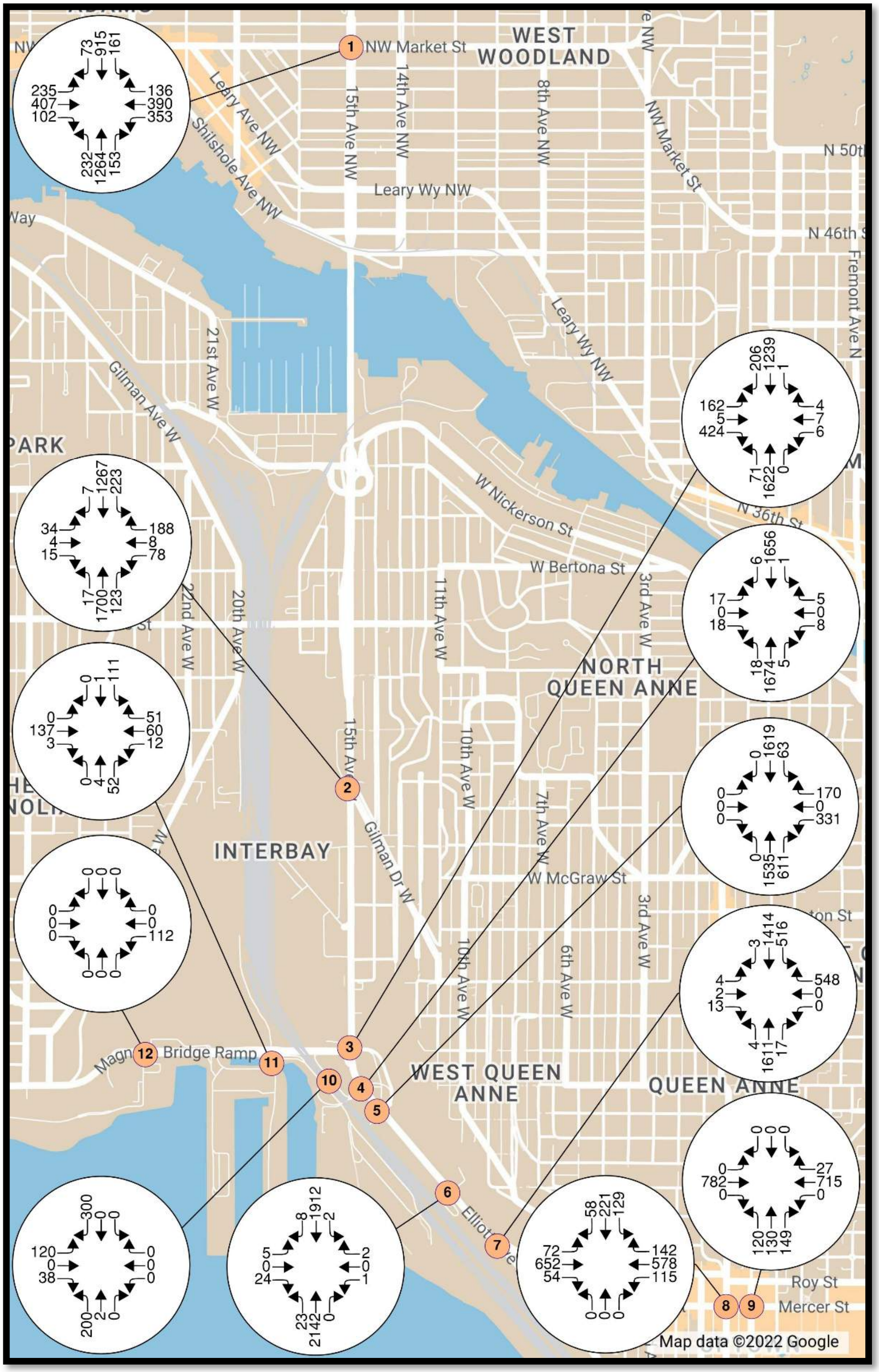

Figure 4-8: 2032 PM Build Volumes

5.0 TRANSPORTATION ANALYSIS

5.1 Capacity and Level of Service

The City of Seattle does not have a specific standard for LOS threshold. However, typically a minimum LOS standard is considered to be LOS D. The operations of the study intersections were evaluated based on this standard.

5.1.1 2025 Conditions

The LOS and delay results for the study intersections are shown in **Table 5-1** and **Table 5-2** and corresponding Synchro Worksheets are provided in **Appendix E.** For both the AM peak hour and the PM peak hour all study intersections are all expected to operate at acceptable LOS and delay under No Build and Build conditions. No mitigation is necessary.

5.1.1 2032 Conditions

The LOS and delay results for the study intersections are shown in **Table 5-3** and **Table 5-4** and corresponding Synchro Worksheets are provided in **Appendix E**. For both the AM peak hour and the PM peak hour all study intersections are all expected to operate at acceptable LOS and delay under No Build and Build conditions. No mitigation is necessary.

Table 5-1: 2025 AM LOS and Delay

	INTERSECTION	AM Peak			
		LOS	Delay (sec)	LOS	Delay (sec)
		No Build		Build	
1.	15th Ave NW & NW Market St	D	45.5	D	45.6
2.	15th Ave W & Gilman Dr W	B	13.5	B	13.6
3.	15th Ave W & W Garfield St	A	4.1	A	4.1
4.	Elliott Ave W & W Galer St	A	4.2	A	4.3
5.	Elliott Ave W & W Galer St Flyover	A	7.6	A	8.3
6.	Elliott Ave W & Prospect St	A	6.9	A	7.0
7.	Elliott Ave W & W Mercer Pl	B	16.2	B	16.5
8.	W Mercer St & Queen Anne Ave N	B	17.2	B	17.0
9.	W Mercer St & 1st Ave N	A	7.3	A	7.3
10.	Alaskan Way W & W Galer St Flyover	A	9.4	B	11.7
11.	Pier 90 & Uplands Rd / East Gate (internal to Port)	A	7.9	A	8.1
12.	Magnolia Bridge & 23rd Ave W / West Gate	A	7.3	A	7.3

Table 5-2: 2025 PM LOS and Delay

INTERSECTION		PM Peak			
		LOS	Delay (sec)	LOS	Delay (sec)
		No Build		Build	
1.	15th Ave NW & NW Market St	D	49.7	D	51.7
2.	15th Ave W & Gilman Dr W	C	29.7	C	31.0
3.	15th Ave W & W Garfield St	A	6.7	A	6.7
4.	Elliott Ave W & W Galer St	A	7.7	A	7.8
5.	Elliott Ave W & W Galer St Flyover	C	22.6	C	23.5
6.	Elliott Ave W & Prospect St	A	6.1	A	6.3
7.	Elliott Ave W & W Mercer Pl	C	21.2	C	21.4
8.	W Mercer St & Queen Anne Ave N	B	17.7	B	15.4
9.	W Mercer St & 1st Ave N	B	10.5	B	10.4
10.	Alaskan Way W & W Galer St Flyover	B	17.1	B	17.2
11.	Pier 90 & Uplands Rd / East Gate (internal to Port)	A	7.3	A	7.7
12.	Magnolia Bridge & 23rd Ave W / West Gate	A	7.7	A	7.7

Table 5-3: 2032 AM LOS and Delay

INTERSECTION		AM Peak			
		LOS	Delay (sec)	LOS	Delay (sec)
		No Build		Build	
1.	15th Ave NW & NW Market St	D	43.9	D	44.1
2.	15th Ave W & Gilman Dr W	B	13.3	B	13.7
3.	15th Ave W & W Garfield St	A	3.9	A	3.9
4.	Elliott Ave W & W Galer St	A	4.2	A	4.2
5.	Elliott Ave W & W Galer St Flyover	A	7.4	A	9.3
6.	Elliott Ave W & Prospect St	A	6.9	A	7.0
7.	Elliott Ave W & W Mercer Pl	B	15.8	B	16.3
8.	W Mercer St & Queen Anne Ave N	B	17.3	B	16.8
9.	W Mercer St & 1st Ave N	A	7.4	A	7.3
10.	Alaskan Way W & W Galer St Flyover	A	9.3	B	15.7
11.	Pier 90 & Uplands Rd / East Gate (internal to Port)	A	7.8	A	8.5
12.	Magnolia Bridge & 23rd Ave W / West Gate	A	7.3	A	7.3

Table 5-4: 2032 PM LOS and Delay

INTERSECTION	PM Peak			
	No Build		Build	
	LOS	Delay (sec)	LOS	Delay (sec)
1. 15th Ave NW & NW Market St	D	51.2	D	51.7
2. 15th Ave W & Gilman Dr W	C	30.7	C	32.7
3. 15th Ave W & W Garfield St	A	6.6	A	6.6
4. Elliott Ave W & W Galer St	A	7.9	A	8.1
5. Elliott Ave W & W Galer St Flyover	C	22.4	C	25.1
6. Elliott Ave W & Prospect St	A	6.3	A	6.8
7. Elliott Ave W & W Mercer Pl	C	21.0	C	21.9
8. W Mercer St & Queen Anne Ave N	B	15.5	B	15.3
9. W Mercer St & 1st Ave N	B	10.3	B	10.2
10. Alaskan Way W & W Galer St Flyover	B	16.8	B	17.7
11. Pier 90 & Uplands Rd / East Gate (internal to Port)	A	7.1	A	8.3
12. Magnolia Bridge & 23rd Ave W / West Gate	A	7.7	A	7.7

5.2 Site Access

It is assumed that primary access to the Uplands area will continue to be via the East Gate. The Port may relocate and improve the West Gate at some point in the future, but it would not likely serve as a primary access route.

To improve pedestrian and bike accessibility and circulation inside T91 with the addition of the Uplands Phase I development, the following recommendations should be considered:

- Reopen the North Gate to allow pedestrian and bicycle access (no vehicular access). The North Gate is located immediately adjacent to the Uplands Phase I development and it would become the closest and most practical access point for pedestrians and cyclists travelling from the north or from parts of the Magnolia and Queen Anne neighborhoods. Reopening the gate negates the need for these pedestrians and bicyclists to travel to either the East Gate or the West Gate to enter T91. The North Gate can be opened for pedestrian and bicyclist access without vehicular access.

- Update web-based navigation applications, such as GoogleMaps, to direct transit users to stop at a location near the North Gate to access the Uplands area. If the North Gate is reopened, the bus stop at the intersection of Thorndyke Avenue W and 22nd Avenue W (routes 31 and 33) can serve pedestrian and bicycle traffic accessing the Uplands Phase 1 development.

As previously recommended by Heffron Transportation, PH agrees upon the following proposed improvements as well:

- Update web-based navigation applications, such as GoogleMaps to route passengers who wish to go to the cruise terminal at Smith Cove to be dropped off on Elliott Avenue W rather than on the Magnolia Bridge. The Magnolia Bridge route is not accessible, isn't as safe, and does not have sufficient room for many passengers to wait.

- Provide a circulatory pedestrian and bicycle walkway within Uplands and along the perimeter fence. The new circulatory walkway in Uplands would provide connection from the Uplands to Short-Fill area and a walkway along the perimeter fence would pose the fewest conflicts with crossing vehicular traffic. This recommendation becomes a need if the North Gate remains closed and pedestrians and cyclists must enter through either the East Gate or the West Gate to navigate internally to Uplands Phase 1 development.

- Provide an ADA compliant walkway through the East Gate to connect the Elliott Bay Trail crossing to the start of striped pedestrian walkway past the gate. Borrowing a section of the existing 26-foot width of exit lane, a 4- to 5-foot wide striped walkway can be installed with a narrow buffer striping along the south side of the lane. If oversized trucks exiting the East Gate need to drive over the proposed striped walkway, necessary precautions and special traffic control operation, which may involve installing warning signage and flagging personnel, can and must be arranged.

5.3 Parking, Queuing, Circulation, and Truck Access

Parking:

For Manufacturing land use Per City Code 23.54 Table A, one (1) parking space per each 2,000 square feet of building space is required. **Table 5-5** below shows the total number of spaces required per City Code as well as the total number of spaces provided (based on the site plan dated March 30, 2023). The proposed number of parking spaces exceeds the City Code requirement.

Table 5-5: Parking Requirements

Project Phase	Land Use	Size (SF)	City Code Parking Requirement	Parking Provided
Phase 1	Manufacturing	134,260	67	96
Phase 1 + Phase 2	Manufacturing	461,250	231	264

Queueing & Circulation:

Under No Build and Build conditions for both the 2025 and 2032 year the internal intersection of Pier 90 and Uplands Rd is expected to operate at LOS A with little delay for drivers, which indicates that this intersection would not cause queuing onto the City street of Alaskan Way W. The East Gate itself, on a typical non-cruise day, would mostly be receiving employees which would result in little to no queue forming at the gate. On cruise days the gate is left open and would not cause queuing. Queuing Synchro reports are included in **Appendix E**.

For intersection movements with the largest increases in traffic due to the Uplands development, PH reviewed expected queue lengths. **Table 5-6** shows the queue lengths for key movements for the Build scenario. As shown, queuing is not expected to increase beyond what is acceptable.

Table 5-6: Queuing

INTERSECTION		Movement	Storage (ft)	Queue Length (ft) 2025 AM	2025 PM	2032 AM	2032 PM
5.	Elliott Ave W & W Galer St Flyover	SBLT	180	148	76	169	97
		WBLT	215	65	139	76	195
7.	Elliott Ave W & W Mercer Pl	SBLT	325	163	273	168	308
10.	Alaskan Way W & W Galer St Flyover	EBLT	N/A	102	40	157	72

Truck Access:

Each of the buildings that are part of the Uplands development will have loading docks. Trucks accessing the Uplands development will be able to do so using the East Gate, as they do currently. Based on the current site plan, trucks should be able to access the Uplands development by turning right or travelling through the Pier 90/Uplands Rd intersection and approaching the east or west side of the development, respectively. If the Port begins to use the West Gate on a regular basis, not just on cruise days, trucks could also access the Uplands development from the West Gate.

6.0 CONCLUSIONS

The Uplands development is not anticipated to have a significant impact on traffic operations at any of the study intersections and no mitigation is necessary.

To improve pedestrian and bike accessibility and circulation inside T91 with the addition of the Uplands Phase I development, the following recommendations should be considered:

- Reopen the North Gate to allow pedestrian and bicycle access (no vehicular access).
- Update web-based navigation applications, such as GoogleMaps, to direct transit users to stop at a location near the North Gate to access the Uplands area.
- Update web-based navigation applications, such as GoogleMaps, to route passengers who wish to go to the cruise terminal at Smith Cove to be dropped off on Elliott Avenue W rather than on the Magnolia Bridge.
- Provide a circulatory pedestrian and bicycle walkway within Uplands and along the perimeter fence.
- Provide an ADA compliant walkway through the East Gate to connect the Elliott Bay Trail crossing to the start of striped pedestrian walkway past the gate.

APPENDIX A

Site Plan

APPLICANT'S INFORMATION
NAME: PORT OF SEATTLE
ADDRESS: 2711 ALASKAN WAY, SEATTLE, WA
EMAIL: WOLFE.L@PORTSEATTLE.ORG
PHONE NUMBER: 206.247.2193

OWNER'S INFORMATION
NAME: PORT OF SEATTLE
ADDRESS: 2711 ALASKAN WAY, SEATTLE, WA
EMAIL: WOLFE.L@PORTSEATTLE.ORG
PHONE NUMBER: 206.247.2193

PROJECT SITE ADDRESS
2001 W GARFIELD ST, SEATTLE, WA 98119

CODE ANALYSIS

PROJECT DESCRIPTION
(3) CORE AND SHELL INDUSTRIAL BUILDINGS. NO OCCUPANCY THIS PERMIT. FUTURE TENANT IMPROVEMENTS FOR B, S-1, S-2, F-1, AND F-2 OCCUPANCIES TO BE SUBMITTED AT A LATER DATE.

LAND USE PERMIT:
3037632-LU (MUP FOR PHASE I AND PHASE II)
000166-21PA

BUILDING PERMIT:
6822294-CN (PHASE I - BUILDING 1)
XXXXXX-CN (PHASE I - BUILDING 2)
XXXXXX-CN (PHASE I - BUILDING 3)

LEGAL DESCRIPTION
KING COUNTY ASSESOR'S PARCEL NUMBER: 766620-1146
PARCEL LEGAL DESCRIPTION:
SEATTLE TIDE LDS BLKS 114 THRU 116 & 120 THRU 125 TGW VAC STS & ALLEYS ADJ; TGW POR OF W 239 FT OF LT 9 BLK 128 & OF LT 9 BLK 129 LY ELY OF NP RR R/W ALL LY S OF A LN 977.16 FT N AS MEAS AT R/A TO & PLW C/L OF W GARFIELD ST TGW VAC ST ADJ TGW LOTS 1 THRU 8 BLK 130 LESS NP RR R/W; TGW LOTS 1 THRU 8 BLK 131 LESS E 21 FT THOF & LESS W 9.62 FT OF E 30.62 FT OF SD LOT 8 EXCEPT N 32.53 FT THOF TGW VAC ST ADJ; TGW ALL OF BLK 136 & POR VAC ST ADJ, TGW ALL BLKS 137 & 138 TGW BLKS 117 THRU 119 LESS FOLG AS DESC IN DEED REC NO 9001240416 LTS 1 THRU 9 BLK 118 LTS 8-9 & POR LT 7 BLK 117 LTS 1 THRU 3 & POR LT 4 BLK 119 & VAC RDS ADJ LESS PORS OF ABOVE DESCRIBED PARCEL FOR W MARINA PL & 23RD AVE W AS DESCRIBED IN DEED REC NO 9201060605 (REF: M1 ACCT IN -15.6) LESS POR DESC IN PCL F OF QCD # 20030829003913 & LESS POR PER DEED REC # 20091222000251 & LESS POR WITHIN SEATTLE BLA# 3016217 REC #20131105900005
Plat Block: 114 &
Plat Lot:

KING COUNTY ASSESOR'S PARCEL NUMBER: 766620-1530
PARCEL LEGAL DESCRIPTION:
SEATTLE TIDE LDS VAC SMITH COVE W W LESS FOLG BAAP ON WLY LN BLK 130 450.12 FT NLY OF SW COR THOF TH ALG CRV TO RGT RAD 1165.78 FT ARC DIST 733.04 FT TO ST THE RADIAL PT OF SD CRV BRNG N 53-55-45 E FROM ST PT OF CRV TH N 00-08-22 W PLL TO & 223 FT W OF ELY MGN SMITH COVE WW 1696.2 FT TAP ON GOV MDR LN TH S 40-26-28 E ALG SD GOV MDR LN 344.76 FT TO NW COR BLK 126 TH S 00-08-22 E ALG E MGN SMITH COVE WW2118.8FT TO BEG BEING A TR OF LAND CONV TO GNRY BY PORT OF SEATTLE 4/29/15 & DESIG AS PARCEL C ALSO LESS FOLG DESC BEG AT NXN OF C/L OF 15TH AVE W & W GARFIELD ST TH S 89-51-38 W ALG C/L W GARFIELD ST 738.47 FT TH N 27-02-43 W 56.07 FT TH N 41-10-23 W 493.84 FT TO POC TH ON CRV TO RGT RAD 1165.78 FT THRU C/A 41-02-01 ARC DIST 834.90 FT TO TPOB TH N 00-08-22 W 118.03 FT TH S 89-51-38 W 26 FT TH S 00-08-22 E 140.27 FT TH S 16-44-48 E 118.93 FT TAP ON ABOVE DESC CRV CTR OF WCH BRS 136.52 FT TO TPOB 136.52 FT TO TPOB LESS POR SD WW LY S OF GARFIELD ST COND CASE #469 LESS PORS FOR W GARFIELD ST & 20TH AVE W
Plat Block: WW
Plat Lot: POR

KING COUNTY ASSESOR'S PARCEL NUMBER: 766620-1153
PARCEL LEGAL DESCRIPTION:
SEATTLE TIDE LANDS PCL C SEATTLE BLA #3016217 REC #20131105900005 SD BLA BEING POR BLKS 117 & 118 OF SD ADD TGW RDS ADJ
Plat Block: 117 -

SEATTLE MUNICIPAL CODE
JURISDICTION: CITY OF SEATTLE
ASSESSOR PARCEL NUMBER (APN): 766620-1146, 766620-1530, 766620-1153
ZONING: IG U/45 GENERAL INDUSTRIAL 1
HEIGHT LIMITS: MAXIMUM HEIGHT: 45'*
* PER SMC 23.50.020, MECHANICAL EQUIPMENT SOLAR COLLECTORS, AND COMMUNICATION UTILITIES ARE PERMITTED TO EXCEED MAXIMUM HEIGHT LIMITS UP TO 15'. PARAPETS, CLERESTORIES, SKYLIGHTS, AND OPEN RAILINGS ARE PERMITTED TO EXTEND 4' ABOVE THE HEIGHT LIMIT.
REFER TO BALLARD-INTERBAY-NORTHERN MANUFACTURING INDUSTRIAL CENTER OVERLAY.

NO EASEMENTS, SHORT PLATS, OR LOT BOUNDARY ADJUSTMENTS WITHIN THE PHASE I AND PHASE II AREAS.

ECA AREAS:
WETLANDS: SEE PLANS ON G0.04.
LIQUEFACTION: ENTIRE PHASE I AND PHASE II AREAS ARE IN A LIQUEFACTION ZONE.
STEEP SLOPES: SEE PLANS ON G0.04.
LANDFILL: SEE PLANS ON G0.04.
FLOOD: NOT APPLICABLE
ARCHEALOGICAL BUFFER: NOT APPLICABLE

MINIMUM SETBACK: N/A
MAXIMUM BUILDING COVERAGE: N/A
MINIMUM BUILDING FAR: N/A
MAXIMUM BUILDING FAR: 2.5
SITE AREA: 862,639 SF
BUILDING AREA: 406,250 SF
PROVIDED FAR: 0.5

LANDSCAPING (PER SMC 23.50.016, 23.50.034, AND 23.50.040)
LANDSCAPING AREA: NO MINIMUM
PERIMETER LANDSCAPING: NO MINIMUM
PARKING LOT INTERIOR LANDSCAPING: NO MINIMUM
STREET TREES: NOT REQUIRED, LOT IS NOT ADJACENT TO ANY STREETS DESIGNATED ON THE INDUSTRIAL STREETS LANDSCAPING PLAN MAP (23.50.016)
SCREENING: NOT REQUIRED, LOT IS NOT ADJACENT TO ANY STREETS DESIGNATED ON THE INDUSTRIAL STREETS LANDSCAPING PLAN MAP (23.50.016)
FENCING: NO MUNICIPAL FENCING STANDARDS SPECIFIED. FENCING TO MEET POS STANDARD.

SIGN STANDARDS (PER SMC CHAPTER 23.55): BY SEPARATE PERMIT IN CONSTRUCTION PACKAGE

DEPARTURES REQUESTED NONE

PARKING (PER SMC CHAPTER 23.54)
NOTE: THE PROJECT ASSUMES 55,000 SF OF FUTURE MEZZANINE AREA WILL BE BUILT OUT DURING TENANT IMPROVEMENTS. BUILDINGS ARE DESIGNED FOR LIGHT INDUSTRIAL TENANTS WITH AN ESTIMATED OCCUPANCY RATIO OF 90% LIGHT INDUSTRIAL/MANUFACTURING/STORAGE AND 10% OFFICE. PARKING DEMAND AND REQUIREMENTS UNDER THIS PERMIT INCLUDE FUTURE MEZZANINE BUILD OUT AND ARE BASED ON THIS RATIO . PARKING REQUIREMENTS SHALL BE REVERIFIED AT FUTURE PERMITS FOR TENANT IMPROVEMENTS AND OCCUPANCY.

THE LIGHT INDUSTRIAL USE PROFILE FOR PARKING (PER SMC) IS BASED ON THESE CATEGORIES: MANUFACTURING, MARINE SALES AND SERVICE, AND STORAGE, ALL OF WHICH HAVE THE SAME MINIMUM PARKING REQUIREMENT OF 1 SPACE PER 2,000 SF.

PARKING - BUILDING 1 REQUIREMENTS
BUILDING FOOTPRINT: 25,000 SF
MEZZANINE (FUTURE): 3,385 SF
OFFICE AREA: 2,838 SF
LIGHT INDUSTRIAL (LI): 25,547 SF

PARKING (PER SMC CHAPTER 23.54)
AUTO PARKING
REQUIRED:
OFFICE (1 PER 1,000): 3
INDUSTRIAL (1 PER 2,000): 13
TOTAL: 16

BIKE PARKING (PER SMC CHAPTER 23.54)
REQUIRED:
OFFICE
(1 LONG-TERM PER 2,000 SF): 2
(1 SHORT-TERM PER 10,000 SF): 1
INDUSTRIAL (1 SHORT-TERM PER 10,000 SF): 3

PARKING - BUILDING 2 REQUIREMENTS
BUILDING FOOTPRINT: 25,000 SF
MEZZANINE (FUTURE): 3,385 SF
OFFICE AREA: 2,838 SF
LIGHT INDUSTRIAL: 25,547 SF

PARKING (PER SMC CHAPTER 23.54)
AUTO PARKING
REQUIRED:
OFFICE (1 PER 1,000): 3
INDUSTRIAL (1 PER 2,000): 13
TOTAL: 16

BIKE PARKING (PER SMC CHAPTER 23.54)
REQUIRED:
OFFICE
(1 LONG-TERM PER 2,000 SF): 2
(1 SHORT-TERM PER 10,000 SF): 1
INDUSTRIAL (1 SHORT-TERM PER 10,000 SF): 3

PARKING - BUILDING 3 REQUIREMENTS
BUILDING FOOTPRINT: 68,250 SF
MEZZANINE (FUTURE): 9,240 SF
OFFICE AREA: 7,749 SF
LIGHT INDUSTRIAL: 69,741 SF

PARKING (PER SMC CHAPTER 23.54)
AUTO PARKING
REQUIRED:
OFFICE (1 PER 1,000): 8
INDUSTRIAL (1 PER 2,000): 35
TOTAL: 43

BIKE PARKING (PER SMC CHAPTER 23.54)
REQUIRED:
OFFICE
(1 LONG-TERM PER 2,000 SF): 4
(1 SHORT-TERM PER 10,000 SF): 1
INDUSTRIAL (1 SHORT-TERM PER 10,000 SF): 7

PARKING - BUILDING 4 REQUIREMENTS
BUILDING FOOTPRINT: 288,000 SF
MEZZANINE (FUTURE): 38,990 SF
OFFICE AREA: 32,699 SF
LIGHT INDUSTRIAL: 294,291 SF

PARKING (PER SMC CHAPTER 23.54)
AUTO PARKING
REQUIRED:
OFFICE (1 PER 1,000): 33
INDUSTRIAL (1 PER 2,000): 148
TOTAL: 181

BIKE PARKING (PER SMC CHAPTER 23.54)
REQUIRED:
OFFICE
(1 LONG-TERM PER 2,000 SF): 17
(1 SHORT-TERM PER 10,000 SF): 4
INDUSTRIAL (1 SHORT-TERM PER 10,000 SF): 30

TOTAL PARKING
PARKING (PER SMC CHAPTER 23.54)
AUTO PARKING REQUIRED:
OFFICE (1 PER 1,000): 47
LIGHT INDUSTRIAL (1 PER 2,000): 209
TOTAL: 256
PROVIDED: 264

ACCESSIBLE STALLS (PER SBC 1106.1)
REQUIRED:
ACCESSIBLE: 7
ACCESSIBLE (VAN): 2
PROVIDED:
ACCESSIBLE: 15
ACCESSIBLE (VAN): 4

EV READY STALLS (PER SMC 23.54.030.L.2)
REQUIRED: 27 (10% OF TOTAL)
PROVIDED 29

PARKING STALL SIZE (PER SMC 23.54.030.B.2.c)
REQUIRED:
SMALL (7.5' X 15'): 93 MINIMUM (35% OF TOTAL), 171 MAXIMUM (65%)
LARGE (8.5' X 19'): 93 MINIMUM (35% OF TOTAL)
PROVIDED:
SMALL: 115
LARGE: 130

TOTAL PARKING CONT'D
BIKE PARKING (PER SMC CHAPTER 23.54)
TOTAL REQUIRED:
LONG TERM: 25
SHORT TERM: 50
PROVIDED:
LONG TERM: 43
SHORT TERM: 54

SEATTLE BUILDING CODE
APPLICABLE CODES (NOTE: BUILDINGS ARE DESIGNED TO CODE THAT WILL BE UNDER ENFORCEMENT AT TIME OF SUBMISSION)
2021 SEATTLE BUILDING CODE

CONSTRUCTION TYPE:III-B, SINGLE STORY

FIRE PROTECTION: AUTOMATIC FIRE SPRINKLER SYSTEM (ESFR)

OCCUPANCIES: THE BUILDING TO BE UNOCCUPIED UNDER THIS PERMIT. FUTURE OCCUPANCIES MAY CONSIST OF B, F-1, F-2, S-1, AND S-2 OCCUPANCIES.

BUILDING HEIGHT (SBC TABLE 504.3)
BUILDING HEIGHT: THE VERTICAL DISTANCE FROM *GRADE PLANE* TO THE AVERAGE HEIGHT OF THE HIGHEST ROOF SURFACE.
ALLOWABLE: 75'-0" / 3 STORIES
PROVIDED: 45'-0" / 1 STORY

BUIDING AREA
BUILDING 1 & 2
ALLOWABLE AREA (SBC TABLE 506.2)
BUILDINGS ALLOWED UP TO 48,000 SF BASED ON F-1 OCCUPANCY (MOST RESTRICTIVE, NON-SEPARATED USE)

BUILDING 3 & 4
UNLIMITED AREA BUILDING (SBC 507.4)
BUILDING HAS 60' OPEN YARDS ON ALL SIDES, IS ONLY ONE LEVEL, ABOVE GRADE, AND IS EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM.

SEATTLE ENERGY CODE
APPLICABLE CODES (NOTE: BUILDINGS ARE DESIGNED TO CODE THAT WILL BE UNDER ENFORCEMENT AT TIME OF SUBMISSION)
2021 SEATTLE ENERGY CODE (FORTHCOMING)

MINIMUM SKYLIGHT FENESTRATION AREA (SEC C402.4.2)
BUILDING 1: NOT REQUIRED PER C402.4.2 EXCEPTION 1.4, DAYLIGHT ZONE UNDER ROOFTOP MONITORS IS GREATER THAN 50% OF THE ENCLOSED SPACE FLOOR AREA

BUILDING 2: NOT REQUIRED PER C402.4.2 EXCEPTION 1.4, DAYLIGHT ZONE UNDER ROOFTOP MONITORS IS GREATER THAN 50% OF THE ENCLOSED SPACE FLOOR AREA

BUILDING 3: NOT REQUIRED PER C402.4.2 EXCEPTION 1.4, DAYLIGHT ZONE UNDER ROOFTOP MONITORS IS GREATER THAN 50% OF THE ENCLOSED SPACE FLOOR AREA

SOLAR READINESS (SEC C411.2)
SOLAR ZONE SHALL ACCOMMODATE 20% OF THE ELECTRICAL SERVICE SIZE BASED ON THE RATED CAPACITY OF THE TOTAL ELECTRICAL SERVICES TO THE BUILDING ASSUMING 10 PEAK WATTS OF PHOTOVOLTAIC PER SQUARE FOOT.

ON-SITE RENEWABLE ENERGY SYSTEMS (SEC 412.1)
RENEWABLE ENERGY SHALL BE GENERATED THROUGH ROOFTOP PHOTOVOLTAIC PANELS TO PROVIDE NOT LESS THAN 0.25 WATTS RATED PEAK PHOTOVOLTAIC ENERGY PRODUCTION PER SQUARE FOOT OF CONDITIONED SPACE.

SEATTLE FIRE CODE
APPLICABLE CODES (NOTE: BUILDINGS ARE DESIGNED TO CODE THAT IS NOT YET UNDER ENFORCEMENT AT TIME OF SUBMISSION)
2021 SEATTLE FIRE CODE

SFC SECTION 509.1
ALL FIRE PROTECTION & UTILITY EQUIPMENT SHALL BE IDENTIFIED WITH APPROVED SIGNAGE CONSTRUCTED OF DURABLE MATERIALS AND BE READILY VISIBLE.

SFC SECTION 32 - HIGH-PILED COMBUSTIBLE STORAGE
BUILDING IS DESIGNED TO ACCOMODATE HIGH-PILED STORAGE PER SFC TABLE 3206.2:
- AN AUTOMATIC FIRE-EXTINGUISHING SYSTEM IS PROVIDED IN ACCORDANCE WITH SFC 3206.4
- FIRE DETECTION SYSTEM IS NOT REQUIRED PER TABLE 3206.2
- BUILDING ACCESS IS PROVIDED PER SFC 3206.7
- SMOKE AND HEAT REMOVAL IS NOT REQUIRED PER TABLE 3206.2 FOOTNOTE H: AUTOMATIC FIRE-EXTINGUISHING SYSTEM PROVIDED IN ACCORDANCE WITH SFC 3207 AND 3208

TABLE 601 - FIRE RESISTIVE REQUIREMENTS

EXTERIOR BEARING WALL	2-HR
INTERIOR BEARING WALL	NR
EXTERIOR NON-BEARING WALL	NR
INTERIOR NON-BEARING WALL	NR
STRUCTURAL FRAME	NR
FLOOR	NR
ROOF	NR
FIRE PUMP ROOM (913.2.1)	1-HR

BASED ON SEC 2018 (TABLE C402.1.3)
CLIMATE ZONE: 4C (TABLE C301.1)
MAX LIGHTING POWER DENSITY: 0.45 W/SQ. FT PER TABLE 9.5.1
HEATING SYSTEM OUTPUT: NOT GREATER THAN 8 BTU/(H-SQ. FT.) PER TABLE 3.2

SEATTLE ENERGY CODE: IT IS THE APPLICANT'S INTENT TO DESIGN THE BUILDING TO BE IN ALIGNMENT WITH THE FORTHCOMING SEC 2021. THE CODE HAS NOT BEEN PUBLISHED AS OF MARCH 15, 2023. THE ENERGY CODE INFORMATION WITHIN THIS SUBMISSION IS ALIGNED WITH SEC 2018.

	REQUIRED R-VALUE	PROVIDED R-VALUE	MAX U-FACTOR	PROVIDED U-FACTOR	MAX SHGC	PROVIDED SHGC
WINDOW (35% OF WALL MAX)	--	--	U-0.34	0.34	--	0.40
ENTRANCE DOOR	--	--	U-0.60	0.60	--	--
OPAQUE DOOR-SWINGING	--	--	U-0.28	0.28	--	--
OPAQUE DOOR-ROLL-UP	--	--	U-0.28	0.28	--	--
SKYLIGHT (5% OF ROOF MAX)	--	--	U-0.45	0.45	0.32	0.32
MASS WALLS[1]	N/A[1]	R-26	U-0.580	U-0.740	--	--
ROOF	R-38 CI	R-38 CI	U-0.026	0.026	--	--
SLAB ON GRADE	N/A	N/A	F-0.730	F-0.730	--	--

CI = CONTINUOUS INSULATION
1. NO CONTINUOUS INSULATION REQUIRED FOR WALLS AT SEMI-HEATED SPACE PER C402.1.1.2

N
1 G0.03 VICINITY MAP

CALL 2 DAYS BEFORE YOU DIG 1-800-424-5555

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PROJECT ENGR./ARCH: BRETT CONWAY
DESIGNER: RAH, BC, MJH
DRAWN BY: AMF, MVP
SCALE: 12" = 1'-0"
DATE: 03/20/23
CHECKED BY: RAH, BC
CHECKED/APPROVED BY: RAH, BC

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D

POS PROJECT MANAGER: STEFAN WYNN
POS PROJECT ENGINEER:
POS DESIGN ENGINEER:
POS DRAFTER:
POS SCALE:
POS DATE:
POS CHECKED/APPROVED BY:

Port of Seattle
PROJECT NAME: T-91 UPLANDS DEVELOPMENT - MUP SET
SHEET TITLE: CODE ANALYSIS

POS WORK PROJECT NUMBER: U00310
CONSULTANT'S PROJECT NUMBER: 2210201.00
POS PROJECT TRACKING NUMBER: 2210201.00 G0.03

1 AP - Overall Site Plan
1" = 200'-0"

CALL 2 DAYS BEFORE YOU DIG 1-800-424-5555

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DESIGN DRIVEN | CLIENT FOCUSED
www.mcknze.com

PROJECT ENGR/ARCH: BRETT CONWAY
DESIGNER: RAH, BC, MJH
DRAWN BY: AMF, MVP
SCALE: As indicated
DATE: 03/20/2023
CHECKED BY: RAH, BC
CHECKED/APPROVED BY: RAH, BC

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D

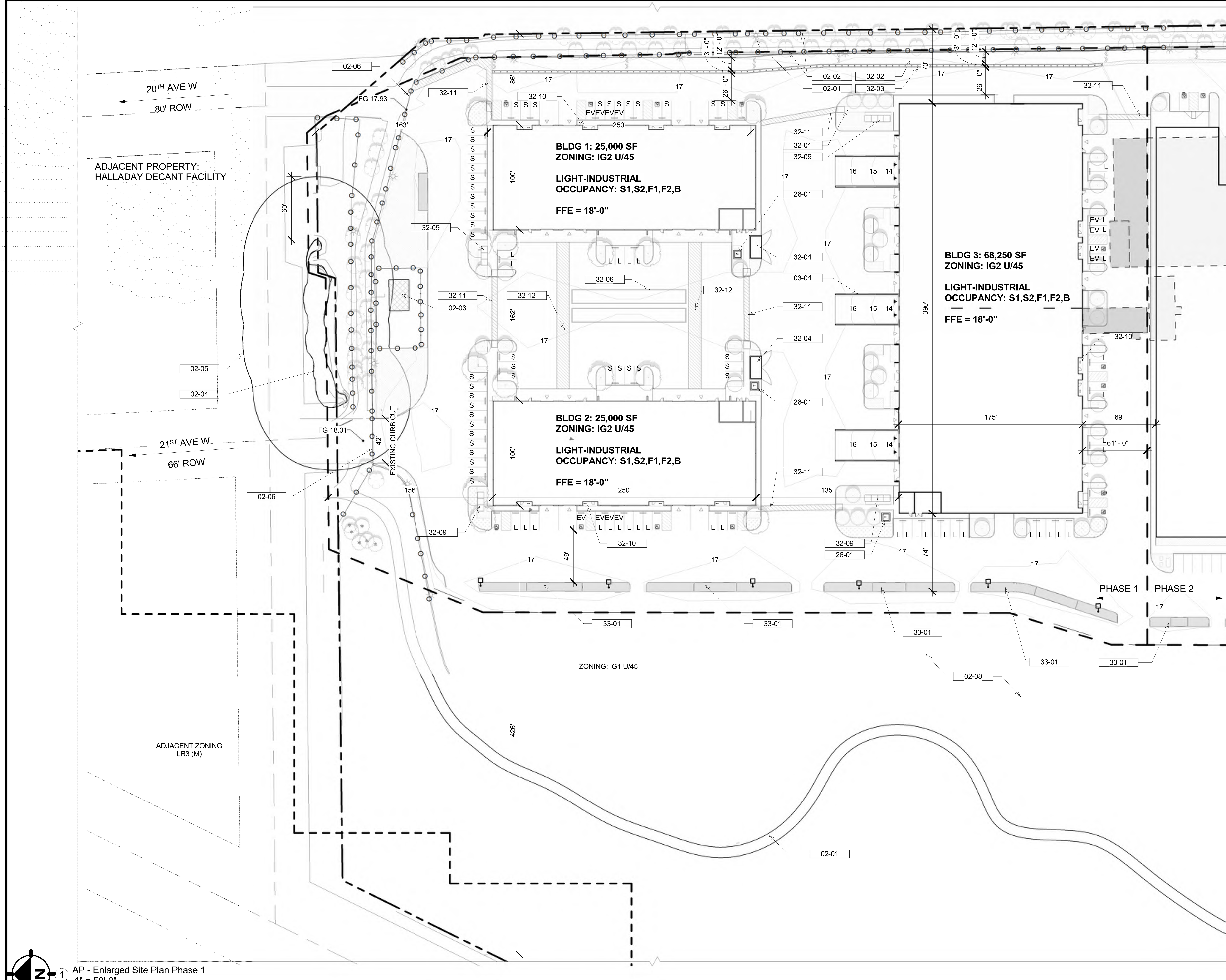
POS PROJECT MANAGER: STEFAN WYNN
POS PROJECT ENGINEER:
POS DESIGN ENGINEER:
POS DRAFTER:
POS SCALE:
POS DATE:
POS CHECKED/APPROVED BY:

Port of Seattle

PROJECT NAME: **T-91 UPLANDS DEVELOPMENT - MUP SET**

SHEET TITLE: **OVERALL SITE PLAN**

POS WORK PROJECT NUMBER: U00310
CONSULTANT'S PROJECT NUMBER: 2210201.00
POS PROJECT TRACKING NUMBER: 2210201.00 G0.04



AP - Enlarged Site Plan Phase 1
1" = 50'-0"

GENERAL NOTES:

1. Future EV: Load capacity is provided for 10% of parking spaces to have a charging station installed at a future date (charging station is not in this project). See electrical narrative. The parking spaces noted with "EV" are those designated within the provided load capacity.
2. Future EV Conduit: Conduit shall be provided to every parking space on the site.
3. Scope of work is limited to with the boundary of the existing fence (keynote 02-02)

LEGEND

Item	Symbol
DOCK HIGH OVERHEAD DOOR	▲
DRIVE IN OVERHEAD DOOR	△
ELECTRIC VEHICLE CHARGING	EV
SMALL PARKING SPACE	S
LARGE PARKING SPACE	L
PROPOSED FUTURE TENANT DEMISING WALLS	
LIGHT POLE, NEW	
PANEL JOINT	PJ
EXISTING BUILDINGS TO BE DEMOLISHED DURING PHASE 1	
EXISTING BUILDINGS TO REMAIN DURING PHASE 1 AND TO BE DEMOLISHED IN PHASE 2	
DOCK HIGH OVERHEAD DOOR	

SITE DATA

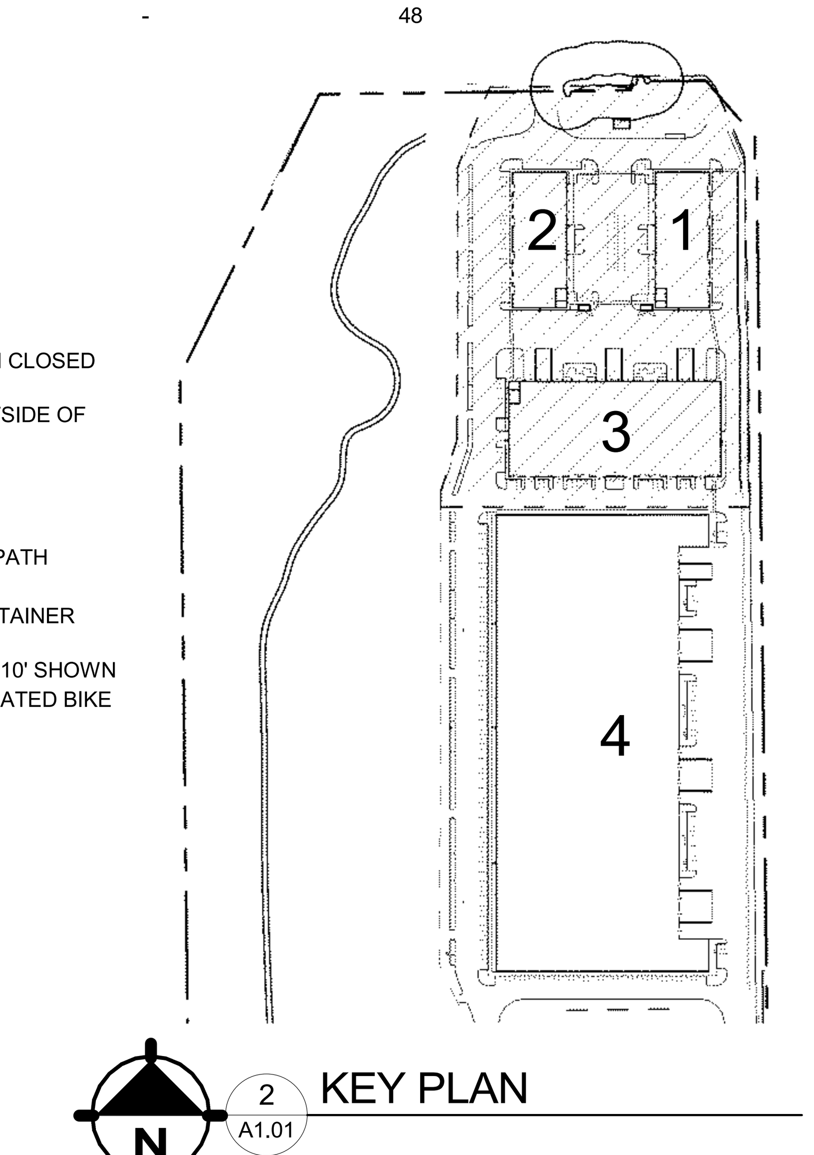
	AREA (SF)	AREA (AC)	COVERAGE
GROSS PROPERTY AREA:	8,572,979	196.8	
RIGHT-OF-WAY DEDICATION:	0		
NET PROPERTY AREA:	8,572,979		
AREA OF DISTURBANCE:	909,145	20.9	10.6%
IMPERVIOUS AREA/LOT COVERAGE:			
BUILDING:	406,250	9.3	4.7%
PAVING:	467,358	10.7	5.5%
TOTAL:	873,608	20.1	10.2%
LANDSCAPE:	35,487	0.8	0.4%
P1 AREA OF DISTURBANCE:	376,556	8.6	4.4%
P1 TOTAL IMPERVIOUS AREA:			
BUILDING:	118,250	2.7	1.4%
PAVING:	240,292	5.5	2.8%
TOTAL:	358,542	8.2	4.2%
LANDSCAPE AREA:	17,964	0.4	0.2%
P2 AREA OF DISTURBANCE:	532,589	12.2	6.2%
P2 IMPERVIOUS AREA:			
BUILDING:	288,000	6.6	3.4%
PAVING:	227,066	5.2	2.6%
TOTAL:	515,066	11.8	6%
LANDSCAPE AREA:	17,523	0.4	0.2%

PARKING DATA

PARKING TYPE	MINIMUM	MAXIMUM	PROVIDED
LARGE:	93	-	130
SMALL:	93	171	115
ACCESSIBLE:	7	-	15
ACCESSIBLE (VAN):	2	-	4
TOTAL PARKING:	9	-	264
PARKING RATIO:	1 SPACE / 1,000 SF OF OFFICE 1 SPACE / 2,000 SF OF WAREHOUSE		
BICYCLE:			
LONG TERM:	41	-	43
SHORT TERM:	42	-	54
LOADING:	2	-	48

KEYNOTES

02-01	EXISTING ELLIOTT BAY BIKE TRAIL
02-02	EXISTING FENCE
02-03	EXISTING SUBSTATION
02-04	EXISTING WETLAND
02-05	WETLAND BUFFER
02-06	EXISTING VEHICLE GATE TO REMAIN CLOSED FOR CURRENT OPERATIONS
02-08	EXISTING ASPHALT TO REMAIN, OUTSIDE OF PHASE BOUNDARY
03-04	CONCRETE RETAINING WALL
26-01	TRANSFORMER
32-01	PEDESTRIAN PATHWAY
32-02	PROPOSED BIKE AND PEDESTRIAN PATH
32-03	BIKE PATH BARRIER
32-04	SOLID WASTE AND RECYCLING CONTAINER ENCLOSURE
32-06	LOADING/ UNLOADING ZONE - 14' X 110' SHOWN
32-09	LONG-TERM BIKE PARKING IN DEDICATED BIKE LOCKERS
32-10	SHORT-TERM BIKE PARKING
32-11	ACCESSIBLE ROUTE STRIPING
32-12	LOADING ZONE STRIPING
33-01	BIORETENTION PLANTER



2 A1.01 KEY PLAN

CALL 2 DAYS
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PROJECT ENGR./ARCH: BRETT CONWAY
DESIGNER: RAH, BC, MJH
DRAWN BY: AMF, MVP
SCALE: As indicated
DATE: 03/20/23
CHECKED BY: RAH, BC
CHECKED/APPROVED BY: RAH, BC

REVISIONS

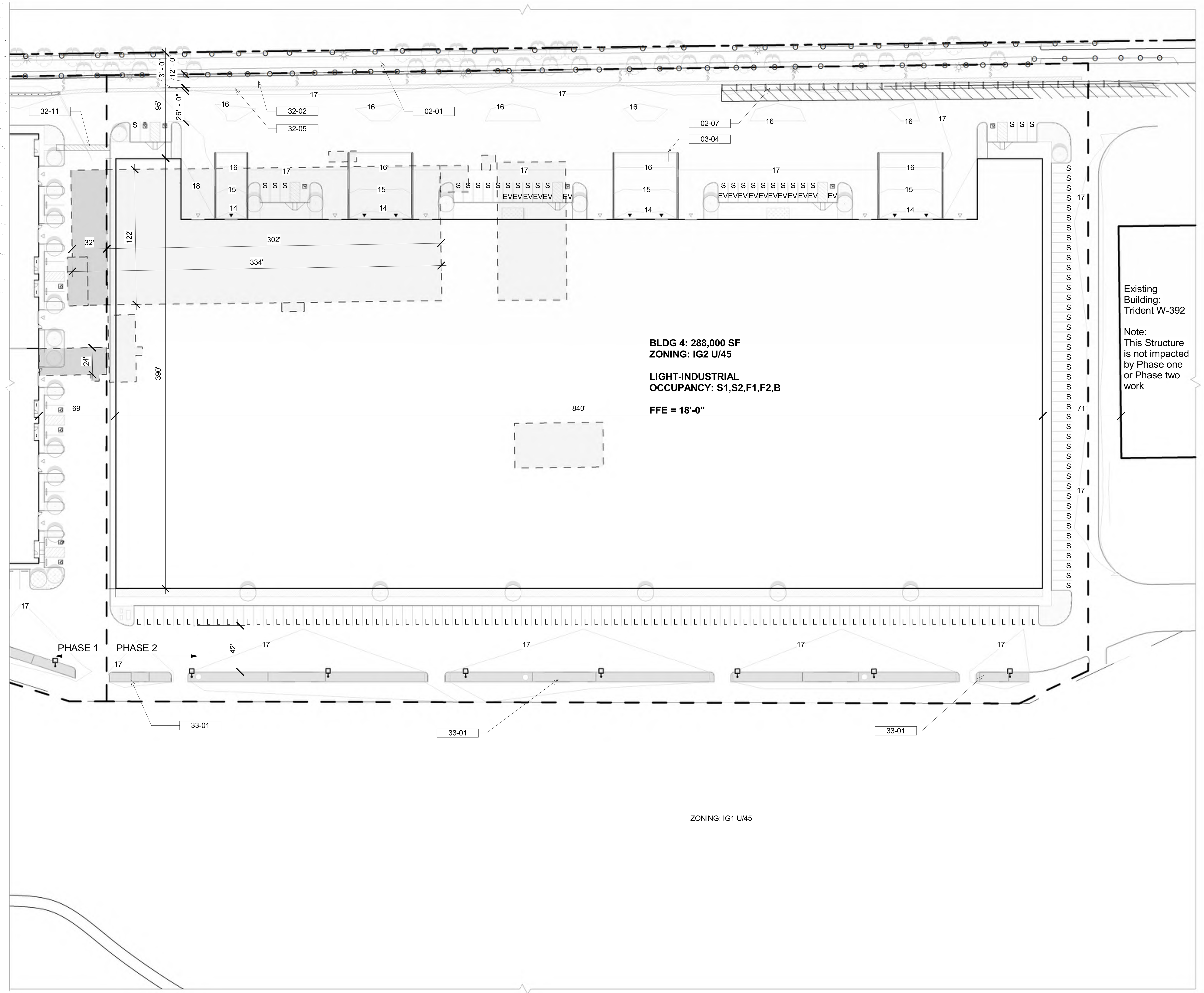
NO.	DATE	BY	DESCRIPTION	APP'D

POS PROJECT MANAGER: STEFAN WYNN
POS PROJECT ENGINEER:
POS DESIGN ENGINEER:
POS DRAFTER:
POS SCALE:
POS DATE:
POS CHECKED/APPROVED BY:

Port of Seattle

PROJECT NAME: T-91 UPLANDS DEVELOPMENT - MUP SET
SHEET TITLE: ENLARGED SITE PLAN PHASE 1

POS WORK PROJECT NUMBER: U00310
CONSULTANT'S PROJECT NUMBER: 2210201.00
POS PROJECT TRACKING NUMBER: 2210201.00 A1.01



AP - Enlarged Site Plan Phase 2
1" = 50'-0"

GENERAL NOTES:

1. Future EV: Load capacity is provided for 10% of parking spaces to have a charging station installed at a future date (charging station is not in this project). See electrical narrative. The parking spaces noted with "EV" are those designated within the provided load capacity.
2. Future EV Conduit: Conduit shall be provided to every parking space on the site.
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LEGEND

DOCK HIGH OVERHEAD DOOR	▲
DRIVE IN OVERHEAD DOOR	△
ELECTRIC VEHICLE CHARGING	EV
SMALL PARKING SPACE	S
LARGE PARKING SPACE	L
PROPOSED FUTURE TENANT DEMISING WALLS	
LIGHT POLE, NEW	
PANEL JOINT	PJ
EXISTING BUILDINGS TO BE DEMOLISHED DURING PHASE 1	
EXISTING BUILDINGS TO REMAIN DURING PHASE 1 AND TO BE DEMOLISHED IN PHASE 2	
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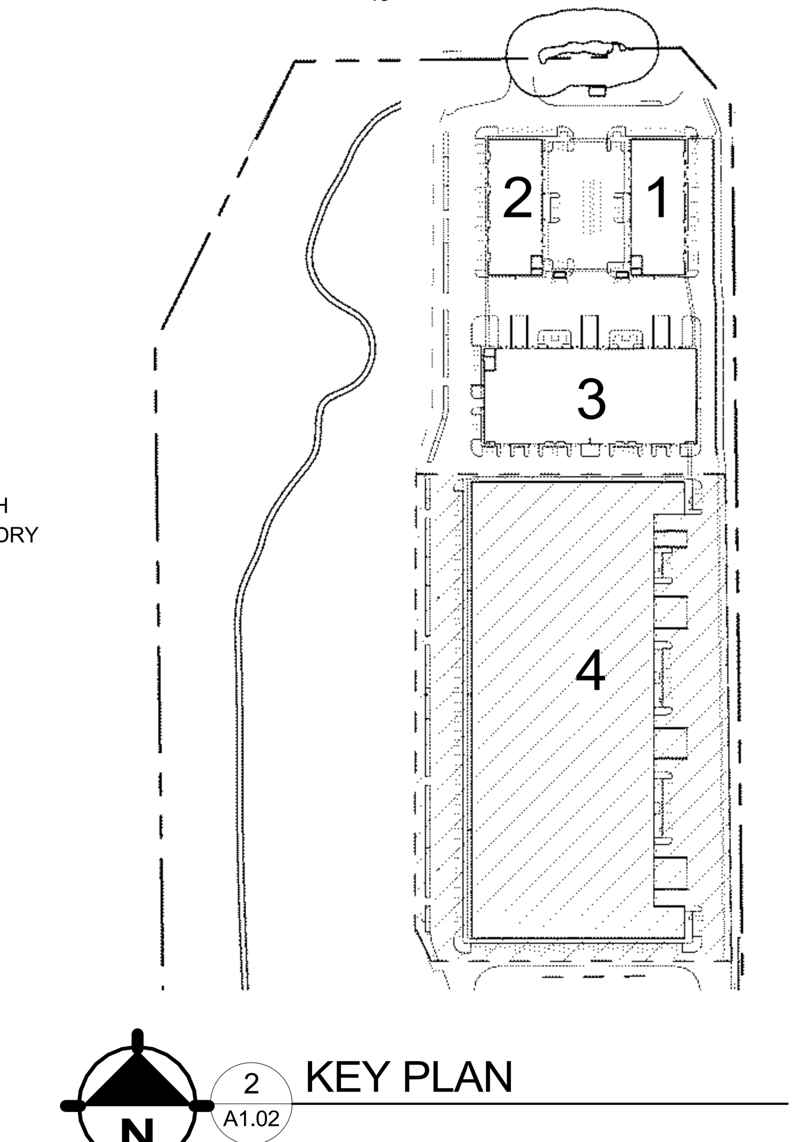
BICYCLE:			
LONG TERM:	41	-	43
SHORT TERM:	42	-	54
LOADING:	2	-	48

KEYNOTES

02-01	EXISTING ELLIOTT BAY BIKE TRAIL
02-07	EXISTING TRACK TO REMAIN
03-04	CONCRETE RETAINING WALL
32-02	PROPOSED BIKE AND PEDESTRIAN PATH
32-05	PAINTED PEDESTRIAN WALKWAY BOUNDRY
32-11	ACCESSIBLE ROUTE STRIPING
33-01	BIORETENTION PLANTER



2 A1.02 KEY PLAN

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POS DESIGN ENGINEER:
POS DRAFTER:
POS SCALE:
POS DATE:
POS CHECKED/APPROVED BY:

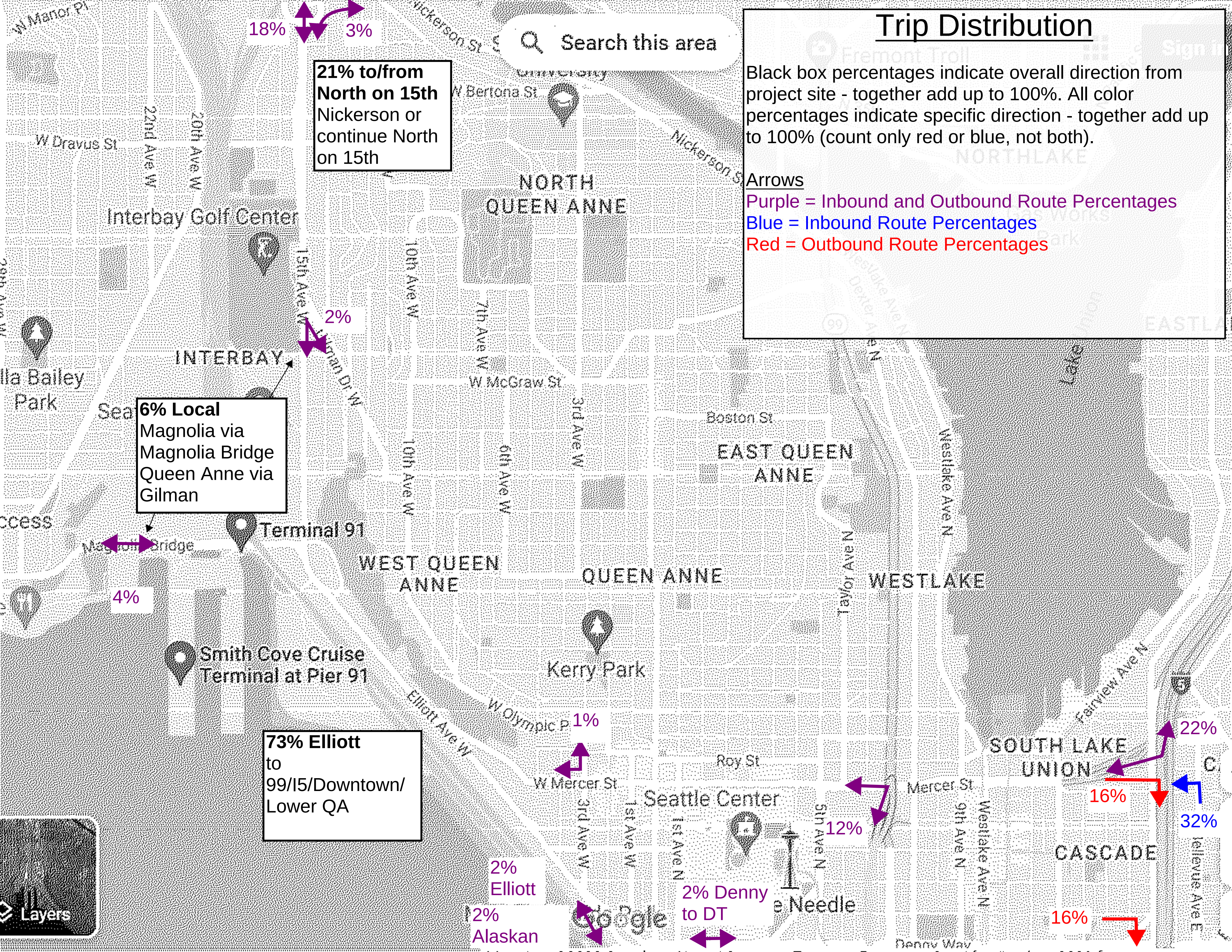
Port of Seattle

PROJECT NAME: T-91 UPLANDS DEVELOPMENT - MUP SET
SHEET TITLE: ENLARGED SITE PLAN PHASE 2

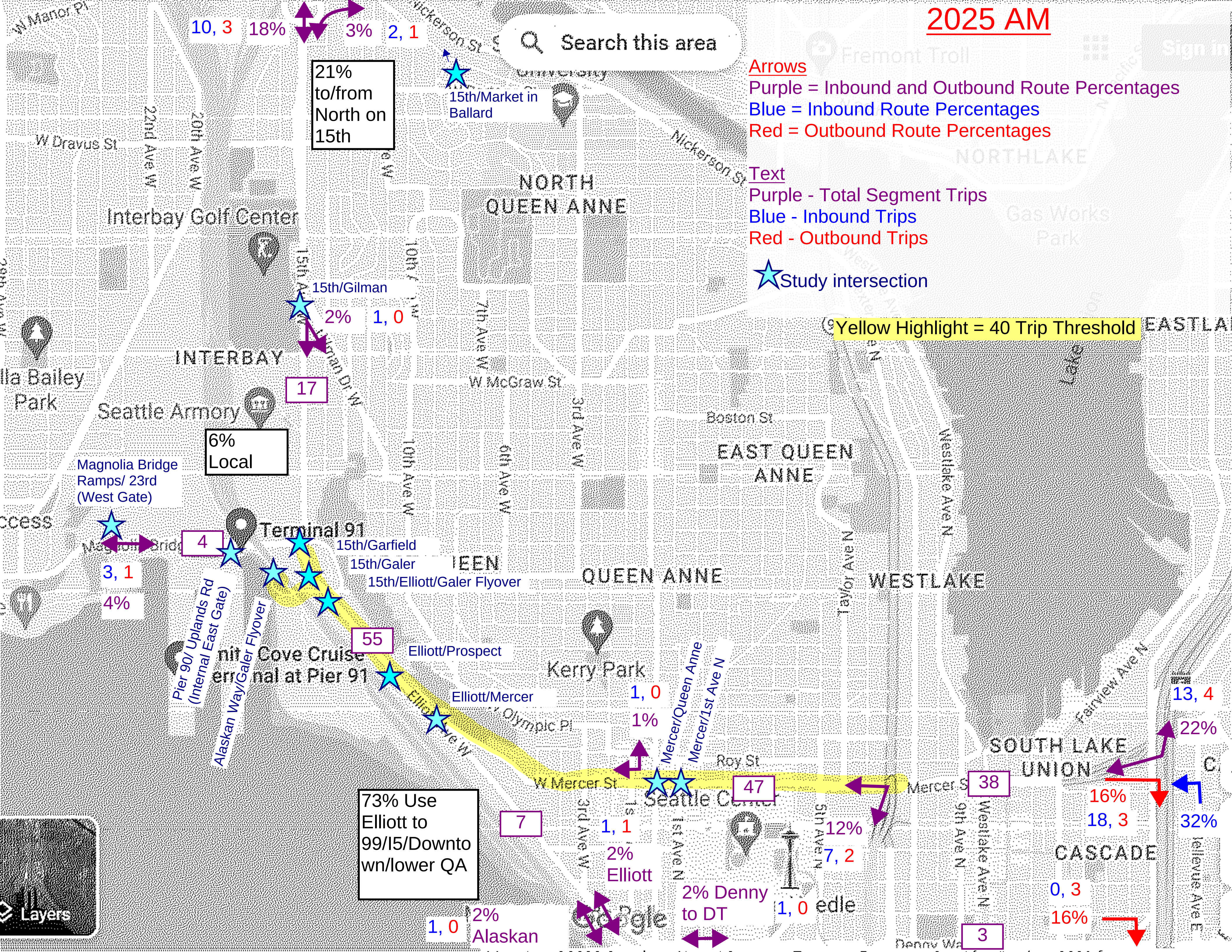
POS WORK PROJECT NUMBER: U00310
CONSULTANT'S PROJECT NUMBER: 2210201.00
POS PROJECT TRACKING NUMBER: 2210201.00 A1.02

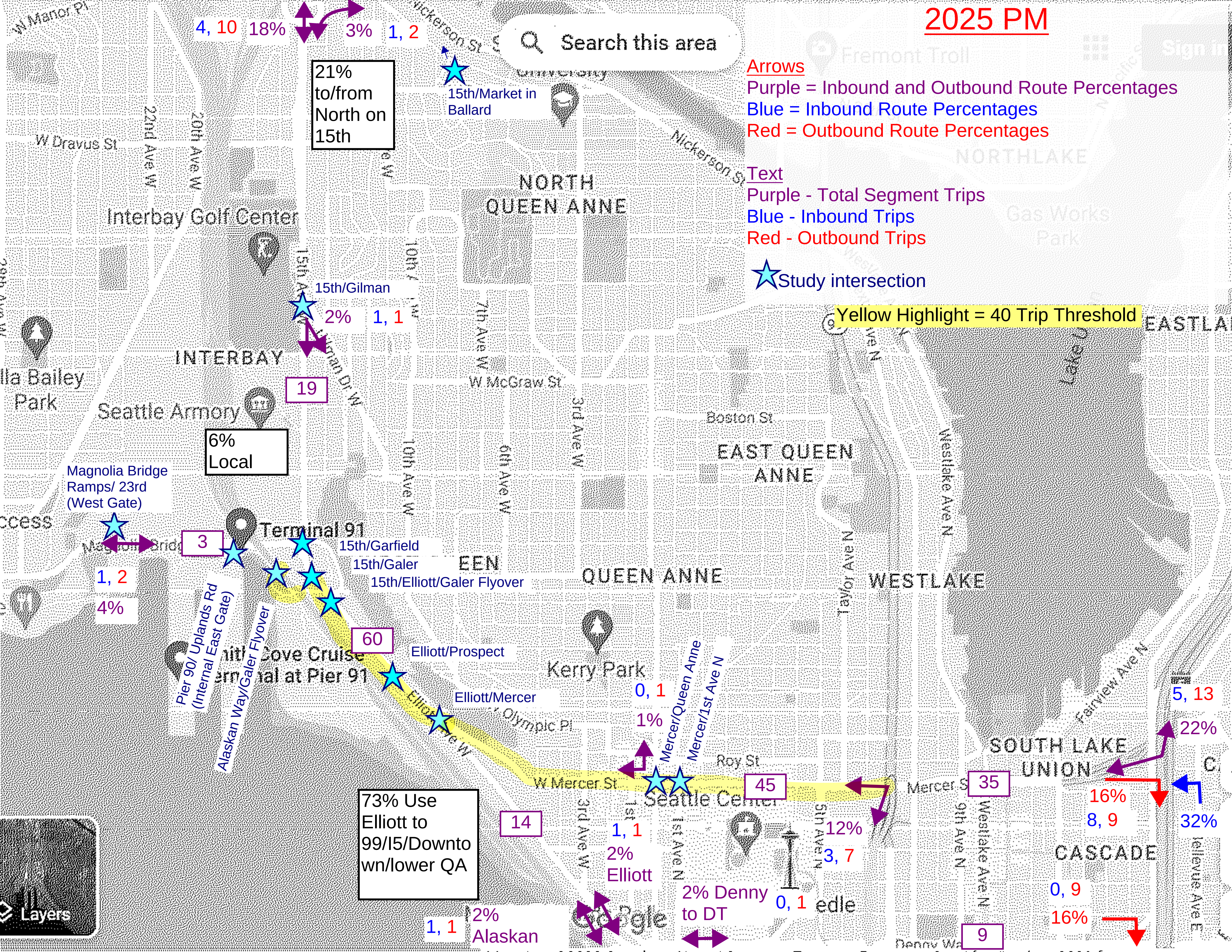
APPENDIX B

Trip Distribution

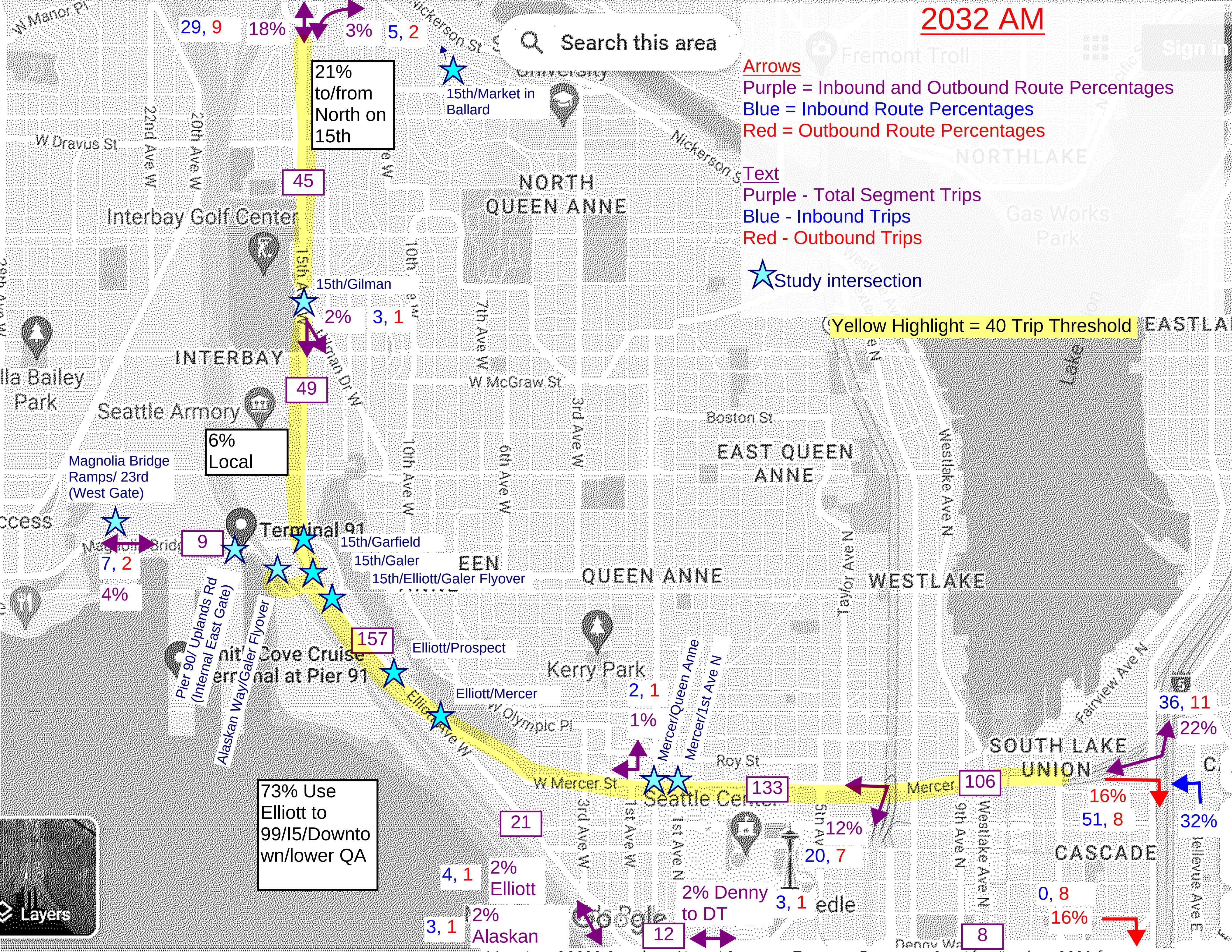


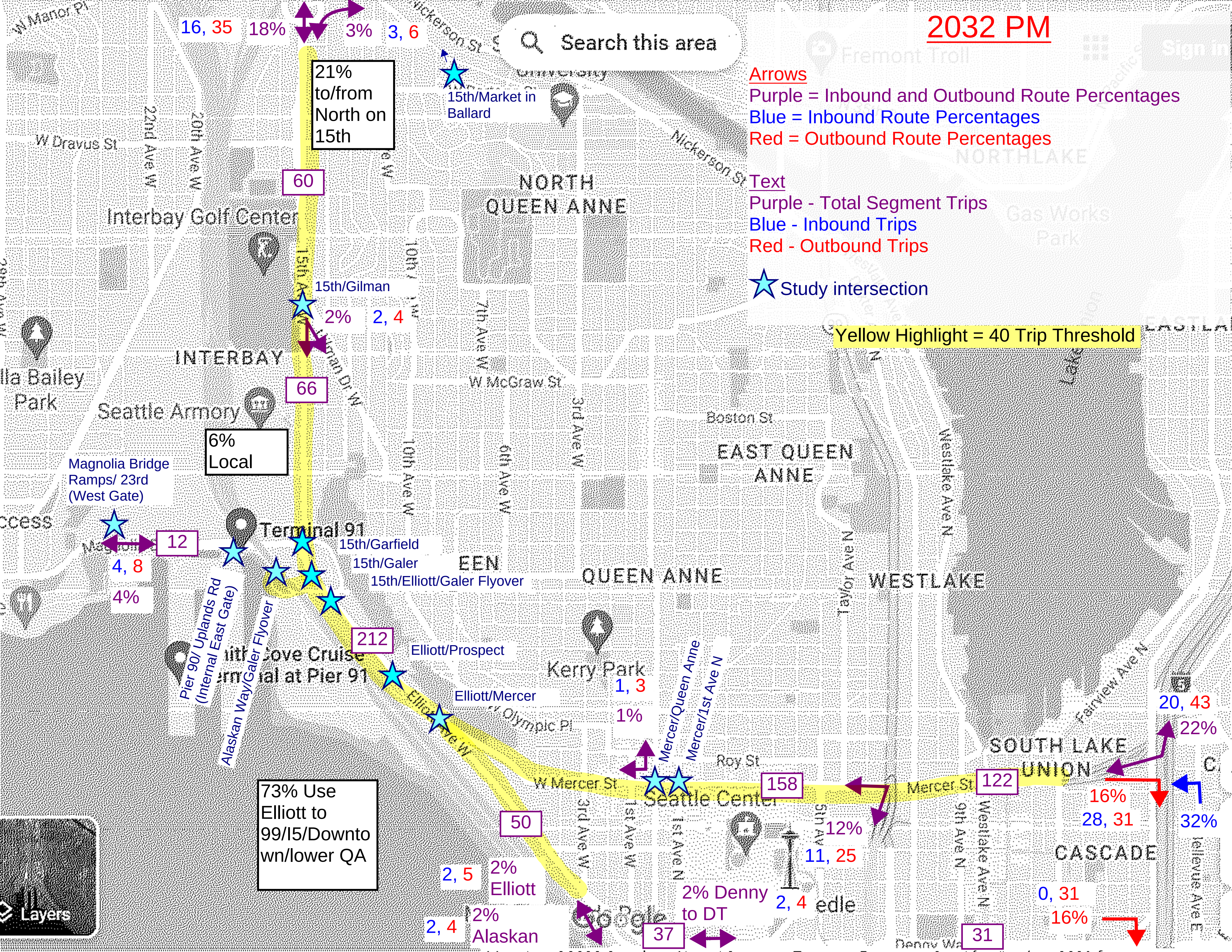
Trip Distribution
Black box percentages indicate overall direction from project site - together add up to 100%. All color percentages indicate specific direction - together add up to 100% (count only red or blue, not both).
Arrows
Purple = Inbound and Outbound Route Percentages
Blue = Inbound Route Percentages
Red = Outbound Route Percentages
21% to/from North on 15th Nickerson or continue North on 15th
6% Local Magnolia via Magnolia Bridge Queen Anne via Gilman
73% Elliott to 99/I5/Downtown/ Lower QA
18%
3%
2%
4%
1%
12%
22%
16%
32%
16%
2% Elliott
2% Alaskan
2% Denny to DT
Search this area
NORTH QUEEN ANNE
INTERBAY
EAST QUEEN ANNE
WEST QUEEN ANNE
QUEEN ANNE
WESTLAKE
SOUTH LAKE UNION
CASCADE
Interbay Golf Center
Terminal 91
Smith Cove Cruise Terminal at Pier 91
Kerry Park
Seattle Center
W Mercer St
Mercer St
Roy St
Boston St
W McGraw St
W Dravus St
Elliott Ave W
Layers

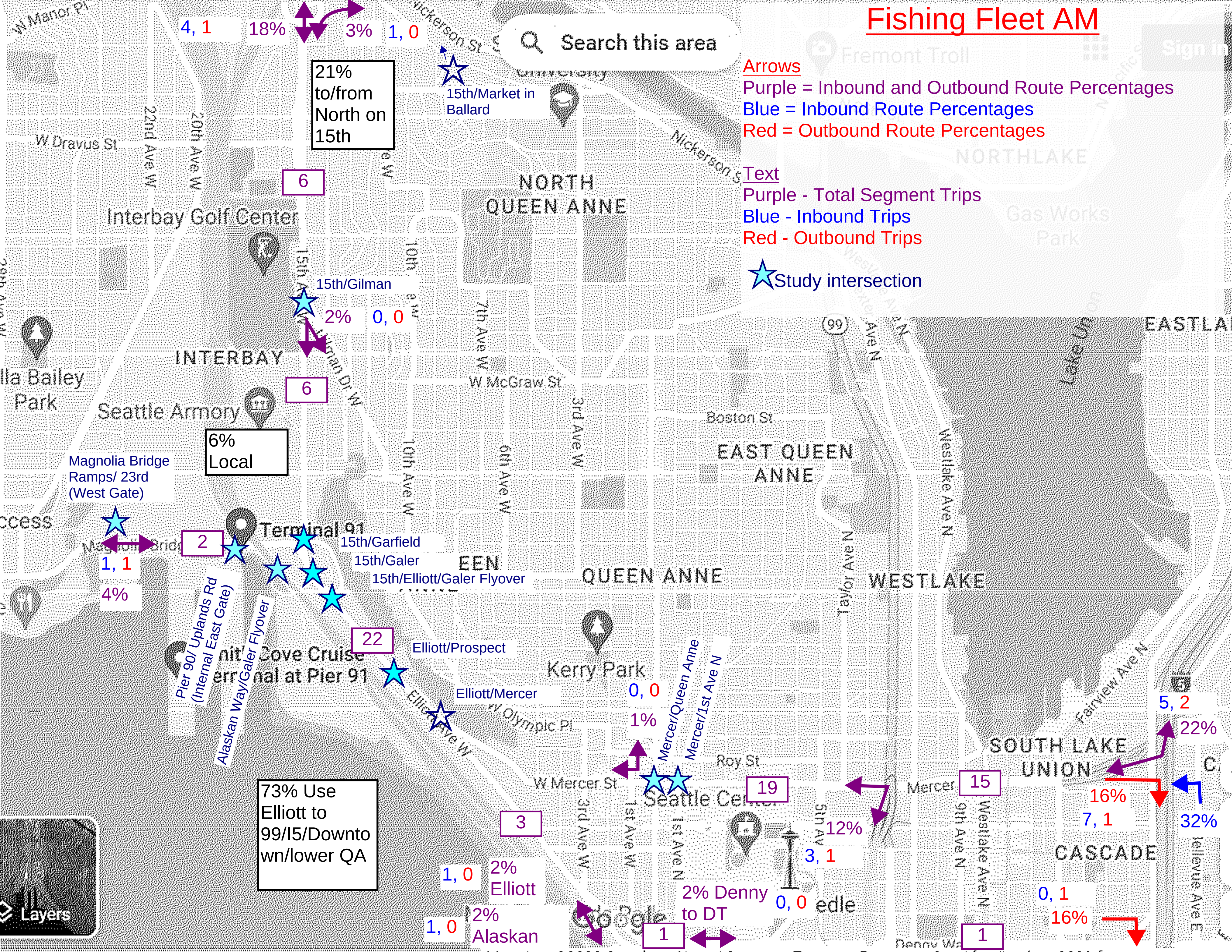

2025 AM
Arrows
Purple = Inbound and Outbound Route Percentages
Blue = Inbound Route Percentages
Red = Outbound Route Percentages
Text
Purple - Total Segment Trips
Blue - Inbound Trips
Red - Outbound Trips
Study intersection
Yellow Highlight = 40 Trip Threshold
10, 3
18%
3%
2, 1
21% to/from North on 15th
15th/Market in Ballard
15th/Gilman
2%
1, 0
17
6% Local
Magnolia Bridge Ramps/ 23rd (West Gate)
4
3, 1
4%
Terminal 91
15th/Garfield
15th/Galer
15th/Elliott/Galer Flyover
Pier 90/ Uplands Rd (Internal East Gate)
Alaskan Way/Galer Flyover
55
Elliott/Prospect
Elliott/Mercer
1, 0
1%
Mercer/Queen Anne
Mercer/1st Ave N
47
38
13, 4
22%
16%
18, 3
32%
73% Use Elliott to 99/I5/Downtown/lower QA
7
1, 1
2% Elliott
12%
7, 2
2% Denny to DT
1, 0
1, 0
2% Alaskan
3
0, 3
16%
W Manor Pl
Nickerson St
Search this area
Fremont Troll
W Dravus St
22nd Ave W
20th Ave W
NORTH QUEEN ANNE
NORTHLAKE
Interbay Golf Center
Gas Works Park
INTERBAY
W McGraw St
Boston St
Seattle Armory
EAST QUEEN ANNE
QUEEN ANNE
WESTLAKE
Kerry Park
SOUTH LAKE UNION
CASCADE
W Mercer St
Roy St
Seattle Center
Westlake Ave N
Fairview Ave N
Taylor Ave N
Layers



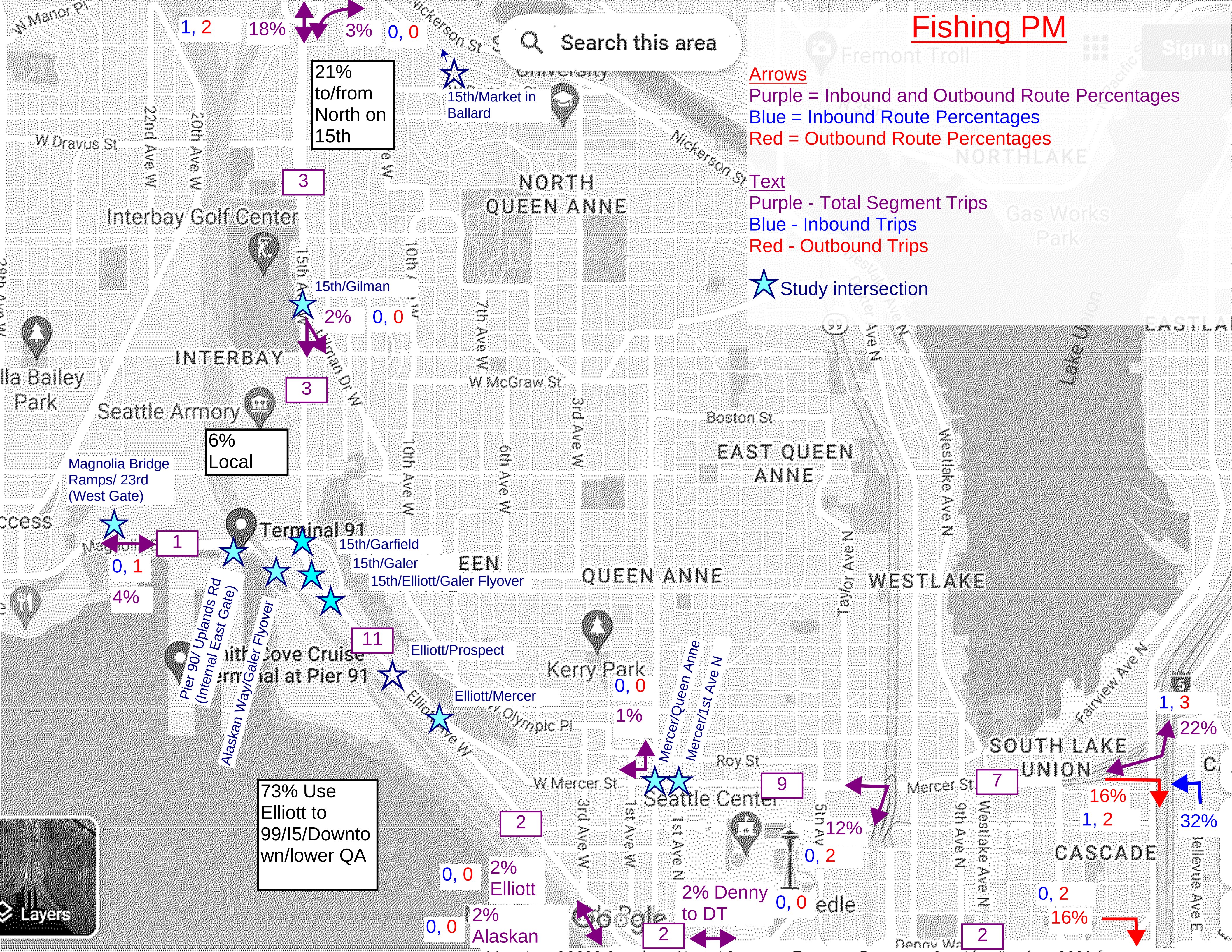
2025 PM
Arrows
Purple = Inbound and Outbound Route Percentages
Blue = Inbound Route Percentages
Red = Outbound Route Percentages
Text
Purple - Total Segment Trips
Blue - Inbound Trips
Red - Outbound Trips
Study intersection
Yellow Highlight = 40 Trip Threshold
4, 10
18%
3%
1, 2
21% to/from North on 15th
15th/Market in Ballard
15th/Gilman
2%
1, 1
19
6% Local
Magnolia Bridge Ramps/ 23rd (West Gate)
3
1, 2
4%
15th/Garfield
15th/Galer
15th/Elliott/Galer Flyover
60
Elliott/Prospect
Elliott/Mercer
Pier 90/ Uplands Rd (Internal East Gate)
Alaskan Way/Galer Flyover
0, 1
1%
Mercer/Queen Anne
Mercer/1st Ave N
45
35
12%
3, 7
73% Use Elliott to 99/I5/Downtown/lower QA
14
1, 1
2%
Elliott
2% Denny to DT
0, 1
1, 1
2%
Alaskan
5, 13
22%
16%
8, 9
32%
0, 9
16%
9
NORTH QUEEN ANNE
INTERBAY
EAST QUEEN ANNE
QUEEN ANNE
WESTLAKE
SOUTH LAKE UNION
CASCADE
Interbay Golf Center
Seattle Armory
Terminal 91
Kerry Park
Seattle Center
W Dravus St
W McGraw St
Boston St
Roy St
W Mercer St
Nickerson St
Search this area
Layers


2032 AM
Arrows
Purple = Inbound and Outbound Route Percentages
Blue = Inbound Route Percentages
Red = Outbound Route Percentages
Text
Purple - Total Segment Trips
Blue - Inbound Trips
Red - Outbound Trips
Study intersection
Yellow Highlight = 40 Trip Threshold
29, 9
18%
3%
5, 2
21% to/from North on 15th
15th/Market in Ballard
45
15th/Gilman
2%
3, 1
49
6% Local
Magnolia Bridge Ramps/ 23rd (West Gate)
9
7, 2
4%
15th/Garfield
15th/Galer
15th/Elliott/Galer Flyover
157
Pier 90/ Uplands Rd (Internal East Gate)
Alaskan Way/Galer Flyover
Elliott/Prospect
Elliott/Mercer
73% Use Elliott to 99/I5/Downtown/lower QA
21
4, 1
2% Elliott
3, 1
2% Alaskan
2, 1
1%
Mercer/Queen Anne
Mercer/1st Ave N
133
12
2% Denny to DT
3, 1
12%
20, 7
106
8
36, 11
22%
16%
51, 8
32%
0, 8
16%
NORTH QUEEN ANNE
INTERBAY
EAST QUEEN ANNE
QUEEN ANNE
WESTLAKE
SOUTH LAKE UNION
CASCADE
NORTHLAKE
Interbay Golf Center
Seattle Armory
Terminal 91
Kerry Park
Seattle Center
W Mercer St
W McGraw St
Boston St
Roy St
Nickerson St
W Dravus St
15th Ave W
10th Ave W
6th Ave W
3rd Ave W
7th Ave W
Taylor Ave N
Westlake Ave N
Fairview Ave N
Search this area
Fremont Troll
Gas Works Park
Layers


2032 PM
Arrows
Purple = Inbound and Outbound Route Percentages
Blue = Inbound Route Percentages
Red = Outbound Route Percentages
Text
Purple - Total Segment Trips
Blue - Inbound Trips
Red - Outbound Trips
Study intersection
Yellow Highlight = 40 Trip Threshold
16, 35
18%
3%
3, 6
21% to/from North on 15th
15th/Market in Ballard
60
15th/Gilman
2%
2, 4
66
6% Local
Magnolia Bridge Ramps/ 23rd (West Gate)
12
4, 8
4%
Pier 90/ Uplands Rd (Internal East Gate)
Alaskan Way/Galer Flyover
15th/Garfield
15th/Galer
15th/Elliott/Galer Flyover
212
Elliott/Prospect
Elliott/Mercer
1, 3
1%
Mercer/Queen Anne
Mercer/1st Ave N
158
12%
11, 25
122
20, 43
22%
16%
28, 31
32%
73% Use Elliott to 99/I5/Downtown/lower QA
50
2, 5
2% Elliott
2, 4
2% Alaskan
37
2% Denny to DT
2, 4
0, 31
16%
31
Interbay Golf Center
INTERBAY
Seattle Armory
NORTH QUEEN ANNE
EAST QUEEN ANNE
QUEEN ANNE
WESTLAKE
SOUTH LAKE UNION
CASCADE
Terminal 91
Kerry Park
Seattle Center
W Mercer St
Mercer St
W McGraw St
Boston St
Roy St
W Dravus St
Nickerson St
Search this area



Fishing Fleet AM
Arrows
Purple = Inbound and Outbound Route Percentages
Blue = Inbound Route Percentages
Red = Outbound Route Percentages
Text
Purple - Total Segment Trips
Blue - Inbound Trips
Red - Outbound Trips
Study intersection
4, 1
18%
3%
1, 0
21% to/from North on 15th
15th/Market in Ballard
6
15th/Gilman
2%
0, 0
6
6% Local
Magnolia Bridge Ramps/ 23rd (West Gate)
1, 1
4%
2
Pier 90/ Uplands Rd (Internal East Gate)
Alaskan Way/Galer Flyover
15th/Garfield
15th/Galer
15th/Elliott/Galer Flyover
22
Elliott/Prospect
Elliott/Mercer
73% Use Elliott to 99/I5/Downtown/lower QA
3
1, 0
2% Elliott
1, 0
2% Alaskan
0, 0
1%
Mercer/Queen Anne
Mercer/1st Ave N
19
1
2% Denny to DT
0, 0
12%
3, 1
15
1
5, 2
22%
16%
7, 1
32%
0, 1
16%


Fishing PM
Arrows
Purple = Inbound and Outbound Route Percentages
Blue = Inbound Route Percentages
Red = Outbound Route Percentages
Text
Purple - Total Segment Trips
Blue - Inbound Trips
Red - Outbound Trips
Study intersection
1, 2
18%
3%
0, 0
21% to/from North on 15th
15th/Market in Ballard
3
15th/Gilman
2%
0, 0
3
6% Local
Magnolia Bridge Ramps/ 23rd (West Gate)
1
0, 1
4%
Terminal 91
15th/Garfield
15th/Galer
15th/Elliott/Galer Flyover
Pier 90/ Uplands Rd (Internal East Gate)
Alaskan Way/Galer Flyover
11
Elliott/Prospect
Elliott/Mercer
0, 0
1%
Mercer/Queen Anne
Mercer/1st Ave N
73% Use Elliott to 99/I5/Downtown/lower QA
2
0, 0
2% Elliott
0, 0
2% Alaskan
2
2% Denny to DT
0, 0
9
12%
0, 2
7
2
1, 3
22%
16%
1, 2
32%
0, 2
16%
Search this area
Interbay Golf Center
INTERBAY
Seattle Armory
NORTH QUEEN ANNE
EAST QUEEN ANNE
QUEEN ANNE
WESTLAKE
SOUTH LAKE UNION
CASCADE
Kerry Park
Seattle Center
Fremont Troll
Gas Works Park
NORTHLAKE
Layers

Pipeline Trips AM

Turning Movement Count
60 Minute Counts

	DATE	TIME	INTID	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1. 15th and Market	9/4/2019	700	1		17			7							
2. 15th Ave W and Gilman Drive	9/4/2019	700	2		17			7							
3. 15th Ave W and W Garfield St	9/4/2019	700	3		9			28							
4. Elliott Ave W and Galer St	9/4/2019	700	4		9			28							
5. Elliott Ave W and Galer St Flyover	9/4/2019	700	5		9			28							
6. Elliott Ave W and Prospect St	9/4/2019	700	6		9			28							
7. Elliott Ave W and W Mercer Pl	9/4/2019	700	7		4		14	14							5
8. Mercer St and Queen Anne Ave N	9/4/2019	700	8								36			8	
9. Mercer St and 1st Ave N	9/4/2019	700	9								36			8	
10. Alaskan Way W and Galer St Flyover	9/4/2019	700	10												
11. Pier 90/Uplands Rd (Internal intersection near East Gate)			11												
12. Magnolia Bridge Ramps/23rd Ave W (near West Gate)			12												

More information about pipeline projects in Trip Gen spreadsheet Pipeline tab
2222 15th Ave W - page 24 and 25
101 Roy
300 W Republican

Pipeline Trips PM

Turning Movement Count
60 Minute Counts

	DATE	TIME	INTID	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1. 15th and Market	9/4/2019	700	1		18			26							
2. 15th Ave W and Gilman Drive	9/4/2019	700	2		18			26							
3. 15th Ave W and W Garfield St	9/4/2019	700	3		39			21							
4. Elliott Ave W and Galer St	9/4/2019	700	4		39			21							
5. Elliott Ave W and Galer St Flyover	9/4/2019	700	5		39			21							
6. Elliott Ave W and Prospect St	9/4/2019	700	6		39			21							
7. Elliott Ave W and W Mercer Pl	9/4/2019	700	7		19		11	10							20
8. Mercer St and Queen Anne Ave N	9/4/2019	700	8								16			43	
9. Mercer St and 1st Ave N	9/4/2019	700	9								16			43	
10. Alaskan Way W and Galer St Flyover	9/4/2019	700	10												
11. Pier 90/Uplands Rd (Internal intersection near East Gate)			11												
12. Magnolia Bridge Ramps/23rd Ave W (near West Gate)			12												

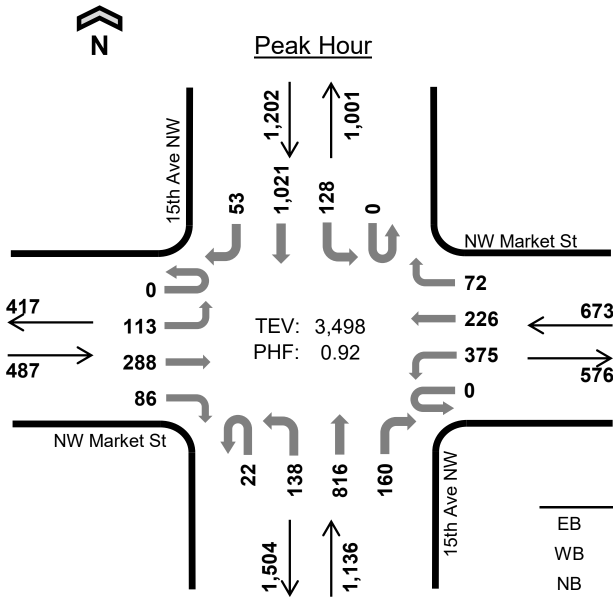
More information about pipeline projects in Trip Gen spreadsheet Pipeline tab
2222 15th Ave W - page 24 and 25
101 Roy
300 W Republican
2235 15th Ave

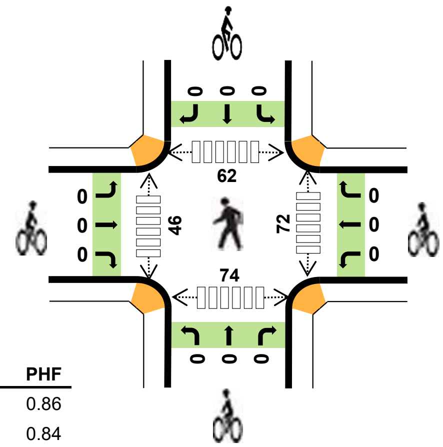
APPENDIX C

Turning Movement Counts

15th Ave NW
NW Market St

Date: 11/15/2022
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV %:	PHF
EB	3.7%	0.86
WB	4.6%	0.84
NB	3.7%	0.84
SB	3.0%	0.96
TOTAL	3.6%	0.92

Two-Hour Count Summaries

Interval Start		NW Market St				NW Market St				15th Ave NW				15th Ave NW				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	17	63	11	0	46	38	15	2	12	84	17	0	29	166	10	510	0
7:15 AM		0	19	76	27	0	56	37	8	5	19	121	13	0	24	221	7	633	0
7:30 AM		0	23	70	25	0	69	47	18	5	23	108	40	0	31	255	10	724	0
7:45 AM		0	18	71	28	0	86	43	22	2	21	141	26	0	43	304	10	815	2,682
8:00 AM		**0**	**27**	**59**	**23**	**0**	**71**	**49**	**10**	**7**	**24**	**170**	**42**	**0**	**30**	**243**	**11**	**766**	2,938
8:15 AM		**0**	**28**	**65**	**23**	**0**	**103**	**57**	**16**	**3**	**32**	**216**	**41**	**0**	**33**	**249**	**15**	**881**	3,186
8:30 AM		**0**	**30**	**84**	**28**	**0**	**84**	**57**	**26**	**6**	**51**	**245**	**36**	**0**	**37**	**254**	**16**	**954**	3,416
8:45 AM		**0**	**28**	**80**	**12**	**0**	**117**	**63**	**20**	**6**	**31**	**185**	**41**	**0**	**28**	**275**	**11**	**897**	**3,498**
Count Total		0	190	568	177	0	632	391	135	36	213	1,270	256	0	255	1,967	90	6,180	0
Peak Hour	**All**	**0**	**113**	**288**	**86**	**0**	**375**	**226**	**72**	**22**	**138**	**816**	**160**	**0**	**128**	**1,021**	**53**	**3,498**	**0**
	HV	**0**	**3**	**13**	**2**	**0**	**8**	**14**	**9**	**1**	**7**	**29**	**5**	**0**	**3**	**31**	**2**	**127**	**0**
	HV%	**-**	**3%**	**5%**	**2%**	**-**	**2%**	**6%**	**13%**	**5%**	**5%**	**4%**	**3%**	**-**	**2%**	**3%**	**4%**	**4%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	1	15	7	8	*31*	0	0	0	0	*0*	7	9	11	6	*33*
7:15 AM	3	5	11	5	*24*	0	0	0	0	*0*	2	8	9	6	*25*
7:30 AM	2	8	7	3	*20*	0	0	0	0	*0*	11	10	17	14	*52*
7:45 AM	3	5	14	5	*27*	0	0	0	0	*0*	16	16	20	23	*75*
8:00 AM	**1**	**11**	**12**	**14**	***38***	**0**	**0**	**0**	**0**	***0***	**13**	**13**	**17**	**18**	*61*
8:15 AM	**5**	**4**	**15**	**8**	***32***	**0**	**0**	**0**	**0**	***0***	**18**	**9**	**10**	**15**	*52*
8:30 AM	**8**	**10**	**5**	**4**	***27***	**0**	**0**	**0**	**0**	***0***	**17**	**15**	**16**	**20**	*68*
8:45 AM	**4**	**6**	**10**	**10**	***30***	**0**	**0**	**0**	**0**	***0***	**24**	**9**	**19**	**21**	*73*
Count Total	27	64	81	57	*229*	0	0	0	0	*0*	108	89	119	123	*439*
Peak Hour	**18**	**31**	**42**	**36**	***127***	**0**	**0**	**0**	**0**	***0***	**72**	**46**	**62**	**74**	***254***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	NW Market St Eastbound UT	LT	TH	RT	NW Market St Westbound UT	LT	TH	RT	15th Ave NW Northbound UT	LT	TH	RT	15th Ave NW Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	0	0	1	0	0	2	8	5	0	1	5	1	0	1	6	1	31	0
7:15 AM	0	0	3	0	0	2	1	2	1	0	10	0	0	0	5	0	24	0
7:30 AM	0	0	2	0	0	2	5	1	0	1	5	1	0	1	2	0	20	0
7:45 AM	0	0	3	0	0	0	4	1	0	1	12	1	0	0	5	0	27	102
8:00 AM	**0**	**0**	**1**	**0**	**0**	**2**	**7**	**2**	**0**	**0**	**9**	**3**	**0**	**2**	**12**	**0**	**38**	109
8:15 AM	**0**	**1**	**4**	**0**	**0**	**2**	**1**	**1**	**0**	**5**	**9**	**1**	**0**	**0**	**7**	**1**	**32**	117
8:30 AM	**0**	**1**	**6**	**1**	**0**	**0**	**4**	**6**	**0**	**1**	**4**	**0**	**0**	**0**	**4**	**0**	**27**	124
8:45 AM	**0**	**1**	**2**	**1**	**0**	**4**	**2**	**0**	**1**	**1**	**7**	**1**	**0**	**1**	**8**	**1**	**30**	**127**
Count Total	0	3	22	2	0	14	32	18	2	10	61	8	0	5	49	3	229	0
Peak Hour	**0**	**3**	**13**	**2**	**0**	**8**	**14**	**9**	**1**	**7**	**29**	**5**	**0**	**3**	**31**	**2**	**127**	**0**

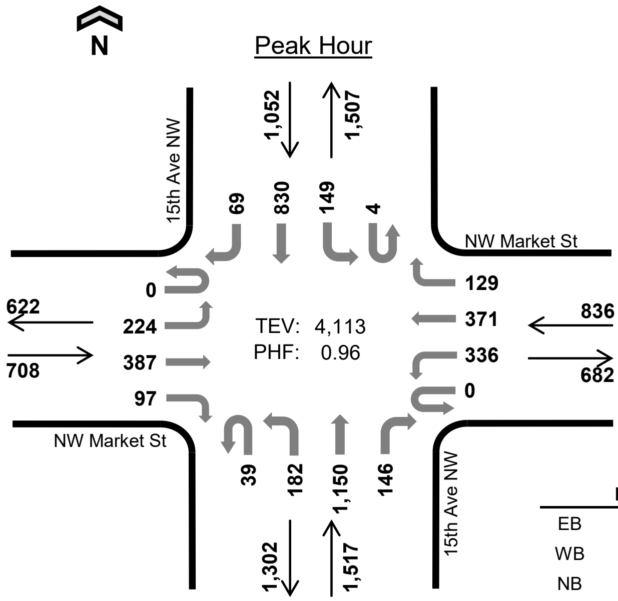
Two-Hour Count Summaries - Bikes

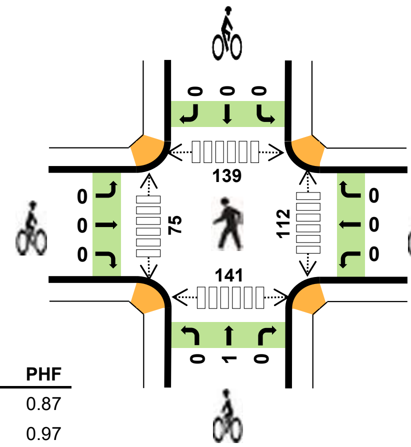
Interval Start	NW Market St Eastbound LT	TH	RT	NW Market St Westbound LT	TH	RT	15th Ave NW Northbound LT	TH	RT	15th Ave NW Southbound LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

15th Ave NW
NW Market St

Date: 11/15/2022
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM





	HV %:	PHF
EB	1.6%	0.87
WB	1.3%	0.97
NB	1.0%	0.96
SB	2.5%	0.94
TOTAL	1.5%	0.96

Two-Hour Count Summaries

Interval Start		NW Market St Eastbound				NW Market St Westbound				15th Ave NW Northbound				15th Ave NW Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	44	102	18	0	74	69	22	12	48	272	50	0	40	203	14	968	0
4:15 PM		0	54	79	28	0	71	94	21	2	49	284	48	0	42	230	14	1,016	0
4:30 PM		0	50	84	33	0	98	101	33	10	37	280	37	0	38	216	6	1,023	0
4:45 PM		0	40	96	24	0	90	88	33	5	43	290	28	0	33	187	16	973	3,980
5:00 PM		**0**	**64**	**115**	**24**	**0**	**89**	**98**	**29**	**8**	**39**	**287**	**36**	**2**	**43**	**215**	**19**	**1,068**	4,080
5:15 PM		**0**	**66**	**82**	**21**	**0**	**77**	**92**	**31**	**10**	**38**	**297**	**40**	**0**	**37**	**207**	**19**	**1,017**	4,081
5:30 PM		**0**	**45**	**98**	**18**	**0**	**90**	**88**	**34**	**11**	**56**	**266**	**35**	**2**	**44**	**205**	**9**	**1,001**	4,059
5:45 PM		**0**	**49**	**92**	**34**	**0**	**80**	**93**	**35**	**10**	**49**	**300**	**35**	**0**	**25**	**203**	**22**	**1,027**	**4,113**
Count Total		0	412	748	200	0	669	723	238	68	359	2,276	309	4	302	1,666	119	8,093	0
Peak Hour	**All**	**0**	**224**	**387**	**97**	**0**	**336**	**371**	**129**	**39**	**182**	**1,150**	**146**	**4**	**149**	**830**	**69**	**4,113**	**0**
	HV	**0**	**1**	**10**	**0**	**0**	**4**	**6**	**1**	**0**	**1**	**14**	**0**	**0**	**4**	**22**	**0**	**63**	**0**
	HV%	**-**	**0%**	**3%**	**0%**	**-**	**1%**	**2%**	**1%**	**0%**	**1%**	**1%**	**0%**	**0%**	**3%**	**3%**	**0%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	3	7	4	7	*21*	0	0	0	0	*0*	34	23	36	22	*115*
4:15 PM	2	4	3	5	*14*	0	2	0	0	*2*	23	11	44	17	*95*
4:30 PM	5	9	4	5	*23*	1	0	0	0	*1*	38	23	23	41	*125*
4:45 PM	6	4	3	6	*19*	0	0	0	0	*0*	27	30	39	28	*124*
5:00 PM	**2**	**3**	**5**	**7**	***17***	**0**	**0**	**0**	**0**	***0***	**31**	**21**	**32**	**37**	*121*
5:15 PM	**4**	**3**	**3**	**7**	***17***	**0**	**0**	**0**	**0**	***0***	**39**	**13**	**44**	**40**	*136*
5:30 PM	**3**	**2**	**2**	**6**	***13***	**0**	**0**	**1**	**0**	***1***	**19**	**20**	**32**	**29**	*100*
5:45 PM	**2**	**3**	**5**	**6**	***16***	**0**	**0**	**0**	**0**	***0***	**23**	**21**	**31**	**35**	*110*
Count Total	27	35	29	49	*140*	1	2	1	0	*4*	234	162	281	249	*926*
Peak Hour	**11**	**11**	**15**	**26**	***63***	**0**	**0**	**1**	**0**	***1***	**112**	**75**	**139**	**141**	***467***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	NW Market St				NW Market St				15th Ave NW				15th Ave NW				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	2	0	0	3	3	1	0	0	3	1	0	2	5	0	21	0
4:15 PM	0	0	1	1	0	2	2	0	0	0	3	0	0	0	4	1	14	0
4:30 PM	0	0	4	1	0	5	2	2	0	0	4	0	0	0	4	1	23	0
4:45 PM	0	0	3	3	0	1	3	0	0	0	3	0	0	2	4	0	19	77
5:00 PM	**0**	**0**	**2**	**0**	**0**	**2**	**1**	**0**	**0**	**1**	**4**	**0**	**0**	**2**	**5**	**0**	**17**	73
5:15 PM	**0**	**0**	**4**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**3**	**0**	**0**	**1**	**6**	**0**	**17**	76
5:30 PM	**0**	**0**	**3**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**6**	**0**	**13**	66
5:45 PM	**0**	**1**	**1**	**0**	**0**	**1**	**1**	**1**	**0**	**0**	**5**	**0**	**0**	**1**	**5**	**0**	**16**	**63**
Count Total	0	2	20	5	0	15	16	4	0	1	27	1	0	8	39	2	140	0
Peak Hour	**0**	**1**	**10**	**0**	**0**	**4**	**6**	**1**	**0**	**1**	**14**	**0**	**0**	**4**	**22**	**0**	**63**	**0**

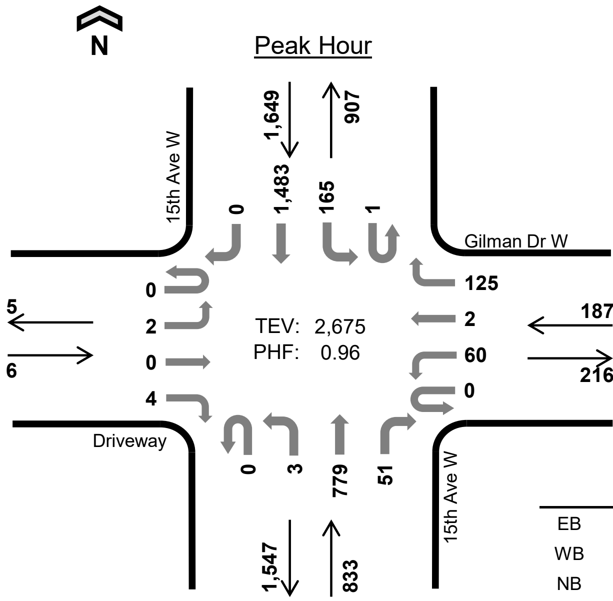
Two-Hour Count Summaries - Bikes

Interval Start	NW Market St			NW Market St			15th Ave NW			15th Ave NW			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	2	0	0	0	0	0	0	0	2	0
4:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	1	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	1
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
Count Total	1	0	0	0	2	0	0	1	0	0	0	0	4	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**

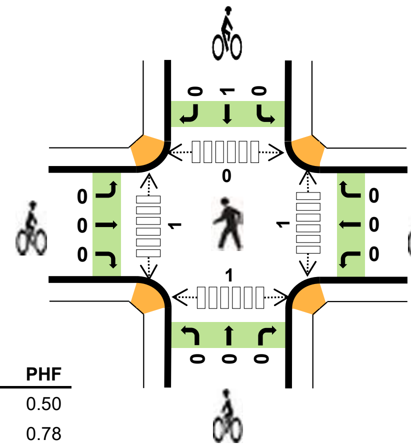
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

15th Ave W
Gilman Dr W

Date: 11/15/2022
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM



	HV %:	PHF
EB	16.7%	0.50
WB	2.1%	0.78
NB	6.6%	0.94
SB	2.7%	0.97
TOTAL	3.9%	0.96



Two-Hour Count Summaries

Interval Start	Driveway Eastbound UT	LT	TH	RT	Gilman Dr W Westbound UT	LT	TH	RT	15th Ave W Northbound UT	LT	TH	RT	15th Ave W Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	0	0	0	0	0	10	2	20	0	0	138	3	0	14	221	0	408	0
7:15 AM	0	0	0	0	0	13	0	11	0	1	128	6	0	19	267	0	445	0
7:30 AM	0	0	0	0	0	16	1	15	0	0	159	7	1	34	373	0	606	0
7:45 AM	0	1	0	0	0	21	1	27	0	0	169	6	0	47	369	0	641	2,100
8:00 AM	**0**	**0**	**0**	**0**	**0**	**19**	**0**	**24**	**0**	**0**	**174**	**16**	**0**	**39**	**374**	**0**	**646**	2,338
8:15 AM	**0**	**0**	**0**	**1**	**0**	**15**	**2**	**43**	**0**	**0**	**197**	**16**	**0**	**42**	**381**	**0**	**697**	2,590
8:30 AM	**0**	**1**	**0**	**2**	**0**	**12**	**0**	**22**	**0**	**1**	**208**	**12**	**1**	**39**	**358**	**0**	**656**	2,640
8:45 AM	**0**	**1**	**0**	**1**	**0**	**14**	**0**	**36**	**0**	**2**	**200**	**7**	**0**	**45**	**370**	**0**	**676**	**2,675**
Count Total	0	3	0	4	0	120	6	198	0	4	1,373	73	2	279	2,713	0	4,775	0
Peak Hour All	**0**	**2**	**0**	**4**	**0**	**60**	**2**	**125**	**0**	**3**	**779**	**51**	**1**	**165**	**1,483**	**0**	**2,675**	**0**
Peak Hour HV	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**3**	**0**	**0**	**51**	**4**	**0**	**6**	**39**	**0**	**105**	**0**
Peak Hour HV%	**-**	**0%**	**-**	**25%**	**-**	**2%**	**0%**	**2%**	**-**	**0%**	**7%**	**8%**	**0%**	**4%**	**3%**	**-**	**4%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	0	1	12	6	*19*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	0	0	8	11	*19*	0	0	0	1	*1*	0	0	0	0	*0*
7:30 AM	0	0	8	10	*18*	0	0	0	1	*1*	0	0	0	0	*0*
7:45 AM	0	0	8	10	*18*	0	0	0	2	*2*	0	0	0	1	*1*
8:00 AM	**0**	**1**	**12**	**10**	***23***	**0**	**0**	**0**	**1**	***1***	**1**	**0**	**0**	**0**	*1*
8:15 AM	**1**	**1**	**17**	**13**	***32***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:30 AM	**0**	**1**	**13**	**8**	***22***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
8:45 AM	**0**	**1**	**13**	**14**	***28***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	*1*
Count Total	1	5	91	82	*179*	0	0	0	5	*5*	1	1	0	2	*4*
Peak Hour	**1**	**4**	**55**	**45**	***105***	**0**	**0**	**0**	**1**	***1***	**1**	**1**	**0**	**1**	*3*

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Driveway				Gilman Dr W				15th Ave W				15th Ave W				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	1	0	0	12	0	0	0	6	0	19	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	7	1	0	0	11	0	19	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	8	0	1	1	8	0	18	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	6	2	0	0	10	0	18	74
8:00 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**10**	**2**	**0**	**1**	**9**	**0**	**23**	78
8:15 AM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**16**	**1**	**0**	**1**	**12**	**0**	**32**	91
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**13**	**0**	**0**	**1**	**7**	**0**	**22**	95
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**12**	**1**	**0**	**3**	**11**	**0**	**28**	**105**
Count Total	0	0	0	1	0	1	0	4	0	0	84	7	1	7	74	0	179	0
Peak Hour	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**3**	**0**	**0**	**51**	**4**	**0**	**6**	**39**	**0**	**105**	**0**

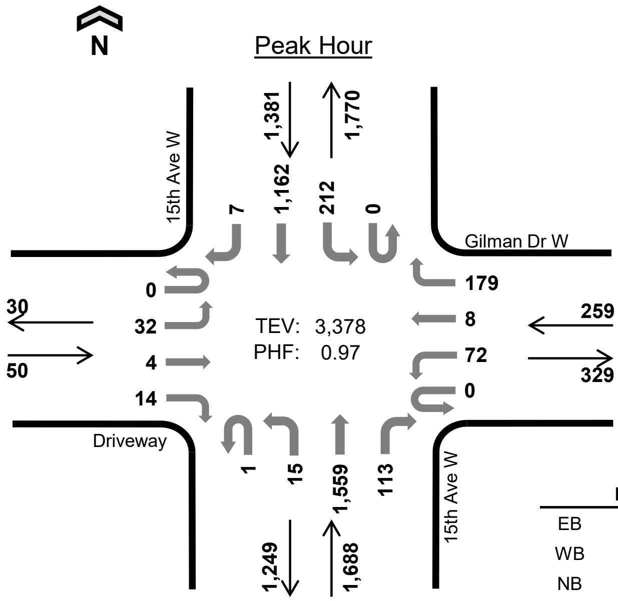
Two-Hour Count Summaries - Bikes

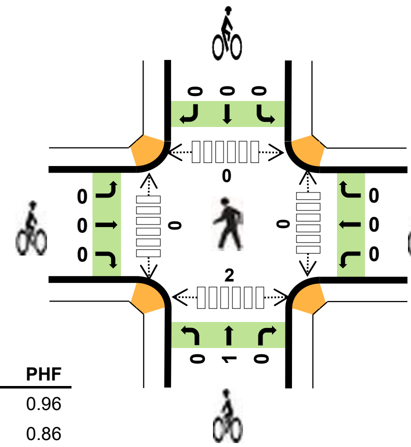
Interval Start	Driveway			Gilman Dr W			15th Ave W			15th Ave W			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	2	4
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	5
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	4
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
Count Total	0	0	0	0	0	0	0	0	0	0	5	0	5	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

15th Ave W
Gilman Dr W

Date: 11/15/2022
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM





	HV %:	PHF
EB	0.0%	0.96
WB	0.8%	0.86
NB	1.4%	0.96
SB	2.8%	0.93
TOTAL	1.9%	0.97

Two-Hour Count Summaries

Interval Start		Driveway Eastbound UT	LT	TH	RT	Gilman Dr W Westbound UT	LT	TH	RT	15th Ave W Northbound UT	LT	TH	RT	15th Ave W Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM		0	5	0	2	0	23	1	37	0	4	338	21	0	32	265	0	728	0
4:15 PM		0	5	3	4	0	15	1	47	0	4	368	36	0	30	272	3	788	0
4:30 PM		0	4	2	7	0	16	0	35	0	4	355	27	0	42	319	1	812	0
4:45 PM		**0**	**8**	**2**	**3**	**0**	**18**	**1**	**40**	**0**	**2**	**377**	**37**	**0**	**56**	**311**	**3**	**858**	3,186
5:00 PM		**0**	**5**	**1**	**5**	**0**	**23**	**1**	**51**	**1**	**7**	**412**	**18**	**0**	**47**	**299**	**1**	**871**	3,329
5:15 PM		**0**	**9**	**1**	**3**	**0**	**14**	**4**	**38**	**0**	**2**	**405**	**29**	**0**	**59**	**272**	**0**	**836**	3,377
5:30 PM		**0**	**10**	**0**	**3**	**0**	**17**	**2**	**50**	**0**	**4**	**365**	**29**	**0**	**50**	**280**	**3**	**813**	**3,378**
5:45 PM		0	4	0	6	0	12	1	39	0	1	312	21	0	50	241	5	692	3,212
Count Total		0	50	9	33	0	138	11	337	1	28	2,932	218	0	366	2,259	16	6,398	0
Peak Hour	**All**	**0**	**32**	**4**	**14**	**0**	**72**	**8**	**179**	**1**	**15**	**1,559**	**113**	**0**	**212**	**1,162**	**7**	**3,378**	**0**
	HV	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**23**	**0**	**0**	**3**	**35**	**0**	**63**	**0**
	HV%	**-**	**0%**	**0%**	**0%**	**-**	**3%**	**0%**	**0%**	**0%**	**0%**	**1%**	**0%**	**-**	**1%**	**3%**	**0%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	0	1	5	13	*19*	0	0	0	0	*0*	0	0	0	1	*1*
4:15 PM	0	1	7	11	*19*	0	0	0	1	*1*	0	4	0	1	*5*
4:30 PM	0	1	9	9	*19*	0	0	0	0	*0*	2	1	0	1	*4*
4:45 PM	**0**	**2**	**10**	**13**	***25***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
5:00 PM	**0**	**0**	**6**	**8**	***14***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**0**	**0**	**4**	**8**	***12***	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	*0*
5:30 PM	**0**	**0**	**3**	**9**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	***1***
5:45 PM	0	0	5	9	*14*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	0	5	49	80	*134*	0	0	1	1	*2*	2	5	0	5	*12*
Peak Hour	**0**	**2**	**23**	**38**	***63***	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**2**	***2***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Driveway				Gilman Dr W				15th Ave W				15th Ave W				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	1	0	0	5	0	0	1	12	0	19	0
4:15 PM	0	0	0	0	0	0	0	1	0	0	7	0	0	0	11	0	19	0
4:30 PM	0	0	0	0	0	0	0	1	0	0	9	0	0	0	9	0	19	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**10**	**0**	**0**	**2**	**11**	**0**	**25**	82
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**8**	**0**	**14**	77
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**8**	**0**	**12**	70
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**1**	**8**	**0**	**12**	**63**
5:45 PM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	9	0	14	52
Count Total	0	0	0	0	0	2	0	3	0	0	49	0	0	4	76	0	134	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**23**	**0**	**0**	**3**	**35**	**0**	**63**	**0**

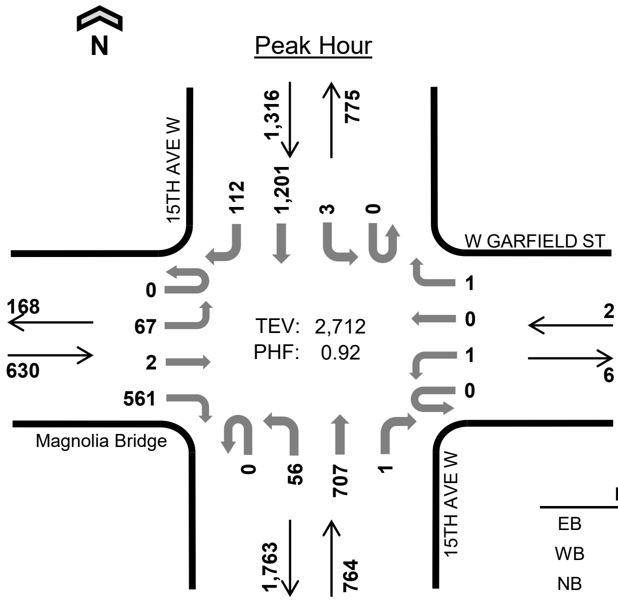
Two-Hour Count Summaries - Bikes

Interval Start	Driveway			Gilman Dr W			15th Ave W			15th Ave W			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	1
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	0	1	0	0	1	0	2	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**

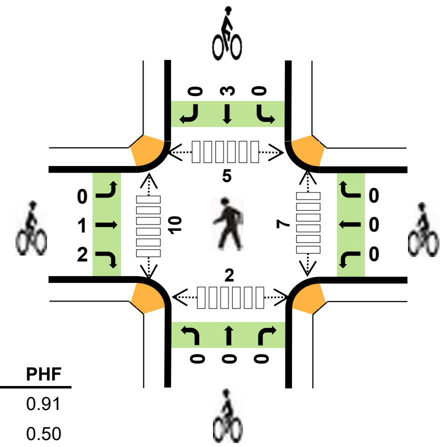
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

15TH AVE W
Magnolia Bridge

Date: 09/01/2022
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM



	HV %:	PHF
EB	2.1%	0.91
WB	0.0%	0.50
NB	6.7%	0.92
SB	4.0%	0.85
TOTAL	4.3%	0.92



Two-Hour Count Summaries

Interval Start		Magnolia Bridge Eastbound UT	LT	TH	RT	W GARFIELD ST Westbound UT	LT	TH	RT	15TH AVE W Northbound UT	LT	TH	RT	15TH AVE W Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM		0	14	0	109	0	0	1	0	0	10	136	0	0	0	194	11	475	0
7:15 AM		0	10	0	118	0	0	0	0	0	12	171	0	0	0	229	17	557	0
7:30 AM		**0**	**11**	**0**	**162**	**0**	**0**	**0**	**0**	**0**	**11**	**168**	**1**	**0**	**0**	**298**	**19**	**670**	0
7:45 AM		**0**	**20**	**0**	**149**	**0**	**0**	**0**	**0**	**0**	**18**	**189**	**0**	**0**	**0**	**283**	**27**	**686**	2,388
8:00 AM		**0**	**15**	**0**	**105**	**0**	**1**	**0**	**0**	**0**	**19**	**174**	**0**	**0**	**2**	**272**	**29**	**617**	2,530
8:15 AM		**0**	**21**	**2**	**145**	**0**	**0**	**0**	**1**	**0**	**8**	**176**	**0**	**0**	**1**	**348**	**37**	**739**	**2,712**
8:30 AM		0	26	0	136	0	0	0	0	0	14	187	0	0	2	271	31	667	2,709
8:45 AM		0	18	0	121	0	1	1	0	0	28	183	1	0	1	284	36	674	2,697
Count Total		0	135	2	1,045	0	2	2	1	0	120	1,384	2	0	6	2,179	207	5,085	0
Peak Hour	**All**	**0**	**67**	**2**	**561**	**0**	**1**	**0**	**1**	**0**	**56**	**707**	**1**	**0**	**3**	**1,201**	**112**	**2,712**	**0**
	HV	**0**	**2**	**0**	**11**	**0**	**0**	**0**	**0**	**0**	**5**	**46**	**0**	**0**	**0**	**44**	**8**	**116**	**0**
	HV%	**-**	**3%**	**0%**	**2%**	**-**	**0%**	**-**	**0%**	**-**	**9%**	**7%**	**0%**	**-**	**0%**	**4%**	**7%**	**4%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	3	0	10	10	*23*	1	0	1	1	*3*	1	2	0	0	*3*
7:15 AM	4	0	8	10	*22*	1	0	1	1	*3*	2	0	0	0	*2*
7:30 AM	**2**	**0**	**11**	**8**	***21***	**1**	**0**	**0**	**0**	*1*	**2**	**4**	**2**	**1**	*9*
7:45 AM	**4**	**0**	**10**	**14**	***28***	**0**	**0**	**0**	**0**	*0*	**4**	**0**	**1**	**0**	*5*
8:00 AM	**4**	**0**	**17**	**10**	***31***	**1**	**0**	**0**	**3**	*4*	**1**	**4**	**2**	**0**	*7*
8:15 AM	**3**	**0**	**13**	**20**	***36***	**1**	**0**	**0**	**0**	*1*	**0**	**2**	**0**	**1**	***3***
8:30 AM	3	0	8	18	*29*	0	0	1	1	*2*	1	2	1	1	*5*
8:45 AM	7	0	15	12	*34*	2	0	0	3	*5*	5	1	2	1	*9*
Count Total	30	0	92	102	*224*	7	0	3	9	*19*	16	15	8	4	*43*
Peak Hour	**13**	**0**	**51**	**52**	***116***	**3**	**0**	**0**	**3**	***6***	**7**	**10**	**5**	**2**	***24***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Magnolia Bridge				W GARFIELD ST				15TH AVE W				15TH AVE W				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	0	2	0	0	0	0	0	1	9	0	0	0	10	0	23	0
7:15 AM	0	0	0	4	0	0	0	0	0	0	8	0	0	0	9	1	22	0
7:30 AM	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**0**	**0**	**0**	**8**	**0**	**21**	0
7:45 AM	**0**	**1**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	**0**	**0**	**0**	**13**	**1**	**28**	94
8:00 AM	**0**	**1**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**4**	**13**	**0**	**0**	**0**	**7**	**3**	**31**	102
8:15 AM	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**1**	**12**	**0**	**0**	**0**	**16**	**4**	**36**	**116**
8:30 AM	0	0	0	3	0	0	0	0	0	0	8	0	0	0	18	0	29	124
8:45 AM	0	1	0	6	0	0	0	0	0	3	12	0	0	0	11	1	34	130
Count Total	0	4	0	26	0	0	0	0	0	9	83	0	0	0	92	10	224	0
Peak Hour	**0**	**2**	**0**	**11**	**0**	**0**	**0**	**0**	**0**	**5**	**46**	**0**	**0**	**0**	**44**	**8**	**116**	**0**

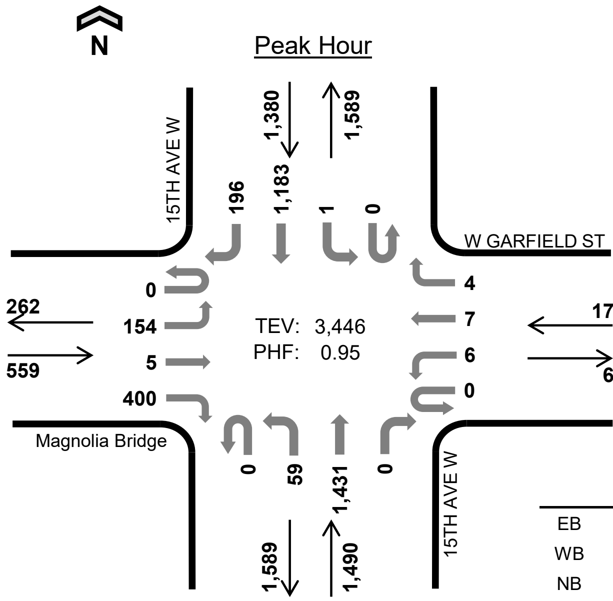
Two-Hour Count Summaries - Bikes

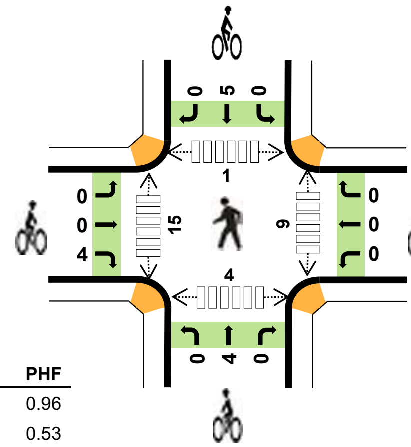
Interval Start	Magnolia Bridge			W GARFIELD ST			15TH AVE W			15TH AVE W			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	1	0	0	0	0	1	0	0	1	0	3	0
7:15 AM	0	0	1	0	0	0	0	1	0	0	1	0	3	0
7:30 AM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	7
8:00 AM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**4**	8
8:15 AM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**6**
8:30 AM	0	0	0	0	0	0	1	0	0	0	1	0	2	7
8:45 AM	0	0	2	0	0	0	0	0	0	0	3	0	5	12
Count Total	0	1	6	0	0	0	1	2	0	0	9	0	19	0
Peak Hour	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**6**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

15TH AVE W
Magnolia Bridge

Date: 09/01/2022
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM





	HV %:	PHF
EB	2.0%	0.96
WB	0.0%	0.53
NB	2.1%	0.95
SB	3.0%	0.90
TOTAL	2.4%	0.95

Two-Hour Count Summaries

Interval Start		Magnolia Bridge Eastbound				W GARFIELD ST Westbound				15TH AVE W Northbound				15TH AVE W Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	45	0	83	0	3	1	0	0	13	325	0	0	0	290	49	809	0
4:15 PM		0	40	0	93	0	0	1	1	0	15	335	0	0	1	292	42	820	0
4:30 PM		0	31	0	88	0	3	0	0	0	9	336	0	0	0	273	43	783	0
4:45 PM		**0**	**32**	**2**	**112**	**0**	**2**	**2**	**0**	**0**	**15**	**357**	**0**	**0**	**1**	**335**	**47**	**905**	3,317
5:00 PM		**0**	**44**	**0**	**101**	**0**	**0**	**3**	**0**	**0**	**12**	**382**	**0**	**0**	**0**	**313**	**47**	**902**	3,410
5:15 PM		**0**	**37**	**1**	**95**	**0**	**2**	**0**	**0**	**0**	**23**	**355**	**0**	**0**	**0**	**247**	**48**	**808**	3,398
5:30 PM		**0**	**41**	**2**	**92**	**0**	**2**	**2**	**4**	**0**	**9**	**337**	**0**	**0**	**0**	**288**	**54**	**831**	**3,446**
5:45 PM		0	31	1	66	0	0	1	0	0	21	348	0	0	0	203	37	708	3,249
Count Total		0	301	6	730	0	12	10	5	0	117	2,775	0	0	2	2,241	367	6,566	0
Peak Hour	**All**	**0**	**154**	**5**	**400**	**0**	**6**	**7**	**4**	**0**	**59**	**1,431**	**0**	**0**	**1**	**1,183**	**196**	**3,446**	**0**
	HV	**0**	**0**	**0**	**11**	**0**	**0**	**0**	**0**	**0**	**1**	**30**	**0**	**0**	**0**	**42**	**0**	**84**	**0**
	HV%	**-**	**0%**	**0%**	**3%**	**-**	**0%**	**0%**	**0%**	**-**	**2%**	**2%**	**-**	**-**	**0%**	**4%**	**0%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	6	0	6	13	*25*	1	0	0	0	*1*	1	5	0	1	*7*
4:15 PM	2	0	8	9	*19*	2	0	1	0	*3*	2	4	0	0	*6*
4:30 PM	5	0	6	9	*20*	1	0	0	0	*1*	3	5	1	0	*9*
4:45 PM	**5**	**0**	**7**	**11**	***23***	**2**	**0**	**0**	**0**	***2***	**3**	**3**	**1**	**3**	*10*
5:00 PM	**3**	**0**	**7**	**11**	***21***	**1**	**0**	**2**	**0**	***3***	**0**	**5**	**0**	**0**	*5*
5:15 PM	**1**	**0**	**10**	**10**	***21***	**0**	**0**	**2**	**5**	***7***	**2**	**2**	**0**	**0**	*4*
5:30 PM	**2**	**0**	**7**	**10**	***19***	**1**	**0**	**0**	**0**	***1***	**4**	**5**	**0**	**1**	***10***
5:45 PM	4	0	5	8	*17*	1	0	0	0	*1*	5	1	1	2	*9*
Count Total	28	0	56	81	*165*	9	0	5	5	*19*	20	30	3	7	*60*
Peak Hour	**11**	**0**	**31**	**42**	***84***	**4**	**0**	**4**	**5**	***13***	**9**	**15**	**1**	**4**	***29***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Magnolia Bridge				W GARFIELD ST				15TH AVE W				15TH AVE W				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	2	0	4	0	0	0	0	0	1	5	0	0	0	12	1	25	0
4:15 PM	0	0	0	2	0	0	0	0	0	0	8	0	0	0	9	0	19	0
4:30 PM	0	0	0	5	0	0	0	0	0	0	6	0	0	0	9	0	20	0
4:45 PM	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**11**	**0**	**23**	87
5:00 PM	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**11**	**0**	**21**	83
5:15 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**9**	**0**	**0**	**0**	**10**	**0**	**21**	85
5:30 PM	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**10**	**0**	**19**	**84**
5:45 PM	0	0	0	4	0	0	0	0	0	0	5	0	0	0	8	0	17	78
Count Total	0	2	0	26	0	0	0	0	0	2	54	0	0	0	80	1	165	0
Peak Hour	**0**	**0**	**0**	**11**	**0**	**0**	**0**	**0**	**0**	**1**	**30**	**0**	**0**	**0**	**42**	**0**	**84**	**0**

Two-Hour Count Summaries - Bikes

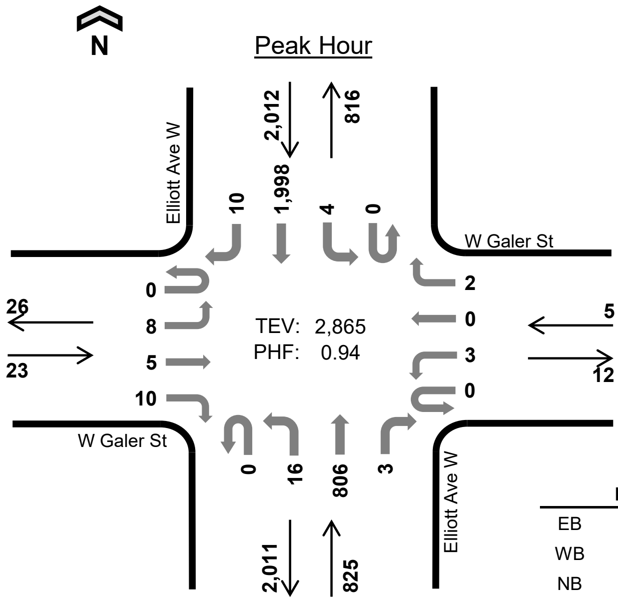
Interval Start	Magnolia Bridge			W GARFIELD ST			15TH AVE W			15TH AVE W			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	1	0
4:15 PM	0	0	2	0	0	0	0	1	0	0	0	0	3	0
4:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	1	0
4:45 PM	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	7
5:00 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**3**	9
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**5**	**0**	**7**	13
5:30 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**13**
5:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	1	12
Count Total	0	0	9	0	0	0	0	5	0	0	5	0	19	0
Peak Hour	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**5**	**0**	**13**	**0**

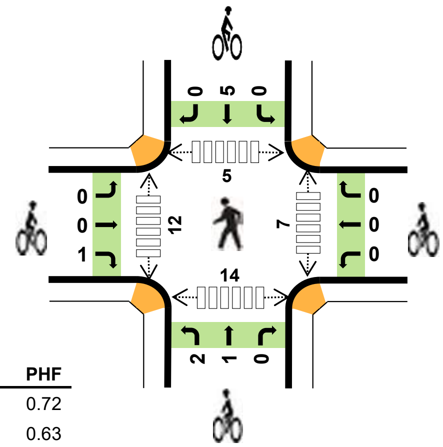
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Elliott Ave W
W Galer St

Date: 11/15/2022
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM

Peak Hour





	HV %:	PHF
EB	4.3%	0.72
WB	0.0%	0.63
NB	5.8%	0.88
SB	2.1%	0.95
TOTAL	3.2%	0.94

Two-Hour Count Summaries

Interval Start	W Galer St Eastbound UT	LT	TH	RT	W Galer St Westbound UT	LT	TH	RT	Elliott Ave W Northbound UT	LT	TH	RT	Elliott Ave W Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	0	0	4	2	0	1	0	0	0	2	164	1	0	0	292	8	474	0
7:15 AM	0	0	1	0	0	0	0	0	0	0	139	3	0	0	435	2	580	0
7:30 AM	0	1	0	1	0	1	0	1	0	4	165	0	0	1	545	3	722	0
7:45 AM	**0**	**4**	**1**	**3**	**0**	**0**	**0**	**1**	**0**	**7**	**215**	**1**	**0**	**1**	**529**	**1**	**763**	2,539
8:00 AM	**0**	**1**	**3**	**3**	**0**	**1**	**0**	**1**	**0**	**5**	**181**	**1**	**0**	**2**	**501**	**3**	**702**	2,767
8:15 AM	**0**	**1**	**1**	**2**	**0**	**2**	**0**	**0**	**0**	**2**	**177**	**1**	**0**	**0**	**478**	**3**	**667**	2,854
8:30 AM	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**2**	**233**	**0**	**0**	**1**	**490**	**3**	**733**	**2,865**
8:45 AM	0	1	0	2	0	1	0	0	0	3	201	1	0	0	441	8	658	2,760
Count Total	0	10	10	15	0	6	0	3	0	25	1,475	8	0	5	3,711	31	5,299	0
Peak Hour All	**0**	**8**	**5**	**10**	**0**	**3**	**0**	**2**	**0**	**16**	**806**	**3**	**0**	**4**	**1,998**	**10**	**2,865**	**0**
Peak Hour HV	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**46**	**0**	**0**	**1**	**42**	**0**	**92**	**0**
Peak Hour HV%	**-**	**0%**	**0%**	**10%**	**-**	**0%**	**-**	**0%**	**-**	**13%**	**6%**	**0%**	**-**	**25%**	**2%**	**0%**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	2	0	12	6	*20*	0	0	0	0	*0*	1	2	3	4	*10*
7:15 AM	0	0	8	16	*24*	0	0	0	1	*1*	0	1	1	1	*3*
7:30 AM	0	1	6	5	*12*	0	0	0	0	*0*	1	3	0	2	*6*
7:45 AM	**0**	**0**	**9**	**7**	***16***	**0**	**0**	**2**	**2**	***4***	**0**	**5**	**1**	**1**	*7*
8:00 AM	**1**	**0**	**13**	**12**	***26***	**1**	**0**	**0**	**3**	***4***	**3**	**5**	**3**	**2**	*13*
8:15 AM	**0**	**0**	**11**	**14**	***25***	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**1**	**10**	*13*
8:30 AM	**0**	**0**	**15**	**10**	***25***	**0**	**0**	**1**	**0**	***1***	**3**	**1**	**0**	**1**	***5***
8:45 AM	1	0	7	11	*19*	0	0	0	2	*2*	6	3	3	0	*12*
Count Total	4	1	81	81	*167*	1	0	3	8	*12*	15	21	12	21	*69*
Peak Hour	**1**	**0**	**48**	**43**	***92***	**1**	**0**	**3**	**5**	***9***	**7**	**12**	**5**	**14**	***38***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	W Galer St Eastbound UT	LT	TH	RT	W Galer St Westbound UT	LT	TH	RT	Elliott Ave W Northbound UT	LT	TH	RT	Elliott Ave W Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	0	0	0	2	0	0	0	0	0	0	12	0	0	0	6	0	20	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	8	0	0	0	16	0	24	0
7:30 AM	0	0	0	0	0	1	0	0	0	0	6	0	0	0	5	0	12	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**7**	**0**	**0**	**0**	**7**	**0**	**16**	72
8:00 AM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**13**	**0**	**0**	**0**	**12**	**0**	**26**	78
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**0**	**0**	**0**	**14**	**0**	**25**	79
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**0**	**0**	**1**	**9**	**0**	**25**	**92**
8:45 AM	0	0	0	1	0	0	0	0	0	0	7	0	0	0	11	0	19	95
Count Total	0	0	0	4	0	1	0	0	0	2	79	0	0	1	80	0	167	0
Peak Hour	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**46**	**0**	**0**	**1**	**42**	**0**	**92**	**0**

Two-Hour Count Summaries - Bikes

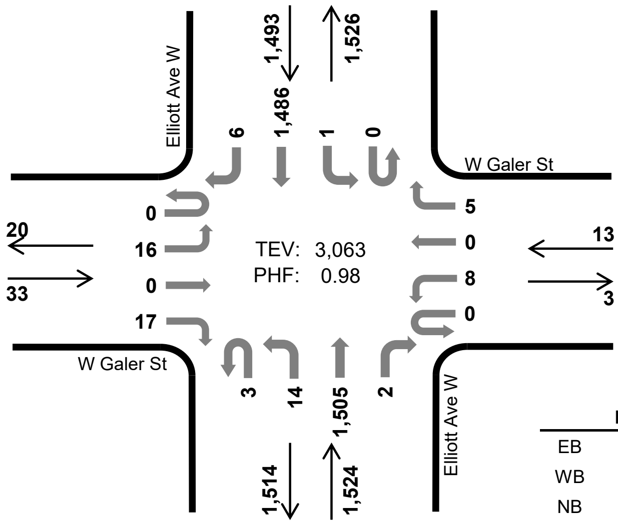
Interval Start	W Galer St Eastbound LT	TH	RT	W Galer St Westbound LT	TH	RT	Elliott Ave W Northbound LT	TH	RT	Elliott Ave W Southbound LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**2**	**0**	**4**	5
8:00 AM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**4**	9
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	8
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**9**
8:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	2	7
Count Total	0	0	1	0	0	0	2	1	0	0	8	0	12	0
Peak Hour	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**5**	**0**	**9**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

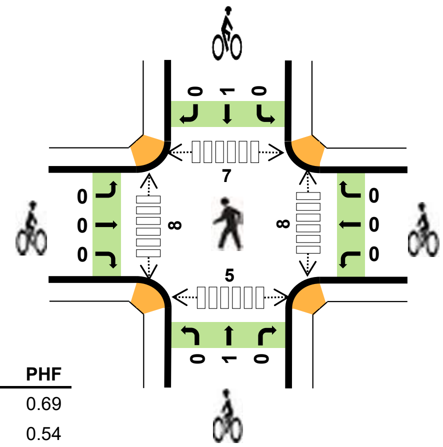
Elliott Ave W
W Galer St

Date: 11/15/2022
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM

Peak Hour



	HV %:	PHF
EB	0.0%	0.69
WB	0.0%	0.54
NB	2.0%	0.97
SB	3.9%	0.92
TOTAL	2.9%	0.98



Two-Hour Count Summaries

Interval Start	W Galer St Eastbound UT	LT	TH	RT	W Galer St Westbound UT	LT	TH	RT	Elliott Ave W Northbound UT	LT	TH	RT	Elliott Ave W Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM	0	6	0	3	0	3	0	1	0	0	337	1	0	0	336	2	689	0
4:15 PM	0	3	0	6	0	1	0	1	0	5	325	0	0	0	355	4	700	0
4:30 PM	**0**	**0**	**0**	**5**	**0**	**1**	**0**	**0**	**0**	**2**	**364**	**0**	**0**	**0**	**404**	**1**	**777**	0
4:45 PM	**0**	**9**	**0**	**3**	**0**	**3**	**0**	**3**	**0**	**4**	**381**	**0**	**0**	**1**	**355**	**3**	**762**	2,928
5:00 PM	**0**	**4**	**0**	**4**	**0**	**4**	**0**	**1**	**1**	**8**	**372**	**1**	**0**	**0**	**386**	**1**	**782**	3,021
5:15 PM	**0**	**3**	**0**	**5**	**0**	**0**	**0**	**1**	**2**	**0**	**388**	**1**	**0**	**0**	**341**	**1**	**742**	**3,063**
5:30 PM	0	2	0	5	0	1	0	2	0	6	338	1	0	0	341	2	698	2,984
5:45 PM	0	5	0	4	0	0	0	3	1	3	337	0	0	0	304	5	662	2,884
Count Total	0	32	0	35	0	13	0	12	4	28	2,842	4	0	1	2,822	19	5,812	0
Peak Hour All	**0**	**16**	**0**	**17**	**0**	**8**	**0**	**5**	**3**	**14**	**1,505**	**2**	**0**	**1**	**1,486**	**6**	**3,063**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**29**	**0**	**0**	**0**	**58**	**0**	**88**	**0**
Peak Hour HV%	**-**	**0%**	**-**	**0%**	**-**	**0%**	**-**	**0%**	**0%**	**7%**	**2%**	**0%**	**-**	**0%**	**4%**	**0%**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	0	0	7	13	*20*	0	0	0	0	*0*	0	3	0	1	*4*
4:15 PM	0	0	9	15	*24*	0	0	0	1	*1*	7	1	1	3	*12*
4:30 PM	**0**	**0**	**7**	**15**	***22***	**0**	**0**	**1**	**1**	***2***	**2**	**0**	**0**	**1**	***3***
4:45 PM	**0**	**0**	**8**	**21**	***29***	**0**	**0**	**0**	**0**	***0***	**3**	**5**	**2**	**1**	***11***
5:00 PM	**0**	**0**	**7**	**11**	***18***	**0**	**0**	**0**	**0**	***0***	**1**	**2**	**3**	**2**	***8***
5:15 PM	**0**	**0**	**8**	**11**	***19***	**0**	**0**	**0**	**0**	***0***	**2**	**1**	**2**	**1**	***6***
5:30 PM	0	0	6	13	*19*	0	0	0	0	*0*	1	3	0	0	*4*
5:45 PM	0	0	7	12	*19*	0	0	0	1	*1*	3	5	1	4	*13*
Count Total	0	0	59	111	*170*	0	0	1	3	*4*	19	20	9	13	*61*
Peak Hour	**0**	**0**	**30**	**58**	***88***	**0**	**0**	**1**	**1**	***2***	**8**	**8**	**7**	**5**	***28***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	W Galer St				W Galer St				Elliott Ave W				Elliott Ave W				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	13	0	20	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	9	0	0	0	15	0	24	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**15**	**0**	**22**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**21**	**0**	**29**	95
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**6**	**0**	**0**	**0**	**11**	**0**	**18**	93
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**11**	**0**	**19**	**88**
5:30 PM	0	0	0	0	0	0	0	0	0	0	5	1	0	0	13	0	19	85
5:45 PM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	12	0	19	75
Count Total	0	0	0	0	0	0	0	0	0	1	57	1	0	0	111	0	170	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**29**	**0**	**0**	**0**	**58**	**0**	**88**	**0**

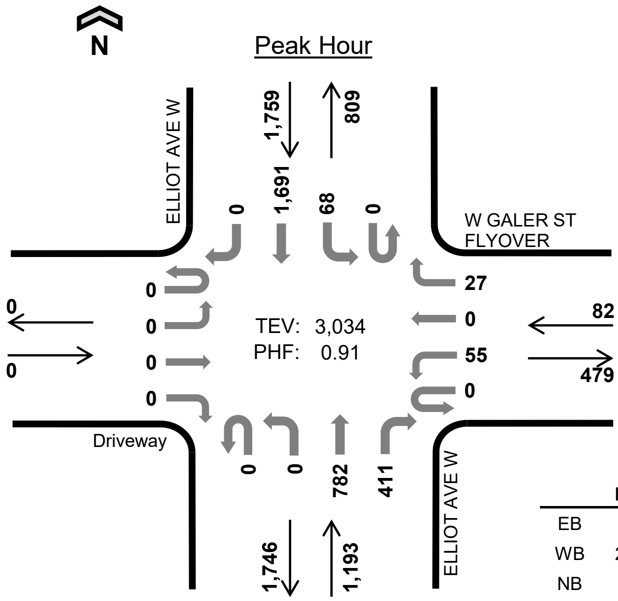
Two-Hour Count Summaries - Bikes

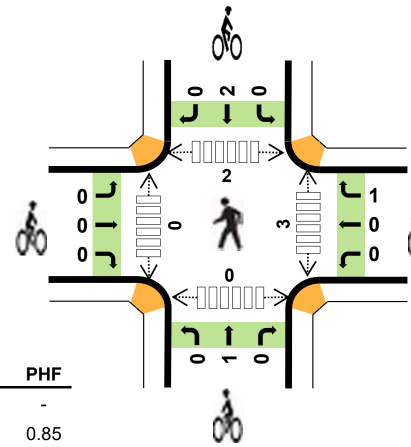
Interval Start	W Galer St			W Galer St			Elliott Ave W			Elliott Ave W			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**2**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Count Total	0	0	0	0	0	0	0	1	0	1	2	0	4	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**2**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

ELLIOT AVE W
W GALER ST FLYOVER

Date: 09/01/2022
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM





	HV %:	PHF
EB	-	-
WB	20.7%	0.85
NB	7.0%	0.97
SB	3.1%	0.87
TOTAL	5.1%	0.91

Two-Hour Count Summaries

Interval Start	Driveway Eastbound UT	LT	TH	RT	W GALER ST FLYOVER Westbound UT	LT	TH	RT	ELLIOT AVE W Northbound UT	LT	TH	RT	ELLIOT AVE W Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	0	0	0	0	0	17	0	8	0	0	144	64	0	9	282	0	524	0
7:15 AM	0	0	0	0	0	9	0	7	0	0	191	90	0	15	312	0	624	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**11**	**0**	**5**	**0**	**0**	**179**	**106**	**0**	**15**	**440**	**0**	**756**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**14**	**0**	**10**	**0**	**0**	**214**	**93**	**0**	**21**	**405**	**0**	**757**	2,661
8:00 AM	**0**	**0**	**0**	**0**	**0**	**16**	**0**	**4**	**0**	**0**	**204**	**94**	**0**	**13**	**361**	**0**	**692**	2,829
8:15 AM	**0**	**0**	**0**	**0**	**0**	**14**	**0**	**8**	**0**	**0**	**185**	**118**	**0**	**19**	**485**	**0**	**829**	**3,034**
8:30 AM	0	0	0	0	0	9	0	13	0	0	203	111	0	23	379	0	738	3,016
8:45 AM	0	0	0	0	0	19	0	7	0	0	213	105	0	18	387	0	749	3,008
Count Total	0	0	0	0	0	109	0	62	0	0	1,533	781	0	133	3,051	0	5,669	0
Peak Hour All	**0**	**0**	**0**	**0**	**0**	**55**	**0**	**27**	**0**	**0**	**782**	**411**	**0**	**68**	**1,691**	**0**	**3,034**	**0**
HV	**0**	**0**	**0**	**0**	**0**	**15**	**0**	**2**	**0**	**0**	**59**	**24**	**0**	**4**	**50**	**0**	**154**	**0**
HV%	**-**	**-**	**-**	**-**	**-**	**27%**	**-**	**7%**	**-**	**-**	**8%**	**6%**	**-**	**6%**	**3%**	**-**	**5%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	0	4	15	13	*32*	0	0	0	1	*1*	0	0	0	0	*0*
7:15 AM	0	3	14	11	*28*	0	0	0	0	*0*	2	0	0	0	*2*
7:30 AM	**0**	**4**	**21**	**9**	***34***	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**0**	**9**	**16**	**15**	***40***	**0**	**1**	**0**	**0**	***1***	**1**	**0**	**0**	**0**	*1*
8:00 AM	**0**	**4**	**26**	**11**	***41***	**0**	**0**	**0**	**2**	***2***	**1**	**0**	**0**	**0**	*1*
8:15 AM	**0**	**0**	**20**	**19**	***39***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**2**	**0**	***3***
8:30 AM	0	1	19	20	*40*	0	0	0	1	*1*	0	0	0	0	*0*
8:45 AM	0	4	19	18	*41*	0	0	0	3	*3*	2	0	0	0	*2*
Count Total	0	29	150	116	*295*	0	1	1	7	*9*	7	0	2	0	*9*
Peak Hour	**0**	**17**	**83**	**54**	***154***	**0**	**1**	**1**	**2**	**4**	**3**	**0**	**2**	**0**	**5**

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Driveway				W GALER ST FLYOVER				ELLIOT AVE W				ELLIOT AVE W				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	3	0	1	0	0	10	5	0	1	12	0	32	0
7:15 AM	0	0	0	0	0	2	0	1	0	0	8	6	0	2	9	0	28	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**13**	**8**	**0**	**1**	**8**	**0**	**34**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**2**	**0**	**0**	**10**	**6**	**0**	**2**	**13**	**0**	**40**	134
8:00 AM	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**22**	**4**	**0**	**0**	**11**	**0**	**41**	143
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	**6**	**0**	**1**	**18**	**0**	**39**	**154**
8:30 AM	0	0	0	0	0	1	0	0	0	0	10	9	0	3	17	0	40	160
8:45 AM	0	0	0	0	0	3	0	1	0	0	15	4	0	0	18	0	41	161
Count Total	0	0	0	0	0	24	0	5	0	0	102	48	0	10	106	0	295	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**15**	**0**	**2**	**0**	**0**	**59**	**24**	**0**	**4**	**50**	**0**	**154**	**0**

Two-Hour Count Summaries - Bikes

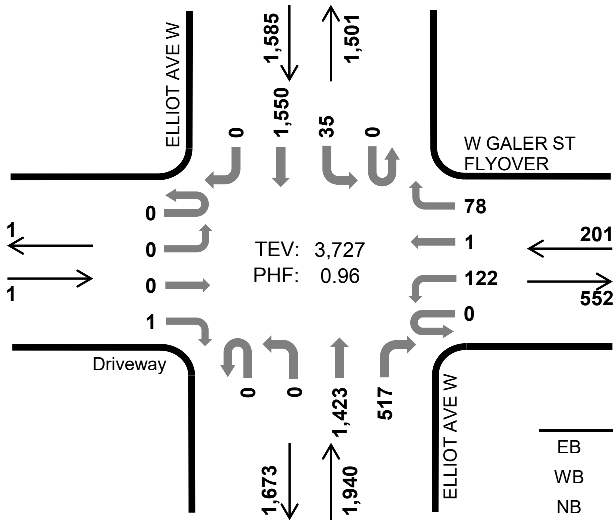
Interval Start	Driveway			W GALER ST FLYOVER			ELLIOT AVE W			ELLIOT AVE W			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	3
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	4
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**
8:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	4
8:45 AM	0	0	0	0	0	0	0	0	0	0	3	0	3	6
Count Total	0	0	0	0	0	1	0	1	0	0	7	0	9	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**2**	**0**	**4**	**0**

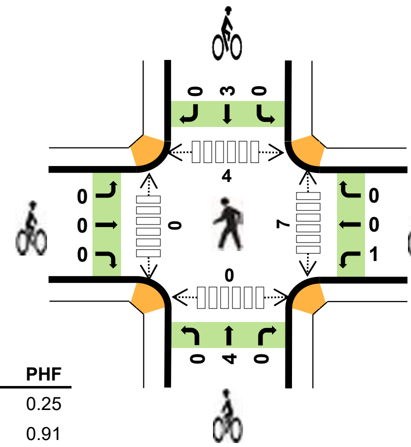
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

ELLIOT AVE W
W GALER ST FLYOVER

Date: 09/01/2022
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM

Peak Hour





	HV %:	PHF
EB	0.0%	0.25
WB	3.5%	0.91
NB	2.3%	0.96
SB	3.2%	0.89
TOTAL	2.7%	0.96

Two-Hour Count Summaries

Interval Start	Driveway Eastbound UT	LT	TH	RT	W GALER ST FLYOVER Westbound UT	LT	TH	RT	ELLIOT AVE W Northbound UT	LT	TH	RT	ELLIOT AVE W Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM	0	0	0	0	0	39	0	22	0	0	332	123	0	11	364	0	891	0
4:15 PM	0	0	0	0	0	36	0	24	0	0	321	130	0	12	381	0	904	0
4:30 PM	0	0	0	1	0	53	0	23	0	1	312	114	0	5	350	0	859	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**29**	**0**	**20**	**0**	**0**	**351**	**131**	**0**	**12**	**431**	**0**	**974**	3,628
5:00 PM	**0**	**0**	**0**	**0**	**0**	**26**	**1**	**20**	**0**	**0**	**379**	**113**	**0**	**5**	**405**	**0**	**949**	3,686
5:15 PM	**0**	**0**	**0**	**1**	**0**	**27**	**0**	**23**	**0**	**0**	**372**	**131**	**0**	**11**	**330**	**0**	**895**	3,677
5:30 PM	**0**	**0**	**0**	**0**	**0**	**40**	**0**	**15**	**0**	**0**	**321**	**142**	**0**	**7**	**384**	**0**	**909**	**3,727**
5:45 PM	0	0	0	0	0	26	0	17	0	0	364	132	0	6	275	0	820	3,573
Count Total	0	0	0	2	0	276	1	164	0	1	2,752	1,016	0	69	2,920	0	7,201	0
Peak Hour All	**0**	**0**	**0**	**1**	**0**	**122**	**1**	**78**	**0**	**0**	**1,423**	**517**	**0**	**35**	**1,550**	**0**	**3,727**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**4**	**0**	**0**	**31**	**13**	**0**	**2**	**49**	**0**	**102**	**0**
Peak Hour HV%	**-**	**-**	**-**	**0%**	**-**	**2%**	**0%**	**5%**	**-**	**-**	**2%**	**3%**	**-**	**6%**	**3%**	**-**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	0	0	8	17	*25*	0	0	0	0	*0*	0	0	1	0	*1*
4:15 PM	0	1	12	11	*24*	0	0	2	0	*2*	2	0	1	0	*3*
4:30 PM	0	1	11	14	*26*	0	0	0	0	*0*	1	0	0	0	*1*
4:45 PM	**0**	**0**	**13**	**14**	***27***	**0**	**1**	**0**	**1**	***2***	**2**	**0**	**1**	**0**	*3*
5:00 PM	**0**	**1**	**10**	**14**	***25***	**0**	**0**	**2**	**1**	***3***	**1**	**0**	**1**	**0**	*2*
5:15 PM	**0**	**4**	**12**	**12**	***28***	**0**	**0**	**2**	**1**	***3***	**2**	**0**	**1**	**0**	*3*
5:30 PM	**0**	**2**	**9**	**11**	***22***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**1**	**0**	***3***
5:45 PM	0	0	6	12	*18*	0	0	0	0	*0*	4	0	0	0	*4*
Count Total	0	9	81	105	*195*	0	1	6	3	*10*	14	0	6	0	*20*
Peak Hour	**0**	**7**	**44**	**51**	***102***	**0**	**1**	**4**	**3**	***8***	**7**	**0**	**4**	**0**	***11***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Driveway				W GALER ST FLYOVER				ELLIOT AVE W				ELLIOT AVE W				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	5	3	0	1	16	0	25	0
4:15 PM	0	0	0	0	0	1	0	0	0	0	8	4	0	1	10	0	24	0
4:30 PM	0	0	0	0	0	1	0	0	0	0	9	2	0	1	13	0	26	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**5**	**0**	**1**	**13**	**0**	**27**	102
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**7**	**3**	**0**	**1**	**13**	**0**	**25**	102
5:15 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**3**	**0**	**0**	**8**	**4**	**0**	**0**	**12**	**0**	**28**	106
5:30 PM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**8**	**1**	**0**	**0**	**11**	**0**	**22**	**102**
5:45 PM	0	0	0	0	0	0	0	0	0	0	4	2	0	0	12	0	18	93
Count Total	0	0	0	0	0	5	0	4	0	0	57	24	0	5	100	0	195	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**4**	**0**	**0**	**31**	**13**	**0**	**2**	**49**	**0**	**102**	**0**

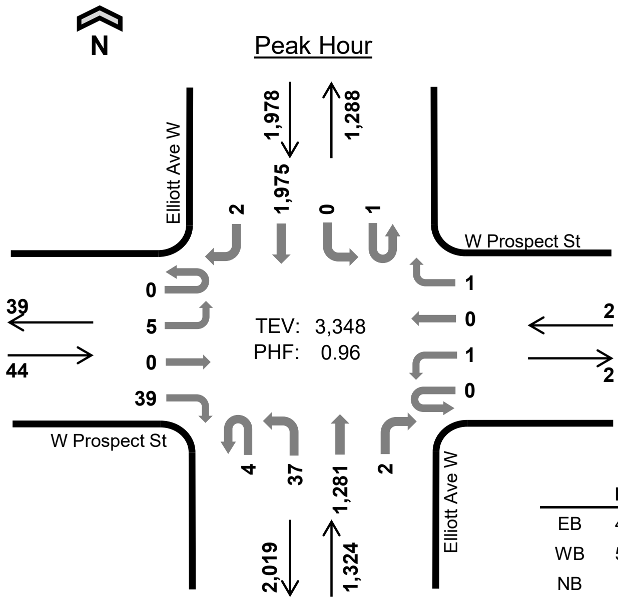
Two-Hour Count Summaries - Bikes

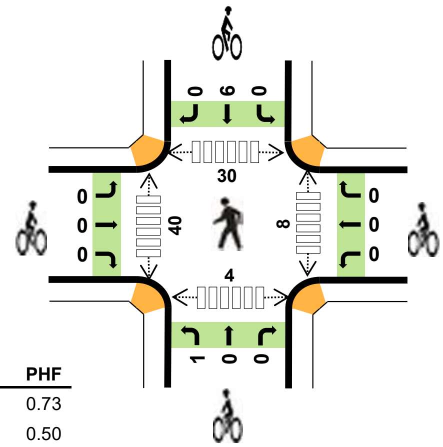
Interval Start	Driveway			W GALER ST FLYOVER			ELLIOT AVE W			ELLIOT AVE W			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	2	0	0	0	0	2	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	4
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**1**	**0**	**3**	7
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**1**	**0**	**3**	8
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Count Total	0	0	0	1	0	0	0	6	0	0	3	0	10	0
Peak Hour	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**4**	**0**	**0**	**3**	**0**	**8**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Elliott Ave W
W Prospect St

Date: 11/15/2022
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	45.5%	0.73
WB	50.0%	0.50
NB	7.2%	0.89
SB	2.6%	0.97
TOTAL	5.0%	0.96

Two-Hour Count Summaries

Interval Start		W Prospect St Eastbound UT	LT	TH	RT	W Prospect St Westbound UT	LT	TH	RT	Elliott Ave W Northbound UT	LT	TH	RT	Elliott Ave W Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM		0	0	0	2	0	0	0	0	0	6	257	0	0	0	305	0	570	0
7:15 AM		0	1	0	5	0	0	0	0	0	6	224	0	0	0	345	1	582	0
7:30 AM		0	1	0	8	0	0	0	0	1	5	287	0	0	0	525	2	829	0
7:45 AM		**0**	**1**	**0**	**13**	**0**	**0**	**0**	**0**	**2**	**7**	**330**	**0**	**0**	**0**	**507**	**1**	**861**	2,842
8:00 AM		**0**	**4**	**0**	**11**	**0**	**1**	**0**	**0**	**0**	**14**	**294**	**1**	**1**	**0**	**486**	**0**	**812**	3,084
8:15 AM		**0**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**8**	**294**	**0**	**0**	**0**	**492**	**1**	**803**	3,305
8:30 AM		**0**	**0**	**0**	**7**	**0**	**0**	**0**	**1**	**2**	**8**	**363**	**1**	**0**	**0**	**490**	**0**	**872**	**3,348**
8:45 AM		0	4	0	9	0	0	0	0	0	8	304	1	0	0	483	0	809	3,296
Count Total		0	11	0	63	0	1	0	1	5	62	2,353	3	1	0	3,633	5	6,138	0
Peak Hour	**All**	**0**	**5**	**0**	**39**	**0**	**1**	**0**	**1**	**4**	**37**	**1,281**	**2**	**1**	**0**	**1,975**	**2**	**3,348**	**0**
	HV	**0**	**0**	**0**	**20**	**0**	**0**	**0**	**1**	**0**	**17**	**77**	**1**	**0**	**0**	**52**	**0**	**168**	**0**
	HV%	**-**	**0%**	**-**	**51%**	**-**	**0%**	**-**	**100%**	**0%**	**46%**	**6%**	**50%**	**0%**	**-**	**3%**	**0%**	**5%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	1	0	23	12	*36*	0	0	0	1	*1*	3	3	0	2	*8*
7:15 AM	3	0	15	14	*32*	0	0	0	1	*1*	1	8	7	0	*16*
7:30 AM	6	0	13	9	*28*	0	0	0	1	*1*	3	4	4	0	*11*
7:45 AM	**8**	**0**	**26**	**5**	***39***	**0**	**0**	**0**	**3**	***3***	**3**	**11**	**7**	**0**	***21***
8:00 AM	**5**	**0**	**21**	**16**	***42***	**0**	**0**	**0**	**2**	***2***	**0**	**9**	**6**	**0**	***15***
8:15 AM	**4**	**0**	**22**	**18**	***44***	**0**	**0**	**0**	**1**	***1***	**1**	**10**	**9**	**4**	***24***
8:30 AM	**3**	**1**	**26**	**13**	***43***	**0**	**0**	**1**	**0**	***1***	**4**	**10**	**8**	**0**	***22***
8:45 AM	6	0	16	14	*36*	0	0	0	0	*0*	2	12	15	5	*34*
Count Total	36	1	162	101	*300*	0	0	1	9	*10*	17	67	56	11	*151*
Peak Hour	**20**	**1**	**95**	**52**	***168***	**0**	**0**	**1**	**6**	***7***	**8**	**40**	**30**	**4**	***82***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	W Prospect St				W Prospect St				Elliott Ave W				Elliott Ave W				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	1	0	0	0	0	0	4	19	0	0	0	12	0	36	0
7:15 AM	0	0	0	3	0	0	0	0	0	4	11	0	0	0	14	0	32	0
7:30 AM	0	0	0	6	0	0	0	0	0	3	10	0	0	0	9	0	28	0
7:45 AM	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**5**	**21**	**0**	**0**	**0**	**5**	**0**	**39**	135
8:00 AM	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**4**	**17**	**0**	**0**	**0**	**16**	**0**	**42**	141
8:15 AM	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**5**	**17**	**0**	**0**	**0**	**18**	**0**	**44**	153
8:30 AM	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**3**	**22**	**1**	**0**	**0**	**13**	**0**	**43**	**168**
8:45 AM	0	0	0	6	0	0	0	0	0	4	12	0	0	0	14	0	36	165
Count Total	0	0	0	36	0	0	0	1	0	32	129	1	0	0	101	0	300	0
Peak Hour	**0**	**0**	**0**	**20**	**0**	**0**	**0**	**1**	**0**	**17**	**77**	**1**	**0**	**0**	**52**	**0**	**168**	**0**

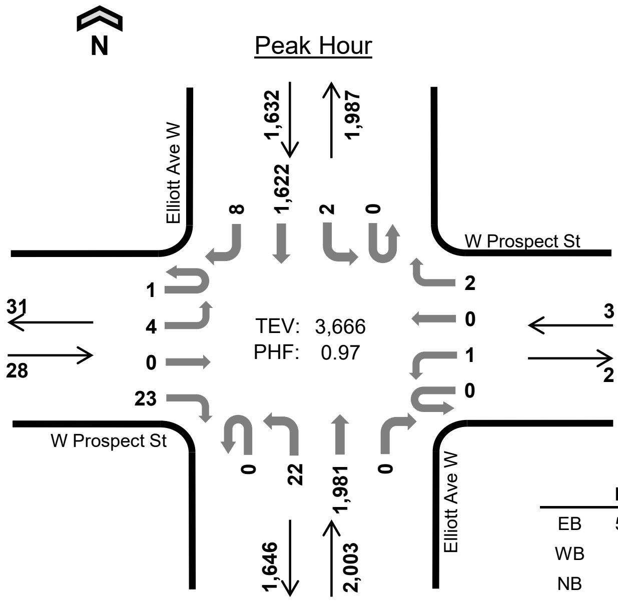
Two-Hour Count Summaries - Bikes

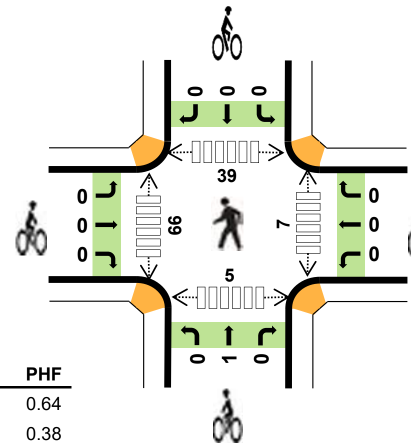
Interval Start	W Prospect St			W Prospect St			Elliott Ave W			Elliott Ave W			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**3**	6
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	7
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	7
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**7**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Count Total	0	0	0	0	0	0	1	0	0	0	9	0	10	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**6**	**0**	**7**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Elliott Ave W
W Prospect St

Date: 11/15/2022
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM





	HV %:	PHF
EB	50.0%	0.64
WB	0.0%	0.38
NB	2.3%	0.94
SB	3.3%	0.97
TOTAL	3.1%	0.97

Two-Hour Count Summaries

Interval Start		W Prospect St				W Prospect St				Elliott Ave W				Elliott Ave W				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	6	0	6	0	0	0	0	0	5	424	0	1	1	372	0	815	0
4:15 PM		0	1	0	7	0	0	0	1	0	8	451	0	0	0	392	1	861	0
4:30 PM		0	0	0	6	0	0	0	0	0	4	452	0	0	0	446	3	911	0
4:45 PM		**1**	**1**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**6**	**462**	**0**	**0**	**0**	**410**	**2**	**887**	3,474
5:00 PM		**0**	**1**	**0**	**10**	**0**	**0**	**0**	**1**	**0**	**5**	**483**	**0**	**0**	**1**	**404**	**4**	**909**	3,568
5:15 PM		**0**	**1**	**0**	**3**	**0**	**1**	**0**	**1**	**0**	**5**	**527**	**0**	**0**	**1**	**388**	**2**	**929**	3,636
5:30 PM		**0**	**1**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**6**	**509**	**0**	**0**	**0**	**420**	**0**	**941**	**3,666**
5:45 PM		1	0	0	12	0	0	0	1	1	10	466	0	0	0	374	0	865	3,644
Count Total		2	11	0	54	0	1	0	4	1	49	3,774	0	1	3	3,206	12	7,118	0
Peak Hour	**All**	**1**	**4**	**0**	**23**	**0**	**1**	**0**	**2**	**0**	**22**	**1,981**	**0**	**0**	**2**	**1,622**	**8**	**3,666**	**0**
	HV	**0**	**0**	**0**	**14**	**0**	**0**	**0**	**0**	**0**	**13**	**34**	**0**	**0**	**0**	**54**	**0**	**115**	**0**
	HV%	**0%**	**0%**	**-**	**61%**	**-**	**0%**	**-**	**0%**	**-**	**59%**	**2%**	**-**	**-**	**0%**	**3%**	**0%**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	5	0	13	15	*33*	0	0	1	0	*1*	6	20	30	3	*59*
4:15 PM	4	0	18	13	*35*	0	0	0	0	*0*	4	23	15	1	*43*
4:30 PM	5	0	13	16	*34*	0	0	0	0	*0*	3	33	16	2	*54*
4:45 PM	**2**	**0**	**13**	**21**	***36***	**0**	**0**	**0**	**0**	***0***	**3**	**29**	**18**	**3**	*53*
5:00 PM	**7**	**0**	**13**	**12**	***32***	**0**	**0**	**0**	**0**	***0***	**2**	**19**	**10**	**2**	*33*
5:15 PM	**1**	**0**	**12**	**12**	***25***	**0**	**0**	**1**	**0**	***1***	**1**	**9**	**6**	**0**	*16*
5:30 PM	**4**	**0**	**9**	**9**	***22***	**0**	**0**	**0**	**0**	***0***	**1**	**9**	**5**	**0**	***15***
5:45 PM	2	0	12	14	*28*	0	0	1	0	*1*	2	19	5	0	*26*
Count Total	30	0	103	112	*245*	0	0	3	0	*3*	22	161	105	11	*299*
Peak Hour	**14**	**0**	**47**	**54**	***115***	**0**	**0**	**1**	**0**	***1***	**7**	**66**	**39**	**5**	***117***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	W Prospect St				W Prospect St				Elliott Ave W				Elliott Ave W				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	5	0	0	0	0	0	3	10	0	0	0	15	0	33	0
4:15 PM	0	0	0	4	0	0	0	0	0	4	14	0	0	0	13	0	35	0
4:30 PM	0	0	0	5	0	0	0	0	0	4	9	0	0	0	15	1	34	0
4:45 PM	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**4**	**9**	**0**	**0**	**0**	**21**	**0**	**36**	138
5:00 PM	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**3**	**10**	**0**	**0**	**0**	**12**	**0**	**32**	137
5:15 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**4**	**8**	**0**	**0**	**0**	**12**	**0**	**25**	127
5:30 PM	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**2**	**7**	**0**	**0**	**0**	**9**	**0**	**22**	**115**
5:45 PM	0	0	0	2	0	0	0	0	0	3	9	0	0	0	14	0	28	107
Count Total	0	0	0	30	0	0	0	0	0	27	76	0	0	0	111	1	245	0
Peak Hour	**0**	**0**	**0**	**14**	**0**	**0**	**0**	**0**	**0**	**13**	**34**	**0**	**0**	**0**	**54**	**0**	**115**	**0**

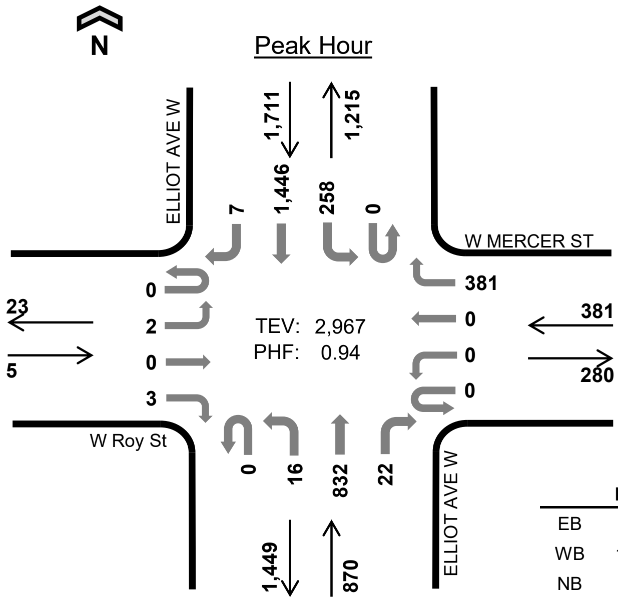
Two-Hour Count Summaries - Bikes

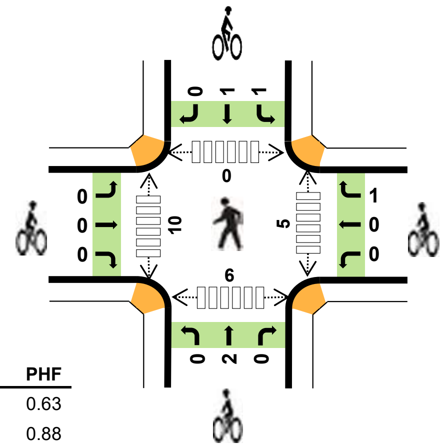
Interval Start	W Prospect St			W Prospect St			Elliott Ave W			Elliott Ave W			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	1
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	1	2
Count Total	0	0	0	0	0	0	0	3	0	0	0	0	3	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

ELLIOT AVE W
W Roy St

Date: 09/01/2022
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM





	HV %:	PHF
EB	0.0%	0.63
WB	10.2%	0.88
NB	7.4%	0.95
SB	4.7%	0.90
TOTAL	6.2%	0.94

Two-Hour Count Summaries

Interval Start		W Roy St Eastbound UT	LT	TH	RT	W MERCER ST Westbound UT	LT	TH	RT	ELLIOT AVE W Northbound UT	LT	TH	RT	ELLIOT AVE W Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM		0	0	0	0	0	0	0	71	0	6	165	5	0	40	240	1	528	0
7:15 AM		0	1	0	1	0	0	0	77	0	12	199	3	0	44	302	2	641	0
7:30 AM		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**108**	**0**	**7**	**191**	**8**	**0**	**62**	**355**	**2**	**733**	0
7:45 AM		**0**	**1**	**0**	**0**	**0**	**0**	**0**	**97**	**0**	**2**	**206**	**3**	**0**	**67**	**365**	**2**	**743**	2,645
8:00 AM		**0**	**0**	**0**	**2**	**0**	**0**	**0**	**85**	**0**	**3**	**222**	**5**	**0**	**58**	**322**	**1**	**698**	2,815
8:15 AM		**0**	**1**	**0**	**1**	**0**	**0**	**0**	**91**	**0**	**4**	**213**	**6**	**0**	**71**	**404**	**2**	**793**	**2,967**
8:30 AM		0	1	0	0	0	0	0	95	0	5	218	5	0	69	332	0	725	2,959
8:45 AM		0	0	0	0	0	0	0	117	3	0	224	3	1	67	324	4	743	2,959
Count Total		0	4	0	4	0	0	0	741	3	39	1,638	38	1	478	2,644	14	5,604	0
Peak Hour	**All**	**0**	**2**	**0**	**3**	**0**	**0**	**0**	**381**	**0**	**16**	**832**	**22**	**0**	**258**	**1,446**	**7**	**2,967**	**0**
	HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**39**	**0**	**0**	**64**	**0**	**0**	**31**	**50**	**0**	**184**	**0**
	HV%	**-**	**0%**	**-**	**0%**	**-**	**-**	**-**	**10%**	**-**	**0%**	**8%**	**0%**	**-**	**12%**	**3%**	**0%**	**6%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	0	15	6	14	*35*	0	0	2	0	*2*	1	0	0	1	*2*
7:15 AM	0	5	15	17	*37*	0	0	0	0	*0*	0	1	0	1	*2*
7:30 AM	**0**	**10**	**14**	**15**	***39***	**0**	**0**	**1**	**0**	***1***	**3**	**3**	**0**	**1**	*7*
7:45 AM	**0**	**9**	**12**	**24**	***45***	**0**	**0**	**1**	**0**	***1***	**0**	**5**	**0**	**2**	*7*
8:00 AM	**0**	**11**	**20**	**18**	***49***	**0**	**0**	**0**	**2**	***2***	**1**	**2**	**0**	**2**	*5*
8:15 AM	**0**	**9**	**18**	**24**	***51***	**0**	**1**	**0**	**0**	***1***	**1**	**0**	**0**	**1**	***2***
8:30 AM	0	10	13	20	*43*	0	1	0	0	*1*	4	2	0	2	*8*
8:45 AM	0	13	10	23	*46*	0	0	0	1	*1*	3	5	0	1	*9*
Count Total	0	82	108	155	*345*	0	2	4	3	*9*	13	18	0	11	*42*
Peak Hour	**0**	**39**	**64**	**81**	***184***	**0**	**1**	**2**	**2**	**5**	**5**	**10**	**0**	**6**	***21***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	W Roy St				W MERCER ST				ELLIOT AVE W				ELLIOT AVE W				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	15	0	0	6	0	0	3	11	0	35	0
7:15 AM	0	0	0	0	0	0	0	5	0	0	14	1	0	8	9	0	37	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	**0**	**0**	**14**	**0**	**0**	**5**	**10**	**0**	**39**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**0**	**12**	**0**	**0**	**12**	**12**	**0**	**45**	156
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**0**	**0**	**20**	**0**	**0**	**4**	**14**	**0**	**49**	170
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**0**	**18**	**0**	**0**	**10**	**14**	**0**	**51**	**184**
8:30 AM	0	0	0	0	0	0	0	10	0	0	12	1	0	6	14	0	43	188
8:45 AM	0	0	0	0	0	0	0	13	0	0	10	0	0	11	12	0	46	189
Count Total	0	0	0	0	0	0	0	82	0	0	106	2	0	59	96	0	345	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**39**	**0**	**0**	**64**	**0**	**0**	**31**	**50**	**0**	**184**	**0**

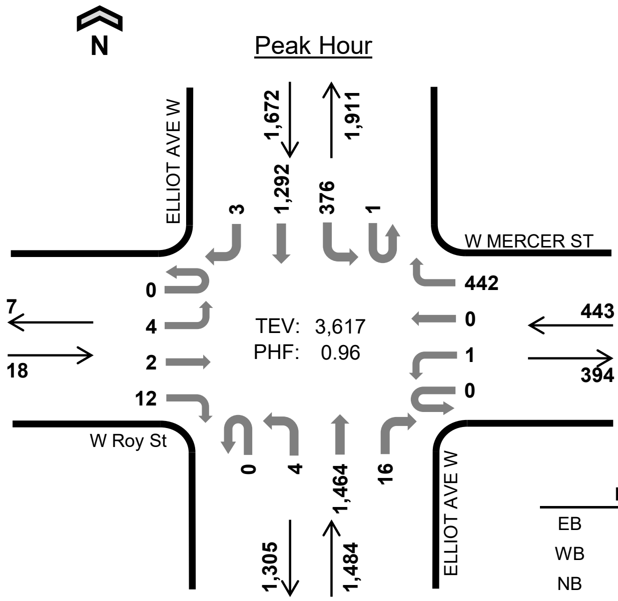
Two-Hour Count Summaries - Bikes

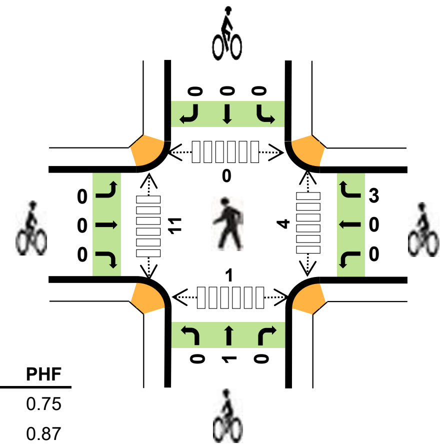
Interval Start	W Roy St			W MERCER ST			ELLIOT AVE W			ELLIOT AVE W			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	2	0	0	0	0	2	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	4
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**2**	4
8:15 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**5**
8:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	1	5
8:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	5
Count Total	0	0	0	0	0	2	0	4	0	1	2	0	9	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**1**	**1**	**0**	**5**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

ELLIOT AVE W
W Roy St

Date: 09/01/2022
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM





	HV %:	PHF
EB	0.0%	0.75
WB	5.9%	0.87
NB	2.0%	0.93
SB	4.0%	0.92
TOTAL	3.4%	0.96

Two-Hour Count Summaries

Interval Start		W Roy St Eastbound UT	LT	TH	RT	W MERCER ST Westbound UT	LT	TH	RT	ELLIOT AVE W Northbound UT	LT	TH	RT	ELLIOT AVE W Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM		0	0	0	7	0	0	0	92	0	3	358	10	0	110	291	0	871	0
4:15 PM		0	1	4	3	0	0	0	121	0	0	313	2	0	101	293	1	839	0
4:30 PM		0	2	1	4	0	0	0	93	0	2	340	7	1	88	346	0	884	0
4:45 PM		**0**	**2**	**1**	**3**	**0**	**0**	**0**	**120**	**0**	**0**	**353**	**7**	**1**	**95**	**354**	**2**	**938**	3,532
5:00 PM		**0**	**1**	**0**	**4**	**0**	**0**	**0**	**128**	**0**	**2**	**345**	**5**	**0**	**75**	**340**	**0**	**900**	3,561
5:15 PM		**0**	**1**	**0**	**4**	**0**	**0**	**0**	**109**	**0**	**1**	**394**	**3**	**0**	**97**	**281**	**1**	**891**	3,613
5:30 PM		**0**	**0**	**1**	**1**	**0**	**1**	**0**	**85**	**0**	**1**	**372**	**1**	**0**	**109**	**317**	**0**	**888**	**3,617**
5:45 PM		0	0	3	1	0	0	0	105	0	0	371	7	1	74	240	1	803	3,482
Count Total		0	7	10	27	0	1	0	853	0	9	2,846	42	3	749	2,462	5	7,014	0
Peak Hour	**All**	**0**	**4**	**2**	**12**	**0**	**1**	**0**	**442**	**0**	**4**	**1,464**	**16**	**1**	**376**	**1,292**	**3**	**3,617**	**0**
	HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**26**	**0**	**0**	**29**	**0**	**0**	**24**	**43**	**0**	**122**	**0**
	HV%	**-**	**0%**	**0%**	**0%**	**-**	**0%**	**-**	**6%**	**-**	**0%**	**2%**	**0%**	**0%**	**6%**	**3%**	**0%**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	0	7	5	17	*29*	0	0	0	0	*0*	2	0	0	0	*2*
4:15 PM	1	8	7	13	*29*	0	1	1	0	*2*	0	7	0	0	*7*
4:30 PM	0	9	8	19	*36*	0	0	0	0	*0*	0	5	0	1	*6*
4:45 PM	**0**	**10**	**7**	**17**	***34***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**0**	**0**	*2*
5:00 PM	**0**	**4**	**7**	**20**	***31***	**0**	**2**	**0**	**0**	***2***	**1**	**3**	**0**	**1**	*5*
5:15 PM	**0**	**6**	**11**	**12**	***29***	**0**	**1**	**1**	**0**	***2***	**3**	**4**	**0**	**0**	*7*
5:30 PM	**0**	**6**	**4**	**18**	***28***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**0**	**0**	*2*
5:45 PM	0	3	6	14	*23*	0	0	0	0	*0*	2	4	0	2	*8*
Count Total	1	53	55	130	*239*	0	4	2	0	*6*	8	27	0	4	*39*
Peak Hour	**0**	**26**	**29**	**67**	***122***	**0**	**3**	**1**	**0**	***4***	**4**	**11**	**0**	**1**	***16***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	W Roy St				W MERCER ST				ELLIOT AVE W				ELLIOT AVE W				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	7	0	0	5	0	0	6	11	0	29	0
4:15 PM	0	0	0	1	0	0	0	8	0	0	7	0	0	8	5	0	29	0
4:30 PM	0	0	0	0	0	0	0	9	0	0	7	1	0	8	11	0	36	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	**0**	**0**	**7**	**0**	**0**	**5**	**12**	**0**	**34**	128
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**7**	**0**	**0**	**7**	**13**	**0**	**31**	130
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**11**	**0**	**0**	**4**	**8**	**0**	**29**	130
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**4**	**0**	**0**	**8**	**10**	**0**	**28**	**122**
5:45 PM	0	0	0	0	0	0	0	3	0	0	6	0	0	2	12	0	23	111
Count Total	0	0	0	1	0	0	0	53	0	0	54	1	0	48	82	0	239	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**26**	**0**	**0**	**29**	**0**	**0**	**24**	**43**	**0**	**122**	**0**

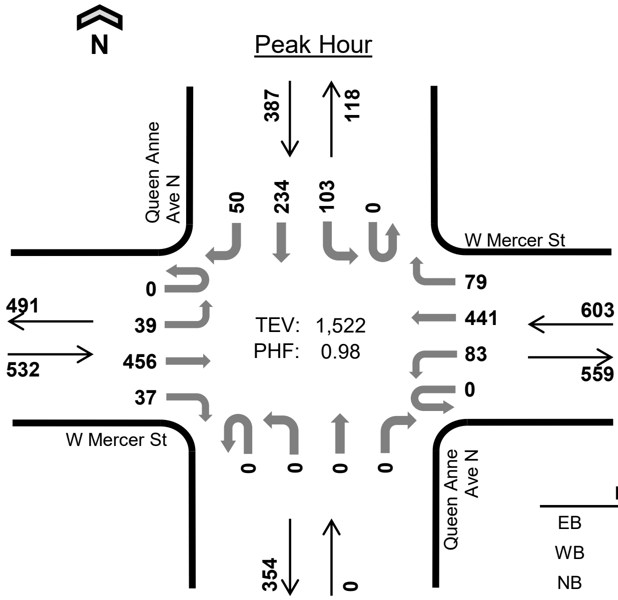
Two-Hour Count Summaries - Bikes

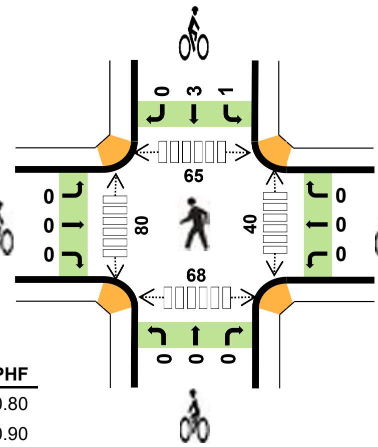
Interval Start	W Roy St			W MERCER ST			ELLIOT AVE W			ELLIOT AVE W			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	2	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
5:00 PM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	4
5:15 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	4
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Count Total	0	0	0	0	0	4	0	2	0	0	0	0	6	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**1**	**0**	**0**	**0**	**0**	**4**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Queen Anne Ave N
W Mercer St

Date: 11/15/2022
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV %:	PHF
EB	9.2%	0.80
WB	8.1%	0.90
NB	-	-
SB	7.2%	0.91
TOTAL	8.3%	0.98

Two-Hour Count Summaries

Interval Start		W Mercer St Eastbound UT	LT	TH	RT	W Mercer St Westbound UT	LT	TH	RT	Queen Anne Ave N Northbound UT	LT	TH	RT	Queen Anne Ave N Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM		0	11	76	6	0	27	103	19	0	0	0	0	0	18	22	6	288	0
7:15 AM		0	9	83	9	0	15	100	24	0	0	0	0	0	17	43	11	311	0
7:30 AM		0	10	131	14	0	21	123	15	0	0	0	0	0	21	37	10	382	0
7:45 AM		0	7	106	10	0	13	113	19	0	0	0	0	0	18	38	25	349	1,330
8:00 AM		**0**	**6**	**103**	**11**	**0**	**29**	**110**	**18**	**0**	**0**	**0**	**0**	**0**	**29**	**65**	**12**	**383**	1,425
8:15 AM		**0**	**8**	**146**	**12**	**0**	**10**	**104**	**17**	**0**	**0**	**0**	**0**	**0**	**18**	**54**	**11**	**380**	1,494
8:30 AM		**0**	**12**	**112**	**7**	**0**	**26**	**123**	**18**	**0**	**0**	**0**	**0**	**0**	**29**	**51**	**12**	**390**	1,502
8:45 AM		**0**	**13**	**95**	**7**	**0**	**18**	**104**	**26**	**0**	**0**	**0**	**0**	**0**	**27**	**64**	**15**	**369**	**1,522**
Count Total		0	76	852	76	0	159	880	156	0	0	0	0	0	177	374	102	2,852	0
Peak Hour	**All**	**0**	**39**	**456**	**37**	**0**	**83**	**441**	**79**	**0**	**0**	**0**	**0**	**0**	**103**	**234**	**50**	**1,522**	**0**
	HV	**0**	**4**	**30**	**15**	**0**	**7**	**38**	**4**	**0**	**0**	**0**	**0**	**0**	**6**	**22**	**0**	**126**	**0**
	HV%	**-**	**10%**	**7%**	**41%**	**-**	**8%**	**9%**	**5%**	**-**	**-**	**-**	**-**	**-**	**6%**	**9%**	**0%**	**8%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	5	16	0	3	*24*	1	0	0	1	*2*	7	6	11	7	*31*
7:15 AM	7	14	0	5	*26*	0	0	1	0	*1*	5	15	10	11	*41*
7:30 AM	12	11	0	4	*27*	2	0	0	2	*4*	6	14	20	14	*54*
7:45 AM	8	16	0	8	*32*	1	0	1	4	*6*	13	15	16	17	*61*
8:00 AM	**13**	**15**	**0**	**8**	***36***	**0**	**0**	**0**	**1**	***1***	**8**	**23**	**19**	**14**	*64*
8:15 AM	**11**	**11**	**0**	**8**	***30***	**0**	**0**	**0**	**2**	***2***	**8**	**24**	**18**	**13**	*63*
8:30 AM	**10**	**11**	**0**	**6**	***27***	**0**	**0**	**0**	**0**	***0***	**9**	**19**	**13**	**14**	*55*
8:45 AM	**15**	**12**	**0**	**6**	***33***	**0**	**0**	**0**	**1**	***1***	**15**	**14**	**15**	**27**	*71*
Count Total	81	106	0	48	*235*	4	0	2	11	*17*	71	130	122	117	*440*
Peak Hour	**49**	**49**	**0**	**28**	***126***	**0**	**0**	**0**	**4**	***4***	**40**	**80**	**65**	**68**	***253***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	W Mercer St				W Mercer St				Queen Anne Ave N				Queen Anne Ave N				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	2	2	1	0	1	14	1	0	0	0	0	0	0	3	0	24	0
7:15 AM	0	0	4	3	0	0	10	4	0	0	0	0	0	1	3	1	26	0
7:30 AM	0	0	8	4	0	0	11	0	0	0	0	0	0	0	4	0	27	0
7:45 AM	0	1	4	3	0	3	13	0	0	0	0	0	0	1	3	4	32	109
8:00 AM	**0**	**1**	**8**	**4**	**0**	**2**	**12**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**7**	**0**	**36**	121
8:15 AM	**0**	**2**	**6**	**3**	**0**	**1**	**10**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**7**	**0**	**30**	125
8:30 AM	**0**	**1**	**5**	**4**	**0**	**1**	**8**	**2**	**0**	**0**	**0**	**0**	**0**	**2**	**4**	**0**	**27**	125
8:45 AM	**0**	**0**	**11**	**4**	**0**	**3**	**8**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**4**	**0**	**33**	**126**
Count Total	0	7	48	26	0	11	86	9	0	0	0	0	0	8	35	5	235	0
Peak Hour	**0**	**4**	**30**	**15**	**0**	**7**	**38**	**4**	**0**	**0**	**0**	**0**	**0**	**6**	**22**	**0**	**126**	**0**

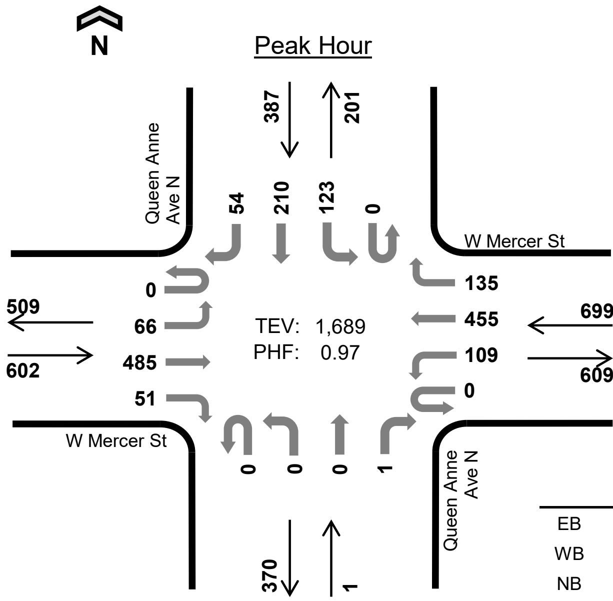
Two-Hour Count Summaries - Bikes

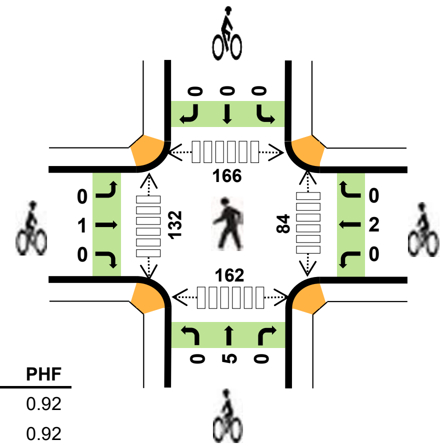
Interval Start	W Mercer St			W Mercer St			Queen Anne Ave N			Queen Anne Ave N			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	1	0	0	0	0	0	0	0	0	1	0	2	0
7:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	1	0
7:30 AM	0	2	0	0	0	0	0	0	0	0	2	0	4	0
7:45 AM	0	1	0	0	0	0	0	1	0	0	4	0	6	13
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	12
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	13
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	9
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**4**
Count Total	0	4	0	0	0	0	0	2	0	1	10	0	17	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**0**	**4**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Queen Anne Ave N
W Mercer St

Date: 11/15/2022
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM





	HV %:	PHF
EB	6.0%	0.92
WB	4.6%	0.92
NB	0.0%	0.25
SB	3.9%	0.94
TOTAL	4.9%	0.97

Two-Hour Count Summaries

Interval Start		W Mercer St Eastbound				W Mercer St Westbound				Queen Anne Ave N Northbound				Queen Anne Ave N Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	17	150	10	0	16	127	27	0	0	0	0	0	31	46	11	435	0
4:15 PM		0	13	132	11	0	23	108	31	0	0	0	0	0	35	48	14	415	0
4:30 PM		**0**	**14**	**133**	**13**	**0**	**30**	**103**	**27**	**0**	**0**	**0**	**0**	**0**	**30**	**48**	**9**	**407**	0
4:45 PM		**0**	**17**	**111**	**12**	**0**	**29**	**127**	**28**	**0**	**0**	**0**	**0**	**0**	**28**	**49**	**19**	**420**	1,677
5:00 PM		**0**	**18**	**108**	**12**	**0**	**28**	**113**	**48**	**0**	**0**	**0**	**0**	**0**	**33**	**54**	**14**	**428**	1,670
5:15 PM		**0**	**17**	**133**	**14**	**0**	**22**	**112**	**32**	**0**	**0**	**0**	**1**	**0**	**32**	**59**	**12**	**434**	**1,689**
5:30 PM		0	19	102	12	0	23	111	35	0	0	0	0	0	21	42	20	385	1,667
5:45 PM		0	15	105	26	0	18	116	36	0	0	0	0	0	34	51	23	424	1,671
Count Total		0	130	974	110	0	189	917	264	0	0	0	1	0	244	397	122	3,348	0
Peak Hour	**All**	**0**	**66**	**485**	**51**	**0**	**109**	**455**	**135**	**0**	**0**	**0**	**1**	**0**	**123**	**210**	**54**	**1,689**	**0**
	HV	**0**	**1**	**19**	**16**	**0**	**1**	**31**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**10**	**2**	**83**	**0**
	HV%	**-**	**2%**	**4%**	**31%**	**-**	**1%**	**7%**	**0%**	**-**	**-**	**-**	**0%**	**-**	**2%**	**5%**	**4%**	**5%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	11	6	0	5	*22*	0	1	0	0	*1*	24	29	42	33	*128*
4:15 PM	10	10	0	7	*27*	0	0	0	1	*1*	20	32	43	30	*125*
4:30 PM	**10**	**7**	**0**	**2**	***19***	**1**	**0**	**2**	**0**	*3*	**18**	**27**	**26**	**37**	*108*
4:45 PM	**8**	**8**	**0**	**3**	***19***	**0**	**2**	**0**	**0**	*2*	**14**	**32**	**45**	**24**	*115*
5:00 PM	**13**	**10**	**0**	**7**	***30***	**0**	**0**	**2**	**0**	*2*	**27**	**40**	**44**	**52**	*163*
5:15 PM	**5**	**7**	**0**	**3**	***15***	**0**	**0**	**1**	**0**	*1*	**25**	**33**	**51**	**49**	***158***
5:30 PM	8	7	0	7	*22*	0	0	0	1	*1*	21	34	25	45	*125*
5:45 PM	7	9	0	3	*19*	1	1	2	0	*4*	24	16	36	37	*113*
Count Total	72	64	0	37	*173*	2	4	7	2	*15*	173	243	312	307	*1,035*
Peak Hour	**36**	**32**	**0**	**15**	***83***	**1**	**2**	**5**	**0**	***8***	**84**	**132**	**166**	**162**	***544***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	W Mercer St Eastbound UT	LT	TH	RT	W Mercer St Westbound UT	LT	TH	RT	Queen Anne Ave N Northbound UT	LT	TH	RT	Queen Anne Ave N Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM	0	0	8	3	0	0	6	0	0	0	0	0	0	2	3	0	22	0
4:15 PM	0	0	5	5	0	0	9	1	0	0	0	0	0	2	4	1	27	0
4:30 PM	**0**	**0**	**7**	**3**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**19**	0
4:45 PM	**0**	**0**	**5**	**3**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**19**	87
5:00 PM	**0**	**1**	**6**	**6**	**0**	**0**	**10**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**4**	**2**	**30**	95
5:15 PM	**0**	**0**	**1**	**4**	**0**	**1**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**15**	**83**
5:30 PM	0	0	6	2	0	1	5	1	0	0	0	0	0	2	5	0	22	86
5:45 PM	0	0	2	5	0	0	9	0	0	0	0	0	0	0	3	0	19	86
Count Total	0	1	40	31	0	2	60	2	0	0	0	0	0	9	25	3	173	0
Peak Hour	**0**	**1**	**19**	**16**	**0**	**1**	**31**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**10**	**2**	**83**	**0**

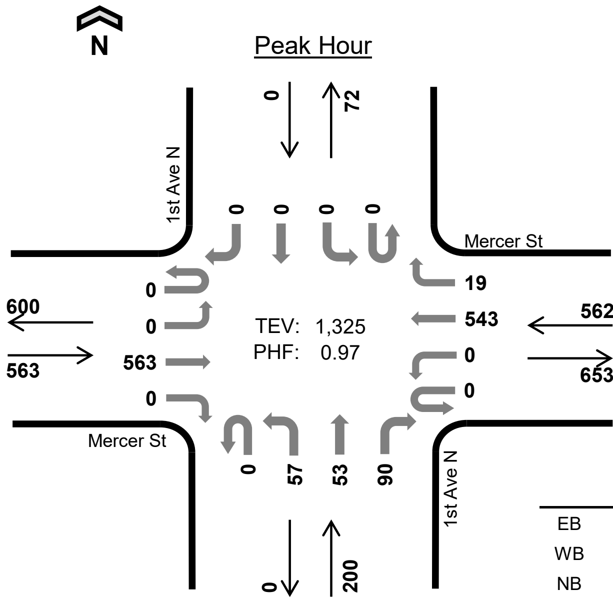
Two-Hour Count Summaries - Bikes

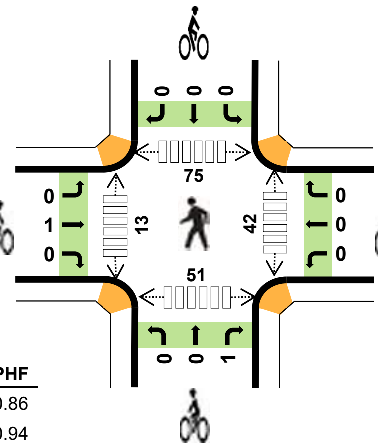
Interval Start	W Mercer St Eastbound LT	TH	RT	W Mercer St Westbound LT	TH	RT	Queen Anne Ave N Northbound LT	TH	RT	Queen Anne Ave N Southbound LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	0
4:30 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**3**	0
4:45 PM	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	7
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**2**	8
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**8**
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	6
5:45 PM	0	1	0	0	1	0	0	2	0	0	0	0	4	8
Count Total	0	2	0	0	4	0	0	7	0	0	2	0	15	0
Peak Hour	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**8**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

1st Ave N
Mercer St

Date: 11/15/2022
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	5.2%	0.86
WB	6.8%	0.94
NB	15.0%	0.88
SB	-	-
TOTAL	7.3%	0.97

Two-Hour Count Summaries

Interval Start	Mercer St Eastbound UT	LT	TH	RT	Mercer St Westbound UT	LT	TH	RT	1st Ave N Northbound UT	LT	TH	RT	1st Ave N Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	0	0	93	0	0	0	139	2	0	13	8	9	0	0	0	0	264	0
7:15 AM	0	0	98	0	0	0	122	3	0	16	11	17	0	0	0	0	267	0
7:30 AM	0	0	146	0	0	0	144	4	0	14	18	14	0	0	0	0	340	0
7:45 AM	**0**	**0**	**135**	**0**	**0**	**0**	**137**	**6**	**0**	**14**	**12**	**31**	**0**	**0**	**0**	**0**	**335**	1,206
8:00 AM	**0**	**0**	**128**	**0**	**0**	**0**	**131**	**3**	**0**	**18**	**10**	**24**	**0**	**0**	**0**	**0**	**314**	1,256
8:15 AM	**0**	**0**	**163**	**0**	**0**	**0**	**128**	**7**	**0**	**12**	**10**	**15**	**0**	**0**	**0**	**0**	**335**	1,324
8:30 AM	**0**	**0**	**137**	**0**	**0**	**0**	**147**	**3**	**0**	**13**	**21**	**20**	**0**	**0**	**0**	**0**	**341**	**1,325**
8:45 AM	0	0	127	0	0	0	116	2	0	30	13	26	0	0	0	0	314	1,304
Count Total	0	0	1,027	0	0	0	1,064	30	0	130	103	156	0	0	0	0	2,510	0
Peak Hour All	**0**	**0**	**563**	**0**	**0**	**0**	**543**	**19**	**0**	**57**	**53**	**90**	**0**	**0**	**0**	**0**	**1,325**	**0**
Peak Hour HV	**0**	**0**	**29**	**0**	**0**	**0**	**36**	**2**	**0**	**21**	**7**	**2**	**0**	**0**	**0**	**0**	**97**	**0**
Peak Hour HV%	**-**	**-**	**5%**	**-**	**-**	**-**	**7%**	**11%**	**-**	**37%**	**13%**	**2%**	**-**	**-**	**-**	**-**	**7%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	2	11	7	0	*20*	1	1	0	0	*2*	6	0	13	5	*24*
7:15 AM	6	10	10	0	*26*	0	0	0	0	*0*	8	8	17	11	*44*
7:30 AM	7	4	7	0	*18*	2	0	0	0	*2*	18	9	18	11	*56*
7:45 AM	**7**	**11**	**10**	**0**	***28***	**1**	**0**	**0**	**0**	***1***	**8**	**4**	**19**	**12**	*43*
8:00 AM	**9**	**10**	**9**	**0**	***28***	**0**	**0**	**1**	**0**	***1***	**12**	**3**	**15**	**13**	*43*
8:15 AM	**7**	**11**	**5**	**0**	***23***	**0**	**0**	**0**	**0**	***0***	**9**	**0**	**21**	**10**	*40*
8:30 AM	**6**	**6**	**6**	**0**	***18***	**0**	**0**	**0**	**0**	***0***	**13**	**6**	**20**	**16**	*55*
8:45 AM	14	4	10	0	*28*	1	0	0	0	*1*	15	3	11	13	*42*
Count Total	58	67	64	0	*189*	5	1	1	0	*7*	89	33	134	91	*347*
Peak Hour	**29**	**38**	**30**	**0**	***97***	**1**	**0**	**1**	**0**	***2***	**42**	**13**	**75**	**51**	***181***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Mercer St				Mercer St				1st Ave N				1st Ave N				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	2	0	0	0	11	0	0	6	1	0	0	0	0	0	20	0
7:15 AM	0	0	6	0	0	0	10	0	0	5	3	2	0	0	0	0	26	0
7:30 AM	0	0	7	0	0	0	4	0	0	5	2	0	0	0	0	0	18	0
7:45 AM	**0**	**0**	**7**	**0**	**0**	**0**	**11**	**0**	**0**	**6**	**4**	**0**	**0**	**0**	**0**	**0**	**28**	92
8:00 AM	**0**	**0**	**9**	**0**	**0**	**0**	**8**	**2**	**0**	**7**	**1**	**1**	**0**	**0**	**0**	**0**	**28**	100
8:15 AM	**0**	**0**	**7**	**0**	**0**	**0**	**11**	**0**	**0**	**4**	**1**	**0**	**0**	**0**	**0**	**0**	**23**	97
8:30 AM	**0**	**0**	**6**	**0**	**0**	**0**	**6**	**0**	**0**	**4**	**1**	**1**	**0**	**0**	**0**	**0**	**18**	**97**
8:45 AM	0	0	14	0	0	0	4	0	0	8	1	1	0	0	0	0	28	97
Count Total	0	0	58	0	0	0	65	2	0	45	14	5	0	0	0	0	189	0
Peak Hour	**0**	**0**	**29**	**0**	**0**	**0**	**36**	**2**	**0**	**21**	**7**	**2**	**0**	**0**	**0**	**0**	**97**	**0**

Two-Hour Count Summaries - Bikes

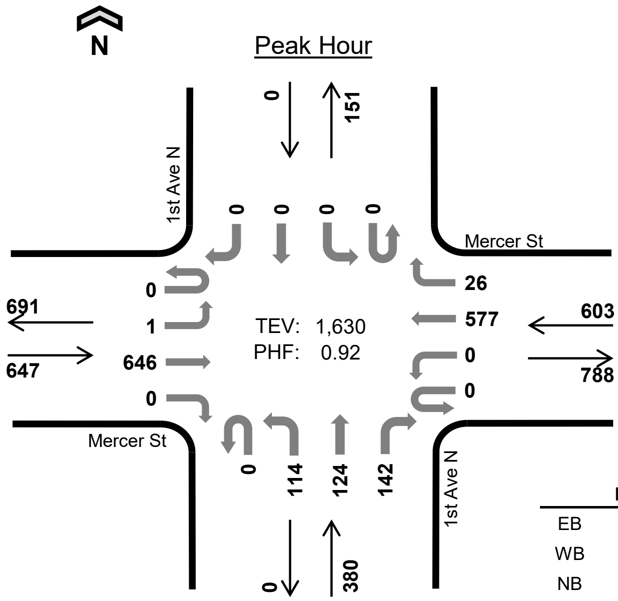
Interval Start	Mercer St			Mercer St			1st Ave N			1st Ave N			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	2	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	2	0	0	0	0	0	0	0	0	0	0	2	0
7:45 AM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	5
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	4
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	4
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
8:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	2
Count Total	0	5	0	0	1	0	0	0	1	0	0	0	7	0
Peak Hour	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**

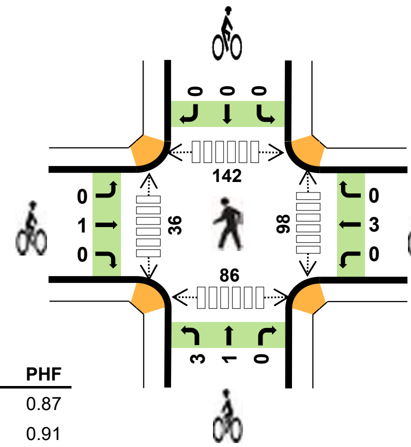
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

1st Ave N
Mercer St

Date: 11/15/2022
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM

Peak Hour





	HV %:	PHF
EB	4.8%	0.87
WB	1.8%	0.91
NB	9.5%	0.91
SB	-	-
TOTAL	4.8%	0.92

Two-Hour Count Summaries

Interval Start		Mercer St Eastbound UT	LT	TH	RT	Mercer St Westbound UT	LT	TH	RT	1st Ave N Northbound UT	LT	TH	RT	1st Ave N Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM		**0**	**0**	**186**	**0**	**0**	**0**	**154**	**10**	**0**	**23**	**32**	**38**	**0**	**0**	**0**	**0**	**443**	0
4:15 PM		**0**	**1**	**166**	**0**	**0**	**0**	**141**	**12**	**0**	**36**	**31**	**33**	**0**	**0**	**0**	**0**	**420**	0
4:30 PM		**0**	**0**	**165**	**0**	**0**	**0**	**120**	**1**	**0**	**31**	**30**	**43**	**0**	**0**	**0**	**0**	**390**	0
4:45 PM		**0**	**0**	**129**	**0**	**0**	**0**	**162**	**3**	**0**	**24**	**31**	**28**	**0**	**0**	**0**	**0**	**377**	**1,630**
5:00 PM		0	1	141	0	0	0	144	6	0	41	31	34	0	0	0	0	398	1,585
5:15 PM		0	2	168	0	0	0	147	10	0	33	30	18	0	0	0	0	408	1,573
5:30 PM		0	0	133	0	0	0	142	13	0	27	21	31	0	0	0	0	367	1,550
5:45 PM		0	0	140	0	0	0	136	11	0	45	33	27	0	0	0	0	392	1,565
Count Total		0	4	1,228	0	0	0	1,146	66	0	260	239	252	0	0	0	0	3,195	0
Peak Hour	**All**	**0**	**1**	**646**	**0**	**0**	**0**	**577**	**26**	**0**	**114**	**124**	**142**	**0**	**0**	**0**	**0**	**1,630**	**0**
	HV	**0**	**0**	**31**	**0**	**0**	**0**	**11**	**0**	**0**	**24**	**10**	**2**	**0**	**0**	**0**	**0**	**78**	**0**
	HV%	**-**	**0%**	**5%**	**-**	**-**	**-**	**2%**	**0%**	**-**	**21%**	**8%**	**1%**	**-**	**-**	**-**	**-**	**5%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	**10**	**1**	**6**	**0**	***17***	**0**	**0**	**1**	**0**	***1***	**16**	**9**	**34**	**18**	*77*
4:15 PM	**7**	**5**	**14**	**0**	***26***	**0**	**0**	**1**	**0**	***1***	**17**	**8**	**31**	**25**	*81*
4:30 PM	**7**	**2**	**10**	**0**	***19***	**1**	**1**	**1**	**0**	***3***	**25**	**12**	**41**	**23**	*101*
4:45 PM	**7**	**3**	**6**	**0**	***16***	**0**	**2**	**1**	**0**	***3***	**40**	**7**	**36**	**20**	***103***
5:00 PM	7	6	6	0	*19*	0	1	1	0	*2*	36	6	44	30	*116*
5:15 PM	1	1	12	0	*14*	0	1	1	0	*2*	44	12	43	30	*129*
5:30 PM	8	2	7	0	*17*	0	0	0	0	*0*	25	17	37	20	*99*
5:45 PM	2	3	10	0	*15*	1	1	1	0	*3*	41	11	37	29	*118*
Count Total	49	23	71	0	*143*	2	6	7	0	*15*	244	82	303	195	*824*
Peak Hour	**31**	**11**	**36**	**0**	***78***	**1**	**3**	**4**	**0**	***8***	**98**	**36**	**142**	**86**	***362***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Mercer St				Mercer St				1st Ave N				1st Ave N				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**10**	**0**	**0**	**0**	**1**	**0**	**0**	**4**	**2**	**0**	**0**	**0**	**0**	**0**	**17**	0
4:15 PM	**0**	**0**	**7**	**0**	**0**	**0**	**5**	**0**	**0**	**9**	**4**	**1**	**0**	**0**	**0**	**0**	**26**	0
4:30 PM	**0**	**0**	**7**	**0**	**0**	**0**	**2**	**0**	**0**	**7**	**2**	**1**	**0**	**0**	**0**	**0**	**19**	0
4:45 PM	**0**	**0**	**7**	**0**	**0**	**0**	**3**	**0**	**0**	**4**	**2**	**0**	**0**	**0**	**0**	**0**	**16**	**78**
5:00 PM	0	0	7	0	0	0	6	0	0	3	3	0	0	0	0	0	19	80
5:15 PM	0	0	1	0	0	0	1	0	0	7	4	1	0	0	0	0	14	68
5:30 PM	0	0	8	0	0	0	2	0	0	4	3	0	0	0	0	0	17	66
5:45 PM	0	0	2	0	0	0	3	0	0	6	2	2	0	0	0	0	15	65
Count Total	0	0	49	0	0	0	23	0	0	44	22	5	0	0	0	0	143	0
Peak Hour	**0**	**0**	**31**	**0**	**0**	**0**	**11**	**0**	**0**	**24**	**10**	**2**	**0**	**0**	**0**	**0**	**78**	**0**

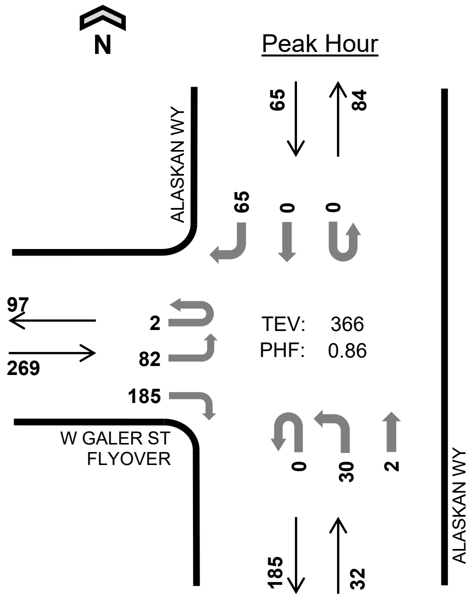
Two-Hour Count Summaries - Bikes

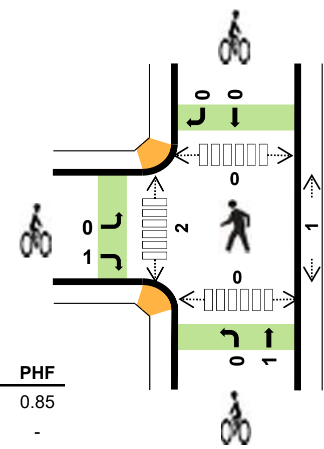
Interval Start	Mercer St			Mercer St			1st Ave N			1st Ave N			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	0
4:30 PM	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**3**	0
4:45 PM	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	**8**
5:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	2	9
5:15 PM	0	0	0	0	1	0	0	1	0	0	0	0	2	10
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	7
5:45 PM	0	1	0	0	1	0	1	0	0	0	0	0	3	7
Count Total	0	2	0	0	6	0	4	3	0	0	0	0	15	0
Peak Hour	**0**	**1**	**0**	**0**	**3**	**0**	**3**	**1**	**0**	**0**	**0**	**0**	**8**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

ALASKAN WY
W GALER ST FLYOVER

Date: 09/08/2022
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV %:	PHF
EB	5.9%	0.85
WB	-	-
NB	3.1%	0.89
SB	24.6%	0.81
TOTAL	9.0%	0.86

Two-Hour Count Summaries

Interval Start	W GALER ST FLYOVER Eastbound UT	LT	TH	RT	0 Westbound UT	LT	TH	RT	ALASKAN WY Northbound UT	LT	TH	RT	ALASKAN WY Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	1	16	0	38	0	0	0	0	0	13	0	0	0	0	0	12	80	0
7:15 AM	3	14	0	28	0	0	0	0	0	5	0	0	0	0	0	16	66	0
7:30 AM	2	20	0	47	0	0	0	0	0	7	1	0	0	0	0	7	84	0
7:45 AM	1	17	0	64	0	0	0	0	0	5	0	0	0	0	0	11	98	328
8:00 AM	**0**	**18**	**0**	**37**	**0**	**0**	**0**	**0**	**0**	**8**	**1**	**0**	**0**	**0**	**0**	**10**	**74**	322
8:15 AM	**0**	**21**	**0**	**47**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**16**	**91**	347
8:30 AM	**1**	**20**	**0**	**46**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**20**	**94**	357
8:45 AM	**1**	**23**	**0**	**55**	**0**	**0**	**0**	**0**	**0**	**8**	**1**	**0**	**0**	**0**	**0**	**19**	**107**	**366**
Count Total	9	149	0	362	0	0	0	0	0	60	3	0	0	0	0	111	694	0
Peak Hour All	**2**	**82**	**0**	**185**	**0**	**0**	**0**	**0**	**0**	**30**	**2**	**0**	**0**	**0**	**0**	**65**	**366**	**0**
Peak Hour HV	**0**	**13**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**16**	**33**	**0**
Peak Hour HV%	**0%**	**16%**	**-**	**2%**	**-**	**-**	**-**	**-**	**-**	**3%**	**0%**	**-**	**-**	**-**	**-**	**25%**	**9%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	2	0	0	7	*9*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	5	0	0	8	*13*	0	0	0	0	*0*	0	1	0	0	*1*
7:30 AM	5	0	1	2	*8*	1	0	0	0	*1*	0	1	0	0	*1*
7:45 AM	5	0	0	2	*7*	0	0	1	0	*1*	0	0	0	0	*0*
8:00 AM	**3**	**0**	**1**	**4**	***8***	**1**	**0**	**0**	**0**	***1***	**0**	**1**	**0**	**0**	*1*
8:15 AM	**4**	**0**	**0**	**4**	***8***	**0**	**0**	**1**	**0**	***1***	**1**	**0**	**0**	**0**	*1*
8:30 AM	**5**	**0**	**0**	**2**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	*1*
8:45 AM	**4**	**0**	**0**	**6**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
Count Total	33	0	2	35	*70*	2	0	2	0	*4*	1	4	0	0	*5*
Peak Hr	**16**	**0**	**1**	**16**	***33***	**1**	**0**	**1**	**0**	***2***	**1**	**2**	**0**	**0**	***3***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	W GALER ST FLYOVER				0				ALASKAN WY				ALASKAN WY				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	7	9	0
7:15 AM	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	8	13	0
7:30 AM	1	4	0	0	0	0	0	0	0	1	0	0	0	0	0	2	8	0
7:45 AM	0	2	0	3	0	0	0	0	0	0	0	0	0	0	0	2	7	37
8:00 AM	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**4**	**8**	36
8:15 AM	**0**	**3**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**8**	31
8:30 AM	**0**	**4**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**7**	30
8:45 AM	**0**	**3**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**10**	**33**
Count Total	1	26	0	6	0	0	0	0	0	2	0	0	0	0	0	35	70	0
Peak Hour	**0**	**13**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**16**	**33**	**0**

Two-Hour Count Summaries - Bikes

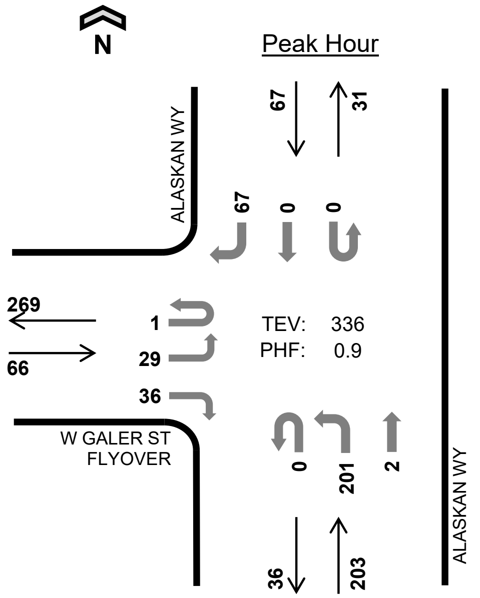
Interval Start	W GALER ST FLYOVER			0			ALASKAN WY			ALASKAN WY			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	1	0
7:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	1	2
8:00 AM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	3
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	4
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
Count Total	0	0	2	0	0	0	1	1	0	0	0	0	4	0
Peak Hour	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**0**

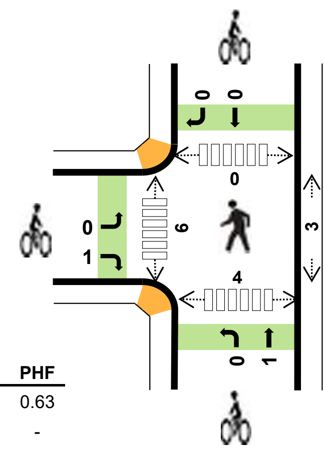
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

ALASKAN WY
W GALER ST FLYOVER

Date: 09/08/2022
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM

Peak Hour





	HV %:	PHF
EB	10.6%	0.63
WB	-	-
NB	0.5%	0.85
SB	7.5%	0.84
TOTAL	3.9%	0.90

Two-Hour Count Summaries

Interval Start	W GALER ST FLYOVER				0				ALASKAN WY				ALASKAN WY				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**10**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**60**	**0**	**0**	**0**	**0**	**0**	**16**	**92**	0
4:15 PM	**1**	**12**	**0**	**13**	**0**	**0**	**0**	**0**	**0**	**51**	**0**	**0**	**0**	**0**	**0**	**16**	**93**	0
4:30 PM	**0**	**4**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**49**	**1**	**0**	**0**	**0**	**0**	**20**	**83**	0
4:45 PM	**0**	**3**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**41**	**1**	**0**	**0**	**0**	**0**	**15**	**68**	**336**
5:00 PM	1	4	0	9	0	0	0	0	0	36	0	0	0	0	0	13	63	307
5:15 PM	1	9	0	8	0	0	0	0	0	24	0	0	0	0	0	24	66	280
5:30 PM	0	4	0	10	0	0	0	0	0	34	1	0	0	0	0	13	62	259
5:45 PM	1	8	0	6	0	0	0	0	0	19	1	0	0	0	0	8	43	234
Count Total	4	54	0	69	0	0	0	0	0	314	4	0	0	0	0	125	570	0
Peak Hour All	**1**	**29**	**0**	**36**	**0**	**0**	**0**	**0**	**0**	**201**	**2**	**0**	**0**	**0**	**0**	**67**	**336**	**0**
Peak Hour HV	**0**	**5**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**5**	**13**	**0**
Peak Hour HV%	**0%**	**17%**	**-**	**6%**	**-**	**-**	**-**	**-**	**-**	**0%**	**0%**	**-**	**-**	**-**	**-**	**7%**	**4%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	**4**	**0**	**0**	**2**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**3**	**0**	**0**	*3*
4:15 PM	**0**	**0**	**1**	**1**	***2***	**0**	**0**	**0**	**0**	***0***	**2**	**1**	**0**	**3**	*6*
4:30 PM	**0**	**0**	**0**	**1**	***1***	**0**	**0**	**1**	**0**	***1***	**1**	**1**	**0**	**1**	*3*
4:45 PM	**3**	**0**	**0**	**1**	***4***	**1**	**0**	**0**	**0**	***1***	**0**	**1**	**0**	**0**	***1***
5:00 PM	1	0	0	0	*1*	0	0	1	1	*2*	0	1	0	0	*1*
5:15 PM	0	0	2	1	*3*	0	0	0	0	*0*	1	1	0	0	*2*
5:30 PM	1	0	0	0	*1*	0	0	1	0	*1*	1	10	0	0	*11*
5:45 PM	1	0	0	0	*1*	1	0	0	0	*1*	0	5	0	0	*5*
Count Total	10	0	3	6	*19*	2	0	3	1	*6*	5	23	0	4	*32*
Peak Hr	**7**	**0**	**1**	**5**	***13***	**1**	**0**	**1**	**0**	***2***	**3**	**6**	**0**	**4**	***13***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	W GALER ST FLYOVER				0				ALASKAN WY				ALASKAN WY				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**6**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	0
4:45 PM	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**4**	**13**
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	8
5:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	3	9
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	9
5:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6
Count Total	0	8	0	2	0	0	0	0	0	3	0	0	0	0	0	6	19	0
Peak Hour	**0**	**5**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**5**	**13**	**0**

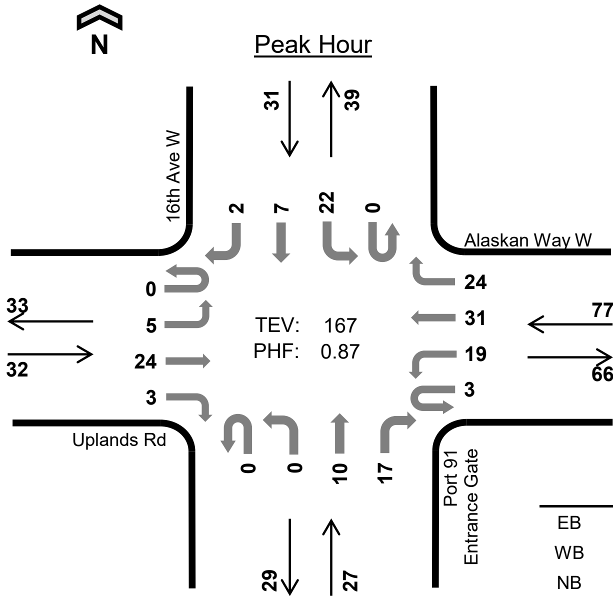
Two-Hour Count Summaries - Bikes

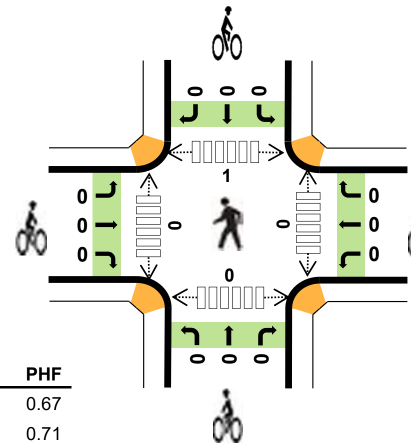
Interval Start	W GALER ST FLOYVER			0			ALASKAN WY			ALASKAN WY			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	0
4:45 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**
5:00 PM	0	0	0	0	0	0	1	0	0	0	1	0	2	4
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4
5:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	1	4
5:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	1	4
Count Total	1	0	1	0	0	0	1	2	0	0	1	0	6	0
Peak Hour	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Port 91 Entrance Gate
Uplands Rd

Date:	11/15/2022
Count Period:	7:00 AM to 9:00 AM
Peak Hour:	7:45 AM to 8:45 AM





	HV %:	PHF
EB	25.0%	0.67
WB	13.0%	0.71
NB	3.7%	0.75
SB	22.6%	0.78
TOTAL	15.6%	0.87

Two-Hour Count Summaries

Interval Start	Uplands Rd				Alaskan Way W				Port 91 Entrance Gate				16th Ave W				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	1	0	0	9	6	6	0	2	2	1	0	6	4	1	38	0
7:15 AM	0	0	1	1	0	10	6	8	0	1	0	2	0	3	1	0	33	0
7:30 AM	0	0	5	1	0	4	8	3	0	2	3	2	0	5	1	1	35	0
7:45 AM	**0**	**1**	**4**	**0**	**1**	**5**	**4**	**7**	**0**	**0**	**2**	**3**	**0**	**2**	**2**	**0**	**31**	137
8:00 AM	**0**	**1**	**7**	**2**	**0**	**3**	**10**	**7**	**0**	**0**	**2**	**6**	**0**	**7**	**3**	**0**	**48**	147
8:15 AM	**0**	**2**	**2**	**1**	**2**	**7**	**11**	**7**	**0**	**0**	**2**	**3**	**0**	**7**	**1**	**1**	**46**	160
8:30 AM	**0**	**1**	**11**	**0**	**0**	**4**	**6**	**3**	**0**	**0**	**4**	**5**	**0**	**6**	**1**	**1**	**42**	**167**
8:45 AM	0	1	1	0	0	5	5	4	0	1	0	7	0	5	2	0	31	167
Count Total	0	6	32	5	3	47	56	45	0	6	15	29	0	41	15	4	304	0
Peak Hour All	**0**	**5**	**24**	**3**	**3**	**19**	**31**	**24**	**0**	**0**	**10**	**17**	**0**	**22**	**7**	**2**	**167**	**0**
Peak Hour HV	**0**	**2**	**6**	**0**	**1**	**0**	**3**	**6**	**0**	**0**	**0**	**1**	**0**	**6**	**1**	**0**	**26**	**0**
Peak Hour HV%	**-**	**40%**	**25%**	**0%**	**33%**	**0%**	**10%**	**25%**	**-**	**-**	**0%**	**6%**	**-**	**27%**	**14%**	**0%**	**16%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	0	1	*1*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	0	3	0	1	*4*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	1	2	1	1	*5*	0	0	0	0	*0*	0	0	2	0	*2*
7:45 AM	**2**	**2**	**0**	**2**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**2**	**3**	**1**	**2**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**0**	*1*
8:15 AM	**2**	**4**	**0**	**0**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:30 AM	**2**	**1**	**0**	**3**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	0	1	0	1	*2*	0	1	0	0	*1*	0	0	0	1	*1*
Count Total	9	16	2	11	*38*	0	1	0	0	*1*	0	0	3	1	*4*
Peak Hour	**8**	**10**	**1**	**7**	***26***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**0**	***1***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Uplands Rd				Alaskan Way W				Port 91 Entrance Gate				16th Ave W				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
7:15 AM	0	0	0	0	0	0	1	2	0	0	0	0	0	1	0	0	4	0
7:30 AM	0	0	1	0	0	0	0	2	0	0	1	0	0	1	0	0	5	0
7:45 AM	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**6**	16
8:00 AM	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**8**	23
8:15 AM	**0**	**2**	**0**	**0**	**1**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	25
8:30 AM	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**6**	**26**
8:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	2	22
Count Total	0	2	7	0	1	0	4	11	0	0	1	1	0	10	1	0	38	0
Peak Hour	**0**	**2**	**6**	**0**	**1**	**0**	**3**	**6**	**0**	**0**	**0**	**1**	**0**	**6**	**1**	**0**	**26**	**0**

Two-Hour Count Summaries - Bikes

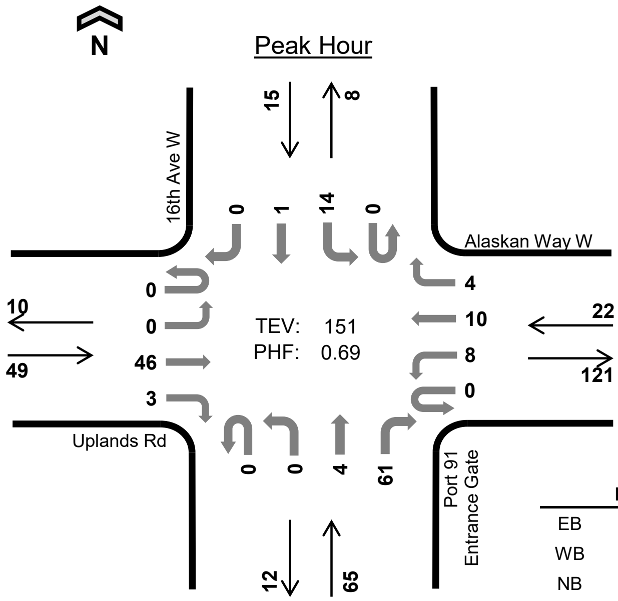
Interval Start	Uplands Rd			Alaskan Way W			Port 91 Entrance Gate			16th Ave W			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	1
Count Total	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

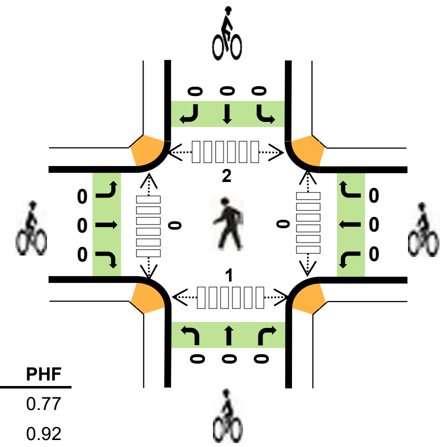
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Port 91 Entrance Gate
Uplands Rd

Date: 11/15/2022
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM

Peak Hour





	HV %:	PHF
EB	4.1%	0.77
WB	9.1%	0.92
NB	0.0%	0.56
SB	6.7%	0.54
TOTAL	3.3%	0.69

Two-Hour Count Summaries

Interval Start	Uplands Rd Eastbound UT	LT	TH	RT	Alaskan Way W Westbound UT	LT	TH	RT	Port 91 Entrance Gate Northbound UT	LT	TH	RT	16th Ave W Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM	0	0	17	1	0	1	4	2	0	2	0	6	0	5	1	1	40	0
4:15 PM	0	0	9	0	0	3	2	5	0	0	0	7	0	3	0	1	30	0
4:30 PM	0	0	12	0	0	1	5	2	0	0	0	7	0	3	1	0	31	0
4:45 PM	0	0	13	0	0	6	2	0	0	1	1	4	0	7	1	0	35	136
5:00 PM	**0**	**0**	**8**	**0**	**0**	**1**	**3**	**2**	**0**	**0**	**1**	**10**	**0**	**0**	**1**	**0**	**26**	122
5:15 PM	**0**	**0**	**11**	**1**	**0**	**2**	**2**	**0**	**0**	**0**	**1**	**8**	**0**	**3**	**0**	**0**	**28**	120
5:30 PM	**0**	**0**	**12**	**1**	**0**	**3**	**2**	**1**	**0**	**0**	**0**	**16**	**0**	**7**	**0**	**0**	**42**	131
5:45 PM	**0**	**0**	**15**	**1**	**0**	**2**	**3**	**1**	**0**	**0**	**2**	**27**	**0**	**4**	**0**	**0**	**55**	**151**
Count Total	0	0	97	4	0	19	23	13	0	3	5	85	0	32	4	2	287	0
Peak Hour All	**0**	**0**	**46**	**3**	**0**	**8**	**10**	**4**	**0**	**0**	**4**	**61**	**0**	**14**	**1**	**0**	**151**	**0**
Peak Hour HV	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**5**	**0**
Peak Hour HV%	**-**	**-**	**0%**	**67%**	**-**	**0%**	**0%**	**50%**	**-**	**-**	**0%**	**0%**	**-**	**7%**	**0%**	**-**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	0	4	0	1	*5*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	1	2	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	0	0	0	1	*1*	0	0	0	0	*0*	0	0	1	1	*2*
5:00 PM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**0**	*1*
5:30 PM	**1**	**1**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:45 PM	**0**	**0**	**0**	**1**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**1**	***2***
Count Total	4	9	0	3	*16*	0	0	0	0	*0*	0	0	3	2	*5*
Peak Hour	**2**	**2**	**0**	**1**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**1**	*3*

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Uplands Rd Eastbound UT	LT	TH	RT	Alaskan Way W Westbound UT	LT	TH	RT	Port 91 Entrance Gate Northbound UT	LT	TH	RT	16th Ave W Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2	0
4:15 PM	0	0	0	0	0	0	1	3	0	0	0	0	0	1	0	0	5	0
4:30 PM	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	3	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	11
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	10
5:15 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	6
5:30 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	5
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**5**
Count Total	0	0	1	3	0	0	2	7	0	0	0	0	0	3	0	0	16	0
Peak Hour	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**5**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Uplands Rd Eastbound LT	TH	RT	Alaskan Way W Westbound LT	TH	RT	Port 91 Entrance Gate Northbound LT	TH	RT	16th Ave W Southbound LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

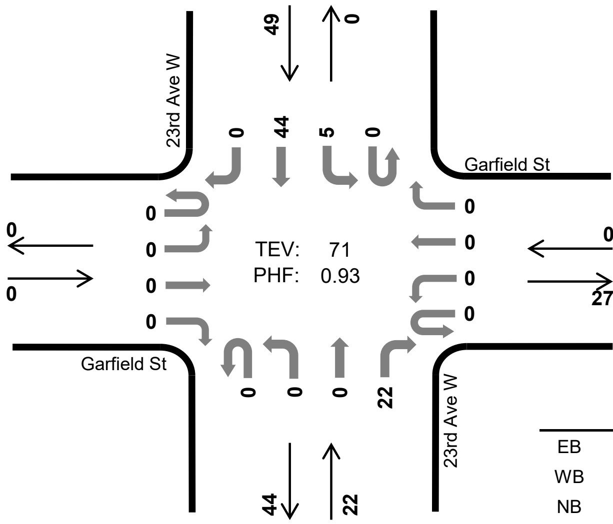
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

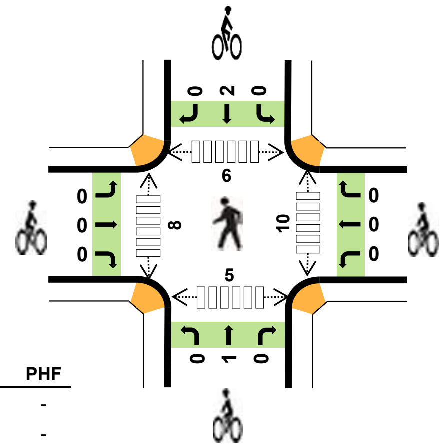
23rd Ave W
Garfield St

idax

Date: 09/08/2022
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM

Peak Hour





	HV %:	PHF
EB	-	-
WB	-	-
NB	0.0%	0.69
SB	0.0%	0.94
TOTAL	0.0%	0.93

Two-Hour Count Summaries

Interval Start	Garfield St				Garfield St				23rd Ave W				23rd Ave W				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	4	0	0	5	0	9	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	6	0	1	7	0	14	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	5	0	2	6	0	13	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	12	0	16	52
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**1**	**12**	**0**	**17**	60
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**1**	**12**	**0**	**18**	64
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**0**	**1**	**10**	**0**	**19**	70
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**2**	**10**	**0**	**17**	**71**
Count Total	0	0	0	0	0	0	0	0	0	0	0	37	0	12	74	0	123	0
Peak Hour All	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**22**	**0**	**5**	**44**	**0**	**71**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Peak Hour HV%	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**0%**	**0%**	**-**	**0%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	0	0	*0*	0	0	1	1	*2*	2	0	0	0	*2*
7:15 AM	0	0	0	1	*1*	0	0	0	0	*0*	1	0	1	0	*2*
7:30 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	1	0	*1*
7:45 AM	0	0	0	3	*3*	0	0	0	0	*0*	1	2	0	1	*4*
8:00 AM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**0**	***1***	**6**	**3**	**1**	**0**	*10*
8:15 AM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**2**	***2***	**0**	**2**	**1**	**1**	*4*
8:30 AM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**1**	**0**	*3*
8:45 AM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**3**	**2**	**3**	**4**	***12***
Count Total	0	0	0	4	*4*	0	0	2	3	*5*	14	10	8	6	*38*
Peak Hour	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**2**	***3***	**10**	**8**	**6**	**5**	***29***

project.manager.wa@idaxdata.com

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Garfield St Eastbound UT	LT	TH	RT	Garfield St Westbound UT	LT	TH	RT	23rd Ave W Northbound UT	LT	TH	RT	23rd Ave W Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	4
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	4
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

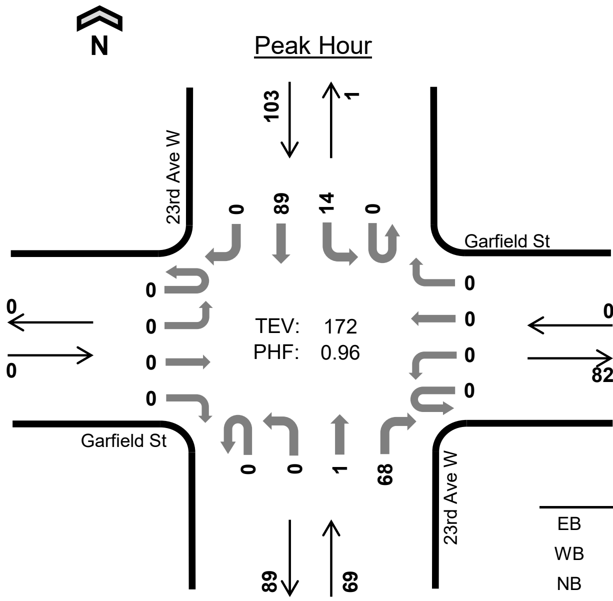
Two-Hour Count Summaries - Bikes

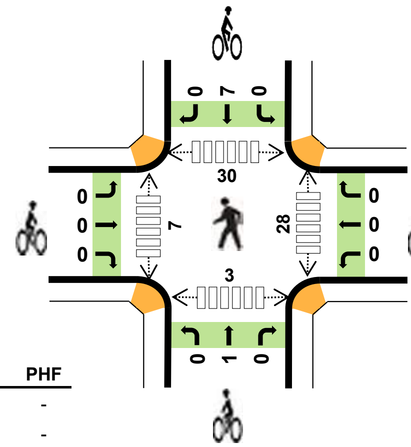
Interval Start	Garfield St Eastbound LT	TH	RT	Garfield St Westbound LT	TH	RT	23rd Ave W Northbound LT	TH	RT	23rd Ave W Southbound LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	0	0	0	0	0	0	0	1	0	0	1	0	2	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	1
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	3
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
Count Total	0	0	0	0	0	0	0	2	0	0	3	0	5	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**3**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

23rd Ave W
Garfield St

Date: 09/08/2022
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM





	HV %:	PHF
EB	-	-
WB	-	-
NB	0.0%	0.86
SB	2.9%	0.92
TOTAL	1.7%	0.96

Two-Hour Count Summaries

Interval Start		Garfield St Eastbound				Garfield St Westbound				23rd Ave W Northbound				23rd Ave W Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	0	0	0	0	0	0	0	0	0	0	19	0	3	15	0	37	0
4:15 PM		0	0	0	0	0	0	0	0	0	0	0	22	0	2	21	0	45	0
4:30 PM		0	0	0	0	0	0	0	0	0	0	1	16	0	2	15	0	34	0
4:45 PM		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	**0**	**3**	**24**	**0**	**41**	157
5:00 PM		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**19**	**0**	**7**	**18**	**0**	**45**	165
5:15 PM		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**0**	**1**	**27**	**0**	**43**	163
5:30 PM		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**20**	**0**	**3**	**20**	**0**	**43**	172
5:45 PM		0	0	0	0	0	1	0	0	0	0	0	13	0	2	20	0	36	167
Count Total		0	0	0	0	0	1	0	0	0	0	2	138	0	23	160	0	324	0
Peak Hour	**All**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**68**	**0**	**14**	**89**	**0**	**172**	**0**
	HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**3**	**0**
	HV%	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0%**	**0%**	**-**	**21%**	**0%**	**-**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	0	1	*1*	0	0	3	2	*5*	2	2	4	0	*8*
4:15 PM	0	0	0	0	*0*	0	0	4	2	*6*	0	1	1	1	*3*
4:30 PM	0	0	0	1	*1*	0	0	2	2	*4*	1	0	0	0	*1*
4:45 PM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**7**	***7***	**3**	**0**	**3**	**1**	*7*
5:00 PM	**0**	**0**	**0**	**3**	***3***	**0**	**0**	**1**	**0**	***1***	**8**	**2**	**8**	**1**	*19*
5:15 PM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**10**	**4**	**10**	**1**	*25*
5:30 PM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**7**	**1**	**9**	**0**	***17***
5:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	1	0	1	0	*2*
Count Total	0	0	0	5	*5*	0	0	10	13	*23*	32	10	36	4	*82*
Peak Hour	**0**	**0**	**0**	**3**	***3***	**0**	**0**	**1**	**7**	***8***	**28**	**7**	**30**	**3**	***68***

Two-Hour Count Summaries - Heavy Vehicles

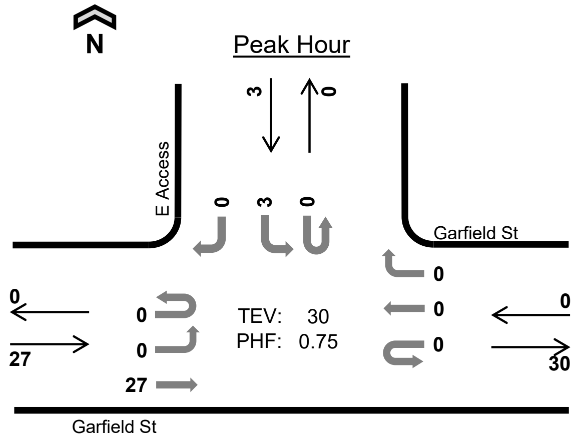
Interval Start	Garfield St Eastbound				Garfield St Westbound				23rd Ave W Northbound				23rd Ave W Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**3**	4
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	4
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**3**	**0**

Two-Hour Count Summaries - Bikes

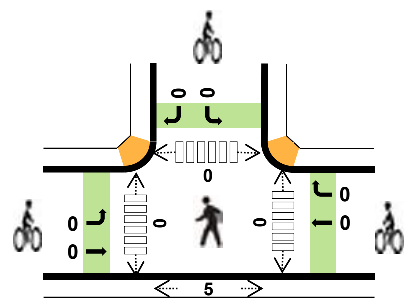
Interval Start	Garfield St Eastbound			Garfield St Westbound			23rd Ave W Northbound			23rd Ave W Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	3	0	2	0	5	0
4:15 PM	0	0	0	0	0	0	0	3	1	0	2	0	6	0
4:30 PM	0	0	0	0	0	0	0	2	0	0	2	0	4	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**7**	22
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	18
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	12
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	0	6	4	0	13	0	23	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**7**	**0**	**8**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

E Access
Garfield St



Date: 09/08/2022
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM



	HV %:	PHF
EB	0.0%	0.75
WB	-	-
NB	-	-
SB	0.0%	0.75
TOTAL	0.0%	0.75

Two-Hour Count Summaries

Interval Start	Garfield St Eastbound UT	LT	TH	RT	Garfield St Westbound UT	LT	TH	RT	0 Northbound UT	LT	TH	RT	E Access Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	0	0	4	0	0	0	0	0	0	0	0	0	0	1	0	0	5	0
7:15 AM	0	0	7	0	0	0	0	0	0	0	0	0	0	1	0	0	8	0
7:30 AM	0	0	7	0	0	0	0	0	0	0	0	0	0	1	0	0	8	0
7:45 AM	0	0	4	0	0	0	0	0	0	0	0	0	0	1	0	0	5	26
8:00 AM	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**6**	27
8:15 AM	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	25
8:30 AM	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**10**	27
8:45 AM	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**8**	**30**
Count Total	0	0	49	0	0	0	0	0	0	0	0	0	0	7	0	0	56	0
Peak Hour All	**0**	**0**	**27**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**30**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Peak Hour HV%	**-**	**-**	**0%**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**-**	**0%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	1	*1*
7:45 AM	3	0	0	0	*3*	0	0	0	0	*0*	0	0	0	1	*1*
8:00 AM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**2**	*2*
8:30 AM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**2**	*2*
8:45 AM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	***1***
Count Total	4	0	0	0	*4*	0	0	0	0	*0*	0	0	0	7	*7*
Peak Hr	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**5**	***5***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Garfield St				Garfield St				0				E Access				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	4
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	4
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

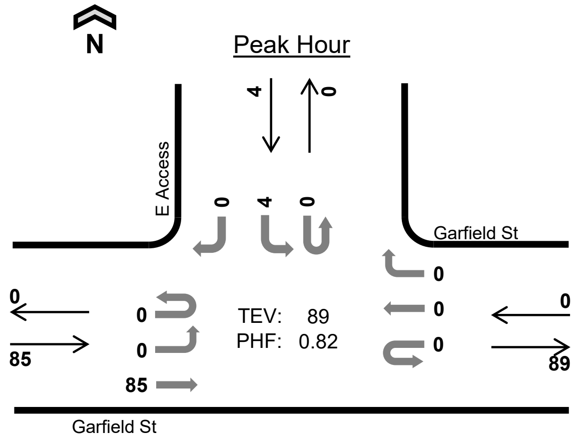
Two-Hour Count Summaries - Bikes

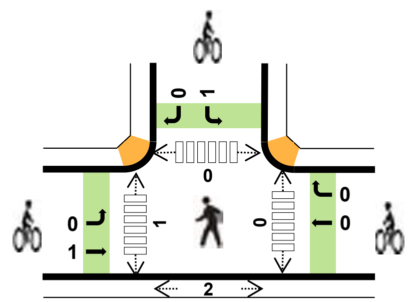
Interval Start	Garfield St			Garfield St			0			E Access			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

E Access
Garfield St

Date: 09/08/2022
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM





	HV %:	PHF
EB	4.7%	0.82
WB	-	-
NB	-	-
SB	0.0%	0.33
TOTAL	4.5%	0.82

Two-Hour Count Summaries

Interval Start		Garfield St				Garfield St				0				E Access				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	0	22	0	0	0	0	0	0	0	0	0	0	2	0	0	24	0
4:15 PM		**0**	**0**	**24**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**27**	0
4:30 PM		**0**	**0**	**18**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**18**	0
4:45 PM		**0**	**0**	**17**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**17**	86
5:00 PM		**0**	**0**	**26**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**27**	89
5:15 PM		0	1	15	0	0	0	0	0	0	0	0	0	0	0	0	0	16	78
5:30 PM		0	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	22	82
5:45 PM		0	0	15	0	0	0	0	0	0	0	0	0	0	1	0	1	17	82
Count Total		0	1	159	0	0	0	0	0	0	0	0	0	0	7	0	1	168	0
Peak Hour	**All**	**0**	**0**	**85**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**89**	**0**
	HV	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**
	HV%	**-**	**-**	**5%**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**-**	**4%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	0	0	0	*1*	3	0	0	0	*3*	0	1	0	0	*1*
4:15 PM	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**1**	***2***	**0**	**0**	**0**	**0**	*0*
4:30 PM	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**2**	*2*
5:00 PM	**3**	**0**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	***1***
5:15 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	4	*4*
5:30 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	3	*3*
5:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	2	0	0	0	*2*
Count Total	5	0	0	0	*5*	4	0	0	1	*5*	2	2	0	9	*13*
Peak Hr	**4**	**0**	**0**	**0**	***4***	**1**	**0**	**0**	**1**	***2***	**0**	**1**	**0**	**2**	***3***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Garfield St				Garfield St				0				E Access				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
5:00 PM	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**4**
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Count Total	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
Peak Hour	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Garfield St			Garfield St			0			E Access			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	3	0	0	0	0	0	0	0	0	0	0	3	0
4:15 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	5
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	4	0	0	0	0	0	0	0	1	0	0	5	0
Peak Hour	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

APPENDIX D

Collision Data

JURISDICTION	COUNTY	CITY	PRIMARY TRAFFICWAY	BLOCK NUMBER	INTERSECTING TRAFFIC WAY	DIST FROM REF POINT	SR ONLY HISTORY/ SUSPENSE	REPORT NUMBER	DATE	TIME	MOST SEVERE INJURY TYPE	# INJ	# FAT	# VEH	# PEDS	# BIKES	VEHICLE 1 TYPE	VEHICLE 2 TYPE	JUNCTION RELATIONSHIP	WEATHER	ROADWAY SURFACE CONDITION	LIGHTING CONDITION	FIRST COLLISION TYPE / OBJECT STRUCK	VEHICLE 1 ACTION	VEHICLE 2 ACTION	VEHICLE 1 COMPASS DIRECTION FROM	VEHICLE 1 COMPASS DIRECTION TO	VEHICLE 2 COMPASS DIRECTION FROM	VEHICLE 2 COMPASS DIRECTION TO	DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1)	DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 1)
15th Ave W and Gilman Drive																															
City Street	King	Seattle	15TH AVE W	0	GILMAN DR W		No	E918145	05/06/2019	08:22	No Apparent Injury	0	0	2	0	0	Pickup,Par	Pickup,Par	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	North	East	South	North	Improper T	Inattentior
City Street	King	Seattle	15TH AVE W	0	GILMAN DR W		No	E825575	08/03/2018	11:40	Possible Injury	3	0	2	0	0	Passenger	Passenger	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	Entering at angle	Going Straight Ahead	Stopped at Signal or Sto	South	North	Vehicle Sto	Vehicle Sto	None	
City Street	King	Seattle	15TH AVE W	2500	GILMAN DR W		No	3703878	02/21/2017	18:24	No Apparent Injury	0	0	2	0	0	Passenger	Bus or Mo	At Intersection and Related	Raining	Wet	Dark-Stree	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	South	West	North	South	Did Not Gr	Improper T
City Street	King	Seattle	15TH AVE W	0	GILMAN DR W		No	3753568	09/19/2017	18:09	Possible Injury	1	0	3	0	0	Pickup,Par	Passenger	At Intersection and Related	Raining	Wet	Dusk	From opposite direction - one left turn - one straight	Going Straight Ahead	Making Left Turn	South	North	North	East	Other Con	Inattentior
City Street	King	Seattle	15TH AVE W	0	GILMAN DR W		No	3835906	06/03/2020	14:37	No Apparent Injury	0	0	2	0	0	Passenger	Pickup,Par	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - one stopped - sideswipe	Going Straight Ahead	Stopped at Signal or Sto	South	North	South	North	Improper	Exceeding
City Street	King	Seattle	15TH AVE W	2500	GILMAN DR W		No	3753279	06/21/2017	19:00	Suspected Minor Injury	1	0	1	0	1	Pickup,Panel Truck or		At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	Vehicle - Pedalcyclist	Making Left Turn		South	West			Did Not Gr	Inattentior
City Street	King	Seattle	15TH AVE W	0	GILMAN DR W		No	EA51979	07/10/2020	16:12	Possible Injury	1	0	2	0	0	Pickup,Par	Passenger	At Intersection and Related	Clear	Dry	Daylight	From opposite direction - all others	Changing Lanes	Stopped for Traffic	South	South	Vehicle Sto	Vehicle Sto	Distractions Outside V	
City Street	King	Seattle	15TH AVE W	2481	GILMAN DR W		No	EA88289	12/09/2020	00:37	Suspected Minor Injury	1	0	2	0	0	Passenger	Passenger	At Intersection and Related	Overcast	Wet	Dark-Stree	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	South	West	North	South	Did Not Grant RW to V	
City Street	King	Seattle	15TH AVE W	0	GILMAN DR W		No	3753817	09/29/2018	13:07	Suspected Minor Injury	3	0	2	0	0	Passenger	Pickup,Par	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	South	South	South	West	Exceeding Reas. Safe S	
City Street	King	Seattle	15TH AVE W	2500	GILMAN DR W		No	3907245	10/05/2021	17:33	No Apparent Injury	0	0	2	0	0	Passenger	Passenger	At Driveway within Major Intersection	Clear	Dry	Daylight	From same direction - both going straight - both moving - rear-end	Going Straight Ahead	Slowing	North	South	South	West	Under Infl	Exceeding
City Street	King	Seattle	15TH AVE W	0	GILMAN DR W		No	3811084	12/05/2019	20:17	No Apparent Injury	0	0	2	0	0	Not Stated	Passenger	At Intersection and Related	Clear or Partly Cloudy	Dry	Dark-Stree	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	North	East	South	North	Did Not Grant RW to V	
City Street	King	Seattle	15TH AVE W	2493	GILMAN DR W		No	EB43725	06/24/2021	12:20	No Apparent Injury	0	0	2	0	0	Pickup,Par	Pickup,Par	At Intersection and Related	Clear or Partly Cloudy	Dry	Dark-Stree	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	North	East	South	North	Did Not Grant RW to V	
City Street	King	Seattle	15TH AVE W	2400		50	No	E867389	12/02/2018	18:46	Possible Injury	2	0	2	0	0	Pickup,Par	Passenger	Intersection Related but Not at Intersection	Overcast	Dry	Dark-Stree	From same direction - both going straight - both moving - rear-end	Going Straight Ahead	Starting in Traffic Lane	South	North	South	North	Unknown Distraction	
15th Ave W and W Garfield St																															
City Street	King	Seattle	15TH AVE W	1400	W GARFIELD ST		No	3836563	09/26/2021	20:09	No Apparent Injury	0	0	2	0	0	Passenger	Pickup,Par	At Intersection and Related	Raining	Wet	Dark-Stree	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	South	West	North	South	Improper Turn/Merge	
City Street	King	Seattle	15TH AVE W	0	W GARFIELD ST		No	3852084	07/18/2020	02:29	Dead at Scene	0	1	4	0	0	Passenger Car		At Intersection and Related	Partly Cloudy	Dry	Dark-Stree	Bridge Column, Pier or Pillar	Making Left Turn		South	Northwest			Exceeding	Exceeding
City Street	King	Seattle	15TH AVE W	1589	W GARFIELD ST		No	3907235	08/28/2021	19:54	Suspected Serious Injury	1	0	2	1	0	Passenger Car		At Intersection and Related	Clear	Dry	Dark-Stree	Vehicle going straight hits pedestrian	Starting from Parked Position		South	North			Unknown	Improper F
City Street	King	Seattle	15TH AVE W	0	W GARFIELD ST		No	3811876	10/30/2018	21:50	No Apparent Injury	0	0	1	0	0	Passenger Car		At Intersection and Related	Raining	Wet	Dark-Stree	Temporary Traffic Sign, Barricade or Construction Materials	Going Straight Ahead		North	South			Under Infl	Inattentior
City Street	King	Seattle	15TH AVE W	1589	W GARFIELD ST		No	3836988	08/27/2021	23:49	No Apparent Injury	0	0	2	0	0	Pickup,Par	Pickup,Par	At Intersection and Not Related	Overcast	Dry	Dark-Stree	From same direction - both going straight - both moving - sideswipe	Changing Lanes	Changing Lanes	South	North	South	North	Exceeding	Did Not Gr
City Street	King	Seattle	15TH AVE W	0	W GARFIELD ST		No	3732893	02/16/2017	20:02	Possible Injury	1	0	2	0	0	Passenger	Passenger	At Intersection and Related	Clear or Partly Cloudy	Dry	Dark-Stree	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	South	West	North	South	Did Not Grant RW to V	
City Street	King	Seattle	15TH AVE W	0	W GARFIELD ST		No	3852418	04/25/2020	02:33	Suspected Serious Injury	1	0	1	0	0	Passenger Car		At Intersection and Not Related	Overcast	Dry	Dark-Stree	Metal Sign Post	Going Straight Ahead		Southeast	Northwest			Under Infl	Exceeding
City Street	King	Seattle	15TH AVE W	0	W GARFIELD ST		No	E662633	04/18/2017	15:24	Possible Injury	1	0	3	0	0	Pickup,Par	Pickup,Par	At Intersection and Related	Overcast	Wet	Daylight	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic			North	Vehicle Sto	Other Contributing Ci	
City Street	King	Seattle	15TH AVE W	0	W GARFIELD ST		No	E698061	06/25/2017	17:01	No Apparent Injury	0	0	2	0	0	Passenger	Passenger	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	From opposite direction - all others	Changing Lanes	Stopped at Signal or Sto	South	North	Vehicle Sto	Vehicle Sto	Inattention	

Alaskan Way W and Galer St Flyover

ALASKAN WAY W FROM JUST EAST OF PIER 90 TO IT'S EXTENTS TO THE SOUTHEAST - No Reported Crashes

JURISDICTION	COUNTY	CITY	PRIMARY TRAFFICWAY	BLOCK NUMBER	INTERSECTING TRAFFIC WAY	DIST FROM REF POINT	SR ONLY HISTORY/ SUSPENSE	REPORT NUMBER	DATE	TIME	MOST SEVERE INJURY TYPE	# INJ	# FAT	# VEH	# PEDS	# BIKES	VEHICLE 1 TYPE	VEHICLE 2 TYPE	JUNCTION RELATIONSHIP	WEATHER	ROADWAY SURFACE CONDITION	LIGHTING CONDITION	FIRST COLLISION TYPE / OBJECT STRUCK	VEHICLE 1 ACTION	VEHICLE 2 ACTION	VEHICLE 1 COMPASS DIRECTION FROM	VEHICLE 1 COMPASS DIRECTION TO	VEHICLE 2 COMPASS DIRECTION FROM	VEHICLE 2 COMPASS DIRECTION TO	DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1)	DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 1)
Elliott Ave W and Galer St																															
City Street	King	Seattle	ELLIOTT AVE W	1493	W GALER ST		No	3852112	09/12/2020	20:51	No Apparent Injury	0	0	2	0	0	Pickup,Par	Passenger	At Intersection and Related	Fog or Smog or Smoke	Dry	Dark-Stree	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Sto	South	North	Vehicle Ba	Vehicle Sto	Under Infl	Improper T
City Street	King	Seattle	ELLIOTT AVE W	0	W GALER ST		No	E832052	08/20/2018	09:45	Possible Injury	1	0	2	0	0	Not Stated	Pickup,Par	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - both moving - rear-end	Going Straight Ahead	Going Straight Ahead	South	North	South	North	Unknown Distraction	
City Street	King	Seattle	ELLIOTT AVE W	0	W GALER ST		No	3750926	04/06/2019	22:24	Suspected Serious Injury	1	0	1	1	0	Pickup,Panel Truck or		At Intersection and Related	Overcast	Wet	Dark-Stree	Vehicle going straight hits pedestrian	Going Straight Ahead		South	North			Driver Not Distracted	
City Street	King	Seattle	ELLIOTT AVE W	0	W GALER ST		No	3732314	02/05/2018	05:43	No Apparent Injury	0	0	2	0	0	Passenger	Passenger	At Intersection and Related	Clear or Partly Cloudy	Dry	Dark-Stree	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	North	East	South	North	None	
City Street	King	Seattle	ELLIOTT AVE W	1400		67	No	3852485	02/20/2021	12:54	Possible Injury	2	0	3	0	0	Passenger	Passenger	Intersection Related but Not at Intersection	Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - one stopped - rear-end	Changing Lanes	Stopped at Signal or Sto	South	North			Follow Too Closely	
City Street	King	Seattle	ELLIOTT AVE W	9900		50	No	3750841	10/07/2019	14:37	Possible Injury	1	0	3	0	0	Truck (Flat	Passenger	Intersection Related but Not at Intersection	Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - one stopped - sideswipe	Changing Lanes	Stopped for Traffic	North	South	Vehicle Ba	Vehicle Sto	Inattention	
Elliott Ave W and Galer St Floyover																															
City Street	King	Seattle	14TH AVE W	0	ELLIOTT AV	0	No	3750576	4/27/2019	14:00	Possible Injury	2	0	2	0	0	Passenger	Passenger	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	Same direction -- both turning right -- both moving -- rear end	Making Right Turn	Making Right Turn	East	North	East	North	Inattentior	
City Street	King	Seattle	14TH AVE W / GALER S	0	ELLIOTT AV	0	No	3750590	10/9/2019	14:30	No Apparent Injury	0	0	2	0	0	Passenger	Not Stated	At Intersection and Related	Clear or Partly Cloudy	Dry	Dawn	Same direction -- both turning right -- both moving -- rear end	Making Right Turn	Making Right Turn	Northeast	Northwest	Northeast	Northwest	Inattentior	
City Street	King	Seattle	14TH AVE W/VAN BUR	0	ELLIOTT AV	0	No	EB19754	3/26/2021	17:41	No Apparent Injury	0	0	2	0	0	Pickup,Par	Truck Trac	At Intersection and Related	Clear	Dry	Daylight	Entering at angle	Making Right Turn	Stopped at Signal or Sto	South	Northeast	Vehicle Sto	Vehicle Sto	Other Con	
Elliott Ave W and Prospect St																															
City Street	King	Seattle	ELLIOTT AVE W	0	W PROSPECT ST		No	E735819	11/15/2017	08:01	Suspected Minor Injury	3	0	2	0	0	Passenger	Passenger	At Intersection and Related	Raining	Wet	Daylight	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	South	West	North	South	Did Not Grant RW to V	
City Street	King	Seattle	ELLIOTT AVE W	0	W PROSPECT ST		No	E702954	08/18/2017	10:26	No Apparent Injury	0	0	2	0	0	Pickup,Par	Pickup,Par	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	North	South	North	Vehicle Sto	Inattention	
City Street	King	Seattle	ELLIOTT AVE W	1059	W PROSPECT ST		No	3836697	06/11/2021	23:30	Possible Injury	2	0	2	0	0	Passenger	Passenger	At Intersection and Related	Clear	Wet	Dark-Stree	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Sto	North	South		Vehicle Sto	Under Influence of Alc	
City Street	King	Seattle	ELLIOTT AVE W	1059	W PROSPECT ST		No	3852168	01/23/2021	19:48	Possible Injury	1	0	1	0	0	Passenger Car		At Intersection and Related	Clear	Dry	Dark-Stree	Utility Box	Starting in Traffic Lane		Southwest	Northwest			Other Contributing Ci	
Elliott Ave W and W Mercer PL																															
City Street	King	Seattle	ELLIOTT AVE W	600	W MERCER PL		No	3750612	04/16/2019	17:14	Possible Injury	1	0	2	0	0	Passenger	Motorcycl	At Intersection and Related	Raining	Wet	Daylight	Same direction -- both turning right -- both moving -- sideswipe	Making Right Turn	Making Right Turn	South	East	South	East	Improper T	Inattentior
City Street	King	Seattle	ELLIOTT AVE W	0	W MERCER PL		No	3784869	11/03/2017	17:09	Possible Injury	2	0	2	0	0	Not Stated	Passenger	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - both moving - rear-end	Going Straight Ahead	Starting in Traffic Lane	North	South	North	South	Inattention	
City Street	King	Seattle	ELLIOTT AVE W		W MERCER PL		No	E863159	10/26/2018	03:00	Possible Injury	2	0	2	0	0	Passenger	Passenger	At Intersection and Related	Raining	Wet	Dark-Stree	From same direction - both going straight - both moving - rear-end	Changing Lanes	Going Straight Ahead	North	South	North	South	Other Driv	Did Not Gr
City Street	King	Seattle	ELLIOTT AVE W	6600	W MERCER PL		No	3805883	07/20/2019	00:44	No Apparent Injury	0	0	2	0	0	Passenger	Passenger	At Intersection and Related	Clear or Partly Cloudy	Dry	Dark-Stree	From same direction - both going straight - both moving - rear-end	Going Straight Ahead	Slowing	Northeast	Southwest	Northeast	Southwest	Inattention	
City Street	King	Seattle	ELLIOTT AVE W	0	W MERCER PL		No	3811792	08/06/2018	15:38	No Apparent Injury	0	0	2	0	0	Passenger	Passenger	At Intersection and Not Related	Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - both moving - sideswipe	Changing Lanes	Starting in Traffic Lane	North	Southeast	North	Southeast	Inattention	
City Street	King	Seattle	ELLIOTT AVE W	600	W MERCER PL		No	E767039	01/03/2018	23:16	No Apparent Injury	0	0	2	0	0	Pickup,Par	Pickup,Par	At Intersection and Related	Overcast	Dry	Dark-Stree	From opposite direction - one left turn - one straight	Other*	Going Straight Ahead	Vehicle Sto	East	South	North	Unknown Distraction	
City Street	King	Seattle	W MERCER PL	8700	ELLIOTT AVE W		No	3753728	12/20/2018	04:55	Possible Injury	2	0	2	0	0	Passenger	Pickup,Par	At Intersection and Related	Raining	Wet	Dawn	Entering at angle	Making Right Turn	Going Straight Ahead	East	North	South	North	Inattention	
City Street	King	Seattle	W MERCER PL	0	ELLIOTT AVE W		No	3811680	08/27/2018	21:39	Suspected Minor Injury	1	0	2	0	0	Passenger	Pickup,Par	At Intersection and Related	Raining	Wet	Dark-Stree	From same direction - both going straight - both moving - rear-end	Going Straight Ahead	Slowing	Southwest	East		Vehicle Sto	Inattention	
City Street	King	Seattle	W MERCER PL	700		56	No	E830992	08/20/2018	15:16	No Apparent Injury	0	0	2	0	0	Pickup,Par	Passenger	Intersection Related but Not at Intersection	Fog or Smog or Smoke	Dry	Daylight	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	East	West	East	West	Follow Too Closely	
City Street	King	Seattle	ELLIOTT AVE W	700	W ROY ST		No	E994714	12/13/2019	15:09	Possible Injury	1	0	2	0	0	Passenger	Passenger	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	Entering at angle	Going Straight Ahead	Making Left Turn	North	South	West	North	None	
City Street	King	Seattle	ELLIOTT AVE W	0	W ROY ST		No	3811446	01/03/2019	05:50	Possible Injury	1	0	2	0	0	Passenger	Pickup,Par	At Intersection and Related	Raining	Wet	Dark-Stree	From same direction - both going straight - one stopped - sideswipe	Going Straight Ahead	Stopped at Signal or Sto	South	North	Vehicle Ba	Vehicle Sto	Apparently Fatigued	
City Street	King	Seattle	ELLIOTT AVE W	1100		0.19	No	E925714	05/24/2019	11:48	Suspected Minor Injury	1	0	2	0	0	Moped	Passenger	Driveway Related but Not at Driveway	Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	North	South	North	Vehicle Sto	Inattention	
City Street	King	Seattle	ELLIOTT AVE W	0		230	No	E773770	02/27/2018	08:10	No Apparent Injury	0	0	2	0	0	Pickup,Par	Bus or Mo	At Driveway	Overcast	Dry	Daylight	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	South	West	North	South	Inattention	
City Street	King	Seattle	ELLIOTT AVE W	600		398	No	E730284	10/24/2017	13:12	Suspected Minor Injury	1	0	1	0	1	Pickup,Panel Truck or		At Driveway	Clear or Partly Cloudy	Dry	Daylight	Vehicle - Pedalcyclist	Making Right Turn		East	West			Inattention	
City Street	King	Seattle	ELLIOTT AVE W	600		300	No	3811602	09/23/2018	16:53	Suspected Serious Injury	1	0	1	0	1	Pickup,Panel Truck or		At Driveway	Clear or Partly Cloudy	Dry	Daylight	Vehicle Strikes Pedalcyclist	Starting From Parked Position		East	West			None	
City Street	King	Seattle	ELLIOTT AVE W	0		222	No	E936047	06/28/2019	12:10	No Apparent Injury	0	0	2	0	0	Pickup,Par	Passenger	At Driveway	Clear or Partly Cloudy	Dry	Daylight	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	North	East	South	North	Inattention	

Magnolia Bridge Ramps/ 23rd Ave W
Port East

JURISDICTION	COUNTY	CITY	PRIMARY TRAFFICWAY	BLOCK NUMBER	INTERSECTING TRAFFIC WAY	DIST FROM REF POINT	SR ONLY HISTORY/ SUSPENSE	REPORT NUMBER	DATE	TIME	MOST SEVERE INJURY TYPE	# INJ	# FAT	# VEH	# PEDS	# BIKES	VEHICLE 1 TYPE	VEHICLE 2 TYPE	JUNCTION RELATIONSHIP	WEATHER	ROADWAY SURFACE CONDITION	LIGHTING CONDITION	FIRST COLLISION TYPE / OBJECT STRUCK	VEHICLE 1 ACTION	VEHICLE 2 ACTION	VEHICLE 1 COMPASS DIRECTION FROM	VEHICLE 1 COMPASS DIRECTION TO	VEHICLE 2 COMPASS DIRECTION FROM	VEHICLE 2 COMPASS DIRECTION TO	DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1)	DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 1)
Mercer St / Queen Anne N																															
City Street	King	Seattle	MERCER ST	2	QUEEN ANNE AVE N		No	EC47825	05/16/2022	16:30	No Apparent Injury	0	0	2	0	0	Pickup,Par	Passenger	At Intersection and Related	Clear	Unknown	Unknown	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	East	West	Vehicle Sto	Vehicle Sto	Other Contributing Ci	
City Street	King	Seattle	MERCER ST	0	QUEEN ANNE AVE N		No	3386370	10/19/2017	15:46	Possible Injury	1	0	1	1	0	Pickup,Panel Truck or		At Intersection and Related	Raining	Wet	Daylight	Vehicle turning left hits pedestrian	Making Left Turn		North	East			Did Not Grant R/W to	
City Street	King	Seattle	MERCER ST	2	QUEEN ANNE AVE N		No	3881488	03/26/2021	05:15	Suspected Serious Injury	1	0	1	1	0	Not Stated		At Intersection and Related		Unknown	Unknown	Vehicle turning left hits pedestrian	Making Left Turn		North	East			Did Not Grant R/W to	
City Street	King	Seattle	MERCER ST	0	QUEEN ANNE AVE N		No	3812561	01/11/2019	21:11	No Apparent Injury	0	0	2	0	0	Passenger	Pickup,Par	At Intersection and Related	Clear or Partly Cloudy	Dry	Dark-Stree	Entering at angle	Going Wrong Way on O	Making Right Turn	South	North	East	North	Inattention	
City Street	King	Seattle	MERCER ST	0	QUEEN ANNE AVE N		No	3811807	12/28/2018	22:13	No Apparent Injury	0	0	2	0	0	Passenger	Pickup,Par	At Intersection and Related	Overcast	Wet	Dark-Stree	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	West	North	East	West	Did Not Grant RW to V	
City Street	King	Seattle	MERCER ST	0	QUEEN ANNE AVE N		No	E964069	09/24/2019	13:19	No Apparent Injury	0	0	2	0	0	Pickup,Par	Truck & Tr	At Intersection and Not Related	Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - both moving - sideswipe	Changing Lanes	Going Straight Ahead	East	North	West	East	Did Not Grant RW to V	
City Street	King	Seattle	QUEEN ANNE AVE N		MERCER ST		No	3547757	12/29/2019	21:18	No Apparent Injury	0	0	2	0	0	Passenger	Passenger	At Intersection and Not Related	Clear or Partly Cloudy	Dry	Dark-Stree	From same direction - both going straight - both moving - sideswipe	Going Straight Ahead	Going Straight Ahead	North	South	North	South	Inattention	
City Street	King	Seattle	QUEEN ANNE AVE N	601	MERCER ST		No	EC09601	12/24/2021	20:13	Possible Injury	2	0	1	2	0	Pickup,Panel Truck or		At Intersection and Related	Raining	Wet	Dark-Stree	Vehicle turning left hits pedestrian	Other*		South	East			Unknown Distraction	
City Street	King	Seattle	QUEEN ANNE AVE N	0	MERCER ST		No	E845881	09/11/2018	22:25	Possible Injury	1	0	1	1	0	Passenger Car		At Intersection and Related	Overcast	Dry	Dark-Stree	Vehicle turning left hits pedestrian	Making Left Turn		North	East			Did Not Grant R/W to	
City Street	King	Seattle	QUEEN ANNE AVE N	0	MERCER ST		No	E913520	04/08/2019	17:42	Possible Injury	1	0	1	1	0	Passenger Car		At Intersection and Related	Overcast	Dry	Daylight	Vehicle turning left hits pedestrian	Making Left Turn		North	East			Inattention	
City Street	King	Seattle	QUEEN ANNE AVE N	0	W MERCER ST		No	3811362	09/24/2019	14:07	Suspected Minor Injury	1	0	1	1	0	Pickup,Panel Truck or		At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	Vehicle turning right hits pedestrian	Making Right Turn		South	East			Inattentior	Did Not Gr
City Street	King	Seattle	QUEEN ANNE AVE N	0	W MERCER ST		No	3750615	05/06/2019	14:49	Suspected Minor Injury	1	0	1	1	0	Pickup,Panel Truck or		At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	Vehicle turning right hits pedestrian	Making Right Turn		West	South			Did Not Gr	Inattentior
City Street	King	Seattle	QUEEN ANNE AVE N	543	W MERCER ST		No	EA56256	08/13/2020	12:22	No Apparent Injury	0	0	3	0	0	Passenger	Pickup,Par	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	Entering at angle	Going Wrong Way on O	Going Straight Ahead	South	North	West	East	Did Not Grant RW to V	
City Street	King	Seattle	QUEEN ANNE AVE N	601	W MERCER ST		No	EB27362	04/09/2021	16:29	Possible Injury	1	0	2	0	0	Bus or Mo	Passenger	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - one stopped - rear-end	Starting in Traffic Lane	Stopped at Signal or Sto	Vehicle Sto	Vehicle Sto	Vehicle Sto	Vehicle Sto	Eating or Drinking	
City Street	King	Seattle	QUEEN ANNE AVE N	600		73	No	E841521	09/21/2018	11:10	No Apparent Injury	0	0	2	0	0	Pickup,Par	Passenger	Intersection Related but Not at Intersection	Clear or Partly Cloudy	Dry	Daylight	One car leaving parked position	Starting From Parked P	Making Right Turn	East	Northwest	East	North	Did Not Grant RW to V	
City Street	King	Seattle	QUEEN ANNE AVE N	600		68	No	3795993	08/14/2019	19:00	No Apparent Injury	0	0	2	0	0	Bus or Mo	Pickup,Par	Intersection Related but Not at Intersection	Clear or Partly Cloudy	Dry	Dusk	One parked--one moving	Making Right Turn	Legally Parked, Unoccup	South	North	Vehicle Sto	Vehicle Sto	Unknown Distraction	
City Street	King	Seattle	W MERCER ST	200	3RD AVE W		No	E989761	11/20/2019	11:43	No Apparent Injury	0	0	2	0	0	Pickup,Par	Pickup,Par	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - both moving - sideswipe	Going Straight Ahead	Going Straight Ahead	West	East	West	East	Improper Passing	
City Street	King	Seattle	W MERCER ST	0	QUEEN ANNE AVE N		No	3746297	01/26/2018	22:03	Possible Injury	1	0	1	1	0	Pickup,Panel Truck or		At Intersection and Related	Raining	Wet	Dark-Stree	Vehicle turning left hits pedestrian	Making Left Turn		North	East			Did Not Grant R/W to	
City Street	King	Seattle	W MERCER ST	0	QUEEN ANNE AVE N		No	3852439	05/16/2020	20:09	Suspected Serious Injury	1	0	3	0	0	Passenger	Passenger	At Intersection and Related	Raining	Wet	Dusk	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Sto	West	East	Vehicle Stopped		Under Infl	Follow Too
City Street	King	Seattle	W MERCER ST	0	QUEEN ANNE AVE N		No	3796006	12/26/2018	10:10	No Apparent Injury	0	0	2	0	0	Truck (Flat	Passenger	At Intersection and Not Related	Raining	Dry	Daylight	From same direction - both going straight - both moving - sideswipe	Going Straight Ahead	Going Straight Ahead	North	South	North	South	Unknown Distraction	

City Street	King	Seattle	W MERCER ST	0	QUEEN ANNE AVE N		No	3812606	01/18/2019	17:30	Possible Injury	1	0	1	0	1	Passenger Car		At Intersection and Related	Raining	Wet	Dark-Stree	Vehicle Strikes Pedalcyclist	Making Left Turn		East	West			Inattention	
City Street	King	Seattle	W MERCER ST	1	QUEEN ANNE AVE N		No	3836830	05/15/2022	23:30	No Apparent Injury	0	0	2	0	0	Pickup,Par	Passenger	At Intersection and Related	Overcast	Wet	Dark-Stree	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Sto	West	East	West	East		
City Street	King	Seattle	W MERCER ST	1	QUEEN ANNE AVE N		No	EA69783	10/06/2020	09:00	No Apparent Injury	0	0	2	0	0	Truck (Flat	Pickup,Par	At Intersection and Not Related	Clear	Dry	Daylight	From same direction - both going straight - both moving - rear-end	Going Straight Ahead	Going Straight Ahead	West	East	West	East	Unknown Distraction	

Mercer St/ 1st Ave N

City Street	King	Seattle	MERCER ST	0	1ST AVE N		No	3784813	10/28/2017	12:30	Possible Injury	2	0	2	0	0	Passenger	Passenger	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	Entering at angle	Going Straight Ahead	Going Straight Ahead	East	West	South	North	None	
City Street	King	Seattle	MERCER ST	0	1ST AVE N		No	3753400	07/25/2018	09:28	Suspected Serious Injury	1	0	1	1	0	Pickup,Panel Truck or		At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	Vehicle going straight hits pedestrian	Going Straight Ahead		East	West			Disregard S	Did Not Gr
City Street	King	Seattle	MERCER ST	0	1ST AVE N		No	3704083	06/15/2017	05:29	No Apparent Injury	0	0	2	0	0	Passenger	Passenger	At Intersection and Related	Overcast	Dry	Daylight	From same direction - both going straight - one stopped - sideswipe	Going Straight Ahead	Stopped at Signal or Sto	East	West	East	West	Other Contributing Ci	
City Street	King	Seattle	MERCER ST	0	1ST AVE N		No	EA18129	02/18/2020	13:30	No Apparent Injury	0	0	2	0	0	Not Stated	Passenger	At Intersection and Not Related	Clear	Dry	Daylight	From same direction - both going straight - one stopped - sideswipe	Overtaking and Passing	Stopped for Traffic	West	East	West	Vehicle Sto	Operating Recklessly o	
City Street	King	Seattle	MERCER ST	0	1ST AVE N		No	E751640	12/18/2017	09:07	No Apparent Injury	0	0	2	0	0	Pickup,Par	Pickup,Par	At Intersection and Related	Raining	Wet	Daylight	Entering at angle	Going Straight Ahead	Going Straight Ahead	East	West	South	North	Inattention	
City Street	King	Seattle	1ST AVE N	0	MERCER ST		No	EA01708	01/03/2020	20:19	Possible Injury	1	0	2	0	0	Passenger	Truck Trac	At Intersection and Related	Raining	Wet	Dark-Stree	From same direction - one right turn - one straight	Overtaking and Passing	Making Right Turn	South	North	South	East	Did Not Grant RW to V	
City Street	King	Seattle	1ST AVE N	0	MERCER ST		No	3750938	04/20/2019	02:02	No Apparent Injury	0	0	2	0	0	Passenger	Pickup,Par	At Intersection and Related	Clear or Partly Cloudy	Wet	Dark-Stree	Entering at angle	Going Straight Ahead	Going Straight Ahead					Disregard Stop and Go	
City Street	King	Seattle	1ST AVE N	0	MERCER ST		No	3790979	12/19/2017	06:50	No Apparent Injury	0	0	2	0	0	Pickup,Par	Passenger	At Intersection and Related	Raining	Wet	Dark-Stree	Entering at angle	Going Straight Ahead	Going Straight Ahead	South	North	West	East	Disregard Stop and Go	
City Street	King	Seattle	1ST AVE N	0	MERCER ST		No	E876707	12/20/2018	05:40	No Apparent Injury	0	0	2	0	0	Bus or Mo	Pickup,Par	At Intersection and Related	Overcast	Unknown	Dark-Stree	Entering at angle	Going Straight Ahead	Going Straight Ahead	South	North	West	East	Other Contributing Ci	

15th Ave W/ NW Market St

City Street	King	Seattle	15TH AVE NW	0	NW MARKET ST		No	E725456	10/19/2017	08:35	No Apparent Injury	0	0	2	0	0	Passenger	Pickup,Par	At Intersection and Not Related	Raining	Wet	Daylight	From same direction - both going straight - both moving - rear-end	Going Straight Ahead	Going Straight Ahead	North	South	North	South	Inattention	
City Street	King	Seattle	15TH AVE NW	0	NW MARKET ST		No	E909189	03/18/2019	13:15	No Apparent Injury	0	0	2	0	0	Passenger	Passenger	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	South	North	South	Vehicle Sto	Inattention	Follow Too
City Street	King	Seattle	15TH AVE NW	0	NW MARKET ST		No	3796303	08/11/2019	00:31	Possible Injury	1	0	1	0	1	Passenger Car		At Intersection and Related	Clear or Partly Cloudy	Dry	Dark-Stree	Vehicle Strikes Pedalcyclist	Going Straight Ahead		North	South			Unknown Distraction	
City Street	King	Seattle	15TH AVE NW	0	NW MARKET ST		No	3854724	02/13/2020	23:43	Suspected Minor Injury	1	0	2	0	0	Passenger	Passenger	At Intersection and Related	Clear or Partly Cloudy	Dry	Dark-Stree	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Sto	South	North	South	Vehicle Sto	Under Influ	Exceeding
City Street	King	Seattle	15TH AVE NW	5500	NW MARKET ST		No	3887488	11/04/2020	14:07	Possible Injury	1	0	2	0	0	Passenger	Truck (Flat	At Intersection and Related	Raining	Wet	Daylight	From same direction - one right turn - one straight	Going Straight Ahead	Making Right Turn	South	North	South	East	Did Not Grant RW to V	
City Street	King	Seattle	15TH AVE NW	5500	NW MARKET ST		No	3897858	11/27/2021	20:10	Possible Injury	1	0	1	1	0	Passenger Car		At Intersection and Related	Raining	Wet	Dark-Stree	Vehicle going straight hits pedestrian	Going Straight Ahead		South	North			None	
City Street	King	Seattle	15TH AVE NW	5600	NW MARKET ST		No	3887601	09/08/2020	07:01	Suspected Serious Injury	1	0	2	0	0	Motorcycl	Pickup,Par	At Intersection and Related	Clear	Dry	Dawn	From same direction - both going straight - one stopped - sideswipe	Going Straight Ahead	Stopped at Signal or Sto	South	North		Vehicle Sto	Other Contributing Ci	
City Street	King	Seattle	15TH AVE NW		NW MARKET ST		No	EC10294	01/01/2022	13:28	No Apparent Injury	0	0	2	0	0	Passenger	Passenger	At Intersection and Related	Other	Dry	Daylight	From same direction - both going straight - both moving - sideswipe	Changing Lanes	Going Straight Ahead	North	Northeast	North	North	None	
City Street	King	Seattle	15TH AVE NW	0	NW MARKET ST		No	E770956	02/13/2018	10:56	No Apparent Injury	0	0	2	0	0	Passenger	Passenger	At Intersection and Related	Overcast	Dry	Daylight	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Sto	South	North	South	Vehicle Sto	Inattention	
City Street	King	Seattle	15TH AVE NW	0	NW MARKET ST		No	3694710	12/13/2018	21:22	Possible Injury	2	0	2	0	0	Passenger	Pickup,Par	At Intersection and Related	Overcast	Wet	Dark-Stree	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Sto	South	North		Vehicle Sto	Follow Too Closely	
City Street	King	Seattle	15TH AVE NW	0	NW MARKET ST		No	3854915	06/29/2020	12:40	No Apparent Injury	0	0	2	0	0	Passenger	Passenger	At Intersection and Not Related	Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - both moving - sideswipe	Changing Lanes	Going Straight Ahead	North	South	North	South	None	
City Street	King	Seattle	15TH AVE NW	5500	NW MARKET ST		No	3897860	11/28/2021	14:31	No Apparent Injury	0	0	2	0	0	Passenger	Pickup,Par	At Intersection and Related	Overcast	Wet	Daylight	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Sto	North	East	North	Vehicle Sto	Exceeding Reas. Safe S	
City Street	King	Seattle	15TH AVE NW	0	NW MARKET ST		No	E957437	09/05/2019	11:09	No Apparent Injury	0	0	2	0	0	Pickup,Par	Passenger	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	Entering at angle	Going Straight Ahead	Making Left Turn	South	North	East	South	Disregard Stop and Go	
City Street	King	Seattle	15TH AVE NW	5500		74	No	E743353	11/30/2017	08:47	No Apparent Injury	0	0	2	0	0	Passenger	Pickup,Par	Intersection Related but Not at Intersection	Raining	Wet	Daylight	From same direction - both going straight - both moving - sideswipe	Changing Lanes	Going Straight Ahead	West	East	North	South	Did Not Grant RW to V	
City Street	King	Seattle	NW MARKET ST		15TH AVE NW		No	EC35865	04/09/2022	23:32	Suspected Serious Injury	1	0	1	1	0	Passenger Car		At Intersection and Related	Raining	Wet	Dark-Stree	Vehicle going straight hits pedestrian	Going Straight Ahead		East	West			None	
City Street	King	Seattle	NW MARKET ST		15TH AVE NW		No	EB13753	03/12/2021	12:00	No Apparent Injury	0	0	1	0	1	Truck (Flatbad,Van,et		At Intersection and Related	Clear	Dry	Daylight	Pedalcyclist Strikes Moving Vehicle	Making Right Turn		West	South			None	
City Street	King	Seattle	NW MARKET ST	0	15TH AVE NW		No	E798915	05/16/2018	17:02	Suspected Minor Injury	1	0	1	1	0	Passenger Car		At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	Vehicle going straight hits pedestrian	Going Straight Ahead		East	West			None	
City Street	King	Seattle	NW MARKET ST	0	15TH AVE NW		No	E773697	02/23/2018	10:06	No Apparent Injury	0	0	2	0	0	Truck (Flat	Passenger	At Intersection and Related	Overcast	Dry	Daylight	From same direction - both going straight - one stopped - sideswipe	Making Left Turn	Stopped at Signal or Sto	West	North	Vehicle Sto	Vehicle Sto	Inattention	
City Street	King	Seattle	NW MARKET ST	0	15TH AVE NW		No	E668883	05/06/2017	01:53	Possible Injury	1	0	2	0	0	Passenger	Passenger	At Intersection and Related	Raining	Wet	Dark-Stree	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Sto	West	East	Vehicle Sto	Vehicle Sto	Other Contributing Ci	
City Street	King	Seattle	NW MARKET ST	0	15TH AVE NW		No	3753642	11/09/2017	20:20	No Apparent Injury	0	0	2	0	0	Passenger	Passenger	At Intersection and Related	Raining	Wet	Dark-Stree	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	West	South	West	South	Unknown Distraction	
City Street	King	Seattle	NW MARKET ST	0	15TH AVE NW		No	E955547	07/19/2019	01:48	No Apparent Injury	0	0	2	0	0	Pickup,Par	Passenger	At Intersection and Related	Overcast	Wet	Dark-Stree	Entering at angle	Going Straight Ahead	Going Straight Ahead	North	South	East	West	Unknown Distraction	
City Street	King	Seattle	NW MARKET ST	5500	15TH AVE NW		No	3694509	08/03/2017	10:53	No Apparent Injury	0	0	3	0	0	Passenger	Other	At Intersection and Not Related	Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - one stopped - sideswipe	Changing Lanes	Going Straight Ahead	West	East	West	East	Did Not Grant RW to V	
City Street	King	Seattle	NW MARKET ST	5500	15TH AVE NW		No	E695535	07/27/2017	12:59	Possible Injury	1	0	2	0	0	Passenger	Passenger	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Sto	East	West	Vehicle Sto	Vehicle Sto	Follow Too Closely	
City Street	King	Seattle	NW MARKET ST	0	15TH AVE NW		No	E742419	11/25/2017	15:12	No Apparent Injury	0	0	2	0	0	Passenger	Passenger	At Intersection and Not Related	Raining	Wet	Daylight	From same direction - both going straight - both moving - sideswipe	Going Straight Ahead	Going Straight Ahead	East	West	East	West	Other Contributing Ci	
City Street	King	Seattle	NW MARKET ST	0	15TH AVE NW		No	3754263	02/08/2018	17:59	Possible Injury	2	0	2	0	0	Pickup,Par	Pickup,Par	At Intersection and Related	Raining	Wet	Dark-Stree	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Sto	West	East		Vehicle Sto	Under Influence of Alc	
City Street	King	Seattle	NW MARKET ST	0	15TH AVE NW		No	E971858	03/09/2019	23:45	No Apparent Injury	0	0	2	0	0	Passenger	Passenger	At Intersection and Related	Clear or Partly Cloudy	Dry	Dark-Stree	From same direction - both going straight - both moving - rear-end	Going Straight Ahead	Going Straight Ahead	East	West	East	West	Other Contributing Ci	
City Street	King	Seattle	NW MARKET ST	0	15TH AVE NW		No	3751258	06/22/2018	00:26	Dead at Scene	3	1	4	0	0	Pickup,Par	Pickup,Par	At Intersection and Related	Clear or Partly Cloudy	Dry	Dark-Stree	Entering at angle	Going Straight Ahead	Going Straight Ahead	West	South	North	South	Disregard Stop and Go	

APPENDIX E

Level of Service (LOS) Reports

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	288	86	375	226	72	160	816	160	128	1021	53
Future Volume (vph)	113	288	86	375	226	72	160	816	160	128	1021	53
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	5.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.98		1.00	1.00	0.86	1.00	1.00	0.91
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3400	3249		3433	3151		1719	3471	1353	1770	3505	1410
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3249		3433	3151		1719	3471	1353	1770	3505	1410
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	123	313	93	408	246	78	174	887	174	139	1110	58
RTOR Reduction (vph)	0	23	0	0	25	0	0	0	52	0	0	28
Lane Group Flow (vph)	123	383	0	408	299	0	174	887	122	139	1110	30
Confl. Peds. (#/hr)			74			62			72			46
Heavy Vehicles (%)	3%	5%	2%	2%	6%	13%	5%	4%	3%	2%	3%	4%
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	custom
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2 3			6 7
Actuated Green, G (s)	10.1	20.7		19.7	30.3		17.6	46.1	70.8	23.5	52.0	67.1
Effective Green, g (s)	10.1	20.7		19.7	30.3		17.6	46.1	70.8	23.5	52.0	67.1
Actuated g/C Ratio	0.08	0.16		0.15	0.23		0.14	0.35	0.54	0.18	0.40	0.52
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	264	517		520	734		232	1230	736	319	1402	727
v/s Ratio Prot	0.04	c0.12		c0.12	0.10		c0.10	0.26		0.08	c0.32	
v/s Ratio Perm									0.09			0.02
v/c Ratio	0.47	0.74		0.78	0.41		0.75	0.72	0.17	0.44	0.79	0.04
Uniform Delay, d1	57.4	52.1		53.1	42.2		54.1	36.4	14.8	47.4	34.2	15.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	5.7		7.6	0.4		12.8	3.7	0.1	4.3	4.6	0.0
Delay (s)	58.7	57.8		60.7	42.6		66.8	40.1	14.9	51.6	38.9	15.6
Level of Service	E	E		E	D		E	D	B	D	D	B
Approach Delay (s)		58.0			52.7			40.3			39.2	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	44.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	4	60	2	125	3	779	51	166	1483	0
Future Volume (vph)	2	0	4	60	2	125	3	779	51	166	1483	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	16	12	12	12	11	10	12	11	10	12
Grade (%)		-1%			-9%			1%			-2%	
Total Lost time (s)	6.0	6.0			6.0		4.0	5.5	5.5	4.0	5.5	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99			1.00		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85			0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00			0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1814	1280			1742		1736	3133	1452	1762	3272	
Flt Permitted	0.37	1.00			0.89		0.14	1.00	1.00	0.31	1.00	
Satd. Flow (perm)	699	1280			1576		258	3133	1452	581	3272	
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)	2	0	4	62	2	130	3	811	53	173	1545	0
RTOR Reduction (vph)	0	4	0	0	50	0	0	0	14	0	0	0
Lane Group Flow (vph)	2	0	0	0	145	0	3	811	39	173	1545	0
Confl. Peds. (#/hr)			1	1					1			1
Heavy Vehicles (%)	0%	0%	25%	2%	0%	2%	0%	7%	8%	0%	4%	3%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	17.0	17.0			17.0		111.8	110.8	110.8	121.5	116.5	
Effective Green, g (s)	17.0	17.0			17.0		111.8	110.8	110.8	121.5	116.5	
Actuated g/C Ratio	0.11	0.11			0.11		0.75	0.74	0.74	0.81	0.78	
Clearance Time (s)	6.0	6.0			6.0		4.0	5.5	5.5	4.0	5.5	
Vehicle Extension (s)	2.0	2.0			2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	79	145			178		202	2314	1072	523	2541	
v/s Ratio Prot		0.00					0.00	0.26		c0.01	c0.47	
v/s Ratio Perm	0.00				c0.09		0.01		0.03	0.25		
v/c Ratio	0.03	0.00			0.82		0.01	0.35	0.04	0.33	0.61	
Uniform Delay, d1	59.1	59.0			65.0		5.8	6.9	5.3	3.5	7.1	
Progression Factor	1.00	1.00			1.00		1.00	0.97	0.96	1.00	1.00	
Incremental Delay, d2	0.0	0.0			23.1		0.0	0.4	0.1	0.1	1.1	
Delay (s)	59.2	59.0			88.1		5.8	7.1	5.1	3.7	8.2	
Level of Service	E	E			F		A	A	A	A	A	
Approach Delay (s)		59.1			88.1			7.0			7.7	
Approach LOS		E			F			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology supports speed limit in the range of 25 to 55 mph.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	2	561	1	0	1	56	707	1	3	1326	112
Future Volume (vph)	67	2	561	1	0	1	56	707	1	3	1326	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	12	12	11	10	12	11	10	12
Grade (%)		-7%			0%			-1%			0%	
Total Lost time (s)		4.5	4.0		4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.99		0.99		1.00	1.00	0.94	1.00	1.00	0.92
Flpb, ped/bikes		0.99	1.00		1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt		1.00	0.85		0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.95	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1684	1617		1707		1609	3165	1521	1721	3240	1387
Flt Permitted		0.73	1.00		0.91		0.17	1.00	1.00	0.35	1.00	1.00
Satd. Flow (perm)		1291	1617		1600		282	3165	1521	642	3240	1387
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	73	2	610	1	0	1	61	768	1	3	1441	122
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	18
Lane Group Flow (vph)	0	75	610	0	0	0	61	768	1	3	1441	104
Confl. Peds. (#/hr)	5		2	2		5	10		7	7		10
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	3%	0%	2%	0%	0%	0%	9%	7%	0%	0%	4%	7%
Turn Type	Perm	NA	Free	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4		Free	4			2		2	2		2
Actuated Green, G (s)		13.9	150.0		13.9		127.1	127.1	127.1	127.1	127.1	127.1
Effective Green, g (s)		13.9	150.0		13.9		127.1	127.1	127.1	127.1	127.1	127.1
Actuated g/C Ratio		0.09	1.00		0.09		0.85	0.85	0.85	0.85	0.85	0.85
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)		2.0			2.0		2.5	2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)		119	1617		148		238	2681	1288	543	2745	1175
v/s Ratio Prot								0.24			c0.44	
v/s Ratio Perm		c0.06	0.38		0.00		0.22		0.00	0.00		0.07
v/c Ratio		0.63	0.38		0.00		0.26	0.29	0.00	0.01	0.52	0.09
Uniform Delay, d1		65.6	0.0		61.8		2.2	2.3	1.7	1.8	3.1	1.9
Progression Factor		1.00	1.00		1.00		0.18	0.02	1.00	1.00	1.00	1.00
Incremental Delay, d2		7.7	0.7		0.0		2.5	0.3	0.0	0.0	0.7	0.1
Delay (s)		73.3	0.7		61.8		2.9	0.3	1.7	1.8	3.9	2.0
Level of Service		E	A		E		A	A	A	A	A	A
Approach Delay (s)		8.6			61.8			0.5			3.7	
Approach LOS		A			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	5	10	3	0	2	16	780	3	4	1873	10
Future Volume (vph)	8	5	10	3	0	2	16	780	3	4	1873	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	11	12	12
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.91	
Frpb, ped/bikes		0.98			0.99		1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00			0.98		1.00	1.00	1.00	1.00	1.00	
Frt		0.94			0.95		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98			0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1644			1704		1597	3406	1551	1396	5080	
Flt Permitted		0.88			0.83		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1472			1459		1597	3406	1551	1396	5080	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	9	5	11	3	0	2	17	830	3	4	1993	11
RTOR Reduction (vph)	0	10	0	0	5	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	15	0	0	0	0	17	830	3	4	2004	0
Confl. Peds. (#/hr)	5		14	14		5			7			12
Confl. Bikes (#/hr)			1									5
Heavy Vehicles (%)	0%	0%	10%	0%	0%	0%	13%	6%	0%	25%	2%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			
Actuated Green, G (s)		7.0			7.0		3.6	128.4	128.4	1.1	125.9	
Effective Green, g (s)		7.0			7.0		3.6	128.4	128.4	1.1	125.9	
Actuated g/C Ratio		0.05			0.05		0.02	0.86	0.86	0.01	0.84	
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)		1.0			1.0		3.0	3.0	3.0	3.0	0.2	
Lane Grp Cap (vph)		68			68		38	2915	1327	10	4263	
v/s Ratio Prot							c0.01	0.24		0.00	c0.39	
v/s Ratio Perm		c0.01			0.00				0.00			
v/c Ratio		0.21			0.00		0.45	0.28	0.00	0.40	0.47	
Uniform Delay, d1		68.8			68.2		72.2	2.1	1.6	74.1	3.2	
Progression Factor		1.00			1.00		1.19	0.06	1.00	1.02	0.54	
Incremental Delay, d2		0.6			0.0		7.6	0.2	0.0	21.8	0.3	
Delay (s)		69.4			68.2		93.5	0.4	1.6	97.6	2.1	
Level of Service		E			E		F	A	A	F	A	
Approach Delay (s)		69.4			68.2			2.2			2.3	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	2.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	54.0%	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)	8	5	10	3	0	2	16	780	3	4	1873	10
Future Volume (veh/h)	8	5	10	3	0	2	16	780	3	4	1873	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.94	0.96		0.95	1.00		1.00	1.00		0.97
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	1752	1900	1900	1900	1707	1811	1900	1530	1870	1900
Adj Flow Rate, veh/h	9	5	11	3	0	2	17	830	3	4	1993	11
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	10	0	0	0	13	6	0	25	2	0
Cap, veh/h	67	40	58	104	9	50	196	2452	1142	164	3692	20
Arrive On Green	0.08	0.08	0.08	0.08	0.00	0.08	0.12	0.71	0.71	0.22	1.00	1.00
Sat Flow, veh/h	402	474	689	776	109	590	1626	3441	1602	1457	5239	29
Grp Volume(v), veh/h	25	0	0	5	0	0	17	830	3	4	1295	709
Grp Sat Flow(s),veh/h/ln	1565	0	0	1474	0	0	1626	1721	1602	1457	1702	1864
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	1.4	13.7	0.1	0.3	0.0	0.0
Cycle Q Clear(g_c), s	2.0	0.0	0.0	0.4	0.0	0.0	1.4	13.7	0.1	0.3	0.0	0.0
Prop In Lane	0.36		0.44	0.60		0.40	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	165	0	0	164	0	0	196	2452	1142	164	2399	1314
V/C Ratio(X)	0.15	0.00	0.00	0.03	0.00	0.00	0.09	0.34	0.00	0.02	0.54	0.54
Avail Cap(c_a), veh/h	280	0	0	271	0	0	196	2452	1142	164	2399	1314
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.91	0.91	0.91	0.87	0.87	0.87
Uniform Delay (d), s/veh	63.7	0.0	0.0	63.0	0.0	0.0	58.6	8.2	6.2	51.7	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.0	0.1	0.8	1.4
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	0.9	0.0	0.0	0.2	0.0	0.0	0.6	5.1	0.0	0.1	0.3	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.9	0.0	0.0	63.0	0.0	0.0	58.8	8.5	6.2	51.8	0.8	1.4
LnGrp LOS	E	A	A	E	A	A	E	A	A	D	A	A
Approach Vol, veh/h		25			5			850			2008	
Approach Delay, s/veh		63.9			63.0			9.5			1.1	
Approach LOS		E			E			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	21.4	111.4		17.2	22.6	110.2		17.2				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	106.9		24.1	6.7	105.7		24.1				
Max Q Clear Time (g_c+I1), s	2.3	15.7		4.0	3.4	2.0		2.4				
Green Ext Time (p_c), s	0.0	4.7		0.0	0.0	0.8		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			4.2									
HCM 6th LOS			A									

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	59	29	782	411	68	1816
Future Volume (vph)	59	29	782	411	68	1816
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	16	10	13	9	10
Grade (%)	-2%		0%			0%
Total Lost time (s)	5.0	5.0	5.5	5.0	5.0	5.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	2970	1696	3120	1568	1533	4700
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	2970	1696	3120	1568	1533	4700
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	65	32	859	452	75	1996
RTOR Reduction (vph)	0	29	0	82	0	0
Lane Group Flow (vph)	65	3	859	370	75	1996
Confl. Peds. (#/hr)		2		3		
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	27%	7%	8%	6%	6%	3%
Turn Type	Prot	Perm	NA	custom	Prot	NA
Protected Phases	4		1	4 7	2	1 2
Permitted Phases		4		2		
Actuated Green, G (s)	12.7	12.7	94.9	122.7	26.9	127.3
Effective Green, g (s)	12.7	12.7	94.9	122.7	26.9	127.3
Actuated g/C Ratio	0.08	0.08	0.63	0.82	0.18	0.85
Clearance Time (s)	5.0	5.0	5.5		5.0	
Vehicle Extension (s)	3.0	3.0	2.5		3.0	
Lane Grp Cap (vph)	251	143	1973	1334	274	3988
v/s Ratio Prot	0.02		0.28	c0.18	0.05	c0.42
v/s Ratio Perm		0.00		0.06		
v/c Ratio	0.26	0.02	0.44	0.28	0.27	0.50
Uniform Delay, d1	64.2	62.9	14.0	3.2	53.1	3.0
Progression Factor	1.00	1.00	1.00	1.00	0.90	0.24
Incremental Delay, d2	0.6	0.1	0.7	0.1	0.5	0.1
Delay (s)	64.8	63.0	14.7	3.3	48.5	0.8
Level of Service	E	E	B	A	D	A
Approach Delay (s)	64.2		10.8			2.5
Approach LOS	E		B			A

Intersection Summary			
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support exclusive ped or hold phases.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	39	1	0	1	41	1181	2	1	1850	2
Future Volume (vph)	5	0	39	1	0	1	41	1181	2	1	1850	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0		3.0		3.0	3.0	4.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00		0.98		0.97		1.00	1.00	0.96	1.00	1.00	0.87
Flpb, ped/bikes	0.96		1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00		0.85		0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1729		1051		1119		1236	3406	1031	1805	3505	1405
Flt Permitted	0.76		1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1377		1051		1119		1236	3406	1031	1805	3505	1405
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)	5	0	41	1	0	1	43	1230	2	1	1927	2
RTOR Reduction (vph)	0	0	39	0	2	0	0	0	0	0	0	0
Lane Group Flow (vph)	5	0	2	0	0	0	43	1230	2	1	1927	2
Confl. Peds. (#/hr)	30		4	4		30			8			40
Heavy Vehicles (%)	0%	0%	51%	0%	0%	100%	46%	6%	50%	0%	3%	0%
Turn Type	D.Pm		Perm	Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases					4		5	2		1	6	
Permitted Phases	4		4	4					2			6
Actuated Green, G (s)	5.7		5.7		5.7		9.1	119.6	119.6	1.2	111.7	111.7
Effective Green, g (s)	7.2		7.2		7.2		10.6	121.1	120.1	2.7	113.2	113.2
Actuated g/C Ratio	0.05		0.05		0.05		0.08	0.86	0.86	0.02	0.81	0.81
Clearance Time (s)	4.5		4.5		4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0		3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	70		54		57		93	2946	884	34	2834	1136
v/s Ratio Prot							c0.03	0.36		0.00	c0.55	
v/s Ratio Perm	c0.00		0.00		0.00				0.00			0.00
v/c Ratio	0.07		0.04		0.00		0.46	0.42	0.00	0.03	0.68	0.00
Uniform Delay, d1	63.2		63.1		63.0		62.0	2.0	1.4	67.4	5.7	2.6
Progression Factor	1.00		1.00		1.00		1.22	0.45	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4		0.3		0.0		3.3	0.4	0.0	0.4	1.3	0.0
Delay (s)	63.7		63.4		63.0		78.9	1.3	1.4	67.7	7.0	2.6
Level of Service	E		E		E		E	A	A	E	A	A
Approach Delay (s)		63.4			63.0			3.9			7.1	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	3	0	0	381	16	832	22	258	1571	7
Future Volume (vph)	2	0	3	0	0	381	16	832	22	258	1571	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.0				3.5	4.0	3.0	3.0	2.0	2.0	2.0
Lane Util. Factor	0.95	0.95				1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.96				0.99	1.00	1.00	0.95	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85				0.86	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1715	1467				1476	1805	3343	1540	3127	3505	1535
Flt Permitted	0.95	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1715	1467				1476	1805	3343	1540	3127	3505	1535
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	2	0	3	0	0	405	17	885	23	274	1671	7
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	11	0	0	2
Lane Group Flow (vph)	2	0	0	0	0	405	17	885	12	274	1671	5
Confl. Peds. (#/hr)			6						5			10
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	10%	0%	8%	0%	12%	3%	0%
Turn Type	Split	NA				Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	3					5	2		1 4	6	
Permitted Phases						1 2 3 4			2			6
Actuated Green, G (s)	7.2	7.2				140.0	2.2	68.8	68.8	51.5	97.3	97.3
Effective Green, g (s)	7.2	7.7				131.0	3.7	70.3	70.3	53.0	98.8	98.8
Actuated g/C Ratio	0.05	0.06				0.94	0.03	0.50	0.50	0.38	0.71	0.71
Clearance Time (s)	4.5	4.5					5.5	4.5	4.5		3.5	3.5
Vehicle Extension (s)	3.0	3.0					0.2	0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	88	80				1381	47	1678	773	1183	2473	1083
v/s Ratio Prot	0.00	0.00					0.01	0.26		0.09	c0.48	
v/s Ratio Perm						c0.27			0.01			0.00
v/c Ratio	0.02	0.00				0.29	0.36	0.53	0.01	0.23	0.68	0.00
Uniform Delay, d1	63.1	62.5				0.4	67.0	23.6	17.5	29.6	11.6	6.1
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.00	1.14	0.82	1.00
Incremental Delay, d2	0.1	0.0				0.1	1.7	1.2	0.0	0.1	1.1	0.0
Delay (s)	63.2	62.5				0.5	68.7	24.8	17.5	33.8	10.6	6.1
Level of Service	E	E				A	E	C	B	C	B	A
Approach Delay (s)		62.8			0.5			25.4			13.8	
Approach LOS		E			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology expects strict NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	456	37	83	441	79	0	0	0	103	234	50
Future Volume (vph)	39	456	37	83	441	79	0	0	0	103	234	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5					4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95					1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.97					1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00					0.95	1.00	
Frt	1.00	0.99		1.00	0.98					1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)	1641	3230		1671	3165					1621	1689	
Flt Permitted	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)	1641	3230		1671	3165					1621	1689	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	40	465	38	85	450	81	0	0	0	105	239	51
RTOR Reduction (vph)	0	6	0	0	13	0	0	0	0	0	11	0
Lane Group Flow (vph)	40	497	0	85	518	0	0	0	0	105	279	0
Confl. Peds. (#/hr)			68			65				40		80
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	10%	7%	41%	8%	9%	5%	0%	0%	0%	6%	9%	0%
Turn Type	Prot	NA		Prot	NA					Perm	NA	
Protected Phases	1	6		5	2						4	
Permitted Phases										4		
Actuated Green, G (s)	5.1	40.2		8.2	43.3					18.1	18.1	
Effective Green, g (s)	5.1	40.2		8.2	43.3					18.1	18.1	
Actuated g/C Ratio	0.06	0.50		0.10	0.54					0.23	0.23	
Clearance Time (s)	4.5	4.5		4.5	4.5					4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)	104	1623		171	1713					366	382	
v/s Ratio Prot	0.02	0.15		c0.05	c0.16						c0.17	
v/s Ratio Perm										0.06		
v/c Ratio	0.38	0.31		0.50	0.30					0.29	0.73	
Uniform Delay, d1	35.9	11.7		34.0	10.1					25.6	28.7	
Progression Factor	1.00	1.00		0.89	0.96					1.00	1.00	
Incremental Delay, d2	2.4	0.5		2.2	0.4					0.4	7.0	
Delay (s)	38.3	12.2		32.4	10.2					26.0	35.7	
Level of Service	D	B		C	B					C	D	
Approach Delay (s)		14.1			13.2			0.0			33.2	
Approach LOS		B			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	47.5%	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)	39	456	37	83	441	79	0	0	0	103	234	50
Future Volume (veh/h)	39	456	37	83	441	79	0	0	0	103	234	50
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.97				1.00		0.88
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1752	1796	1292	1781	1767	1826				1811	1767	1900
Adj Flow Rate, veh/h	40	465	38	85	450	81				105	239	51
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	10	7	41	8	9	5				6	9	0
Cap, veh/h	61	1702	138	108	1592	284				399	318	68
Arrive On Green	0.04	0.54	0.54	0.09	0.75	0.75				0.23	0.23	0.23
Sat Flow, veh/h	1668	3177	258	1697	2828	505				1725	1375	293
Grp Volume(v), veh/h	40	249	254	85	266	265				105	0	290
Grp Sat Flow(s),veh/h/ln	1668	1706	1729	1697	1678	1654				1725	0	1668
Q Serve(g_s), s	1.9	6.3	6.4	3.9	4.0	4.1				4.0	0.0	12.9
Cycle Q Clear(g_c), s	1.9	6.3	6.4	3.9	4.0	4.1				4.0	0.0	12.9
Prop In Lane	1.00		0.15	1.00		0.31				1.00		0.18
Lane Grp Cap(c), veh/h	61	914	926	108	945	931				399	0	386
V/C Ratio(X)	0.65	0.27	0.27	0.78	0.28	0.28				0.26	0.00	0.75
Avail Cap(c_a), veh/h	282	914	926	286	945	931				507	0	490
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33				1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.98	0.98	0.98				1.00	0.00	1.00
Uniform Delay (d), s/veh	38.0	10.1	10.1	36.1	4.9	4.9				25.2	0.0	28.6
Incr Delay (d2), s/veh	11.1	0.7	0.7	11.4	0.7	0.8				0.3	0.0	4.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.4	2.5	1.9	1.4	1.4				1.6	0.0	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.1	10.8	10.8	47.5	5.6	5.7				25.5	0.0	33.4
LnGrp LOS	D	B	B	D	A	A				C	A	C
Approach Vol, veh/h		543			616						395	
Approach Delay, s/veh		13.6			11.4						31.3	
Approach LOS		B			B						C	

Timer - Assigned Phs	1	2		4	5	6
Phs Duration (G+Y+Rc), s	7.4	49.5		23.0	9.6	47.4
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s	13.5	29.5		23.5	13.5	29.5
Max Q Clear Time (g_c+I1), s	3.9	6.1		14.9	5.9	8.4
Green Ext Time (p_c), s	0.0	3.6		1.4	0.1	3.2

Intersection Summary	
HCM 6th Ctrl Delay	17.3
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	563	0	0	543	19	57	53	90	0	0	0
Future Volume (vph)	0	563	0	0	543	19	57	53	90	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5			
Lane Util. Factor		0.95			0.95		1.00	1.00	1.00			
Frpb, ped/bikes		1.00			1.00		1.00	1.00	0.94			
Flpb, ped/bikes		1.00			1.00		1.00	1.00	1.00			
Frt		1.00			0.99		1.00	1.00	0.85			
Flt Protected		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (prot)		3438			3339		1318	1681	1493			
Flt Permitted		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (perm)		3438			3339		1318	1681	1493			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	580	0	0	560	20	59	55	93	0	0	0
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	79	0	0	0
Lane Group Flow (vph)	0	580	0	0	579	0	59	55	14	0	0	0
Confl. Peds. (#/hr)			51			75			42			
Confl. Bikes (#/hr)			1			3						
Heavy Vehicles (%)	0%	5%	0%	0%	7%	11%	37%	13%	2%	0%	0%	0%
Turn Type		NA			NA		custom	NA	Perm			
Protected Phases		2			2		3	8				
Permitted Phases							4		8			
Actuated Green, G (s)		58.6			58.6		7.9	12.4	12.4			
Effective Green, g (s)		58.6			58.6		7.9	12.4	12.4			
Actuated g/C Ratio		0.73			0.73		0.10	0.16	0.16			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)		2518			2445		204	260	231			
v/s Ratio Prot		0.17			c0.17		c0.02	0.03				
v/s Ratio Perm							0.02		0.01			
v/c Ratio		0.23			0.24		0.29	0.21	0.06			
Uniform Delay, d1		3.4			3.5		34.1	29.5	28.8			
Progression Factor		0.75			1.00		1.00	1.00	1.00			
Incremental Delay, d2		0.2			0.2		0.8	0.4	0.1			
Delay (s)		2.8			3.7		34.8	29.9	29.0			
Level of Service		A			A		C	C	C			
Approach Delay (s)		2.8			3.7			30.9			0.0	
Approach LOS		A			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	80	185	26	2	0	63
Future Volume (vph)	80	185	26	2	0	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5		3.5	3.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.86	
Flt Protected	0.95	1.00		0.96	1.00	
Satd. Flow (prot)	1556	1570		1765	1284	
Flt Permitted	0.95	1.00		0.96	1.00	
Satd. Flow (perm)	1556	1570		1765	1284	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	93	215	30	2	0	73
RTOR Reduction (vph)	0	0	0	0	53	0
Lane Group Flow (vph)	93	215	0	32	20	0
Confl. Peds. (#/hr)						2
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	16%	2%	3%	0%	0%	25%
Turn Type	Prot	custom	custom	NA	NA	
Protected Phases	4	4	2	2	6	
Permitted Phases		2 6	2			
Actuated Green, G (s)	16.5	53.0		16.5	16.5	
Effective Green, g (s)	16.5	53.0		16.5	16.5	
Actuated g/C Ratio	0.28	0.88		0.28	0.28	
Clearance Time (s)	3.5	3.5		3.5	3.5	
Lane Grp Cap (vph)	427	1570		485	353	
v/s Ratio Prot	c0.06	c0.04		0.02	0.02	
v/s Ratio Perm		0.10				
v/c Ratio	0.22	0.14		0.07	0.06	
Uniform Delay, d1	16.8	0.5		16.1	16.0	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	0.2		0.3	0.3	
Delay (s)	17.9	0.6		16.3	16.3	
Level of Service	B	A		B	B	
Approach Delay (s)	5.9			16.3	16.3	
Approach LOS	A			B	B	

Intersection Summary			
HCM 2000 Control Delay	8.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	31.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support custom phasing.

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	24	3	23	33	26	0	10	17	22	7	2
Future Vol, veh/h	5	24	3	23	33	26	0	10	17	22	7	2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	40	25	0	5	10	25	0	0	6	27	14	0
Mvmt Flow	6	28	3	26	38	30	0	11	20	25	8	2
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	8.2	7.8	7	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	16%	41%	0%	71%
Vol Thru, %	37%	75%	59%	0%	23%
Vol Right, %	63%	9%	0%	100%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	27	32	56	26	31
LT Vol	0	5	23	0	22
Through Vol	10	24	33	0	7
RT Vol	17	3	0	26	2
Lane Flow Rate	31	37	64	30	36
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.034	0.049	0.088	0.034	0.048
Departure Headway (Hd)	3.886	4.844	4.928	4.106	4.815
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	927	732	723	866	748
Service Time	1.886	2.92	2.681	1.859	2.816
HCM Lane V/C Ratio	0.033	0.051	0.089	0.035	0.048
HCM Control Delay	7	8.2	8.2	7	8.1
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0.2	0.3	0.1	0.2

Intersection	
Int Delay, s/veh	7.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	52	0	0	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	52	0	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	6	6	0	0	8	0	10	10	0	8
Sign Control	Yield	Yield	Yield	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	56	0	0	0	0	0	0	0	0

Major/Minor	Major2			Minor2		
Conflicting Flow All	6	0	0	-	118	8
Stage 1	-	-	-	-	112	-
Stage 2	-	-	-	-	6	-
Critical Hdwy	4.1	-	-	-	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	-	4	3.3
Pot Cap-1 Maneuver	1628	-	-	0	776	1080
Stage 1	-	-	-	0	807	-
Stage 2	-	-	-	0	-	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1628	-	-	-	0	1080
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

Approach	WB	SB
HCM Control Delay, s	7.3	0
HCM LOS		A

Minor Lane/Major Mvmt	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1628	-	-	-
HCM Lane V/C Ratio	0.034	-	-	-
HCM Control Delay (s)	7.3	0	-	0
HCM Lane LOS	A	A	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	387	97	336	371	129	221	1150	146	153	830	69
Future Volume (vph)	224	387	97	336	371	129	221	1150	146	153	830	69
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	5.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.95		1.00	0.94		1.00	1.00	0.78	1.00	1.00	0.85
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	3258		3467	3207		1787	3574	1257	1752	3505	1369
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	3258		3467	3207		1787	3574	1257	1752	3505	1369
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)	233	403	101	350	386	134	230	1198	152	159	865	72
RTOR Reduction (vph)	0	17	0	0	25	0	0	0	28	0	0	34
Lane Group Flow (vph)	233	487	0	350	495	0	230	1198	124	159	865	38
Confl. Peds. (#/hr)			141			139			112			75
Heavy Vehicles (%)	0%	3%	0%	1%	2%	1%	1%	1%	0%	3%	3%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	custom
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2 3			6 7
Actuated Green, G (s)	14.3	26.7		16.6	29.0		21.8	55.0	76.6	21.7	54.9	74.2
Effective Green, g (s)	14.3	26.7		16.6	29.0		21.8	55.0	76.6	21.7	54.9	74.2
Actuated g/C Ratio	0.10	0.19		0.12	0.21		0.16	0.39	0.55	0.15	0.39	0.53
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	357	621		411	664		278	1404	687	271	1374	725
v/s Ratio Prot	0.07	0.15		c0.10	c0.15		c0.13	c0.34		0.09	0.25	
v/s Ratio Perm									0.10			0.03
v/c Ratio	0.65	0.78		0.85	0.74		0.83	0.85	0.18	0.59	0.63	0.05
Uniform Delay, d1	60.5	53.9		60.5	52.0		57.3	38.8	15.9	55.0	34.3	15.9
Progression Factor	1.00	1.00		1.00	1.00		1.12	0.82	0.59	1.00	1.00	1.00
Incremental Delay, d2	4.2	6.4		15.5	4.5		16.1	6.0	0.1	9.0	2.2	0.0
Delay (s)	64.7	60.4		76.0	56.6		80.5	37.8	9.5	64.0	36.5	15.9
Level of Service	E	E		E	E		F	D	A	E	D	B
Approach Delay (s)		61.7			64.4			41.3			39.2	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	48.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	88.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	4	14	72	8	179	16	1559	113	212	1162	7
Future Volume (vph)	32	4	14	72	8	179	16	1559	113	212	1162	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	10	12	11	10	12
Grade (%)		-1%			-9%			1%			-2%	
Total Lost time (s)	6.0	6.0			6.0		4.0	5.5	5.5	4.0	5.5	5.5
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.88			0.91		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00			0.99		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1633	1499			1583		1562	2987	1446	1570	2974	1468
Flt Permitted	0.32	1.00			0.90		0.23	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	556	1499			1444		378	2987	1446	149	2974	1468
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	33	4	14	74	8	185	16	1607	116	219	1198	7
RTOR Reduction (vph)	0	12	0	0	58	0	0	0	18	0	0	2
Lane Group Flow (vph)	33	6	0	0	209	0	16	1607	98	219	1198	5
Confl. Peds. (#/hr)			2	2								
Heavy Vehicles (%)	0%	0%	0%	3%	0%	0%	0%	1%	0%	1%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	21.0	21.0			21.0		96.0	94.5	94.5	101.5	101.5	101.5
Effective Green, g (s)	21.0	21.0			21.0		96.0	94.5	94.5	101.5	101.5	101.5
Actuated g/C Ratio	0.15	0.15			0.15		0.69	0.68	0.68	0.72	0.72	0.72
Clearance Time (s)	6.0	6.0			6.0		4.0	5.5	5.5	4.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0			2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	83	224			216		276	2016	976	199	2156	1064
v/s Ratio Prot		0.00					0.00	c0.54		c0.07	0.40	
v/s Ratio Perm	0.06				c0.14		0.04		0.07	c0.73		0.00
v/c Ratio	0.40	0.03			0.97		0.06	0.80	0.10	1.10	0.56	0.00
Uniform Delay, d1	53.8	50.8			59.2		8.0	16.0	7.9	30.9	8.9	5.3
Progression Factor	1.00	1.00			1.00		0.79	0.65	0.67	1.39	1.05	1.00
Incremental Delay, d2	1.1	0.0			53.6		0.0	2.5	0.1	91.8	1.0	0.0
Delay (s)	54.9	50.8			112.8		6.3	12.8	5.4	134.9	10.3	5.3
Level of Service	D	D			F		A	B	A	F	B	A
Approach Delay (s)		53.5			112.8			12.2			29.5	
Approach LOS		D			F			B			C	

Intersection Summary			
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	97.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology supports speed limit in the range of 25 to 55 mph.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	154	5	400	6	7	4	59	1461	0	1	1138	196
Future Volume (vph)	154	5	400	6	7	4	59	1461	0	1	1138	196
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	12	12	11	10	12	11	10	12
Grade (%)		-7%			0%			-1%			0%	
Total Lost time (s)		4.5	4.0		4.5		4.5	4.5		4.5	4.5	4.5
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.99		1.00		1.00	1.00		1.00	1.00	0.89
Flpb, ped/bikes		1.00	1.00		1.00		0.99	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.97		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1747	1600		1799		1705	3320		1745	3240	1444
Flt Permitted		0.72	1.00		0.91		0.21	1.00		0.14	1.00	1.00
Satd. Flow (perm)		1320	1600		1662		376	3320		249	3240	1444
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	162	5	421	6	7	4	62	1538	0	1	1198	206
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	45
Lane Group Flow (vph)	0	167	421	0	14	0	62	1538	0	1	1198	161
Confl. Peds. (#/hr)	1		4	4		1	15		9	9		15
Confl. Bikes (#/hr)			4									
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	2%	2%	0%	0%	4%	0%
Turn Type	Perm	NA	Free	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4		Free	4			2		2	2		2
Actuated Green, G (s)		21.6	140.0		21.6		109.4	109.4		109.4	109.4	109.4
Effective Green, g (s)		21.6	140.0		21.6		109.4	109.4		109.4	109.4	109.4
Actuated g/C Ratio		0.15	1.00		0.15		0.78	0.78		0.78	0.78	0.78
Clearance Time (s)		4.5			4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)		2.0			2.0		2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)		203	1600		256		293	2594		194	2531	1128
v/s Ratio Prot								c0.46			0.37	
v/s Ratio Perm		c0.13	0.26		0.01		0.16			0.00		0.11
v/c Ratio		0.82	0.26		0.05		0.21	0.59		0.01	0.47	0.14
Uniform Delay, d1		57.3	0.0		50.5		4.0	6.2		3.4	5.3	3.8
Progression Factor		1.00	1.00		1.00		0.06	0.04		1.00	1.00	1.00
Incremental Delay, d2		21.8	0.4		0.0		1.4	0.9		0.0	0.6	0.3
Delay (s)		79.2	0.4		50.5		1.7	1.1		3.4	5.9	4.0
Level of Service		E	A		D		A	A		A	A	A
Approach Delay (s)		22.8			50.5			1.2			5.7	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	0	17	8	0	5	17	1505	2	1	1531	6
Future Volume (vph)	16	0	17	8	0	5	17	1505	2	1	1531	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	11	12	12
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.91	
Frpb, ped/bikes		0.99			0.99		1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		0.99			0.99		1.00	1.00	1.00	1.00	1.00	
Frt		0.93			0.95		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98			0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1697			1722		1687	3539	1549	1745	4985	
Flt Permitted		0.88			0.87		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1525			1543		1687	3539	1549	1745	4985	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	16	0	17	8	0	5	17	1536	2	1	1562	6
RTOR Reduction (vph)	0	29	0	0	12	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	4	0	0	1	0	17	1536	2	1	1568	0
Confl. Peds. (#/hr)	7		5	5		7			8			8
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	7%	2%	0%	0%	4%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			
Actuated Green, G (s)		15.4			15.4		2.2	110.0	110.0	1.1	108.9	
Effective Green, g (s)		15.4			15.4		2.2	110.0	110.0	1.1	108.9	
Actuated g/C Ratio		0.11			0.11		0.02	0.79	0.79	0.01	0.78	
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)		1.0			1.0		3.0	3.0	3.0	3.0	0.2	
Lane Grp Cap (vph)		167			169		26	2780	1217	13	3877	
v/s Ratio Prot							0.01	c0.43		0.00	c0.31	
v/s Ratio Perm		c0.00			0.00				0.00			
v/c Ratio		0.02			0.01		0.65	0.55	0.00	0.08	0.40	
Uniform Delay, d1		55.6			55.5		68.5	5.7	3.2	68.9	5.0	
Progression Factor		1.00			1.00		1.36	0.05	1.00	1.14	0.73	
Incremental Delay, d2		0.0			0.0		32.6	0.5	0.0	2.3	0.3	
Delay (s)		55.6			55.5		125.7	0.8	3.2	81.2	4.0	
Level of Service		E			E		F	A	A	F	A	
Approach Delay (s)		55.6			55.5			2.1			4.0	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	3.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
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)	16	0	17	8	0	5	17	1505	2	1	1531	6
Future Volume (veh/h)	16	0	17	8	0	5	17	1505	2	1	1531	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.97	0.97		0.97	1.00		0.99	1.00		0.97
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	1796	1870	1900	1900	1841	1900
Adj Flow Rate, veh/h	16	0	17	8	0	5	17	1536	2	1	1562	6
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0	7	2	0	0	4	0
Cap, veh/h	74	12	50	93	9	38	30	2462	1109	265	4248	16
Arrive On Green	0.06	0.00	0.06	0.06	0.00	0.06	0.02	0.69	0.69	0.29	1.00	1.00
Sat Flow, veh/h	553	186	785	802	148	594	1711	3554	1601	1810	5167	20
Grp Volume(v), veh/h	33	0	0	13	0	0	17	1536	2	1	1013	555
Grp Sat Flow(s),veh/h/ln	1524	0	0	1545	0	0	1711	1777	1601	1810	1675	1837
Q Serve(g_s), s	0.7	0.0	0.0	0.0	0.0	0.0	1.4	32.7	0.1	0.1	0.0	0.0
Cycle Q Clear(g_c), s	2.7	0.0	0.0	1.0	0.0	0.0	1.4	32.7	0.1	0.1	0.0	0.0
Prop In Lane	0.48		0.52	0.62		0.38	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	136	0	0	141	0	0	30	2462	1109	265	2754	1510
V/C Ratio(X)	0.24	0.00	0.00	0.09	0.00	0.00	0.58	0.62	0.00	0.00	0.37	0.37
Avail Cap(c_a), veh/h	294	0	0	295	0	0	67	2462	1109	265	2754	1510
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.59	0.59	0.59	0.91	0.91	0.91
Uniform Delay (d), s/veh	62.5	0.0	0.0	61.8	0.0	0.0	68.3	11.6	6.6	42.2	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.1	0.0	0.0	10.0	0.7	0.0	0.0	0.3	0.6
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	1.1	0.0	0.0	0.4	0.0	0.0	0.7	12.5	0.0	0.0	0.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.9	0.0	0.0	61.9	0.0	0.0	78.3	12.3	6.6	42.2	0.3	0.6
LnGrp LOS	E	A	A	E	A	A	E	B	A	D	A	A
Approach Vol, veh/h		33			13			1555			1569	
Approach Delay, s/veh		62.9			61.9			13.1			0.5	
Approach LOS		E			E			B			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	25.0	101.5		13.5	6.9	119.6		13.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	97.0		24.0	5.5	97.0		24.0				
Max Q Clear Time (g_c+I1), s	2.1	34.7		4.7	3.4	2.0		3.0				
Green Ext Time (p_c), s	0.0	12.0		0.0	0.0	0.6		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			7.5									
HCM 6th LOS			A									

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	167	108	1423	517	35	1520
Future Volume (vph)	167	108	1423	517	35	1520
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	16	10	13	9	10
Grade (%)	-2%		0%			0%
Total Lost time (s)	5.0	5.0	5.5	5.0	5.0	5.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frpb, ped/bikes	1.00	0.98	1.00	0.99	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3699	1727	3303	1612	1533	4700
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3699	1727	3303	1612	1533	4700
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	174	112	1482	539	36	1583
RTOR Reduction (vph)	0	98	0	72	0	0
Lane Group Flow (vph)	174	15	1482	467	36	1583
Confl. Peds. (#/hr)		4		7		
Heavy Vehicles (%)	2%	5%	2%	3%	6%	3%
Turn Type	Prot	Perm	NA	custom	Prot	NA
Protected Phases	4		1	4 7	2	1 2
Permitted Phases		4		2		
Actuated Green, G (s)	18.7	18.7	81.3	116.4	24.5	111.3
Effective Green, g (s)	18.7	18.7	81.3	116.4	24.5	111.3
Actuated g/C Ratio	0.13	0.13	0.58	0.83	0.18	0.79
Clearance Time (s)	5.0	5.0	5.5		5.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	494	230	1918	1397	268	3736
v/s Ratio Prot	0.05		c0.45	c0.22	0.02	c0.34
v/s Ratio Perm		0.01		0.07		
v/c Ratio	0.35	0.07	0.77	0.33	0.13	0.42
Uniform Delay, d1	55.1	53.0	22.3	2.8	48.8	4.4
Progression Factor	1.00	1.00	1.84	1.22	0.81	0.20
Incremental Delay, d2	0.4	0.1	2.5	0.1	1.0	0.3
Delay (s)	55.6	53.1	43.6	3.5	40.5	1.2
Level of Service	E	D	D	A	D	A
Approach Delay (s)	54.6		32.9			2.1
Approach LOS	D		C			A

Intersection Summary			
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support exclusive ped or hold phases.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	23	1	0	2	22	1936	0	2	1652	8
Future Volume (vph)	5	0	23	1	0	2	22	1936	0	2	1652	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5		4.5		4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00		1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00		0.98		0.96		1.00	1.00		1.00	1.00	0.80
Flpb, ped/bikes	0.95		1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00		0.85		0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95		1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1707		984		1623		1135	3539		1805	3505	1290
Flt Permitted	0.93		1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1671		984		1623		1135	3539		1805	3505	1290
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	5	0	24	1	0	2	23	1996	0	2	1703	8
RTOR Reduction (vph)	0	0	23	0	3	0	0	0	0	0	0	1
Lane Group Flow (vph)	5	0	1	0	0	0	23	1996	0	2	1703	7
Confl. Peds. (#/hr)	39		5	5		39			7			66
Heavy Vehicles (%)	0%	0%	61%	0%	0%	0%	59%	2%	0%	0%	3%	0%
Turn Type	D.Pm		Perm	Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases					4		5	2		1	6	
Permitted Phases	4		4	4					2			6
Actuated Green, G (s)	4.3		4.3		4.3		6.0	120.9		1.3	116.2	116.2
Effective Green, g (s)	4.3		4.3		4.3		6.0	120.9		1.3	116.2	116.2
Actuated g/C Ratio	0.03		0.03		0.03		0.04	0.86		0.01	0.83	0.83
Clearance Time (s)	4.5		4.5		4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	3.0		3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	51		30		49		48	3056		16	2909	1070
v/s Ratio Prot							c0.02	c0.56		0.00	0.49	
v/s Ratio Perm	c0.00		0.00		0.00							0.01
v/c Ratio	0.10		0.02		0.00		0.48	0.65		0.12	0.59	0.01
Uniform Delay, d1	66.0		65.8		65.8		65.5	3.0		68.8	3.9	2.0
Progression Factor	1.00		1.00		1.00		0.85	1.63		1.02	0.74	1.00
Incremental Delay, d2	0.8		0.3		0.0		5.4	0.8		3.3	0.8	0.0
Delay (s)	66.8		66.1		65.8		61.0	5.7		73.3	3.7	2.0
Level of Service	E		E		E		E	A		E	A	A
Approach Delay (s)		66.3			65.8			6.3			3.8	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	2	12	0	0	443	4	1509	16	377	1292	3
Future Volume (vph)	4	2	12	0	0	443	4	1509	16	377	1292	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5				3.5	5.5	4.5	4.5	3.5	4.5	4.5
Lane Util. Factor	0.95	0.95				1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.98				0.99	1.00	1.00	0.97	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.87				0.86	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1715	1545				1531	1805	3539	1563	3303	3505	1530
Flt Permitted	0.95	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1715	1545				1531	1805	3539	1563	3303	3505	1530
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)	4	2	12	0	0	461	4	1572	17	393	1346	3
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	7	0	0	1
Lane Group Flow (vph)	4	3	0	0	0	461	4	1572	10	393	1346	2
Confl. Peds. (#/hr)			1						4			11
Confl. Bikes (#/hr)						3						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%	0%	2%	0%	6%	3%	0%
Turn Type	Split	NA				Perm	Prot	NA	custom	Prot	NA	custom
Protected Phases	3	3					5	2		1 4	6	
Permitted Phases						1 2 3 4			6			2
Actuated Green, G (s)	6.5	6.5				140.0	0.8	79.7	84.7	41.3	84.7	79.7
Effective Green, g (s)	6.5	6.5				131.0	0.8	79.7	84.7	41.3	84.7	79.7
Actuated g/C Ratio	0.05	0.05				0.94	0.01	0.57	0.61	0.29	0.61	0.57
Clearance Time (s)	4.5	4.5					5.5	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0					3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	79	71				1432	10	2014	945	974	2120	871
v/s Ratio Prot	0.00	0.00					0.00	c0.44		c0.12	0.38	
v/s Ratio Perm						c0.30			0.01			0.00
v/c Ratio	0.05	0.04				0.32	0.40	0.78	0.01	0.40	0.63	0.00
Uniform Delay, d1	63.8	63.8				0.4	69.4	23.4	11.0	39.5	17.7	13.0
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.00	1.25	0.58	1.00
Incremental Delay, d2	1.2	1.0				0.1	24.2	3.1	0.0	0.2	1.2	0.0
Delay (s)	65.0	64.7				0.5	93.6	26.5	11.0	49.6	11.6	13.0
Level of Service	E	E				A	F	C	B	D	B	B
Approach Delay (s)		64.8			0.5			26.5			20.2	
Approach LOS		E			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	504	51	109	451	135	0	0	0	123	210	54
Future Volume (vph)	66	504	51	109	451	135	0	0	0	123	210	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5					4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95					1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	0.90					1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00					0.90	1.00	
Frt	1.00	0.99		1.00	0.97					1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)	1770	3265		1787	2982					1591	1697	
Flt Permitted	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)	1770	3265		1787	2982					1591	1697	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	68	520	53	112	465	139	0	0	0	127	216	56
RTOR Reduction (vph)	0	8	0	0	29	0	0	0	0	0	13	0
Lane Group Flow (vph)	68	565	0	112	575	0	0	0	0	127	259	0
Confl. Peds. (#/hr)			162			166				84		132
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	2%	4%	31%	1%	7%	0%	0%	0%	0%	2%	5%	4%
Turn Type	Prot	NA		Prot	NA					Perm	NA	
Protected Phases	1	6		5	2						4	
Permitted Phases										4		
Actuated Green, G (s)	7.1	41.3		8.2	42.4					17.0	17.0	
Effective Green, g (s)	7.1	41.3		8.2	42.4					17.0	17.0	
Actuated g/C Ratio	0.09	0.52		0.10	0.53					0.21	0.21	
Clearance Time (s)	4.5	4.5		4.5	4.5					4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)	157	1685		183	1580					338	360	
v/s Ratio Prot	0.04	0.17		c0.06	c0.19						c0.15	
v/s Ratio Perm										0.08		
v/c Ratio	0.43	0.34		0.61	0.36					0.38	0.72	
Uniform Delay, d1	34.5	11.3		34.4	10.9					27.0	29.3	
Progression Factor	1.00	1.00		0.85	1.22					1.00	1.00	
Incremental Delay, d2	1.9	0.5		5.8	0.6					0.7	6.9	
Delay (s)	36.5	11.9		34.9	14.0					27.7	36.2	
Level of Service	D	B		C	B					C	D	
Approach Delay (s)		14.5			17.3			0.0			33.5	
Approach LOS		B			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	50.5%	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)	66	504	51	109	451	135	0	0	0	123	210	54
Future Volume (veh/h)	66	504	51	109	451	135	0	0	0	123	210	54
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.83	1.00		0.90				1.00		0.83
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1870	1841	1441	1885	1796	1900				1870	1826	1841
Adj Flow Rate, veh/h	68	520	53	112	465	139				127	216	56
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	2	4	31	1	7	0				2	5	4
Cap, veh/h	88	1616	164	143	1377	406				421	315	82
Arrive On Green	0.05	0.52	0.52	0.11	0.73	0.73				0.24	0.24	0.24
Sat Flow, veh/h	1781	3136	317	1795	2524	745				1781	1335	346
Grp Volume(v), veh/h	68	288	285	112	312	292				127	0	272
Grp Sat Flow(s),veh/h/ln	1781	1749	1704	1795	1706	1562				1781	0	1681
Q Serve(g_s), s	3.0	7.7	7.8	4.9	5.3	5.4				4.7	0.0	11.8
Cycle Q Clear(g_c), s	3.0	7.7	7.8	4.9	5.3	5.4				4.7	0.0	11.8
Prop In Lane	1.00		0.19	1.00		0.48				1.00		0.21
Lane Grp Cap(c), veh/h	88	901	878	143	931	852				421	0	397
V/C Ratio(X)	0.77	0.32	0.32	0.78	0.34	0.34				0.30	0.00	0.68
Avail Cap(c_a), veh/h	234	901	878	236	931	852				479	0	452
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33				1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.96	0.96	0.96				1.00	0.00	1.00
Uniform Delay (d), s/veh	37.6	11.2	11.3	35.1	5.7	5.7				25.1	0.0	27.8
Incr Delay (d2), s/veh	13.3	0.9	1.0	8.7	0.9	1.1				0.4	0.0	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	3.0	3.0	2.4	1.8	1.7				2.0	0.0	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.9	12.2	12.3	43.8	6.6	6.8				25.5	0.0	31.4
LnGrp LOS	D	B	B	D	A	A				C	A	C
Approach Vol, veh/h		641			716						399	
Approach Delay, s/veh		16.3			12.5						29.6	
Approach LOS		B			B						C	
Timer - Assigned Phs	1	2		4	5	6						
Phs Duration (G+Y+Rc), s	8.5	48.2		23.4	10.9	45.7						
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5						
Max Green Setting (Gmax), s	10.5	34.5		21.5	10.5	34.5						
Max Q Clear Time (g_c+I1), s	5.0	7.4		13.8	6.9	9.8						
Green Ext Time (p_c), s	0.1	4.4		1.3	0.1	3.9						
Intersection Summary												
HCM 6th Ctrl Delay			17.8									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑>		↰	↑	↱			
Traffic Volume (vph)	0	628	0	0	581	26	114	124	142	0	0	0
Future Volume (vph)	0	628	0	0	581	26	114	124	142	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5			
Lane Util. Factor		0.95			0.95		1.00	1.00	1.00			
Frpb, ped/bikes		1.00			0.99		1.00	1.00	0.88			
Flpb, ped/bikes		1.00			1.00		1.00	1.00	1.00			
Frt		1.00			0.99		1.00	1.00	0.85			
Flt Protected		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (prot)		3438			3490		1492	1759	1412			
Flt Permitted		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (perm)		3438			3490		1492	1759	1412			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	683	0	0	632	28	124	135	154	0	0	0
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	39	0	0	0
Lane Group Flow (vph)	0	683	0	0	658	0	124	135	115	0	0	0
Confl. Peds. (#/hr)			86			142			98			
Confl. Bikes (#/hr)			1			3						
Heavy Vehicles (%)	0%	5%	0%	0%	2%	0%	21%	8%	1%	0%	0%	0%
Turn Type		NA			NA		custom	NA	Perm			
Protected Phases		2			2		3	8				
Permitted Phases							4		8			
Actuated Green, G (s)		54.0			54.0		12.5	17.0	17.0			
Effective Green, g (s)		54.0			54.0		12.5	17.0	17.0			
Actuated g/C Ratio		0.68			0.68		0.16	0.21	0.21			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)		2320			2355		317	373	300			
v/s Ratio Prot		c0.20			0.19		c0.05	0.08				
v/s Ratio Perm							0.03		0.08			
v/c Ratio		0.29			0.28		0.39	0.36	0.38			
Uniform Delay, d1		5.3			5.2		31.1	26.9	27.0			
Progression Factor		0.75			1.00		1.00	1.00	1.00			
Incremental Delay, d2		0.3			0.3		0.8	0.6	0.8			
Delay (s)		4.3			5.5		31.9	27.5	27.8			
Level of Service		A			A		C	C	C			
Approach Delay (s)		4.3			5.5			28.9			0.0	
Approach LOS		A			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	25	36	190	2	0	85
Future Volume (vph)	25	36	190	2	0	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5		3.5	3.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1543	1506		1810	1488	
Flt Permitted	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1543	1506		1810	1488	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	28	40	211	2	0	94
RTOR Reduction (vph)	0	0	0	0	68	0
Lane Group Flow (vph)	28	40	0	213	26	0
Confl. Peds. (#/hr)		4				6
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	17%	6%	0%	0%	0%	7%
Turn Type	Prot	custom	Split	NA	NA	
Protected Phases	4	4	2	2	6	
Permitted Phases		2 6				
Actuated Green, G (s)	16.5	53.0		16.5	16.5	
Effective Green, g (s)	16.5	53.0		16.5	16.5	
Actuated g/C Ratio	0.28	0.88		0.28	0.28	
Clearance Time (s)	3.5	3.5		3.5	3.5	
Lane Grp Cap (vph)	424	1506		497	409	
v/s Ratio Prot	c0.02	0.01		c0.12	c0.02	
v/s Ratio Perm		0.02				
v/c Ratio	0.07	0.03		0.43	0.06	
Uniform Delay, d1	16.1	0.4		17.9	16.0	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.0		2.7	0.3	
Delay (s)	16.4	0.5		20.6	16.3	
Level of Service	B	A		C	B	
Approach Delay (s)	7.0			20.6	16.3	
Approach LOS	A			C	B	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.19		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support custom phasing.

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	32	3	10	12	5	0	4	46	7	1	0
Future Vol, veh/h	0	32	3	10	12	5	0	4	46	7	1	0
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Heavy Vehicles, %	0	0	67	0	0	50	0	0	0	7	0	0
Mvmt Flow	0	46	4	14	17	7	0	6	67	10	1	0
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	7.4	7.7	6.8	7.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	45%	0%	88%
Vol Thru, %	8%	91%	55%	0%	12%
Vol Right, %	92%	9%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	50	35	22	5	8
LT Vol	0	0	10	0	7
Through Vol	4	32	12	0	1
RT Vol	46	3	0	5	0
Lane Flow Rate	72	51	32	7	12
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.071	0.058	0.043	0.008	0.014
Departure Headway (Hd)	3.508	4.123	4.9	3.971	4.402
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	1010	866	731	900	806
Service Time	1.568	2.159	2.629	1.7	2.466
HCM Lane V/C Ratio	0.071	0.059	0.044	0.008	0.015
HCM Control Delay	6.8	7.4	7.9	6.7	7.5
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0.2	0.1	0	0

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	107	0	0	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	107	0	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	30	30	0	0	7	0	28	28	0	7
Sign Control	Yield	Yield	Yield	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	21	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	111	0	0	0	0	0	0	0	0

Major/Minor	Major2			Minor2		
Conflicting Flow All	30	0	0	-	252	7
Stage 1	-	-	-	-	222	-
Stage 2	-	-	-	-	30	-
Critical Hdwy	4.31	-	-	-	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.389	-	-	-	4	3.3
Pot Cap-1 Maneuver	1468	-	-	0	655	1081
Stage 1	-	-	-	0	723	-
Stage 2	-	-	-	0	-	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1468	-	-	-	0	1081
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

Approach	WB	SB
HCM Control Delay, s	7.7	0
HCM LOS		A

Minor Lane/Major Mvmt	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1468	-	-	-
HCM Lane V/C Ratio	0.076	-	-	-
HCM Control Delay (s)	7.7	0	-	0
HCM Lane LOS	A	A	-	A
HCM 95th %tile Q(veh)	0.2	-	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	292	87	381	229	73	162	846	162	130	1047	54
Future Volume (vph)	115	292	87	381	229	73	162	846	162	130	1047	54
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	5.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.98		1.00	1.00	0.86	1.00	1.00	0.91
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3400	3248		3433	3151		1719	3471	1353	1770	3505	1410
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3248		3433	3151		1719	3471	1353	1770	3505	1410
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	317	95	414	249	79	176	920	176	141	1138	59
RTOR Reduction (vph)	0	23	0	0	24	0	0	0	50	0	0	29
Lane Group Flow (vph)	125	389	0	414	304	0	176	920	126	141	1138	30
Confl. Peds. (#/hr)			74			62			72			46
Heavy Vehicles (%)	3%	5%	2%	2%	6%	13%	5%	4%	3%	2%	3%	4%
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	custom
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2 3			6 7
Actuated Green, G (s)	10.1	20.9		19.9	30.7		17.7	46.0	70.9	23.2	51.5	66.6
Effective Green, g (s)	10.1	20.9		19.9	30.7		17.7	46.0	70.9	23.2	51.5	66.6
Actuated g/C Ratio	0.08	0.16		0.15	0.24		0.14	0.35	0.55	0.18	0.40	0.51
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	264	522		525	744		234	1228	737	315	1388	722
v/s Ratio Prot	0.04	c0.12		c0.12	0.10		c0.10	0.27		0.08	c0.32	
v/s Ratio Perm									0.09			0.02
v/c Ratio	0.47	0.75		0.79	0.41		0.75	0.75	0.17	0.45	0.82	0.04
Uniform Delay, d1	57.4	52.0		53.0	42.0		54.0	36.9	14.8	47.7	35.1	15.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	5.7		7.7	0.4		12.8	4.2	0.1	4.5	5.5	0.0
Delay (s)	58.7	57.8		60.7	42.3		66.8	41.1	14.9	52.2	40.6	15.8
Level of Service	E	E		E	D		E	D	B	D	D	B
Approach Delay (s)		58.0			52.6			41.1			40.8	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	45.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	4	61	2	127	3	809	52	169	1517	0
Future Volume (vph)	2	0	4	61	2	127	3	809	52	169	1517	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	16	12	12	12	11	10	12	11	10	12
Grade (%)		-1%			-9%			1%			-2%	
Total Lost time (s)	6.0	6.0			6.0		4.0	5.5	5.5	4.0	5.5	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99			1.00		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85			0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00			0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1814	1280			1742		1736	3133	1452	1762	3272	
Flt Permitted	0.36	1.00			0.89		0.13	1.00	1.00	0.30	1.00	
Satd. Flow (perm)	697	1280			1576		245	3133	1452	559	3272	
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)	2	0	4	64	2	132	3	843	54	176	1580	0
RTOR Reduction (vph)	0	4	0	0	50	0	0	0	14	0	0	0
Lane Group Flow (vph)	2	0	0	0	148	0	3	843	40	176	1580	0
Confl. Peds. (#/hr)			1	1					1			1
Heavy Vehicles (%)	0%	0%	25%	2%	0%	2%	0%	7%	8%	0%	4%	3%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	17.2	17.2			17.2		111.5	110.5	110.5	121.3	116.3	
Effective Green, g (s)	17.2	17.2			17.2		111.5	110.5	110.5	121.3	116.3	
Actuated g/C Ratio	0.11	0.11			0.11		0.74	0.74	0.74	0.81	0.78	
Clearance Time (s)	6.0	6.0			6.0		4.0	5.5	5.5	4.0	5.5	
Vehicle Extension (s)	2.0	2.0			2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	79	146			180		192	2307	1069	506	2536	
v/s Ratio Prot		0.00					0.00	0.27		c0.02	c0.48	
v/s Ratio Perm	0.00				c0.09		0.01		0.03	0.27		
v/c Ratio	0.03	0.00			0.82		0.02	0.37	0.04	0.35	0.62	
Uniform Delay, d1	59.0	58.8			64.9		6.0	7.1	5.3	3.7	7.3	
Progression Factor	1.00	1.00			1.00		1.05	0.97	0.95	1.00	1.00	
Incremental Delay, d2	0.0	0.0			24.3		0.0	0.4	0.1	0.2	1.2	
Delay (s)	59.0	58.8			89.2		6.3	7.4	5.1	3.8	8.5	
Level of Service	E	E			F		A	A	A	A	A	
Approach Delay (s)		58.9			89.2			7.2			8.0	
Approach LOS		E			F			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology supports speed limit in the range of 25 to 55 mph.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	2	570	1	0	1	58	728	1	3	1379	114
Future Volume (vph)	68	2	570	1	0	1	58	728	1	3	1379	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	12	12	11	10	12	11	10	12
Grade (%)		-7%			0%			-1%			0%	
Total Lost time (s)		4.5	4.0		4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.99		0.99		1.00	1.00	0.94	1.00	1.00	0.92
Flpb, ped/bikes		0.99	1.00		1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt		1.00	0.85		0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.95	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1684	1617		1707		1609	3165	1521	1722	3240	1387
Flt Permitted		0.73	1.00		0.91		0.16	1.00	1.00	0.35	1.00	1.00
Satd. Flow (perm)		1291	1617		1600		263	3165	1521	627	3240	1387
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	2	620	1	0	1	63	791	1	3	1499	124
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	18
Lane Group Flow (vph)	0	76	620	0	0	0	63	791	1	3	1499	106
Confl. Peds. (#/hr)	5		2	2		5	10		7	7		10
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	3%	0%	2%	0%	0%	0%	9%	7%	0%	0%	4%	7%
Turn Type	Perm	NA	Free	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4		Free	4			2		2	2		2
Actuated Green, G (s)		13.9	150.0		13.9		127.1	127.1	127.1	127.1	127.1	127.1
Effective Green, g (s)		13.9	150.0		13.9		127.1	127.1	127.1	127.1	127.1	127.1
Actuated g/C Ratio		0.09	1.00		0.09		0.85	0.85	0.85	0.85	0.85	0.85
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)		2.0			2.0		2.5	2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)		119	1617		148		222	2681	1288	531	2745	1175
v/s Ratio Prot								0.25			c0.46	
v/s Ratio Perm		c0.06	0.38		0.00		0.24		0.00	0.00		0.08
v/c Ratio		0.64	0.38		0.00		0.28	0.30	0.00	0.01	0.55	0.09
Uniform Delay, d1		65.6	0.0		61.8		2.3	2.3	1.7	1.8	3.3	1.9
Progression Factor		1.00	1.00		1.00		0.27	0.02	1.00	1.00	1.00	1.00
Incremental Delay, d2		8.0	0.7		0.0		3.1	0.3	0.0	0.0	0.8	0.2
Delay (s)		73.6	0.7		61.8		3.7	0.3	1.7	1.8	4.0	2.0
Level of Service		E	A		E		A	A	A	A	A	A
Approach Delay (s)		8.7			61.8			0.6			3.9	
Approach LOS		A			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	5	10	3	0	2	16	803	3	4	1935	10
Future Volume (vph)	8	5	10	3	0	2	16	803	3	4	1935	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	11	12	12
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.91	
Frpb, ped/bikes		0.98			0.99		1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00			0.98		1.00	1.00	1.00	1.00	1.00	
Frt		0.94			0.95		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98			0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1644			1704		1597	3406	1551	1396	5080	
Flt Permitted		0.88			0.83		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1472			1459		1597	3406	1551	1396	5080	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	9	5	11	3	0	2	17	854	3	4	2059	11
RTOR Reduction (vph)	0	10	0	0	5	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	15	0	0	0	0	17	854	3	4	2070	0
Confl. Peds. (#/hr)	5		14	14		5			7			12
Confl. Bikes (#/hr)			1									5
Heavy Vehicles (%)	0%	0%	10%	0%	0%	0%	13%	6%	0%	25%	2%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			
Actuated Green, G (s)		7.0			7.0		3.6	128.4	128.4	1.1	125.9	
Effective Green, g (s)		7.0			7.0		3.6	128.4	128.4	1.1	125.9	
Actuated g/C Ratio		0.05			0.05		0.02	0.86	0.86	0.01	0.84	
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)		1.0			1.0		3.0	3.0	3.0	3.0	0.2	
Lane Grp Cap (vph)		68			68		38	2915	1327	10	4263	
v/s Ratio Prot							c0.01	0.25		0.00	c0.41	
v/s Ratio Perm		c0.01			0.00				0.00			
v/c Ratio		0.21			0.00		0.45	0.29	0.00	0.40	0.49	
Uniform Delay, d1		68.8			68.2		72.2	2.1	1.6	74.1	3.3	
Progression Factor		1.00			1.00		1.18	0.06	1.00	1.02	0.53	
Incremental Delay, d2		0.6			0.0		7.5	0.2	0.0	21.5	0.4	
Delay (s)		69.4			68.2		92.4	0.4	1.6	97.4	2.1	
Level of Service		E			E		F	A	A	F	A	
Approach Delay (s)		69.4			68.2			2.2			2.3	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	2.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
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)	8	5	10	3	0	2	16	803	3	4	1935	10
Future Volume (veh/h)	8	5	10	3	0	2	16	803	3	4	1935	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.94	0.96		0.95	1.00		1.00	1.00		0.97
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	1752	1900	1900	1900	1707	1811	1900	1530	1870	1900
Adj Flow Rate, veh/h	9	5	11	3	0	2	17	854	3	4	2059	11
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	10	0	0	0	13	6	0	25	2	0
Cap, veh/h	67	40	58	104	9	50	196	2452	1142	164	3693	20
Arrive On Green	0.08	0.08	0.08	0.08	0.00	0.08	0.12	0.71	0.71	0.22	1.00	1.00
Sat Flow, veh/h	402	474	689	776	109	590	1626	3441	1602	1457	5240	28
Grp Volume(v), veh/h	25	0	0	5	0	0	17	854	3	4	1337	733
Grp Sat Flow(s),veh/h/ln	1565	0	0	1474	0	0	1626	1721	1602	1457	1702	1864
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	1.4	14.2	0.1	0.3	0.0	0.0
Cycle Q Clear(g_c), s	2.0	0.0	0.0	0.4	0.0	0.0	1.4	14.2	0.1	0.3	0.0	0.0
Prop In Lane	0.36		0.44	0.60		0.40	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	165	0	0	164	0	0	196	2452	1142	164	2399	1314
V/C Ratio(X)	0.15	0.00	0.00	0.03	0.00	0.00	0.09	0.35	0.00	0.02	0.56	0.56
Avail Cap(c_a), veh/h	280	0	0	271	0	0	196	2452	1142	164	2399	1314
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.90	0.90	0.90	0.86	0.86	0.86
Uniform Delay (d), s/veh	63.7	0.0	0.0	63.0	0.0	0.0	58.6	8.2	6.2	51.7	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.0	0.1	0.8	1.5
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	0.9	0.0	0.0	0.2	0.0	0.0	0.6	5.3	0.0	0.1	0.3	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.9	0.0	0.0	63.0	0.0	0.0	58.8	8.6	6.2	51.8	0.8	1.5
LnGrp LOS	E	A	A	E	A	A	E	A	A	D	A	A
Approach Vol, veh/h		25			5			874			2074	
Approach Delay, s/veh		63.9			63.0			9.6			1.1	
Approach LOS		E			E			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	21.4	111.4		17.2	22.6	110.2		17.2				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	106.9		24.1	6.7	105.7		24.1				
Max Q Clear Time (g_c+I1), s	2.3	16.2		4.0	3.4	2.0		2.4				
Green Ext Time (p_c), s	0.0	4.8		0.0	0.0	0.8		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			4.2									
HCM 6th LOS			A									

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	65	31	803	434	75	1871
Future Volume (vph)	65	31	803	434	75	1871
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	16	10	13	9	10
Grade (%)	-2%		0%			0%
Total Lost time (s)	5.0	5.0	5.5	5.0	5.0	5.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	2970	1696	3120	1568	1533	4700
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	2970	1696	3120	1568	1533	4700
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	71	34	882	477	82	2056
RTOR Reduction (vph)	0	31	0	88	0	0
Lane Group Flow (vph)	71	3	882	389	82	2056
Confl. Peds. (#/hr)		2		3		
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	27%	7%	8%	6%	6%	3%
Turn Type	Prot	Perm	NA	custom	Prot	NA
Protected Phases	4		1	4 7	2	1 2
Permitted Phases		4		2		
Actuated Green, G (s)	13.3	13.3	94.8	122.2	26.4	126.7
Effective Green, g (s)	13.3	13.3	94.8	122.2	26.4	126.7
Actuated g/C Ratio	0.09	0.09	0.63	0.81	0.18	0.84
Clearance Time (s)	5.0	5.0	5.5		5.0	
Vehicle Extension (s)	3.0	3.0	2.5		3.0	
Lane Grp Cap (vph)	263	150	1971	1329	269	3969
v/s Ratio Prot	0.02		0.28	c0.19	0.05	c0.44
v/s Ratio Perm		0.00		0.06		
v/c Ratio	0.27	0.02	0.45	0.29	0.30	0.52
Uniform Delay, d1	63.8	62.4	14.2	3.4	53.8	3.2
Progression Factor	1.00	1.00	1.00	1.00	0.90	0.24
Incremental Delay, d2	0.6	0.1	0.7	0.1	0.6	0.1
Delay (s)	64.4	62.5	14.9	3.5	49.3	0.9
Level of Service	E	E	B	A	D	A
Approach Delay (s)	63.8		10.9			2.7
Approach LOS	E		B			A

Intersection Summary			
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support exclusive ped or hold phases.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	40	1	0	1	42	1225	2	1	1911	2
Future Volume (vph)	5	0	40	1	0	1	42	1225	2	1	1911	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0		3.0		3.0	3.0	4.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00		0.98		0.97		1.00	1.00	0.96	1.00	1.00	0.87
Flpb, ped/bikes	0.96		1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00		0.85		0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1729		1051		1119		1236	3406	1031	1805	3505	1405
Flt Permitted	0.76		1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1377		1051		1119		1236	3406	1031	1805	3505	1405
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)	5	0	42	1	0	1	44	1276	2	1	1991	2
RTOR Reduction (vph)	0	0	40	0	2	0	0	0	0	0	0	0
Lane Group Flow (vph)	5	0	2	0	0	0	44	1276	2	1	1991	2
Confl. Peds. (#/hr)	30		4	4		30			8			40
Heavy Vehicles (%)	0%	0%	51%	0%	0%	100%	46%	6%	50%	0%	3%	0%
Turn Type	D.Pm		Perm	Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases					4		5	2		1	6	
Permitted Phases	4		4	4					2			6
Actuated Green, G (s)	5.7		5.7		5.7		9.2	119.6	119.6	1.2	111.6	111.6
Effective Green, g (s)	7.2		7.2		7.2		10.7	121.1	120.1	2.7	113.1	113.1
Actuated g/C Ratio	0.05		0.05		0.05		0.08	0.86	0.86	0.02	0.81	0.81
Clearance Time (s)	4.5		4.5		4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0		3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	70		54		57		94	2946	884	34	2831	1135
v/s Ratio Prot							c0.04	0.37		0.00	c0.57	
v/s Ratio Perm	c0.00		0.00		0.00				0.00			0.00
v/c Ratio	0.07		0.04		0.00		0.47	0.43	0.00	0.03	0.70	0.00
Uniform Delay, d1	63.2		63.1		63.0		61.9	2.0	1.4	67.4	6.0	2.6
Progression Factor	1.00		1.00		1.00		1.22	0.50	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4		0.3		0.0		3.3	0.4	0.0	0.4	1.5	0.0
Delay (s)	63.7		63.4		63.0		78.9	1.4	1.4	67.7	7.5	2.6
Level of Service	E		E		E		E	A	A	E	A	A
Approach Delay (s)		63.4			63.0			4.0			7.5	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	3	0	0	407	16	851	22	280	1610	7
Future Volume (vph)	2	0	3	0	0	407	16	851	22	280	1610	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.0				3.5	4.0	3.0	3.0	2.0	2.0	2.0
Lane Util. Factor	0.95	0.95				1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.96				0.99	1.00	1.00	0.95	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85				0.86	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1715	1467				1476	1805	3343	1540	3127	3505	1535
Flt Permitted	0.95	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1715	1467				1476	1805	3343	1540	3127	3505	1535
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	2	0	3	0	0	433	17	905	23	298	1713	7
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	11	0	0	2
Lane Group Flow (vph)	2	0	0	0	0	433	17	905	12	298	1713	5
Confl. Peds. (#/hr)			6						5			10
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	10%	0%	8%	0%	12%	3%	0%
Turn Type	Split	NA				Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	3					5	2		1 4	6	
Permitted Phases						1 2 3 4			2			6
Actuated Green, G (s)	7.3	7.3				140.0	2.2	68.7	68.7	51.5	96.4	96.4
Effective Green, g (s)	7.3	7.8				131.0	3.7	70.2	70.2	53.0	97.9	97.9
Actuated g/C Ratio	0.05	0.06				0.94	0.03	0.50	0.50	0.38	0.70	0.70
Clearance Time (s)	4.5	4.5					5.5	4.5	4.5		3.5	3.5
Vehicle Extension (s)	3.0	3.0					0.2	0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	89	81				1381	47	1676	772	1183	2450	1073
v/s Ratio Prot	0.00	0.00					0.01	0.27		0.10	c0.49	
v/s Ratio Perm						c0.29			0.01			0.00
v/c Ratio	0.02	0.00				0.31	0.36	0.54	0.01	0.25	0.70	0.00
Uniform Delay, d1	63.0	62.4				0.4	67.0	23.9	17.5	29.9	12.4	6.4
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.00	1.13	0.85	1.00
Incremental Delay, d2	0.1	0.0				0.1	1.7	1.3	0.0	0.1	1.2	0.0
Delay (s)	63.1	62.4				0.5	68.7	25.1	17.6	33.7	11.7	6.4
Level of Service	E	E				A	E	C	B	C	B	A
Approach Delay (s)		62.7			0.5			25.7			15.0	
Approach LOS		E			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology expects strict NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	503	38	84	471	80	0	0	0	105	238	51
Future Volume (vph)	40	503	38	84	471	80	0	0	0	105	238	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5					4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95					1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.97					1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00					0.95	1.00	
Frt	1.00	0.99		1.00	0.98					1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)	1641	3239		1671	3172					1621	1689	
Flt Permitted	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)	1641	3239		1671	3172					1621	1689	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	41	513	39	86	481	82	0	0	0	107	243	52
RTOR Reduction (vph)	0	6	0	0	12	0	0	0	0	0	11	0
Lane Group Flow (vph)	41	546	0	86	551	0	0	0	0	107	284	0
Confl. Peds. (#/hr)			68			65				40		80
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	10%	7%	41%	8%	9%	5%	0%	0%	0%	6%	9%	0%
Turn Type	Prot	NA		Prot	NA					Perm	NA	
Protected Phases	1	6		5	2						4	
Permitted Phases										4		
Actuated Green, G (s)	5.2	39.9		8.3	43.0					18.3	18.3	
Effective Green, g (s)	5.2	39.9		8.3	43.0					18.3	18.3	
Actuated g/C Ratio	0.07	0.50		0.10	0.54					0.23	0.23	
Clearance Time (s)	4.5	4.5		4.5	4.5					4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)	106	1615		173	1704					370	386	
v/s Ratio Prot	0.02	0.17		c0.05	c0.17						c0.17	
v/s Ratio Perm										0.07		
v/c Ratio	0.39	0.34		0.50	0.32					0.29	0.74	
Uniform Delay, d1	35.9	12.1		33.9	10.4					25.5	28.6	
Progression Factor	1.00	1.00		0.89	0.96					1.00	1.00	
Incremental Delay, d2	2.3	0.6		2.2	0.5					0.4	7.1	
Delay (s)	38.2	12.7		32.3	10.4					25.9	35.8	
Level of Service	D	B		C	B					C	D	
Approach Delay (s)		14.4			13.3			0.0			33.1	
Approach LOS		B			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	48.3%	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)	40	503	38	84	471	80	0	0	0	105	238	51
Future Volume (veh/h)	40	503	38	84	471	80	0	0	0	105	238	51
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.97				1.00		0.88
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1752	1796	1292	1781	1767	1826				1811	1767	1900
Adj Flow Rate, veh/h	41	513	39	86	481	82				107	243	52
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	10	7	41	8	9	5				6	9	0
Cap, veh/h	62	1707	129	110	1601	271				402	320	68
Arrive On Green	0.04	0.53	0.53	0.09	0.75	0.75				0.23	0.23	0.23
Sat Flow, veh/h	1668	3197	242	1697	2854	483				1725	1374	294
Grp Volume(v), veh/h	41	273	279	86	282	281				107	0	295
Grp Sat Flow(s),veh/h/ln	1668	1706	1733	1697	1678	1659				1725	0	1668
Q Serve(g_s), s	1.9	7.1	7.2	4.0	4.4	4.4				4.1	0.0	13.2
Cycle Q Clear(g_c), s	1.9	7.1	7.2	4.0	4.4	4.4				4.1	0.0	13.2
Prop In Lane	1.00		0.14	1.00		0.29				1.00		0.18
Lane Grp Cap(c), veh/h	62	911	925	110	942	931				402	0	388
V/C Ratio(X)	0.66	0.30	0.30	0.78	0.30	0.30				0.27	0.00	0.76
Avail Cap(c_a), veh/h	282	911	925	286	942	931				507	0	490
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33				1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.98	0.98	0.98				1.00	0.00	1.00
Uniform Delay (d), s/veh	38.0	10.4	10.4	36.0	5.0	5.0				25.1	0.0	28.6
Incr Delay (d2), s/veh	11.2	0.8	0.8	11.3	0.8	0.8				0.4	0.0	5.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.7	2.8	1.9	1.5	1.5				1.7	0.0	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.2	11.2	11.2	47.3	5.8	5.8				25.5	0.0	33.9
LnGrp LOS	D	B	B	D	A	A				C	A	C
Approach Vol, veh/h		593			649						402	
Approach Delay, s/veh		13.8			11.3						31.6	
Approach LOS		B			B						C	
Timer - Assigned Phs	1	2		4	5	6						
Phs Duration (G+Y+Rc), s	7.5	49.4		23.1	9.7	47.2						
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5						
Max Green Setting (Gmax), s	13.5	29.5		23.5	13.5	29.5						
Max Q Clear Time (g_c+I1), s	3.9	6.4		15.2	6.0	9.2						
Green Ext Time (p_c), s	0.0	3.8		1.4	0.1	3.5						
Intersection Summary												
HCM 6th Ctrl Delay			17.2									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	611	0	0	574	19	58	54	91	0	0	0
Future Volume (vph)	0	611	0	0	574	19	58	54	91	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5			
Lane Util. Factor		0.95			0.95		1.00	1.00	1.00			
Frpb, ped/bikes		1.00			1.00		1.00	1.00	0.94			
Flpb, ped/bikes		1.00			1.00		1.00	1.00	1.00			
Frt		1.00			1.00		1.00	1.00	0.85			
Flt Protected		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (prot)		3438			3341		1318	1681	1493			
Flt Permitted		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (perm)		3438			3341		1318	1681	1493			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	630	0	0	592	20	60	56	94	0	0	0
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	65	0	0	0
Lane Group Flow (vph)	0	630	0	0	611	0	60	56	29	0	0	0
Confl. Peds. (#/hr)			51			75			42			
Confl. Bikes (#/hr)			1			3						
Heavy Vehicles (%)	0%	5%	0%	0%	7%	11%	37%	13%	2%	0%	0%	0%
Turn Type		NA			NA		custom	NA	Perm			
Protected Phases		2			2		3	8				
Permitted Phases							4		8			
Actuated Green, G (s)		58.5			58.5		8.0	12.5	12.5			
Effective Green, g (s)		58.5			58.5		8.0	12.5	12.5			
Actuated g/C Ratio		0.73			0.73		0.10	0.16	0.16			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)		2514			2443		205	262	233			
v/s Ratio Prot		c0.18			0.18		c0.02	0.03				
v/s Ratio Perm							0.02		0.02			
v/c Ratio		0.25			0.25		0.29	0.21	0.12			
Uniform Delay, d1		3.5			3.5		34.0	29.5	29.0			
Progression Factor		0.76			1.00		1.00	1.00	1.00			
Incremental Delay, d2		0.2			0.2		0.8	0.4	0.2			
Delay (s)		2.9			3.8		34.8	29.9	29.3			
Level of Service		A			A		C	C	C			
Approach Delay (s)		2.9			3.8			31.0			0.0	
Approach LOS		A			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	104	188	26	2	0	71
Future Volume (vph)	104	188	26	2	0	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5		3.5	3.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.86	
Flt Protected	0.95	1.00		0.96	1.00	
Satd. Flow (prot)	1556	1570		1765	1284	
Flt Permitted	0.95	1.00		0.96	1.00	
Satd. Flow (perm)	1556	1570		1765	1284	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	121	219	30	2	0	83
RTOR Reduction (vph)	0	0	0	0	60	0
Lane Group Flow (vph)	121	219	0	32	23	0
Confl. Peds. (#/hr)						2
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	16%	2%	3%	0%	0%	25%
Turn Type	Prot	custom	custom	NA	NA	
Protected Phases	4	4	2	2	6	
Permitted Phases		2 6	2			
Actuated Green, G (s)	16.5	53.0		16.5	16.5	
Effective Green, g (s)	16.5	53.0		16.5	16.5	
Actuated g/C Ratio	0.28	0.88		0.28	0.28	
Clearance Time (s)	3.5	3.5		3.5	3.5	
Lane Grp Cap (vph)	427	1570		485	353	
v/s Ratio Prot	c0.08	c0.04		0.02	0.02	
v/s Ratio Perm		0.10				
v/c Ratio	0.28	0.14		0.07	0.06	
Uniform Delay, d1	17.1	0.5		16.1	16.1	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.2		0.3	0.4	
Delay (s)	18.8	0.7		16.3	16.4	
Level of Service	B	A		B	B	
Approach Delay (s)	7.1			16.3	16.4	
Approach LOS	A			B	B	

Intersection Summary			
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support custom phasing.

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	27	3	30	41	34	0	10	19	24	7	2
Future Vol, veh/h	5	27	3	30	41	34	0	10	19	24	7	2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	40	25	0	5	10	25	0	0	6	27	14	0
Mvmt Flow	6	31	3	34	47	39	0	11	22	28	8	2
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	8.2	7.9	7.1	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	14%	42%	0%	73%
Vol Thru, %	34%	77%	58%	0%	21%
Vol Right, %	66%	9%	0%	100%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	29	35	71	34	33
LT Vol	0	5	30	0	24
Through Vol	10	27	41	0	7
RT Vol	19	3	0	34	2
Lane Flow Rate	33	40	82	39	38
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.037	0.054	0.112	0.045	0.052
Departure Headway (Hd)	3.946	4.874	4.943	4.116	4.896
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	913	726	721	863	735
Service Time	1.947	2.964	2.703	1.876	2.898
HCM Lane V/C Ratio	0.036	0.055	0.114	0.045	0.052
HCM Control Delay	7.1	8.2	8.3	7.1	8.2
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0.2	0.4	0.1	0.2

Intersection	
Int Delay, s/veh	7.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	53	0	0	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	53	0	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	6	6	0	0	8	0	10	10	0	8
Sign Control	Yield	Yield	Yield	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	57	0	0	0	0	0	0	0	0

Major/Minor	Major2			Minor2		
Conflicting Flow All	6	0	0	-	120	8
Stage 1	-	-	-	-	114	-
Stage 2	-	-	-	-	6	-
Critical Hdwy	4.1	-	-	-	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	-	4	3.3
Pot Cap-1 Maneuver	1628	-	-	0	774	1080
Stage 1	-	-	-	0	805	-
Stage 2	-	-	-	0	-	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1628	-	-	-	0	1080
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

Approach	WB	SB
HCM Control Delay, s	7.3	0
HCM LOS		A

Minor Lane/Major Mvmt	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1628	-	-	-
HCM Lane V/C Ratio	0.035	-	-	-
HCM Control Delay (s)	7.3	0	-	0
HCM Lane LOS	A	A	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	292	87	381	229	73	162	849	162	130	1057	54
Future Volume (vph)	115	292	87	381	229	73	162	849	162	130	1057	54
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	5.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.98		1.00	1.00	0.86	1.00	1.00	0.91
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3400	3248		3433	3151		1719	3471	1353	1770	3505	1410
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3248		3433	3151		1719	3471	1353	1770	3505	1410
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	317	95	414	249	79	176	923	176	141	1149	59
RTOR Reduction (vph)	0	23	0	0	24	0	0	0	50	0	0	29
Lane Group Flow (vph)	125	389	0	414	304	0	176	923	126	141	1149	30
Confl. Peds. (#/hr)			74			62			72			46
Heavy Vehicles (%)	3%	5%	2%	2%	6%	13%	5%	4%	3%	2%	3%	4%
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	custom
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2 3			6 7
Actuated Green, G (s)	10.1	20.9		19.9	30.7		17.7	46.0	70.9	23.2	51.5	66.6
Effective Green, g (s)	10.1	20.9		19.9	30.7		17.7	46.0	70.9	23.2	51.5	66.6
Actuated g/C Ratio	0.08	0.16		0.15	0.24		0.14	0.35	0.55	0.18	0.40	0.51
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	264	522		525	744		234	1228	737	315	1388	722
v/s Ratio Prot	0.04	c0.12		c0.12	0.10		c0.10	0.27		0.08	c0.33	
v/s Ratio Perm									0.09			0.02
v/c Ratio	0.47	0.75		0.79	0.41		0.75	0.75	0.17	0.45	0.83	0.04
Uniform Delay, d1	57.4	52.0		53.0	42.0		54.0	37.0	14.8	47.7	35.3	15.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	5.7		7.7	0.4		12.8	4.3	0.1	4.5	5.8	0.0
Delay (s)	58.7	57.8		60.7	42.3		66.8	41.2	14.9	52.2	41.1	15.8
Level of Service	E	E		E	D		E	D	B	D	D	B
Approach Delay (s)		58.0			52.6			41.1			41.1	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	45.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	4	62	2	127	3	813	52	169	1529	0
Future Volume (vph)	2	0	4	62	2	127	3	813	52	169	1529	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	16	12	12	12	11	10	12	11	10	12
Grade (%)		-1%			-9%			1%			-2%	
Total Lost time (s)	6.0	6.0			6.0		4.0	5.5	5.5	4.0	5.5	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99			1.00		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85			0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00			0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1814	1280			1743		1736	3133	1452	1762	3272	
Flt Permitted	0.37	1.00			0.89		0.13	1.00	1.00	0.30	1.00	
Satd. Flow (perm)	706	1280			1575		241	3133	1452	556	3272	
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)	2	0	4	65	2	132	3	847	54	176	1593	0
RTOR Reduction (vph)	0	4	0	0	49	0	0	0	14	0	0	0
Lane Group Flow (vph)	2	0	0	0	150	0	3	847	40	176	1593	0
Confl. Peds. (#/hr)			1	1					1			1
Heavy Vehicles (%)	0%	0%	25%	2%	0%	2%	0%	7%	8%	0%	4%	3%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	17.4	17.4			17.4		111.3	110.3	110.3	121.1	116.1	
Effective Green, g (s)	17.4	17.4			17.4		111.3	110.3	110.3	121.1	116.1	
Actuated g/C Ratio	0.12	0.12			0.12		0.74	0.74	0.74	0.81	0.77	
Clearance Time (s)	6.0	6.0			6.0		4.0	5.5	5.5	4.0	5.5	
Vehicle Extension (s)	2.0	2.0			2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	81	148			182		188	2303	1067	503	2532	
v/s Ratio Prot		0.00					0.00	0.27		c0.02	c0.49	
v/s Ratio Perm	0.00				c0.10		0.01		0.03	0.27		
v/c Ratio	0.02	0.00			0.83		0.02	0.37	0.04	0.35	0.63	
Uniform Delay, d1	58.8	58.6			64.8		6.1	7.2	5.4	3.7	7.5	
Progression Factor	1.00	1.00			1.00		1.04	0.97	0.94	1.00	1.00	
Incremental Delay, d2	0.0	0.0			24.3		0.0	0.4	0.1	0.2	1.2	
Delay (s)	58.8	58.6			89.1		6.4	7.5	5.1	3.9	8.7	
Level of Service	E	E			F		A	A	A	A	A	
Approach Delay (s)		58.7			89.1			7.3			8.2	
Approach LOS		E			F			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology supports speed limit in the range of 25 to 55 mph.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	2	573	1	0	1	59	732	1	3	1392	114
Future Volume (vph)	68	2	573	1	0	1	59	732	1	3	1392	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	12	12	11	10	12	11	10	12
Grade (%)		-7%			0%			-1%			0%	
Total Lost time (s)		4.5	4.0		4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.99		0.99		1.00	1.00	0.94	1.00	1.00	0.92
Flpb, ped/bikes		0.99	1.00		1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt		1.00	0.85		0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.95	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1684	1617		1707		1609	3165	1521	1722	3240	1387
Flt Permitted		0.73	1.00		0.91		0.15	1.00	1.00	0.34	1.00	1.00
Satd. Flow (perm)		1291	1617		1600		259	3165	1521	624	3240	1387
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	2	623	1	0	1	64	796	1	3	1513	124
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	17
Lane Group Flow (vph)	0	76	623	0	0	0	64	796	1	3	1513	107
Confl. Peds. (#/hr)	5		2	2		5	10		7	7		10
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	3%	0%	2%	0%	0%	0%	9%	7%	0%	0%	4%	7%
Turn Type	Perm	NA	Free	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4		Free	4			2		2	2		2
Actuated Green, G (s)		13.9	150.0		13.9		127.1	127.1	127.1	127.1	127.1	127.1
Effective Green, g (s)		13.9	150.0		13.9		127.1	127.1	127.1	127.1	127.1	127.1
Actuated g/C Ratio		0.09	1.00		0.09		0.85	0.85	0.85	0.85	0.85	0.85
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)		2.0			2.0		2.5	2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)		119	1617		148		219	2681	1288	528	2745	1175
v/s Ratio Prot								0.25			c0.47	
v/s Ratio Perm		c0.06	0.39		0.00		0.25		0.00	0.00		0.08
v/c Ratio		0.64	0.39		0.00		0.29	0.30	0.00	0.01	0.55	0.09
Uniform Delay, d1		65.6	0.0		61.8		2.3	2.3	1.7	1.8	3.3	1.9
Progression Factor		1.00	1.00		1.00		0.31	0.03	1.00	1.00	1.00	1.00
Incremental Delay, d2		8.0	0.7		0.0		3.3	0.3	0.0	0.0	0.8	0.2
Delay (s)		73.6	0.7		61.8		4.0	0.3	1.7	1.8	4.1	2.0
Level of Service		E	A		E		A	A	A	A	A	A
Approach Delay (s)		8.6			61.8			0.6			3.9	
Approach LOS		A			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	5	10	3	0	2	16	808	3	4	1951	10
Future Volume (vph)	8	5	10	3	0	2	16	808	3	4	1951	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	11	12	12
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.91	
Frpb, ped/bikes		0.98			0.99		1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00			0.98		1.00	1.00	1.00	1.00	1.00	
Frt		0.94			0.95		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98			0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1644			1704		1597	3406	1551	1396	5080	
Flt Permitted		0.88			0.83		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1472			1459		1597	3406	1551	1396	5080	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	9	5	11	3	0	2	17	860	3	4	2076	11
RTOR Reduction (vph)	0	10	0	0	5	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	15	0	0	0	0	17	860	3	4	2087	0
Confl. Peds. (#/hr)	5		14	14		5			7			12
Confl. Bikes (#/hr)			1									5
Heavy Vehicles (%)	0%	0%	10%	0%	0%	0%	13%	6%	0%	25%	2%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			
Actuated Green, G (s)		7.0			7.0		3.6	128.4	128.4	1.1	125.9	
Effective Green, g (s)		7.0			7.0		3.6	128.4	128.4	1.1	125.9	
Actuated g/C Ratio		0.05			0.05		0.02	0.86	0.86	0.01	0.84	
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)		1.0			1.0		3.0	3.0	3.0	3.0	0.2	
Lane Grp Cap (vph)		68			68		38	2915	1327	10	4263	
v/s Ratio Prot							c0.01	0.25		0.00	c0.41	
v/s Ratio Perm		c0.01			0.00				0.00			
v/c Ratio		0.21			0.00		0.45	0.30	0.00	0.40	0.49	
Uniform Delay, d1		68.8			68.2		72.2	2.1	1.6	74.1	3.3	
Progression Factor		1.00			1.00		1.17	0.07	1.00	1.03	0.53	
Incremental Delay, d2		0.6			0.0		7.5	0.2	0.0	21.5	0.4	
Delay (s)		69.4			68.2		92.3	0.4	1.6	97.6	2.1	
Level of Service		E			E		F	A	A	F	A	
Approach Delay (s)		69.4			68.2			2.2			2.3	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	2.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
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)	8	5	10	3	0	2	16	808	3	4	1951	10
Future Volume (veh/h)	8	5	10	3	0	2	16	808	3	4	1951	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.94	0.96		0.95	1.00		1.00	1.00		0.97
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	1752	1900	1900	1900	1707	1811	1900	1530	1870	1900
Adj Flow Rate, veh/h	9	5	11	3	0	2	17	860	3	4	2076	11
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	10	0	0	0	13	6	0	25	2	0
Cap, veh/h	67	40	58	104	9	50	196	2452	1142	164	3693	20
Arrive On Green	0.08	0.08	0.08	0.08	0.00	0.08	0.12	0.71	0.71	0.22	1.00	1.00
Sat Flow, veh/h	402	474	689	776	109	590	1626	3441	1602	1457	5241	28
Grp Volume(v), veh/h	25	0	0	5	0	0	17	860	3	4	1348	739
Grp Sat Flow(s),veh/h/ln	1565	0	0	1474	0	0	1626	1721	1602	1457	1702	1864
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	1.4	14.4	0.1	0.3	0.0	0.0
Cycle Q Clear(g_c), s	2.0	0.0	0.0	0.4	0.0	0.0	1.4	14.4	0.1	0.3	0.0	0.0
Prop In Lane	0.36		0.44	0.60		0.40	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	165	0	0	164	0	0	196	2452	1142	164	2399	1314
V/C Ratio(X)	0.15	0.00	0.00	0.03	0.00	0.00	0.09	0.35	0.00	0.02	0.56	0.56
Avail Cap(c_a), veh/h	280	0	0	271	0	0	196	2452	1142	164	2399	1314
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.90	0.90	0.90	0.86	0.86	0.86
Uniform Delay (d), s/veh	63.7	0.0	0.0	63.0	0.0	0.0	58.6	8.3	6.2	51.7	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.0	0.1	0.8	1.5
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	0.9	0.0	0.0	0.2	0.0	0.0	0.6	5.3	0.0	0.1	0.3	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.9	0.0	0.0	63.0	0.0	0.0	58.8	8.6	6.2	51.8	0.8	1.5
LnGrp LOS	E	A	A	E	A	A	E	A	A	D	A	A
Approach Vol, veh/h		25			5			880			2091	
Approach Delay, s/veh		63.9			63.0			9.6			1.2	
Approach LOS		E			E			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	21.4	111.4		17.2	22.6	110.2		17.2				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	106.9		24.1	6.7	105.7		24.1				
Max Q Clear Time (g_c+I1), s	2.3	16.4		4.0	3.4	2.0		2.4				
Green Ext Time (p_c), s	0.0	4.9		0.0	0.0	0.9		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			4.3									
HCM 6th LOS			A									

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	78	36	803	476	91	1871
Future Volume (vph)	78	36	803	476	91	1871
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	16	10	13	9	10
Grade (%)	-2%		0%			0%
Total Lost time (s)	5.0	5.0	5.5	5.0	5.0	5.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	2970	1696	3120	1568	1533	4700
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	2970	1696	3120	1568	1533	4700
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	86	40	882	523	100	2056
RTOR Reduction (vph)	0	36	0	97	0	0
Lane Group Flow (vph)	86	4	882	426	100	2056
Confl. Peds. (#/hr)		2		3		
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	27%	7%	8%	6%	6%	3%
Turn Type	Prot	Perm	NA	custom	Prot	NA
Protected Phases	4		1	4 7	2	1 2
Permitted Phases		4		2		
Actuated Green, G (s)	14.8	14.8	93.3	122.2	26.4	125.2
Effective Green, g (s)	14.8	14.8	93.3	122.2	26.4	125.2
Actuated g/C Ratio	0.10	0.10	0.62	0.81	0.18	0.83
Clearance Time (s)	5.0	5.0	5.5		5.0	
Vehicle Extension (s)	3.0	3.0	2.5		3.0	
Lane Grp Cap (vph)	293	167	1940	1329	269	3922
v/s Ratio Prot	0.03		0.28	c0.20	0.07	c0.44
v/s Ratio Perm		0.00		0.07		
v/c Ratio	0.29	0.02	0.45	0.32	0.37	0.52
Uniform Delay, d1	62.7	61.1	14.9	3.5	54.5	3.6
Progression Factor	1.00	1.00	1.00	1.00	0.91	0.25
Incremental Delay, d2	0.6	0.1	0.8	0.1	0.8	0.1
Delay (s)	63.3	61.1	15.7	3.6	50.2	1.0
Level of Service	E	E	B	A	D	A
Approach Delay (s)	62.6		11.2			3.3
Approach LOS	E		B			A

Intersection Summary			
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support exclusive ped or hold phases.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	40	1	0	1	42	1267	2	1	1924	2
Future Volume (vph)	5	0	40	1	0	1	42	1267	2	1	1924	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0		3.0		3.0	3.0	4.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00		0.98		0.97		1.00	1.00	0.96	1.00	1.00	0.87
Flpb, ped/bikes	0.96		1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00		0.85		0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1729		1051		1119		1236	3406	1031	1805	3505	1405
Flt Permitted	0.76		1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1377		1051		1119		1236	3406	1031	1805	3505	1405
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)	5	0	42	1	0	1	44	1320	2	1	2004	2
RTOR Reduction (vph)	0	0	40	0	2	0	0	0	0	0	0	0
Lane Group Flow (vph)	5	0	2	0	0	0	44	1320	2	1	2004	2
Confl. Peds. (#/hr)	30		4	4		30			8			40
Heavy Vehicles (%)	0%	0%	51%	0%	0%	100%	46%	6%	50%	0%	3%	0%
Turn Type	D.Pm		Perm	Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases					4		5	2		1	6	
Permitted Phases	4		4	4					2			6
Actuated Green, G (s)	5.7		5.7		5.7		9.2	119.6	119.6	1.2	111.6	111.6
Effective Green, g (s)	7.2		7.2		7.2		10.7	121.1	120.1	2.7	113.1	113.1
Actuated g/C Ratio	0.05		0.05		0.05		0.08	0.86	0.86	0.02	0.81	0.81
Clearance Time (s)	4.5		4.5		4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0		3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	70		54		57		94	2946	884	34	2831	1135
v/s Ratio Prot							c0.04	0.39		0.00	c0.57	
v/s Ratio Perm	c0.00		0.00		0.00				0.00			0.00
v/c Ratio	0.07		0.04		0.00		0.47	0.45	0.00	0.03	0.71	0.00
Uniform Delay, d1	63.2		63.1		63.0		61.9	2.1	1.4	67.4	6.0	2.6
Progression Factor	1.00		1.00		1.00		1.21	0.56	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4		0.3		0.0		3.3	0.4	0.0	0.4	1.5	0.0
Delay (s)	63.7		63.4		63.0		78.1	1.6	1.4	67.7	7.6	2.6
Level of Service	E		E		E		E	A	A	E	A	A
Approach Delay (s)		63.4			63.0			4.1			7.6	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	89.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	3	0	0	446	16	854	22	289	1614	7
Future Volume (vph)	2	0	3	0	0	446	16	854	22	289	1614	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.0				3.5	4.0	3.0	3.0	2.0	2.0	2.0
Lane Util. Factor	0.95	0.95				1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.96				0.99	1.00	1.00	0.95	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85				0.86	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1715	1471				1476	1805	3343	1540	3127	3505	1535
Flt Permitted	0.95	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1715	1471				1476	1805	3343	1540	3127	3505	1535
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	2	0	3	0	0	474	17	909	23	307	1717	7
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	11	0	0	2
Lane Group Flow (vph)	2	0	0	0	0	474	17	909	12	307	1717	5
Confl. Peds. (#/hr)			6						5			10
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	10%	0%	8%	0%	12%	3%	0%
Turn Type	Split	NA				Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	3					5	2		1 4	6	
Permitted Phases						1 2 3 4			2			6
Actuated Green, G (s)	8.0	8.0				140.0	2.2	68.7	68.7	50.8	95.4	95.4
Effective Green, g (s)	8.0	8.5				131.0	3.7	70.2	70.2	52.3	96.9	96.9
Actuated g/C Ratio	0.06	0.06				0.94	0.03	0.50	0.50	0.37	0.69	0.69
Clearance Time (s)	4.5	4.5					5.5	4.5	4.5		3.5	3.5
Vehicle Extension (s)	3.0	3.0					0.2	0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	98	89				1381	47	1676	772	1168	2425	1062
v/s Ratio Prot	0.00	0.00					0.01	0.27		0.10	c0.49	
v/s Ratio Perm						c0.32			0.01			0.00
v/c Ratio	0.02	0.00				0.34	0.36	0.54	0.01	0.26	0.71	0.00
Uniform Delay, d1	62.3	61.8				0.4	67.0	23.9	17.5	30.5	13.0	6.7
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.00	1.13	0.85	1.00
Incremental Delay, d2	0.1	0.0				0.1	1.7	1.3	0.0	0.1	1.3	0.0
Delay (s)	62.4	61.8				0.6	68.7	25.2	17.6	34.4	12.4	6.7
Level of Service	E	E				A	E	C	B	C	B	A
Approach Delay (s)		62.0			0.6			25.8			15.7	
Approach LOS		E			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology expects strict NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	512	38	84	509	80	0	0	0	105	238	52
Future Volume (vph)	40	512	38	84	509	80	0	0	0	105	238	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5					4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95					1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98					1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00					0.95	1.00	
Frt	1.00	0.99		1.00	0.98					1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)	1641	3241		1671	3181					1621	1688	
Flt Permitted	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)	1641	3241		1671	3181					1621	1688	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	41	522	39	86	519	82	0	0	0	107	243	53
RTOR Reduction (vph)	0	6	0	0	12	0	0	0	0	0	11	0
Lane Group Flow (vph)	41	555	0	86	589	0	0	0	0	107	285	0
Confl. Peds. (#/hr)			68			65				40		80
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	10%	7%	41%	8%	9%	5%	0%	0%	0%	6%	9%	0%
Turn Type	Prot	NA		Prot	NA					Perm	NA	
Protected Phases	1	6		5	2						4	
Permitted Phases										4		
Actuated Green, G (s)	5.2	39.9		8.3	43.0					18.3	18.3	
Effective Green, g (s)	5.2	39.9		8.3	43.0					18.3	18.3	
Actuated g/C Ratio	0.07	0.50		0.10	0.54					0.23	0.23	
Clearance Time (s)	4.5	4.5		4.5	4.5					4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)	106	1616		173	1709					370	386	
v/s Ratio Prot	0.02	0.17		c0.05	c0.19						c0.17	
v/s Ratio Perm										0.07		
v/c Ratio	0.39	0.34		0.50	0.34					0.29	0.74	
Uniform Delay, d1	35.9	12.1		33.9	10.5					25.5	28.6	
Progression Factor	1.00	1.00		0.89	0.95					1.00	1.00	
Incremental Delay, d2	2.3	0.6		2.2	0.5					0.4	7.2	
Delay (s)	38.2	12.7		32.3	10.5					25.9	35.9	
Level of Service	D	B		C	B					C	D	
Approach Delay (s)		14.4			13.2			0.0			33.2	
Approach LOS		B			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	49.3%	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)	40	512	38	84	509	80	0	0	0	105	238	52
Future Volume (veh/h)	40	512	38	84	509	80	0	0	0	105	238	52
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.97				1.00		0.88
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1752	1796	1292	1781	1767	1826				1811	1767	1900
Adj Flow Rate, veh/h	41	522	39	86	519	82				107	243	53
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	10	7	41	8	9	5				6	9	0
Cap, veh/h	62	1708	127	110	1620	255				402	319	70
Arrive On Green	0.04	0.53	0.53	0.09	0.75	0.75				0.23	0.23	0.23
Sat Flow, veh/h	1668	3202	238	1697	2890	454				1725	1368	298
Grp Volume(v), veh/h	41	277	284	86	300	301				107	0	296
Grp Sat Flow(s),veh/h/ln	1668	1706	1734	1697	1678	1666				1725	0	1667
Q Serve(g_s), s	1.9	7.2	7.3	4.0	4.8	4.8				4.1	0.0	13.2
Cycle Q Clear(g_c), s	1.9	7.2	7.3	4.0	4.8	4.8				4.1	0.0	13.2
Prop In Lane	1.00		0.14	1.00		0.27				1.00		0.18
Lane Grp Cap(c), veh/h	62	910	925	110	941	934				402	0	389
V/C Ratio(X)	0.66	0.30	0.31	0.78	0.32	0.32				0.27	0.00	0.76
Avail Cap(c_a), veh/h	282	910	925	286	941	934				507	0	490
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33				1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.98	0.98	0.98				1.00	0.00	1.00
Uniform Delay (d), s/veh	38.0	10.4	10.4	36.0	5.1	5.1				25.1	0.0	28.6
Incr Delay (d2), s/veh	11.2	0.9	0.9	11.3	0.9	0.9				0.4	0.0	5.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.8	2.8	1.9	1.6	1.6				1.7	0.0	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.2	11.3	11.3	47.3	5.9	6.0				25.4	0.0	34.0
LnGrp LOS	D	B	B	D	A	A				C	A	C
Approach Vol, veh/h		602			687						403	
Approach Delay, s/veh		13.8			11.1						31.7	
Approach LOS		B			B						C	

Timer - Assigned Phs	1	2		4	5	6
Phs Duration (G+Y+Rc), s	7.5	49.4		23.1	9.7	47.2
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s	13.5	29.5		23.5	13.5	29.5
Max Q Clear Time (g_c+I1), s	3.9	6.8		15.2	6.0	9.3
Green Ext Time (p_c), s	0.0	4.1		1.4	0.1	3.6

Intersection Summary			
HCM 6th Ctrl Delay			17.0
HCM 6th LOS			B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	620	0	0	612	19	58	54	91	0	0	0
Future Volume (vph)	0	620	0	0	612	19	58	54	91	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5			
Lane Util. Factor		0.95			0.95		1.00	1.00	1.00			
Frpb, ped/bikes		1.00			1.00		1.00	1.00	0.94			
Flpb, ped/bikes		1.00			1.00		1.00	1.00	1.00			
Frt		1.00			1.00		1.00	1.00	0.85			
Flt Protected		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (prot)		3438			3343		1318	1681	1493			
Flt Permitted		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (perm)		3438			3343		1318	1681	1493			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	639	0	0	631	20	60	56	94	0	0	0
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	63	0	0	0
Lane Group Flow (vph)	0	639	0	0	650	0	60	56	31	0	0	0
Confl. Peds. (#/hr)			51			75			42			
Confl. Bikes (#/hr)			1			3						
Heavy Vehicles (%)	0%	5%	0%	0%	7%	11%	37%	13%	2%	0%	0%	0%
Turn Type		NA			NA		custom	NA	Perm			
Protected Phases		2			2		3	8				
Permitted Phases							4		8			
Actuated Green, G (s)		58.5			58.5		8.0	12.5	12.5			
Effective Green, g (s)		58.5			58.5		8.0	12.5	12.5			
Actuated g/C Ratio		0.73			0.73		0.10	0.16	0.16			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)		2514			2444		205	262	233			
v/s Ratio Prot		0.19			c0.19		c0.02	0.03				
v/s Ratio Perm							0.02		0.02			
v/c Ratio		0.25			0.27		0.29	0.21	0.13			
Uniform Delay, d1		3.5			3.6		34.0	29.5	29.1			
Progression Factor		0.77			1.00		1.00	1.00	1.00			
Incremental Delay, d2		0.2			0.3		0.8	0.4	0.3			
Delay (s)		3.0			3.9		34.8	29.9	29.3			
Level of Service		A			A		C	C	C			
Approach Delay (s)		3.0			3.9			31.0			0.0	
Approach LOS		A			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	40.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	162	188	26	2	0	89
Future Volume (vph)	162	188	26	2	0	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5		3.5	3.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.86	
Flt Protected	0.95	1.00		0.96	1.00	
Satd. Flow (prot)	1556	1570		1765	1284	
Flt Permitted	0.95	1.00		0.96	1.00	
Satd. Flow (perm)	1556	1570		1765	1284	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	188	219	30	2	0	103
RTOR Reduction (vph)	0	0	0	0	75	0
Lane Group Flow (vph)	188	219	0	32	28	0
Confl. Peds. (#/hr)						2
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	16%	2%	3%	0%	0%	25%
Turn Type	Prot	custom	custom	NA	NA	
Protected Phases	4	4	2	2	6	
Permitted Phases		2 6	2			
Actuated Green, G (s)	16.5	53.0		16.5	16.5	
Effective Green, g (s)	16.5	53.0		16.5	16.5	
Actuated g/C Ratio	0.28	0.88		0.28	0.28	
Clearance Time (s)	3.5	3.5		3.5	3.5	
Lane Grp Cap (vph)	427	1570		485	353	
v/s Ratio Prot	c0.12	c0.04		0.02	0.02	
v/s Ratio Perm		0.10				
v/c Ratio	0.44	0.14		0.07	0.08	
Uniform Delay, d1	17.9	0.5		16.1	16.1	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.3	0.2		0.3	0.4	
Delay (s)	21.2	0.7		16.3	16.6	
Level of Service	C	A		B	B	
Approach Delay (s)	10.1			16.3	16.6	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support custom phasing.

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	36	3	30	70	63	0	10	19	33	7	2
Future Vol, veh/h	5	36	3	30	70	63	0	10	19	33	7	2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	40	25	0	5	10	25	0	0	6	27	14	0
Mvmt Flow	6	41	3	34	80	72	0	11	22	38	8	2
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	8.5	8.1	7.3	8.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	11%	30%	0%	79%
Vol Thru, %	34%	82%	70%	0%	17%
Vol Right, %	66%	7%	0%	100%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	29	44	100	63	42
LT Vol	0	5	30	0	33
Through Vol	10	36	70	0	7
RT Vol	19	3	0	63	2
Lane Flow Rate	33	51	115	72	48
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.038	0.071	0.157	0.083	0.068
Departure Headway (Hd)	4.133	5.061	4.905	4.139	5.088
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	870	711	724	854	707
Service Time	2.138	3.069	2.686	1.919	3.094
HCM Lane V/C Ratio	0.038	0.072	0.159	0.084	0.068
HCM Control Delay	7.3	8.5	8.6	7.3	8.5
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0.2	0.6	0.3	0.2

Intersection	
Int Delay, s/veh	7.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	53	0	0	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	53	0	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	6	6	0	0	8	0	10	10	0	8
Sign Control	Yield	Yield	Yield	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	57	0	0	0	0	0	0	0	0

Major/Minor	Major2			Minor2		
Conflicting Flow All	6	0	0	-	120	8
Stage 1	-	-	-	-	114	-
Stage 2	-	-	-	-	6	-
Critical Hdwy	4.1	-	-	-	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	-	4	3.3
Pot Cap-1 Maneuver	1628	-	-	0	774	1080
Stage 1	-	-	-	0	805	-
Stage 2	-	-	-	0	-	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1628	-	-	-	0	1080
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

Approach	WB	SB
HCM Control Delay, s	7.3	0
HCM LOS		A

Minor Lane/Major Mvmt	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1628	-	-	-
HCM Lane V/C Ratio	0.035	-	-	-
HCM Control Delay (s)	7.3	0	-	0
HCM Lane LOS	A	A	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	227	393	98	341	377	131	224	1187	148	155	870	70
Future Volume (vph)	227	393	98	341	377	131	224	1187	148	155	870	70
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	5.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.95		1.00	0.94		1.00	1.00	0.78	1.00	1.00	0.85
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	3259		3467	3208		1787	3574	1257	1752	3505	1369
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	3259		3467	3208		1787	3574	1257	1752	3505	1369
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)	236	409	102	355	393	136	233	1236	154	161	906	73
RTOR Reduction (vph)	0	17	0	0	25	0	0	0	28	0	0	35
Lane Group Flow (vph)	236	494	0	355	504	0	233	1236	126	161	906	38
Confl. Peds. (#/hr)			141			139			112			75
Heavy Vehicles (%)	0%	3%	0%	1%	2%	1%	1%	1%	0%	3%	3%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	custom
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2 3			6 7
Actuated Green, G (s)	14.4	27.2		16.6	29.4		21.8	55.0	76.6	21.2	54.4	73.8
Effective Green, g (s)	14.4	27.2		16.6	29.4		21.8	55.0	76.6	21.2	54.4	73.8
Actuated g/C Ratio	0.10	0.19		0.12	0.21		0.16	0.39	0.55	0.15	0.39	0.53
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	360	633		411	673		278	1404	687	265	1361	721
v/s Ratio Prot	0.07	0.15		c0.10	c0.16		c0.13	c0.35		0.09	0.26	
v/s Ratio Perm									0.10			0.03
v/c Ratio	0.66	0.78		0.86	0.75		0.84	0.88	0.18	0.61	0.67	0.05
Uniform Delay, d1	60.4	53.6		60.6	51.8		57.4	39.4	16.0	55.5	35.3	16.1
Progression Factor	1.00	1.00		1.00	1.00		1.13	0.82	0.57	1.00	1.00	1.00
Incremental Delay, d2	4.3	6.2		16.9	4.6		17.0	7.2	0.1	10.0	2.6	0.0
Delay (s)	64.7	59.8		77.5	56.4		81.7	39.3	9.2	65.5	37.9	16.1
Level of Service	E	E		E	E		F	D	A	E	D	B
Approach Delay (s)		61.3			64.9			42.5			40.4	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	49.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	89.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	4	14	73	8	182	16	1603	115	215	1207	7
Future Volume (vph)	32	4	14	73	8	182	16	1603	115	215	1207	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	10	12	11	10	12
Grade (%)		-1%			-9%			1%			-2%	
Total Lost time (s)	6.0	6.0			6.0		4.0	5.5	5.5	4.0	5.5	5.5
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.88			0.91		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00			0.99		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1633	1499			1583		1562	2987	1446	1570	2974	1468
Flt Permitted	0.32	1.00			0.90		0.22	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	547	1499			1444		356	2987	1446	136	2974	1468
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	33	4	14	75	8	188	16	1653	119	222	1244	7
RTOR Reduction (vph)	0	12	0	0	59	0	0	0	18	0	0	2
Lane Group Flow (vph)	33	6	0	0	212	0	16	1653	101	222	1244	5
Confl. Peds. (#/hr)			2	2								
Heavy Vehicles (%)	0%	0%	0%	3%	0%	0%	0%	1%	0%	1%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	21.0	21.0			21.0		96.0	94.5	94.5	101.5	101.5	101.5
Effective Green, g (s)	21.0	21.0			21.0		96.0	94.5	94.5	101.5	101.5	101.5
Actuated g/C Ratio	0.15	0.15			0.15		0.69	0.68	0.68	0.72	0.72	0.72
Clearance Time (s)	6.0	6.0			6.0		4.0	5.5	5.5	4.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0			2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	82	224			216		261	2016	976	190	2156	1064
v/s Ratio Prot		0.00					0.00	c0.55		c0.07	0.42	
v/s Ratio Perm	0.06				c0.15		0.04		0.07	c0.77		0.00
v/c Ratio	0.40	0.03			0.98		0.06	0.82	0.10	1.17	0.58	0.00
Uniform Delay, d1	53.8	50.8			59.3		8.4	16.6	7.9	32.9	9.1	5.3
Progression Factor	1.00	1.00			1.00		0.78	0.66	0.67	1.34	1.03	1.00
Incremental Delay, d2	1.2	0.0			57.0		0.0	2.8	0.2	116.3	1.1	0.0
Delay (s)	55.0	50.8			116.4		6.6	13.8	5.5	160.3	10.4	5.3
Level of Service	E	D			F		A	B	A	F	B	A
Approach Delay (s)		53.5			116.4			13.1			33.0	
Approach LOS		D			F			B			C	

Intersection Summary			
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology supports speed limit in the range of 25 to 55 mph.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	5	406	6	7	4	61	1524	0	1	1177	199
Future Volume (vph)	156	5	406	6	7	4	61	1524	0	1	1177	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	12	12	11	10	12	11	10	12
Grade (%)		-7%			0%			-1%			0%	
Total Lost time (s)		4.5	4.0		4.5		4.5	4.5		4.5	4.5	4.5
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.99		1.00		1.00	1.00		1.00	1.00	0.89
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.97		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1747	1600		1799		1719	3320		1745	3240	1444
Flt Permitted		0.72	1.00		0.91		0.20	1.00		0.12	1.00	1.00
Satd. Flow (perm)		1320	1600		1661		360	3320		227	3240	1444
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	164	5	427	6	7	4	64	1604	0	1	1239	209
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	46
Lane Group Flow (vph)	0	169	427	0	14	0	64	1604	0	1	1239	163
Confl. Peds. (#/hr)	1		4	4		1	15		9	9		15
Confl. Bikes (#/hr)			4									
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	2%	2%	0%	0%	4%	0%
Turn Type	Perm	NA	Free	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4		Free	4			2		2	2		2
Actuated Green, G (s)		21.7	140.0		21.7		109.3	109.3		109.3	109.3	109.3
Effective Green, g (s)		21.7	140.0		21.7		109.3	109.3		109.3	109.3	109.3
Actuated g/C Ratio		0.15	1.00		0.15		0.78	0.78		0.78	0.78	0.78
Clearance Time (s)		4.5			4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)		2.0			2.0		2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)		204	1600		257		281	2591		177	2529	1127
v/s Ratio Prot								c0.48			0.38	
v/s Ratio Perm		c0.13	0.27		0.01		0.18			0.00		0.11
v/c Ratio		0.83	0.27		0.05		0.23	0.62		0.01	0.49	0.14
Uniform Delay, d1		57.3	0.0		50.4		4.1	6.5		3.4	5.5	3.8
Progression Factor		1.00	1.00		1.00		0.06	0.04		1.00	1.00	1.00
Incremental Delay, d2		22.3	0.4		0.0		1.6	1.0		0.1	0.7	0.3
Delay (s)		79.7	0.4		50.4		1.9	1.2		3.4	6.1	4.1
Level of Service		E	A		D		A	A		A	A	A
Approach Delay (s)		22.9			50.4			1.3			5.8	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	0	17	8	0	5	17	1567	5	1	1576	6
Future Volume (vph)	16	0	17	8	0	5	17	1567	5	1	1576	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	11	12	12
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.91	
Frpb, ped/bikes		0.99			0.99		1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		0.99			0.99		1.00	1.00	1.00	1.00	1.00	
Frt		0.93			0.95		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98			0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1697			1722		1687	3539	1549	1745	4985	
Flt Permitted		0.88			0.87		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1525			1543		1687	3539	1549	1745	4985	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	16	0	17	8	0	5	17	1599	5	1	1608	6
RTOR Reduction (vph)	0	29	0	0	12	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	4	0	0	1	0	17	1599	4	1	1614	0
Confl. Peds. (#/hr)	7		5	5		7			8			8
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	7%	2%	0%	0%	4%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			
Actuated Green, G (s)		15.4			15.4		2.2	110.0	110.0	1.1	108.9	
Effective Green, g (s)		15.4			15.4		2.2	110.0	110.0	1.1	108.9	
Actuated g/C Ratio		0.11			0.11		0.02	0.79	0.79	0.01	0.78	
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)		1.0			1.0		3.0	3.0	3.0	3.0	0.2	
Lane Grp Cap (vph)		167			169		26	2780	1217	13	3877	
v/s Ratio Prot							0.01	c0.45		0.00	c0.32	
v/s Ratio Perm		c0.00			0.00				0.00			
v/c Ratio		0.02			0.01		0.65	0.58	0.00	0.08	0.42	
Uniform Delay, d1		55.6			55.5		68.5	5.9	3.2	68.9	5.1	
Progression Factor		1.00			1.00		1.34	0.04	1.00	1.15	0.72	
Incremental Delay, d2		0.0			0.0		30.5	0.5	0.0	2.3	0.3	
Delay (s)		55.6			55.5		122.6	0.8	3.2	81.8	4.0	
Level of Service		E			E		F	A	A	F	A	
Approach Delay (s)		55.6			55.5			2.1			4.0	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	3.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
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)	16	0	17	8	0	5	17	1567	5	1	1576	6
Future Volume (veh/h)	16	0	17	8	0	5	17	1567	5	1	1576	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.97	0.97		0.97	1.00		0.99	1.00		0.97
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	1796	1870	1900	1900	1841	1900
Adj Flow Rate, veh/h	16	0	17	8	0	5	17	1599	5	1	1608	6
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0	7	2	0	0	4	0
Cap, veh/h	74	12	50	93	9	38	30	2462	1109	265	4249	16
Arrive On Green	0.06	0.00	0.06	0.06	0.00	0.06	0.02	0.69	0.69	0.29	1.00	1.00
Sat Flow, veh/h	553	186	785	802	148	594	1711	3554	1601	1810	5167	19
Grp Volume(v), veh/h	33	0	0	13	0	0	17	1599	5	1	1042	572
Grp Sat Flow(s),veh/h/ln	1524	0	0	1545	0	0	1711	1777	1601	1810	1675	1837
Q Serve(g_s), s	0.7	0.0	0.0	0.0	0.0	0.0	1.4	35.2	0.1	0.1	0.0	0.0
Cycle Q Clear(g_c), s	2.7	0.0	0.0	1.0	0.0	0.0	1.4	35.2	0.1	0.1	0.0	0.0
Prop In Lane	0.48		0.52	0.62		0.38	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	136	0	0	141	0	0	30	2462	1109	265	2754	1510
V/C Ratio(X)	0.24	0.00	0.00	0.09	0.00	0.00	0.58	0.65	0.00	0.00	0.38	0.38
Avail Cap(c_a), veh/h	294	0	0	295	0	0	67	2462	1109	265	2754	1510
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.53	0.53	0.53	0.90	0.90	0.90
Uniform Delay (d), s/veh	62.5	0.0	0.0	61.8	0.0	0.0	68.3	12.0	6.6	42.2	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.1	0.0	0.0	9.0	0.7	0.0	0.0	0.4	0.7
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	1.1	0.0	0.0	0.4	0.0	0.0	0.7	13.4	0.0	0.0	0.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.9	0.0	0.0	61.9	0.0	0.0	77.3	12.7	6.6	42.2	0.4	0.7
LnGrp LOS	E	A	A	E	A	A	E	B	A	D	A	A
Approach Vol, veh/h		33			13			1621			1615	
Approach Delay, s/veh		62.9			61.9			13.4			0.5	
Approach LOS		E			E			B			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	25.0	101.5		13.5	6.9	119.6		13.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	97.0		24.0	5.5	97.0		24.0				
Max Q Clear Time (g_c+I1), s	2.1	37.2		4.7	3.4	2.0		3.0				
Green Ext Time (p_c), s	0.0	12.9		0.0	0.0	0.6		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			7.7									
HCM 6th LOS			A									

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	179	113	1483	527	37	1564
Future Volume (vph)	179	113	1483	527	37	1564
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	16	10	13	9	10
Grade (%)	-2%		0%			0%
Total Lost time (s)	5.0	5.0	5.5	5.0	5.0	5.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frpb, ped/bikes	1.00	0.98	1.00	0.99	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3699	1727	3303	1612	1533	4700
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3699	1727	3303	1612	1533	4700
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	186	118	1545	549	39	1629
RTOR Reduction (vph)	0	102	0	71	0	0
Lane Group Flow (vph)	186	16	1545	478	39	1629
Confl. Peds. (#/hr)		4		7		
Heavy Vehicles (%)	2%	5%	2%	3%	6%	3%
Turn Type	Prot	Perm	NA	custom	Prot	NA
Protected Phases	4		1	4 7	2	1 2
Permitted Phases		4		2		
Actuated Green, G (s)	19.3	19.3	80.7	116.4	24.5	110.7
Effective Green, g (s)	19.3	19.3	80.7	116.4	24.5	110.7
Actuated g/C Ratio	0.14	0.14	0.58	0.83	0.18	0.79
Clearance Time (s)	5.0	5.0	5.5		5.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	509	238	1903	1397	268	3716
v/s Ratio Prot	0.05		c0.47	c0.22	0.03	c0.35
v/s Ratio Perm		0.01		0.07		
v/c Ratio	0.37	0.07	0.81	0.34	0.15	0.44
Uniform Delay, d1	54.8	52.5	23.6	2.8	48.9	4.7
Progression Factor	1.00	1.00	1.77	1.38	0.81	0.21
Incremental Delay, d2	0.4	0.1	3.1	0.1	1.1	0.4
Delay (s)	55.2	52.6	44.8	4.0	40.7	1.3
Level of Service	E	D	D	A	D	A
Approach Delay (s)	54.2		34.1			2.2
Approach LOS	D		C			A

Intersection Summary			
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support exclusive ped or hold phases.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	23	1	0	2	22	2006	0	2	1707	8
Future Volume (vph)	5	0	23	1	0	2	22	2006	0	2	1707	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5		4.5		4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00		1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00		0.98		0.96		1.00	1.00		1.00	1.00	0.80
Flpb, ped/bikes	0.95		1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00		0.85		0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95		1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1707		984		1623		1135	3539		1805	3505	1290
Flt Permitted	0.93		1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1671		984		1623		1135	3539		1805	3505	1290
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	5	0	24	1	0	2	23	2068	0	2	1760	8
RTOR Reduction (vph)	0	0	23	0	3	0	0	0	0	0	0	1
Lane Group Flow (vph)	5	0	1	0	0	0	23	2068	0	2	1760	7
Confl. Peds. (#/hr)	39		5	5		39			7			66
Heavy Vehicles (%)	0%	0%	61%	0%	0%	0%	59%	2%	0%	0%	3%	0%
Turn Type	D.Pm		Perm	Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases					4		5	2		1	6	
Permitted Phases	4		4	4					2			6
Actuated Green, G (s)	4.3		4.3		4.3		6.0	120.9		1.3	116.2	116.2
Effective Green, g (s)	4.3		4.3		4.3		6.0	120.9		1.3	116.2	116.2
Actuated g/C Ratio	0.03		0.03		0.03		0.04	0.86		0.01	0.83	0.83
Clearance Time (s)	4.5		4.5		4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	3.0		3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	51		30		49		48	3056		16	2909	1070
v/s Ratio Prot							c0.02	c0.58		0.00	0.50	
v/s Ratio Perm	c0.00		0.00		0.00							0.01
v/c Ratio	0.10		0.02		0.00		0.48	0.68		0.12	0.61	0.01
Uniform Delay, d1	66.0		65.8		65.8		65.5	3.1		68.8	4.1	2.0
Progression Factor	1.00		1.00		1.00		0.83	1.78		1.02	0.73	1.00
Incremental Delay, d2	0.8		0.3		0.0		5.3	0.9		3.2	0.9	0.0
Delay (s)	66.8		66.1		65.8		59.9	6.5		73.2	3.8	2.0
Level of Service	E		E		E		E	A		E	A	A
Approach Delay (s)		66.3			65.8			7.0			3.9	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	2	12	0	0	472	4	1551	16	401	1323	3
Future Volume (vph)	4	2	12	0	0	472	4	1551	16	401	1323	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5				3.5	5.5	4.5	4.5	3.5	4.5	4.5
Lane Util. Factor	0.95	0.95				1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.98				0.99	1.00	1.00	0.97	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.87				0.86	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1715	1545				1531	1805	3539	1563	3303	3505	1530
Flt Permitted	0.95	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1715	1545				1531	1805	3539	1563	3303	3505	1530
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)	4	2	12	0	0	492	4	1616	17	418	1378	3
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	7	0	0	1
Lane Group Flow (vph)	4	3	0	0	0	492	4	1616	10	418	1378	2
Confl. Peds. (#/hr)			1						4			11
Confl. Bikes (#/hr)						3						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%	0%	2%	0%	6%	3%	0%
Turn Type	Split	NA				Perm	Prot	NA	custom	Prot	NA	custom
Protected Phases	3	3					5	2		1 4	6	
Permitted Phases						1 2 3 4			6			2
Actuated Green, G (s)	6.5	6.5				140.0	0.8	79.6	84.7	41.4	84.7	79.6
Effective Green, g (s)	6.5	6.5				131.0	0.8	79.6	84.7	41.4	84.7	79.6
Actuated g/C Ratio	0.05	0.05				0.94	0.01	0.57	0.61	0.30	0.61	0.57
Clearance Time (s)	4.5	4.5					5.5	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0					3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	79	71				1432	10	2012	945	976	2120	869
v/s Ratio Prot	0.00	0.00					0.00	c0.46		c0.13	0.39	
v/s Ratio Perm						c0.32			0.01			0.00
v/c Ratio	0.05	0.04				0.34	0.40	0.80	0.01	0.43	0.65	0.00
Uniform Delay, d1	63.8	63.8				0.4	69.4	24.0	11.0	39.8	18.0	13.0
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.00	1.25	0.58	1.00
Incremental Delay, d2	1.2	1.0				0.1	24.2	3.5	0.0	0.3	1.3	0.0
Delay (s)	65.0	64.7				0.6	93.6	27.5	11.0	50.0	11.7	13.0
Level of Service	E	E				A	F	C	B	D	B	B
Approach Delay (s)		64.8			0.6			27.5			20.6	
Approach LOS		E			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	535	52	111	503	137	0	0	0	125	213	55
Future Volume (vph)	67	535	52	111	503	137	0	0	0	125	213	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5					4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95					1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	0.91					1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00					0.90	1.00	
Frt	1.00	0.99		1.00	0.97					1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)	1770	3273		1787	3010					1591	1697	
Flt Permitted	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)	1770	3273		1787	3010					1591	1697	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	69	552	54	114	519	141	0	0	0	129	220	57
RTOR Reduction (vph)	0	8	0	0	26	0	0	0	0	0	13	0
Lane Group Flow (vph)	69	598	0	114	634	0	0	0	0	129	264	0
Confl. Peds. (#/hr)			162			166				84		132
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	2%	4%	31%	1%	7%	0%	0%	0%	0%	2%	5%	4%
Turn Type	Prot	NA		Prot	NA					Perm	NA	
Protected Phases	1	6		5	2						4	
Permitted Phases										4		
Actuated Green, G (s)	7.2	41.2		8.1	42.1					17.2	17.2	
Effective Green, g (s)	7.2	41.2		8.1	42.1					17.2	17.2	
Actuated g/C Ratio	0.09	0.52		0.10	0.53					0.21	0.21	
Clearance Time (s)	4.5	4.5		4.5	4.5					4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)	159	1685		180	1584					342	364	
v/s Ratio Prot	0.04	0.18		c0.06	c0.21						c0.16	
v/s Ratio Perm										0.08		
v/c Ratio	0.43	0.36		0.63	0.40					0.38	0.73	
Uniform Delay, d1	34.5	11.5		34.5	11.4					26.8	29.2	
Progression Factor	1.00	1.00		0.84	1.18					1.00	1.00	
Incremental Delay, d2	1.9	0.6		6.9	0.7					0.7	7.1	
Delay (s)	36.4	12.1		36.0	14.2					27.5	36.3	
Level of Service	D	B		D	B					C	D	
Approach Delay (s)		14.6			17.4			0.0			33.5	
Approach LOS		B			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	51.9%	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)	67	535	52	111	503	137	0	0	0	125	213	55
Future Volume (veh/h)	67	535	52	111	503	137	0	0	0	125	213	55
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.82	1.00		0.90				1.00		0.83
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1870	1841	1441	1885	1796	1900				1870	1826	1841
Adj Flow Rate, veh/h	69	552	54	114	519	141				129	220	57
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	2	4	31	1	7	0				2	5	4
Cap, veh/h	89	1618	157	145	1408	379				422	316	82
Arrive On Green	0.05	0.51	0.51	0.11	0.72	0.72				0.24	0.24	0.24
Sat Flow, veh/h	1781	3151	306	1795	2587	697				1781	1336	346
Grp Volume(v), veh/h	69	305	301	114	341	319				129	0	277
Grp Sat Flow(s),veh/h/ln	1781	1749	1709	1795	1706	1577				1781	0	1682
Q Serve(g_s), s	3.1	8.2	8.3	5.0	6.0	6.1				4.8	0.0	12.0
Cycle Q Clear(g_c), s	3.1	8.2	8.3	5.0	6.0	6.1				4.8	0.0	12.0
Prop In Lane	1.00		0.18	1.00		0.44				1.00		0.21
Lane Grp Cap(c), veh/h	89	898	877	145	929	858				422	0	398
V/C Ratio(X)	0.77	0.34	0.34	0.78	0.37	0.37				0.31	0.00	0.70
Avail Cap(c_a), veh/h	234	898	877	236	929	858				479	0	452
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33				1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.96	0.96	0.96				1.00	0.00	1.00
Uniform Delay (d), s/veh	37.5	11.5	11.5	35.0	5.9	5.9				25.1	0.0	27.9
Incr Delay (d2), s/veh	13.1	1.0	1.1	8.6	1.1	1.2				0.4	0.0	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	3.3	3.2	2.4	2.0	1.9				2.0	0.0	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.7	12.5	12.6	43.6	6.9	7.1				25.5	0.0	31.8
LnGrp LOS	D	B	B	D	A	A				C	A	C
Approach Vol, veh/h		675			774						406	
Approach Delay, s/veh		16.4			12.4						29.8	
Approach LOS		B			B						C	
Timer - Assigned Phs	1	2		4	5	6						
Phs Duration (G+Y+Rc), s	8.5	48.0		23.5	11.0	45.6						
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5						
Max Green Setting (Gmax), s	10.5	34.5		21.5	10.5	34.5						
Max Q Clear Time (g_c+I1), s	5.1	8.1		14.0	7.0	10.3						
Green Ext Time (p_c), s	0.1	4.8		1.3	0.1	4.2						
Intersection Summary												
HCM 6th Ctrl Delay			17.7									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	660	0	0	635	26	116	126	144	0	0	0
Future Volume (vph)	0	660	0	0	635	26	116	126	144	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5			
Lane Util. Factor		0.95			0.95		1.00	1.00	1.00			
Frpb, ped/bikes		1.00			0.99		1.00	1.00	0.88			
Flpb, ped/bikes		1.00			1.00		1.00	1.00	1.00			
Frt		1.00			0.99		1.00	1.00	0.85			
Flt Protected		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (prot)		3438			3494		1492	1759	1412			
Flt Permitted		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (perm)		3438			3494		1492	1759	1412			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	717	0	0	690	28	126	137	157	0	0	0
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	34	0	0	0
Lane Group Flow (vph)	0	717	0	0	716	0	126	137	123	0	0	0
Confl. Peds. (#/hr)			86			142			98			
Confl. Bikes (#/hr)			1			3						
Heavy Vehicles (%)	0%	5%	0%	0%	2%	0%	21%	8%	1%	0%	0%	0%
Turn Type		NA			NA		custom	NA	Perm			
Protected Phases		2			2		3	8				
Permitted Phases							4		8			
Actuated Green, G (s)		53.8			53.8		12.7	17.2	17.2			
Effective Green, g (s)		53.8			53.8		12.7	17.2	17.2			
Actuated g/C Ratio		0.67			0.67		0.16	0.21	0.21			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)		2312			2349		320	378	303			
v/s Ratio Prot		c0.21			0.20		0.06	0.08				
v/s Ratio Perm							0.03		c0.09			
v/c Ratio		0.31			0.30		0.39	0.36	0.41			
Uniform Delay, d1		5.4			5.4		31.0	26.7	27.0			
Progression Factor		0.75			1.00		1.00	1.00	1.00			
Incremental Delay, d2		0.3			0.3		0.8	0.6	0.9			
Delay (s)		4.4			5.7		31.8	27.3	27.9			
Level of Service		A			A		C	C	C			
Approach Delay (s)		4.4			5.7			28.9			0.0	
Approach LOS		A			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	44.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	28	37	193	2	0	98
Future Volume (vph)	28	37	193	2	0	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5		3.5	3.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1543	1506		1810	1488	
Flt Permitted	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1543	1506		1810	1488	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	31	41	214	2	0	109
RTOR Reduction (vph)	0	0	0	0	79	0
Lane Group Flow (vph)	31	41	0	216	30	0
Confl. Peds. (#/hr)		4				6
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	17%	6%	0%	0%	0%	7%
Turn Type	Prot	custom	Split	NA	NA	
Protected Phases	4	4	2	2	6	
Permitted Phases		2 6				
Actuated Green, G (s)	16.5	53.0		16.5	16.5	
Effective Green, g (s)	16.5	53.0		16.5	16.5	
Actuated g/C Ratio	0.28	0.88		0.28	0.28	
Clearance Time (s)	3.5	3.5		3.5	3.5	
Lane Grp Cap (vph)	424	1506		497	409	
v/s Ratio Prot	c0.02	0.01		c0.12	c0.02	
v/s Ratio Perm		0.02				
v/c Ratio	0.07	0.03		0.43	0.07	
Uniform Delay, d1	16.1	0.4		17.9	16.1	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.0		2.8	0.3	
Delay (s)	16.4	0.5		20.7	16.4	
Level of Service	B	A		C	B	
Approach Delay (s)	7.3			20.7	16.4	
Approach LOS	A			C	B	

Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.19		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	37.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support custom phasing.

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			↰	↱		✥			✥	
Traffic Vol, veh/h	0	36	3	11	13	6	0	4	51	11	1	0
Future Vol, veh/h	0	36	3	11	13	6	0	4	51	11	1	0
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Heavy Vehicles, %	0	0	67	0	0	50	0	0	0	7	0	0
Mvmt Flow	0	52	4	16	19	9	0	6	74	16	1	0
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	7.5	7.7	6.9	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	46%	0%	92%
Vol Thru, %	7%	92%	54%	0%	8%
Vol Right, %	93%	8%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	55	39	24	6	12
LT Vol	0	0	11	0	11
Through Vol	4	36	13	0	1
RT Vol	51	3	0	6	0
Lane Flow Rate	80	57	35	9	17
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.078	0.065	0.048	0.01	0.021
Departure Headway (Hd)	3.527	4.156	4.928	3.997	4.435
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	1002	859	726	893	799
Service Time	1.596	2.198	2.663	1.732	2.507
HCM Lane V/C Ratio	0.08	0.066	0.048	0.01	0.021
HCM Control Delay	6.9	7.5	7.9	6.8	7.6
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.3	0.2	0.2	0	0.1

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	109	0	0	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	109	0	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	30	30	0	0	7	0	28	28	0	7
Sign Control	Yield	Yield	Yield	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	21	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	114	0	0	0	0	0	0	0	0

Major/Minor	Major2			Minor2		
Conflicting Flow All	30	0	0	-	258	7
Stage 1	-	-	-	-	228	-
Stage 2	-	-	-	-	30	-
Critical Hdwy	4.31	-	-	-	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.389	-	-	-	4	3.3
Pot Cap-1 Maneuver	1468	-	-	0	650	1081
Stage 1	-	-	-	0	719	-
Stage 2	-	-	-	0	-	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1468	-	-	-	0	1081
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

Approach	WB	SB
HCM Control Delay, s	7.7	0
HCM LOS		A

Minor Lane/Major Mvmt	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1468	-	-	-
HCM Lane V/C Ratio	0.077	-	-	-
HCM Control Delay (s)	7.7	0	-	0
HCM Lane LOS	A	A	-	A
HCM 95th %tile Q(veh)	0.3	-	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	227	393	98	341	377	131	224	1197	148	155	874	70
Future Volume (vph)	227	393	98	341	377	131	224	1197	148	155	874	70
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	5.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.95		1.00	0.94		1.00	1.00	0.78	1.00	1.00	0.85
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	3259		3467	3208		1787	3574	1257	1752	3505	1369
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	3259		3467	3208		1787	3574	1257	1752	3505	1369
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)	236	409	102	355	393	136	233	1247	154	161	910	73
RTOR Reduction (vph)	0	17	0	0	25	0	0	0	28	0	0	35
Lane Group Flow (vph)	236	494	0	355	504	0	233	1247	126	161	910	38
Confl. Peds. (#/hr)			141			139			112			75
Heavy Vehicles (%)	0%	3%	0%	1%	2%	1%	1%	1%	0%	3%	3%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	custom
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2 3			6 7
Actuated Green, G (s)	14.4	27.2		16.6	29.4		21.8	55.0	76.6	21.2	54.4	73.8
Effective Green, g (s)	14.4	27.2		16.6	29.4		21.8	55.0	76.6	21.2	54.4	73.8
Actuated g/C Ratio	0.10	0.19		0.12	0.21		0.16	0.39	0.55	0.15	0.39	0.53
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	360	633		411	673		278	1404	687	265	1361	721
v/s Ratio Prot	0.07	0.15		c0.10	c0.16		c0.13	c0.35		0.09	0.26	
v/s Ratio Perm									0.10			0.03
v/c Ratio	0.66	0.78		0.86	0.75		0.84	0.89	0.18	0.61	0.67	0.05
Uniform Delay, d1	60.4	53.6		60.6	51.8		57.4	39.6	16.0	55.5	35.4	16.1
Progression Factor	1.00	1.00		1.00	1.00		0.88	1.00	1.55	1.00	1.00	1.00
Incremental Delay, d2	4.3	6.2		16.9	4.6		16.9	7.6	0.1	10.0	2.6	0.0
Delay (s)	64.7	59.8		77.5	56.4		67.4	47.2	24.8	65.5	38.0	16.1
Level of Service	E	E		E	E		E	D	C	E	D	B
Approach Delay (s)		61.3			64.9			48.0			40.5	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	51.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	4	14	74	8	182	16	1615	116	215	1212	7
Future Volume (vph)	32	4	14	74	8	182	16	1615	116	215	1212	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	10	12	11	10	12
Grade (%)		-1%			-9%			1%			-2%	
Total Lost time (s)	6.0	6.0			6.0		4.0	5.5	5.5	4.0	5.5	5.5
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.88			0.91		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00			0.99		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1633	1499			1583		1562	2987	1446	1570	2974	1468
Flt Permitted	0.32	1.00			0.90		0.21	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	549	1499			1443		353	2987	1446	133	2974	1468
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	33	4	14	76	8	188	16	1665	120	222	1249	7
RTOR Reduction (vph)	0	12	0	0	58	0	0	0	18	0	0	2
Lane Group Flow (vph)	33	6	0	0	214	0	16	1665	102	222	1249	5
Confl. Peds. (#/hr)			2	2								
Heavy Vehicles (%)	0%	0%	0%	3%	0%	0%	0%	1%	0%	1%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	21.0	21.0			21.0		96.0	94.5	94.5	101.5	101.5	101.5
Effective Green, g (s)	21.0	21.0			21.0		96.0	94.5	94.5	101.5	101.5	101.5
Actuated g/C Ratio	0.15	0.15			0.15		0.69	0.68	0.68	0.72	0.72	0.72
Clearance Time (s)	6.0	6.0			6.0		4.0	5.5	5.5	4.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0			2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	82	224			216		259	2016	976	188	2156	1064
v/s Ratio Prot		0.00					0.00	c0.56		c0.08	0.42	
v/s Ratio Perm	0.06				c0.15		0.04		0.07	c0.78		0.00
v/c Ratio	0.40	0.03			0.99		0.06	0.83	0.10	1.18	0.58	0.00
Uniform Delay, d1	53.8	50.8			59.4		8.5	16.7	8.0	33.5	9.1	5.3
Progression Factor	1.00	1.00			1.00		0.78	0.66	0.67	0.83	1.58	1.00
Incremental Delay, d2	1.2	0.0			59.1		0.0	2.9	0.2	121.1	1.1	0.0
Delay (s)	55.0	50.8			118.5		6.7	14.0	5.5	148.9	15.5	5.3
Level of Service	E	D			F		A	B	A	F	B	A
Approach Delay (s)		53.5			118.5			13.4			35.5	
Approach LOS		D			F			B			D	

Intersection Summary			
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	99.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology supports speed limit in the range of 25 to 55 mph.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	5	407	6	7	4	63	1537	0	1	1183	199
Future Volume (vph)	156	5	407	6	7	4	63	1537	0	1	1183	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	12	12	11	10	12	11	10	12
Grade (%)		-7%			0%			-1%			0%	
Total Lost time (s)		4.5	4.0		4.5		4.5	4.5		4.5	4.5	4.5
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.99		1.00		1.00	1.00		1.00	1.00	0.89
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.97		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1747	1600		1799		1719	3320		1745	3240	1444
Flt Permitted		0.72	1.00		0.91		0.20	1.00		0.12	1.00	1.00
Satd. Flow (perm)		1320	1600		1661		357	3320		223	3240	1444
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	164	5	428	6	7	4	66	1618	0	1	1245	209
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	46
Lane Group Flow (vph)	0	169	428	0	14	0	66	1618	0	1	1245	163
Confl. Peds. (#/hr)	1		4	4		1	15		9	9		15
Confl. Bikes (#/hr)			4									
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	2%	2%	0%	0%	4%	0%
Turn Type	Perm	NA	Free	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4		Free	4			2		2	2		2
Actuated Green, G (s)		21.7	140.0		21.7		109.3	109.3		109.3	109.3	109.3
Effective Green, g (s)		21.7	140.0		21.7		109.3	109.3		109.3	109.3	109.3
Actuated g/C Ratio		0.15	1.00		0.15		0.78	0.78		0.78	0.78	0.78
Clearance Time (s)		4.5			4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)		2.0			2.0		2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)		204	1600		257		278	2591		174	2529	1127
v/s Ratio Prot								c0.49			0.38	
v/s Ratio Perm		c0.13	0.27		0.01		0.18			0.00		0.11
v/c Ratio		0.83	0.27		0.05		0.24	0.62		0.01	0.49	0.14
Uniform Delay, d1		57.3	0.0		50.4		4.1	6.6		3.4	5.5	3.8
Progression Factor		1.00	1.00		1.00		0.06	0.04		1.00	1.00	1.00
Incremental Delay, d2		22.3	0.4		0.0		1.7	1.0		0.1	0.7	0.3
Delay (s)		79.7	0.4		50.4		2.0	1.3		3.4	6.2	4.1
Level of Service		E	A		D		A	A		A	A	A
Approach Delay (s)		22.9			50.4			1.3			5.9	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	0	17	8	0	5	17	1582	5	1	1583	6
Future Volume (vph)	16	0	17	8	0	5	17	1582	5	1	1583	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	11	12	12
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.91	
Frpb, ped/bikes		0.99			0.99		1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		0.99			0.99		1.00	1.00	1.00	1.00	1.00	
Frt		0.93			0.95		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98			0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1697			1722		1687	3539	1549	1745	4985	
Flt Permitted		0.88			0.87		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1525			1543		1687	3539	1549	1745	4985	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	16	0	17	8	0	5	17	1614	5	1	1615	6
RTOR Reduction (vph)	0	29	0	0	12	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	4	0	0	1	0	17	1614	4	1	1621	0
Confl. Peds. (#/hr)	7		5	5		7			8			8
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	7%	2%	0%	0%	4%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			
Actuated Green, G (s)		15.4			15.4		2.2	110.0	110.0	1.1	108.9	
Effective Green, g (s)		15.4			15.4		2.2	110.0	110.0	1.1	108.9	
Actuated g/C Ratio		0.11			0.11		0.02	0.79	0.79	0.01	0.78	
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)		1.0			1.0		3.0	3.0	3.0	3.0	0.2	
Lane Grp Cap (vph)		167			169		26	2780	1217	13	3877	
v/s Ratio Prot							0.01	c0.46		0.00	c0.33	
v/s Ratio Perm		c0.00			0.00				0.00			
v/c Ratio		0.02			0.01		0.65	0.58	0.00	0.08	0.42	
Uniform Delay, d1		55.6			55.5		68.5	5.9	3.2	68.9	5.1	
Progression Factor		1.00			1.00		1.35	0.05	1.00	1.15	0.72	
Incremental Delay, d2		0.0			0.0		29.9	0.5	0.0	2.3	0.3	
Delay (s)		55.6			55.5		122.1	0.8	3.2	81.8	4.0	
Level of Service		E			E		F	A	A	F	A	
Approach Delay (s)		55.6			55.5			2.1			4.0	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	3.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
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)	16	0	17	8	0	5	17	1582	5	1	1583	6
Future Volume (veh/h)	16	0	17	8	0	5	17	1582	5	1	1583	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.97	0.97		0.97	1.00		0.99	1.00		0.97
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	1796	1870	1900	1900	1841	1900
Adj Flow Rate, veh/h	16	0	17	8	0	5	17	1614	5	1	1615	6
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0	7	2	0	0	4	0
Cap, veh/h	74	12	50	93	9	38	30	2462	1109	265	4249	16
Arrive On Green	0.06	0.00	0.06	0.06	0.00	0.06	0.02	0.69	0.69	0.29	1.00	1.00
Sat Flow, veh/h	553	186	785	802	148	594	1711	3554	1601	1810	5168	19
Grp Volume(v), veh/h	33	0	0	13	0	0	17	1614	5	1	1047	574
Grp Sat Flow(s),veh/h/ln	1524	0	0	1545	0	0	1711	1777	1601	1810	1675	1837
Q Serve(g_s), s	0.7	0.0	0.0	0.0	0.0	0.0	1.4	35.8	0.1	0.1	0.0	0.0
Cycle Q Clear(g_c), s	2.7	0.0	0.0	1.0	0.0	0.0	1.4	35.8	0.1	0.1	0.0	0.0
Prop In Lane	0.48		0.52	0.62		0.38	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	136	0	0	141	0	0	30	2462	1109	265	2754	1510
V/C Ratio(X)	0.24	0.00	0.00	0.09	0.00	0.00	0.58	0.66	0.00	0.00	0.38	0.38
Avail Cap(c_a), veh/h	294	0	0	295	0	0	67	2462	1109	265	2754	1510
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.52	0.52	0.52	0.90	0.90	0.90
Uniform Delay (d), s/veh	62.5	0.0	0.0	61.8	0.0	0.0	68.3	12.1	6.6	42.2	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.1	0.0	0.0	8.9	0.7	0.0	0.0	0.4	0.7
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	1.1	0.0	0.0	0.4	0.0	0.0	0.7	13.6	0.0	0.0	0.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.9	0.0	0.0	61.9	0.0	0.0	77.1	12.8	6.6	42.2	0.4	0.7
LnGrp LOS	E	A	A	E	A	A	E	B	A	D	A	A
Approach Vol, veh/h		33			13			1636			1622	
Approach Delay, s/veh		62.9			61.9			13.5			0.5	
Approach LOS		E			E			B			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	25.0	101.5		13.5	6.9	119.6		13.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	97.0		24.0	5.5	97.0		24.0				
Max Q Clear Time (g_c+I1), s	2.1	37.8		4.7	3.4	2.0		3.0				
Green Ext Time (p_c), s	0.0	13.1		0.0	0.0	0.6		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			7.8									
HCM 6th LOS			A									

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	221	128	1483	545	44	1564
Future Volume (vph)	221	128	1483	545	44	1564
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	16	10	13	9	10
Grade (%)	-2%		0%			0%
Total Lost time (s)	5.0	5.0	5.5	5.0	5.0	5.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frpb, ped/bikes	1.00	0.98	1.00	0.99	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3699	1727	3303	1612	1533	4700
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3699	1727	3303	1612	1533	4700
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	230	133	1545	568	46	1629
RTOR Reduction (vph)	0	113	0	73	0	0
Lane Group Flow (vph)	230	20	1545	495	46	1629
Confl. Peds. (#/hr)		4		7		
Heavy Vehicles (%)	2%	5%	2%	3%	6%	3%
Turn Type	Prot	Perm	NA	custom	Prot	NA
Protected Phases	4		1	4 7	2	1 2
Permitted Phases		4		2		
Actuated Green, G (s)	20.6	20.6	79.4	116.4	24.5	109.4
Effective Green, g (s)	20.6	20.6	79.4	116.4	24.5	109.4
Actuated g/C Ratio	0.15	0.15	0.57	0.83	0.18	0.78
Clearance Time (s)	5.0	5.0	5.5		5.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	544	254	1873	1397	268	3672
v/s Ratio Prot	0.06		c0.47	c0.23	0.03	c0.35
v/s Ratio Perm		0.01		0.07		
v/c Ratio	0.42	0.08	0.82	0.35	0.17	0.44
Uniform Delay, d1	54.3	51.5	24.6	2.8	49.1	5.1
Progression Factor	1.00	1.00	1.74	1.46	0.82	0.24
Incremental Delay, d2	0.5	0.1	3.3	0.1	1.3	0.4
Delay (s)	54.8	51.6	46.2	4.2	41.5	1.6
Level of Service	D	D	D	A	D	A
Approach Delay (s)	53.7		34.9			2.7
Approach LOS	D		C			A

Intersection Summary			
HCM 2000 Control Delay	23.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support exclusive ped or hold phases.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	23	1	0	2	22	2024	0	2	1749	8
Future Volume (vph)	5	0	23	1	0	2	22	2024	0	2	1749	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5		4.5		4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00		1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00		0.98		0.96		1.00	1.00		1.00	1.00	0.80
Flpb, ped/bikes	0.95		1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00		0.85		0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95		1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1707		984		1623		1135	3539		1805	3505	1290
Flt Permitted	0.93		1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1671		984		1623		1135	3539		1805	3505	1290
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	5	0	24	1	0	2	23	2087	0	2	1803	8
RTOR Reduction (vph)	0	0	23	0	3	0	0	0	0	0	0	1
Lane Group Flow (vph)	5	0	1	0	0	0	23	2087	0	2	1803	7
Confl. Peds. (#/hr)	39		5	5		39			7			66
Heavy Vehicles (%)	0%	0%	61%	0%	0%	0%	59%	2%	0%	0%	3%	0%
Turn Type	D.Pm		Perm	Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases					4		5	2		1	6	
Permitted Phases	4		4	4					2			6
Actuated Green, G (s)	4.3		4.3		4.3		6.0	120.9		1.3	116.2	116.2
Effective Green, g (s)	4.3		4.3		4.3		6.0	120.9		1.3	116.2	116.2
Actuated g/C Ratio	0.03		0.03		0.03		0.04	0.86		0.01	0.83	0.83
Clearance Time (s)	4.5		4.5		4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	3.0		3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	51		30		49		48	3056		16	2909	1070
v/s Ratio Prot							c0.02	c0.59		0.00	0.51	
v/s Ratio Perm	c0.00		0.00		0.00							0.01
v/c Ratio	0.10		0.02		0.00		0.48	0.68		0.12	0.62	0.01
Uniform Delay, d1	66.0		65.8		65.8		65.5	3.2		68.8	4.2	2.0
Progression Factor	1.00		1.00		1.00		0.83	1.83		0.98	0.73	1.00
Incremental Delay, d2	0.8		0.3		0.0		5.3	0.9		3.2	0.9	0.0
Delay (s)	66.8		66.1		65.8		59.8	6.7		70.5	4.0	2.0
Level of Service	E		E		E		E	A		E	A	A
Approach Delay (s)		66.3			65.8			7.3			4.0	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	88.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	2	12	0	0	488	4	1553	16	431	1335	3
Future Volume (vph)	4	2	12	0	0	488	4	1553	16	431	1335	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5				3.5	5.5	4.5	4.5	3.5	4.5	4.5
Lane Util. Factor	0.95	0.95				1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.98				0.99	1.00	1.00	0.97	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.87				0.86	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1715	1545				1531	1805	3539	1563	3303	3505	1530
Flt Permitted	0.95	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1715	1545				1531	1805	3539	1563	3303	3505	1530
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)	4	2	12	0	0	508	4	1618	17	449	1391	3
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	7	0	0	1
Lane Group Flow (vph)	4	3	0	0	0	508	4	1618	10	449	1391	2
Confl. Peds. (#/hr)			1						4			11
Confl. Bikes (#/hr)						3						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%	0%	2%	0%	6%	3%	0%
Turn Type	Split	NA				Perm	Prot	NA	custom	Prot	NA	custom
Protected Phases	3	3					5	2		1 4	6	
Permitted Phases						1 2 3 4			6			2
Actuated Green, G (s)	6.5	6.5				140.0	0.8	79.6	84.7	41.4	84.7	79.6
Effective Green, g (s)	6.5	6.5				131.0	0.8	79.6	84.7	41.4	84.7	79.6
Actuated g/C Ratio	0.05	0.05				0.94	0.01	0.57	0.61	0.30	0.61	0.57
Clearance Time (s)	4.5	4.5					5.5	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0					3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	79	71				1432	10	2012	945	976	2120	869
v/s Ratio Prot	0.00	0.00					0.00	c0.46		c0.14	0.40	
v/s Ratio Perm						c0.33			0.01			0.00
v/c Ratio	0.05	0.04				0.35	0.40	0.80	0.01	0.46	0.66	0.00
Uniform Delay, d1	63.8	63.8				0.4	69.4	24.0	11.0	40.2	18.1	13.0
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.00	1.27	0.56	1.00
Incremental Delay, d2	1.2	1.0				0.2	24.2	3.5	0.0	0.3	1.3	0.0
Delay (s)	65.0	64.7				0.6	93.6	27.5	11.0	51.3	11.5	13.0
Level of Service	E	E				A	F	C	B	D	B	B
Approach Delay (s)		64.8			0.6			27.5			21.2	
Approach LOS		E			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	88.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	564	52	111	519	137	0	0	0	125	213	55
Future Volume (vph)	68	564	52	111	519	137	0	0	0	125	213	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5					4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95					1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	0.91					1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00					0.90	1.00	
Frt	1.00	0.99		1.00	0.97					1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)	1770	3281		1787	3018					1591	1697	
Flt Permitted	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)	1770	3281		1787	3018					1591	1697	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	70	581	54	114	535	141	0	0	0	129	220	57
RTOR Reduction (vph)	0	7	0	0	25	0	0	0	0	0	13	0
Lane Group Flow (vph)	70	628	0	114	651	0	0	0	0	129	264	0
Confl. Peds. (#/hr)			162			166				84		132
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	2%	4%	31%	1%	7%	0%	0%	0%	0%	2%	5%	4%
Turn Type	Prot	NA		Prot	NA					Perm	NA	
Protected Phases	1	6		5	2						4	
Permitted Phases										4		
Actuated Green, G (s)	7.2	41.2		8.1	42.1					17.2	17.2	
Effective Green, g (s)	7.2	41.2		8.1	42.1					17.2	17.2	
Actuated g/C Ratio	0.09	0.52		0.10	0.53					0.21	0.21	
Clearance Time (s)	4.5	4.5		4.5	4.5					4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)	159	1689		180	1588					342	364	
v/s Ratio Prot	0.04	0.19		c0.06	c0.22						c0.16	
v/s Ratio Perm										0.08		
v/c Ratio	0.44	0.37		0.63	0.41					0.38	0.73	
Uniform Delay, d1	34.5	11.6		34.5	11.4					26.8	29.2	
Progression Factor	1.00	1.00		0.84	1.11					1.00	1.00	
Incremental Delay, d2	1.9	0.6		6.9	0.8					0.7	7.1	
Delay (s)	36.4	12.3		35.7	13.5					27.5	36.3	
Level of Service	D	B		D	B					C	D	
Approach Delay (s)		14.7			16.7			0.0			33.5	
Approach LOS		B			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	52.3%	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)	68	564	52	111	519	137	0	0	0	125	213	55
Future Volume (veh/h)	68	564	52	111	519	137	0	0	0	125	213	55
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.83	1.00		0.90				1.00		0.83
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1870	1841	1441	1885	1796	1900				1870	1826	1841
Adj Flow Rate, veh/h	70	581	54	114	535	141				129	220	57
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				0.97	0.97	0.97
Percent Heavy Veh, %	2	4	31	1	7	0				2	5	4
Cap, veh/h	91	1630	151	144	1416	371				422	316	82
Arrive On Green	0.05	0.51	0.51	0.16	1.00	1.00				0.24	0.24	0.24
Sat Flow, veh/h	1781	3170	293	1795	2606	682				1781	1336	346
Grp Volume(v), veh/h	70	319	316	114	349	327				129	0	277
Grp Sat Flow(s),veh/h/ln	1781	1749	1715	1795	1706	1582				1781	0	1682
Q Serve(g_s), s	3.1	8.7	8.8	4.9	0.0	0.0				4.8	0.0	12.0
Cycle Q Clear(g_c), s	3.1	8.7	8.8	4.9	0.0	0.0				4.8	0.0	12.0
Prop In Lane	1.00		0.17	1.00		0.43				1.00		0.21
Lane Grp Cap(c), veh/h	91	899	882	144	927	860				422	0	398
V/C Ratio(X)	0.77	0.36	0.36	0.79	0.38	0.38				0.31	0.00	0.70
Avail Cap(c_a), veh/h	234	899	882	236	927	860				479	0	452
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.96	0.96	0.96				1.00	0.00	1.00
Uniform Delay (d), s/veh	37.5	11.6	11.6	32.9	0.0	0.0				25.1	0.0	27.9
Incr Delay (d2), s/veh	12.9	1.1	1.1	9.0	1.1	1.2				0.4	0.0	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	3.4	3.4	2.3	0.3	0.3				2.0	0.0	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.4	12.6	12.7	42.0	1.1	1.2				25.5	0.0	31.8
LnGrp LOS	D	B	B	D	A	A				C	A	C
Approach Vol, veh/h		705			790						406	
Approach Delay, s/veh		16.4			7.1						29.8	
Approach LOS		B			A						C	
Timer - Assigned Phs	1	2		4	5	6						
Phs Duration (G+Y+Rc), s	8.6	48.0		23.5	10.9	45.6						
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5						
Max Green Setting (Gmax), s	10.5	34.5		21.5	10.5	34.5						
Max Q Clear Time (g_c+I1), s	5.1	2.0		14.0	6.9	10.8						
Green Ext Time (p_c), s	0.1	5.2		1.3	0.1	4.4						
Intersection Summary												
HCM 6th Ctrl Delay			15.4									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	689	0	0	651	26	116	126	144	0	0	0
Future Volume (vph)	0	689	0	0	651	26	116	126	144	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5			
Lane Util. Factor		0.95			0.95		1.00	1.00	1.00			
Frpb, ped/bikes		1.00			0.99		1.00	1.00	0.88			
Flpb, ped/bikes		1.00			1.00		1.00	1.00	1.00			
Frt		1.00			0.99		1.00	1.00	0.85			
Flt Protected		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (prot)		3438			3495		1492	1759	1412			
Flt Permitted		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (perm)		3438			3495		1492	1759	1412			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	749	0	0	708	28	126	137	157	0	0	0
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	30	0	0	0
Lane Group Flow (vph)	0	749	0	0	734	0	126	137	127	0	0	0
Confl. Peds. (#/hr)			86			142			98			
Confl. Bikes (#/hr)			1			3						
Heavy Vehicles (%)	0%	5%	0%	0%	2%	0%	21%	8%	1%	0%	0%	0%
Turn Type		NA			NA		custom	NA	Perm			
Protected Phases		2			2		3	8				
Permitted Phases							4		8			
Actuated Green, G (s)		53.6			53.6		12.9	17.4	17.4			
Effective Green, g (s)		53.6			53.6		12.9	17.4	17.4			
Actuated g/C Ratio		0.67			0.67		0.16	0.22	0.22			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)		2303			2341		324	382	307			
v/s Ratio Prot		c0.22			0.21		0.06	0.08				
v/s Ratio Perm							0.03		c0.09			
v/c Ratio		0.33			0.31		0.39	0.36	0.41			
Uniform Delay, d1		5.6			5.5		30.8	26.6	26.9			
Progression Factor		0.76			1.00		1.00	1.00	1.00			
Incremental Delay, d2		0.4			0.4		0.8	0.6	0.9			
Delay (s)		4.6			5.9		31.6	27.1	27.8			
Level of Service		A			A		C	C	C			
Approach Delay (s)		4.6			5.9			28.7			0.0	
Approach LOS		A			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	53	37	193	2	0	155
Future Volume (vph)	53	37	193	2	0	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5		3.5	3.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1543	1506		1810	1488	
Flt Permitted	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1543	1506		1810	1488	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	59	41	214	2	0	172
RTOR Reduction (vph)	0	0	0	0	125	0
Lane Group Flow (vph)	59	41	0	216	47	0
Confl. Peds. (#/hr)		4				6
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	17%	6%	0%	0%	0%	7%
Turn Type	Prot	custom	Split	NA	NA	
Protected Phases	4	4	2	2	6	
Permitted Phases		2 6				
Actuated Green, G (s)	16.5	53.0		16.5	16.5	
Effective Green, g (s)	16.5	53.0		16.5	16.5	
Actuated g/C Ratio	0.28	0.88		0.28	0.28	
Clearance Time (s)	3.5	3.5		3.5	3.5	
Lane Grp Cap (vph)	424	1506		497	409	
v/s Ratio Prot	c0.04	0.01		c0.12	c0.03	
v/s Ratio Perm		0.02				
v/c Ratio	0.14	0.03		0.43	0.12	
Uniform Delay, d1	16.4	0.4		17.9	16.3	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.0		2.8	0.6	
Delay (s)	17.1	0.5		20.7	16.9	
Level of Service	B	A		C	B	
Approach Delay (s)	10.3			20.7	16.9	
Approach LOS	B			C	B	

Intersection Summary			
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support custom phasing.

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			↰	↱		✥			✥	
Traffic Vol, veh/h	0	64	3	11	26	18	0	4	51	40	1	0
Future Vol, veh/h	0	64	3	11	26	18	0	4	51	40	1	0
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Heavy Vehicles, %	0	0	67	0	0	50	0	0	0	7	0	0
Mvmt Flow	0	93	4	16	38	26	0	6	74	58	1	0
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	8	7.7	7.2	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	30%	0%	98%
Vol Thru, %	7%	96%	70%	0%	2%
Vol Right, %	93%	4%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	55	67	37	18	41
LT Vol	0	0	11	0	40
Through Vol	4	64	26	0	1
RT Vol	51	3	0	18	0
Lane Flow Rate	80	97	54	26	59
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.085	0.118	0.074	0.03	0.078
Departure Headway (Hd)	3.825	4.382	4.945	4.094	4.705
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	941	823	714	859	765
Service Time	1.833	2.382	2.744	1.892	2.713
HCM Lane V/C Ratio	0.085	0.118	0.076	0.03	0.077
HCM Control Delay	7.2	8	8.1	7	8.1
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.3	0.4	0.2	0.1	0.3

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↱		✥						↳	
Traffic Vol, veh/h	0	0	0	109	0	0	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	109	0	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	30	30	0	0	7	0	28	28	0	7
Sign Control	Yield	Yield	Yield	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	21	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	114	0	0	0	0	0	0	0	0

Major/Minor	Major2			Minor2		
Conflicting Flow All	30	0	0	-	258	7
Stage 1	-	-	-	-	228	-
Stage 2	-	-	-	-	30	-
Critical Hdwy	4.31	-	-	-	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.389	-	-	-	4	3.3
Pot Cap-1 Maneuver	1468	-	-	0	650	1081
Stage 1	-	-	-	0	719	-
Stage 2	-	-	-	0	-	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1468	-	-	-	0	1081
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

Approach	WB	SB
HCM Control Delay, s	7.7	0
HCM LOS		A

Minor Lane/Major Mvmt	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1468	-	-	-
HCM Lane V/C Ratio	0.077	-	-	-
HCM Control Delay (s)	7.7	0	-	0
HCM Lane LOS	A	A	-	A
HCM 95th %tile Q(veh)	0.3	-	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	303	90	394	238	76	168	876	168	135	1084	56
Future Volume (vph)	119	303	90	394	238	76	168	876	168	135	1084	56
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	5.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.98		1.00	1.00	0.86	1.00	1.00	0.91
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3400	3249		3433	3150		1719	3471	1353	1770	3505	1410
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3249		3433	3150		1719	3471	1353	1770	3505	1410
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	119	303	90	394	238	76	168	876	168	135	1084	56
RTOR Reduction (vph)	0	23	0	0	25	0	0	0	55	0	0	27
Lane Group Flow (vph)	119	370	0	394	289	0	168	876	113	135	1084	29
Confl. Peds. (#/hr)			74			62			72			46
Heavy Vehicles (%)	3%	5%	2%	2%	6%	13%	5%	4%	3%	2%	3%	4%
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	custom
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2 3			6 7
Actuated Green, G (s)	9.9	20.2		19.4	29.7		17.2	46.0	70.4	24.4	53.2	68.1
Effective Green, g (s)	9.9	20.2		19.4	29.7		17.2	46.0	70.4	24.4	53.2	68.1
Actuated g/C Ratio	0.08	0.16		0.15	0.23		0.13	0.35	0.54	0.19	0.41	0.52
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	258	504		512	719		227	1228	732	332	1434	738
v/s Ratio Prot	0.04	c0.11		c0.11	0.09		c0.10	0.25		0.08	c0.31	
v/s Ratio Perm									0.08			0.02
v/c Ratio	0.46	0.73		0.77	0.40		0.74	0.71	0.15	0.41	0.76	0.04
Uniform Delay, d1	57.5	52.3		53.2	42.6		54.2	36.3	14.9	46.4	32.8	15.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	5.5		6.9	0.4		12.2	3.6	0.1	3.7	3.8	0.0
Delay (s)	58.8	57.8		60.0	43.0		66.4	39.9	15.0	50.1	36.6	15.1
Level of Service	E	E		E	D		E	D	B	D	D	B
Approach Delay (s)		58.1			52.5			40.1			37.1	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	43.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	88.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	4	63	2	131	3	837	54	174	1571	0
Future Volume (vph)	2	0	4	63	2	131	3	837	54	174	1571	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	16	12	12	12	11	10	12	11	10	12
Grade (%)		-1%			-9%			1%			-2%	
Total Lost time (s)	6.0	6.0			6.0		4.0	5.5	5.5	4.0	5.5	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99			1.00		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85			0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00			0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1814	1280			1742		1736	3133	1452	1762	3272	
Flt Permitted	0.37	1.00			0.89		0.14	1.00	1.00	0.30	1.00	
Satd. Flow (perm)	697	1280			1577		249	3133	1452	564	3272	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2	0	4	63	2	131	3	837	54	174	1571	0
RTOR Reduction (vph)	0	4	0	0	50	0	0	0	14	0	0	0
Lane Group Flow (vph)	2	0	0	0	146	0	3	837	40	174	1571	0
Confl. Peds. (#/hr)			1	1					1			1
Heavy Vehicles (%)	0%	0%	25%	2%	0%	2%	0%	7%	8%	0%	4%	3%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	17.1	17.1			17.1		111.7	110.7	110.7	121.4	116.4	
Effective Green, g (s)	17.1	17.1			17.1		111.7	110.7	110.7	121.4	116.4	
Actuated g/C Ratio	0.11	0.11			0.11		0.74	0.74	0.74	0.81	0.78	
Clearance Time (s)	6.0	6.0			6.0		4.0	5.5	5.5	4.0	5.5	
Vehicle Extension (s)	2.0	2.0			2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	79	145			179		195	2312	1071	509	2539	
v/s Ratio Prot		0.00					0.00	0.27		c0.02	c0.48	
v/s Ratio Perm	0.00				c0.09		0.01		0.03	0.26		
v/c Ratio	0.03	0.00			0.82		0.02	0.36	0.04	0.34	0.62	
Uniform Delay, d1	59.0	58.9			64.9		5.9	7.0	5.3	3.6	7.2	
Progression Factor	1.00	1.00			1.00		1.05	0.97	0.95	1.00	1.00	
Incremental Delay, d2	0.0	0.0			23.2		0.0	0.4	0.1	0.1	1.1	
Delay (s)	59.1	58.9			88.1		6.2	7.3	5.1	3.8	8.4	
Level of Service	E	E			F		A	A	A	A	A	
Approach Delay (s)		59.0			88.1			7.1			7.9	
Approach LOS		E			F			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology supports speed limit in the range of 25 to 55 mph.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	2	591	1	0	1	60	753	1	3	1427	118
Future Volume (vph)	70	2	591	1	0	1	60	753	1	3	1427	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	12	12	11	10	12	11	10	12
Grade (%)		-7%			0%			-1%			0%	
Total Lost time (s)		4.5	4.0		4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.99		0.99		1.00	1.00	0.94	1.00	1.00	0.92
Flpb, ped/bikes		0.99	1.00		1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt		1.00	0.85		0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.95	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1685	1617		1707		1602	3165	1521	1720	3240	1387
Flt Permitted		0.73	1.00		0.91		0.17	1.00	1.00	0.36	1.00	1.00
Satd. Flow (perm)		1292	1617		1599		286	3165	1521	653	3240	1387
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	70	2	591	1	0	1	60	753	1	3	1427	118
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	17
Lane Group Flow (vph)	0	72	591	0	0	0	60	753	1	3	1427	101
Confl. Peds. (#/hr)	5		2	2		5	10		7	7		10
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	3%	0%	2%	0%	0%	0%	9%	7%	0%	0%	4%	7%
Turn Type	Perm	NA	Free	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4		Free	4			2		2	2		2
Actuated Green, G (s)		13.6	150.0		13.6		127.4	127.4	127.4	127.4	127.4	127.4
Effective Green, g (s)		13.6	150.0		13.6		127.4	127.4	127.4	127.4	127.4	127.4
Actuated g/C Ratio		0.09	1.00		0.09		0.85	0.85	0.85	0.85	0.85	0.85
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)		2.0			2.0		2.5	2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)		117	1617		144		242	2688	1291	554	2751	1178
v/s Ratio Prot								0.24			c0.44	
v/s Ratio Perm		c0.06	0.37		0.00		0.21		0.00	0.00		0.07
v/c Ratio		0.62	0.37		0.00		0.25	0.28	0.00	0.01	0.52	0.09
Uniform Delay, d1		65.7	0.0		62.0		2.2	2.2	1.7	1.7	3.0	1.8
Progression Factor		1.00	1.00		1.00		0.19	0.03	1.00	1.00	1.00	1.00
Incremental Delay, d2		6.6	0.6		0.0		2.4	0.3	0.0	0.0	0.7	0.1
Delay (s)		72.3	0.6		62.0		2.8	0.3	1.7	1.7	3.7	2.0
Level of Service		E	A		E		A	A	A	A	A	A
Approach Delay (s)		8.4			62.0			0.5			3.6	
Approach LOS		A			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	3.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	5	11	3	0	2	17	831	3	4	2003	11
Future Volume (vph)	8	5	11	3	0	2	17	831	3	4	2003	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	11	12	12
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.91	
Frpb, ped/bikes		0.98			0.99		1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00			0.98		1.00	1.00	1.00	1.00	1.00	
Frt		0.94			0.95		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98			0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1639			1704		1597	3406	1551	1396	5080	
Flt Permitted		0.89			0.83		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1479			1460		1597	3406	1551	1396	5080	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	8	5	11	3	0	2	17	831	3	4	2003	11
RTOR Reduction (vph)	0	10	0	0	5	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	14	0	0	0	0	17	831	3	4	2014	0
Confl. Peds. (#/hr)	5		14	14		5			7			12
Confl. Bikes (#/hr)			1									5
Heavy Vehicles (%)	0%	0%	10%	0%	0%	0%	13%	6%	0%	25%	2%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			
Actuated Green, G (s)		7.0			7.0		3.6	128.4	128.4	1.1	125.9	
Effective Green, g (s)		7.0			7.0		3.6	128.4	128.4	1.1	125.9	
Actuated g/C Ratio		0.05			0.05		0.02	0.86	0.86	0.01	0.84	
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)		1.0			1.0		3.0	3.0	3.0	3.0	0.2	
Lane Grp Cap (vph)		69			68		38	2915	1327	10	4263	
v/s Ratio Prot							c0.01	0.24		0.00	c0.40	
v/s Ratio Perm		c0.01			0.00				0.00			
v/c Ratio		0.20			0.00		0.45	0.29	0.00	0.40	0.47	
Uniform Delay, d1		68.8			68.2		72.2	2.1	1.6	74.1	3.2	
Progression Factor		1.00			1.00		1.20	0.06	1.00	1.03	0.54	
Incremental Delay, d2		0.5			0.0		7.6	0.2	0.0	21.9	0.3	
Delay (s)		69.3			68.2		94.2	0.4	1.6	98.1	2.1	
Level of Service		E			E		F	A	A	F	A	
Approach Delay (s)		69.3			68.2			2.2			2.3	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	2.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
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)	8	5	11	3	0	2	17	831	3	4	2003	11
Future Volume (veh/h)	8	5	11	3	0	2	17	831	3	4	2003	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.94	0.96		0.95	1.00		1.00	1.00		0.97
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	1752	1900	1900	1900	1707	1811	1900	1530	1870	1900
Adj Flow Rate, veh/h	8	5	11	3	0	2	17	831	3	4	2003	11
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	0	10	0	0	0	13	6	0	25	2	0
Cap, veh/h	62	42	61	104	9	50	196	2452	1142	164	3692	20
Arrive On Green	0.08	0.08	0.08	0.08	0.00	0.08	0.12	0.71	0.71	0.23	1.00	1.00
Sat Flow, veh/h	360	492	721	774	109	589	1626	3441	1602	1457	5239	29
Grp Volume(v), veh/h	24	0	0	5	0	0	17	831	3	4	1301	713
Grp Sat Flow(s),veh/h/ln	1573	0	0	1472	0	0	1626	1721	1602	1457	1702	1864
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	1.4	13.7	0.1	0.3	0.0	0.0
Cycle Q Clear(g_c), s	2.0	0.0	0.0	0.4	0.0	0.0	1.4	13.7	0.1	0.3	0.0	0.0
Prop In Lane	0.33		0.46	0.60		0.40	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	165	0	0	163	0	0	196	2452	1142	164	2399	1314
V/C Ratio(X)	0.15	0.00	0.00	0.03	0.00	0.00	0.09	0.34	0.00	0.02	0.54	0.54
Avail Cap(c_a), veh/h	281	0	0	271	0	0	196	2452	1142	164	2399	1314
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.91	0.91	0.91	0.88	0.88	0.88
Uniform Delay (d), s/veh	63.7	0.0	0.0	63.0	0.0	0.0	58.6	8.2	6.2	51.7	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.0	0.1	0.8	1.4
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	0.9	0.0	0.0	0.2	0.0	0.0	0.6	5.1	0.0	0.1	0.3	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.9	0.0	0.0	63.1	0.0	0.0	58.8	8.5	6.2	51.7	0.8	1.4
LnGrp LOS	E	A	A	E	A	A	E	A	A	D	A	A
Approach Vol, veh/h		24			5			851			2018	
Approach Delay, s/veh		63.9			63.1			9.5			1.1	
Approach LOS		E			E			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	21.4	111.4		17.2	22.6	110.2		17.2				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	106.9		24.1	6.7	105.7		24.1				
Max Q Clear Time (g_c+I1), s	2.3	15.7		4.0	3.4	2.0		2.4				
Green Ext Time (p_c), s	0.0	4.7		0.0	0.0	0.8		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			4.2									
HCM 6th LOS			A									

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	67	32	831	449	77	1937
Future Volume (vph)	67	32	831	449	77	1937
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	16	10	13	9	10
Grade (%)	-2%		0%			0%
Total Lost time (s)	5.0	5.0	5.5	5.0	5.0	5.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	2970	1696	3120	1568	1533	4700
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	2970	1696	3120	1568	1533	4700
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	67	32	831	449	77	1937
RTOR Reduction (vph)	0	29	0	80	0	0
Lane Group Flow (vph)	67	3	831	369	77	1937
Confl. Peds. (#/hr)		2		3		
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	27%	7%	8%	6%	6%	3%
Turn Type	Prot	Perm	NA	custom	Prot	NA
Protected Phases	4		1	4 7	2	1 2
Permitted Phases		4		2		
Actuated Green, G (s)	12.8	12.8	94.3	123.2	27.4	127.2
Effective Green, g (s)	12.8	12.8	94.3	123.2	27.4	127.2
Actuated g/C Ratio	0.09	0.09	0.63	0.82	0.18	0.85
Clearance Time (s)	5.0	5.0	5.5		5.0	
Vehicle Extension (s)	3.0	3.0	2.5		3.0	
Lane Grp Cap (vph)	253	144	1961	1340	280	3985
v/s Ratio Prot	0.02		0.27	c0.18	0.05	c0.41
v/s Ratio Perm		0.00		0.06		
v/c Ratio	0.26	0.02	0.42	0.28	0.28	0.49
Uniform Delay, d1	64.2	62.8	14.1	3.1	52.8	2.9
Progression Factor	1.00	1.00	1.00	1.00	0.90	0.22
Incremental Delay, d2	0.6	0.1	0.7	0.1	0.5	0.1
Delay (s)	64.8	62.9	14.8	3.2	48.2	0.7
Level of Service	E	E	B	A	D	A
Approach Delay (s)	64.2		10.7			2.5
Approach LOS	E		B			A

Intersection Summary			
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support exclusive ped or hold phases.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	41	1	0	1	43	1267	2	1	1978	2
Future Volume (vph)	5	0	41	1	0	1	43	1267	2	1	1978	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0		3.0		3.0	3.0	4.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00		0.98		0.97		1.00	1.00	0.96	1.00	1.00	0.87
Flpb, ped/bikes	0.96		1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00		0.85		0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1729		1051		1119		1236	3406	1031	1805	3505	1405
Flt Permitted	0.76		1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1377		1051		1119		1236	3406	1031	1805	3505	1405
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	0	41	1	0	1	43	1267	2	1	1978	2
RTOR Reduction (vph)	0	0	39	0	2	0	0	0	0	0	0	0
Lane Group Flow (vph)	5	0	2	0	0	0	43	1267	2	1	1978	2
Confl. Peds. (#/hr)	30		4	4		30			8			40
Heavy Vehicles (%)	0%	0%	51%	0%	0%	100%	46%	6%	50%	0%	3%	0%
Turn Type	D.Pm		Perm	Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases					4		5	2		1	6	
Permitted Phases	4		4	4					2			6
Actuated Green, G (s)	5.7		5.7		5.7		9.1	119.6	119.6	1.2	111.7	111.7
Effective Green, g (s)	7.2		7.2		7.2		10.6	121.1	120.1	2.7	113.2	113.2
Actuated g/C Ratio	0.05		0.05		0.05		0.08	0.86	0.86	0.02	0.81	0.81
Clearance Time (s)	4.5		4.5		4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0		3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	70		54		57		93	2946	884	34	2834	1136
v/s Ratio Prot							c0.03	0.37		0.00	c0.56	
v/s Ratio Perm	c0.00		0.00		0.00				0.00			0.00
v/c Ratio	0.07		0.04		0.00		0.46	0.43	0.00	0.03	0.70	0.00
Uniform Delay, d1	63.2		63.1		63.0		62.0	2.0	1.4	67.4	5.9	2.6
Progression Factor	1.00		1.00		1.00		1.21	0.55	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4		0.3		0.0		3.3	0.4	0.0	0.4	1.5	0.0
Delay (s)	63.7		63.4		63.0		78.5	1.5	1.4	67.7	7.3	2.6
Level of Service	E		E		E		E	A	A	E	A	A
Approach Delay (s)		63.4			63.0			4.1			7.4	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	3	0	0	420	17	881	23	289	1666	7
Future Volume (vph)	2	0	3	0	0	420	17	881	23	289	1666	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.0				3.5	4.0	3.0	3.0	2.0	2.0	2.0
Lane Util. Factor	0.95	0.95				1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.96				0.99	1.00	1.00	0.95	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85				0.86	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1715	1467				1476	1805	3343	1540	3127	3505	1535
Flt Permitted	0.95	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1715	1467				1476	1805	3343	1540	3127	3505	1535
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2	0	3	0	0	420	17	881	23	289	1666	7
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	11	0	0	2
Lane Group Flow (vph)	2	0	0	0	0	420	17	881	12	289	1666	5
Confl. Peds. (#/hr)			6						5			10
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	10%	0%	8%	0%	12%	3%	0%
Turn Type	Split	NA				Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	3					5	2		1 4	6	
Permitted Phases						1 2 3 4			2			6
Actuated Green, G (s)	7.3	7.3				140.0	2.2	68.7	68.7	51.5	96.8	96.8
Effective Green, g (s)	7.3	7.8				131.0	3.7	70.2	70.2	53.0	98.3	98.3
Actuated g/C Ratio	0.05	0.06				0.94	0.03	0.50	0.50	0.38	0.70	0.70
Clearance Time (s)	4.5	4.5					5.5	4.5	4.5		3.5	3.5
Vehicle Extension (s)	3.0	3.0					0.2	0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	89	81				1381	47	1676	772	1183	2461	1077
v/s Ratio Prot	0.00	0.00					0.01	0.26		0.09	c0.48	
v/s Ratio Perm						c0.28			0.01			0.00
v/c Ratio	0.02	0.00				0.30	0.36	0.53	0.01	0.24	0.68	0.00
Uniform Delay, d1	63.0	62.4				0.4	67.0	23.6	17.5	29.8	11.8	6.2
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.00	1.13	0.84	1.00
Incremental Delay, d2	0.1	0.0				0.1	1.7	1.2	0.0	0.1	1.1	0.0
Delay (s)	63.1	62.4				0.5	68.7	24.8	17.6	33.7	11.1	6.2
Level of Service	E	E				A	E	C	B	C	B	A
Approach Delay (s)		62.7			0.5			25.4			14.4	
Approach LOS		E			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	15.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology expects strict NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	519	39	87	487	83	0	0	0	108	246	53
Future Volume (vph)	41	519	39	87	487	83	0	0	0	108	246	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5					4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95					1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.97					1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00					0.95	1.00	
Frt	1.00	0.99		1.00	0.98					1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)	1641	3240		1671	3172					1621	1689	
Flt Permitted	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)	1641	3240		1671	3172					1621	1689	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	41	519	39	87	487	83	0	0	0	108	246	53
RTOR Reduction (vph)	0	6	0	0	13	0	0	0	0	0	11	0
Lane Group Flow (vph)	41	552	0	87	557	0	0	0	0	108	288	0
Confl. Peds. (#/hr)			68			65				40		80
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	10%	7%	41%	8%	9%	5%	0%	0%	0%	6%	9%	0%
Turn Type	Prot	NA		Prot	NA					Perm	NA	
Protected Phases	1	6		5	2						4	
Permitted Phases										4		
Actuated Green, G (s)	5.2	39.7		8.3	42.8					18.5	18.5	
Effective Green, g (s)	5.2	39.7		8.3	42.8					18.5	18.5	
Actuated g/C Ratio	0.07	0.50		0.10	0.53					0.23	0.23	
Clearance Time (s)	4.5	4.5		4.5	4.5					4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)	106	1607		173	1697					374	390	
v/s Ratio Prot	0.02	0.17		c0.05	c0.18						c0.17	
v/s Ratio Perm										0.07		
v/c Ratio	0.39	0.34		0.50	0.33					0.29	0.74	
Uniform Delay, d1	35.9	12.2		33.9	10.5					25.3	28.5	
Progression Factor	1.00	1.00		0.89	0.96					1.00	1.00	
Incremental Delay, d2	2.3	0.6		2.3	0.5					0.4	7.2	
Delay (s)	38.2	12.8		32.5	10.6					25.8	35.7	
Level of Service	D	B		C	B					C	D	
Approach Delay (s)		14.6			13.5			0.0			33.0	
Approach LOS		B			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	49.3%	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)	41	519	39	87	487	83	0	0	0	108	246	53
Future Volume (veh/h)	41	519	39	87	487	83	0	0	0	108	246	53
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.97				1.00		0.88
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1752	1796	1292	1781	1767	1826				1811	1767	1900
Adj Flow Rate, veh/h	41	519	39	87	487	83				108	246	53
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	10	7	41	8	9	5				6	9	0
Cap, veh/h	62	1703	128	111	1598	271				403	321	69
Arrive On Green	0.04	0.53	0.53	0.09	0.74	0.74				0.23	0.23	0.23
Sat Flow, veh/h	1668	3201	240	1697	2854	483				1725	1372	296
Grp Volume(v), veh/h	41	276	282	87	285	285				108	0	299
Grp Sat Flow(s),veh/h/ln	1668	1706	1734	1697	1678	1659				1725	0	1668
Q Serve(g_s), s	1.9	7.2	7.3	4.0	4.5	4.5				4.1	0.0	13.4
Cycle Q Clear(g_c), s	1.9	7.2	7.3	4.0	4.5	4.5				4.1	0.0	13.4
Prop In Lane	1.00		0.14	1.00		0.29				1.00		0.18
Lane Grp Cap(c), veh/h	62	908	922	111	940	929				403	0	390
V/C Ratio(X)	0.66	0.30	0.31	0.78	0.30	0.31				0.27	0.00	0.77
Avail Cap(c_a), veh/h	282	908	922	286	940	929				507	0	490
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33				1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.98	0.98	0.98				1.00	0.00	1.00
Uniform Delay (d), s/veh	38.0	10.5	10.5	36.0	5.1	5.1				25.0	0.0	28.6
Incr Delay (d2), s/veh	11.2	0.9	0.9	11.2	0.8	0.8				0.4	0.0	5.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.8	2.8	2.0	1.5	1.5				1.7	0.0	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.2	11.3	11.3	47.1	5.9	5.9				25.4	0.0	34.2
LnGrp LOS	D	B	B	D	A	A				C	A	C
Approach Vol, veh/h		599			657						407	
Approach Delay, s/veh		13.9			11.4						31.9	
Approach LOS		B			B						C	
Timer - Assigned Phs	1	2		4	5	6						
Phs Duration (G+Y+Rc), s	7.5	49.3		23.2	9.7	47.1						
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5						
Max Green Setting (Gmax), s	13.5	29.5		23.5	13.5	29.5						
Max Q Clear Time (g_c+I1), s	3.9	6.5		15.4	6.0	9.3						
Green Ext Time (p_c), s	0.0	3.8		1.4	0.1	3.6						
Intersection Summary												
HCM 6th Ctrl Delay			17.3									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	632	0	0	594	20	60	56	95	0	0	0
Future Volume (vph)	0	632	0	0	594	20	60	56	95	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5			
Lane Util. Factor		0.95			0.95		1.00	1.00	1.00			
Frpb, ped/bikes		1.00			1.00		1.00	1.00	0.94			
Flpb, ped/bikes		1.00			1.00		1.00	1.00	1.00			
Frt		1.00			1.00		1.00	1.00	0.85			
Flt Protected		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (prot)		3438			3341		1318	1681	1493			
Flt Permitted		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (perm)		3438			3341		1318	1681	1493			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	632	0	0	594	20	60	56	95	0	0	0
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	65	0	0	0
Lane Group Flow (vph)	0	632	0	0	613	0	60	56	30	0	0	0
Confl. Peds. (#/hr)			51			75			42			
Confl. Bikes (#/hr)			1			3						
Heavy Vehicles (%)	0%	5%	0%	0%	7%	11%	37%	13%	2%	0%	0%	0%
Turn Type		NA			NA		custom	NA	Perm			
Protected Phases		2			2		3	8				
Permitted Phases							4		8			
Actuated Green, G (s)		58.5			58.5		8.0	12.5	12.5			
Effective Green, g (s)		58.5			58.5		8.0	12.5	12.5			
Actuated g/C Ratio		0.73			0.73		0.10	0.16	0.16			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)		2514			2443		205	262	233			
v/s Ratio Prot		c0.18			0.18		c0.02	0.03				
v/s Ratio Perm							0.02		0.02			
v/c Ratio		0.25			0.25		0.29	0.21	0.13			
Uniform Delay, d1		3.5			3.5		34.0	29.5	29.1			
Progression Factor		0.77			1.00		1.00	1.00	1.00			
Incremental Delay, d2		0.2			0.2		0.8	0.4	0.3			
Delay (s)		2.9			3.8		34.8	29.9	29.3			
Level of Service		A			A		C	C	C			
Approach Delay (s)		2.9			3.8			31.0			0.0	
Approach LOS		A			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	41.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	107	194	27	2	0	73
Future Volume (vph)	107	194	27	2	0	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5		3.5	3.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.86	
Flt Protected	0.95	1.00		0.96	1.00	
Satd. Flow (prot)	1556	1570		1766	1284	
Flt Permitted	0.95	1.00		0.96	1.00	
Satd. Flow (perm)	1556	1570		1766	1284	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	107	194	27	2	0	73
RTOR Reduction (vph)	0	0	0	0	53	0
Lane Group Flow (vph)	107	194	0	29	20	0
Confl. Peds. (#/hr)						2
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	16%	2%	3%	0%	0%	25%
Turn Type	Prot	custom	custom	NA	NA	
Protected Phases	4	4	2	2	6	
Permitted Phases		2 6	2			
Actuated Green, G (s)	16.5	53.0		16.5	16.5	
Effective Green, g (s)	16.5	53.0		16.5	16.5	
Actuated g/C Ratio	0.28	0.88		0.28	0.28	
Clearance Time (s)	3.5	3.5		3.5	3.5	
Lane Grp Cap (vph)	427	1570		485	353	
v/s Ratio Prot	c0.07	c0.03		0.02	0.02	
v/s Ratio Perm		0.09				
v/c Ratio	0.25	0.12		0.06	0.06	
Uniform Delay, d1	16.9	0.5		16.0	16.0	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.4	0.2		0.2	0.3	
Delay (s)	18.3	0.6		16.3	16.3	
Level of Service	B	A		B	B	
Approach Delay (s)	6.9			16.3	16.3	
Approach LOS	A			B	B	

Intersection Summary			
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	32.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support custom phasing.

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	28	3	31	43	35	0	11	20	25	7	2
Future Vol, veh/h	5	28	3	31	43	35	0	11	20	25	7	2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	40	25	0	5	10	25	0	0	6	27	14	0
Mvmt Flow	5	28	3	31	43	35	0	11	20	25	7	2
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	8.2	7.8	7	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	14%	42%	0%	74%
Vol Thru, %	35%	78%	58%	0%	21%
Vol Right, %	65%	8%	0%	100%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	31	36	74	35	34
LT Vol	0	5	31	0	25
Through Vol	11	28	43	0	7
RT Vol	20	3	0	35	2
Lane Flow Rate	31	36	74	35	34
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.034	0.049	0.101	0.04	0.046
Departure Headway (Hd)	3.909	4.853	4.927	4.102	4.858
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	921	730	724	867	742
Service Time	1.91	2.934	2.681	1.855	2.859
HCM Lane V/C Ratio	0.034	0.049	0.102	0.04	0.046
HCM Control Delay	7	8.2	8.2	7	8.1
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0.2	0.3	0.1	0.1

Intersection	
Int Delay, s/veh	7.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	55	0	0	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	55	0	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	6	6	0	0	8	0	10	10	0	8
Sign Control	Yield	Yield	Yield	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	55	0	0	0	0	0	0	0	0

Major/Minor	Major2			Minor2		
Conflicting Flow All	6	0	0	-	116	8
Stage 1	-	-	-	-	110	-
Stage 2	-	-	-	-	6	-
Critical Hdwy	4.1	-	-	-	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	-	4	3.3
Pot Cap-1 Maneuver	1628	-	-	0	778	1080
Stage 1	-	-	-	0	808	-
Stage 2	-	-	-	0	-	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1628	-	-	-	0	1080
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

Approach	WB	SB
HCM Control Delay, s	7.3	0
HCM LOS		A

Minor Lane/Major Mvmt	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1628	-	-	-
HCM Lane V/C Ratio	0.034	-	-	-
HCM Control Delay (s)	7.3	0	-	0
HCM Lane LOS	A	A	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	303	90	394	238	76	168	885	168	135	1113	56
Future Volume (vph)	119	303	90	394	238	76	168	885	168	135	1113	56
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	5.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.98		1.00	1.00	0.86	1.00	1.00	0.91
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3400	3249		3433	3150		1719	3471	1353	1770	3505	1410
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3249		3433	3150		1719	3471	1353	1770	3505	1410
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	119	303	90	394	238	76	168	885	168	135	1113	56
RTOR Reduction (vph)	0	23	0	0	25	0	0	0	55	0	0	27
Lane Group Flow (vph)	119	370	0	394	289	0	168	885	113	135	1113	29
Confl. Peds. (#/hr)			74			62			72			46
Heavy Vehicles (%)	3%	5%	2%	2%	6%	13%	5%	4%	3%	2%	3%	4%
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	custom
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2 3			6 7
Actuated Green, G (s)	9.9	20.2		19.4	29.7		17.2	46.0	70.4	24.4	53.2	68.1
Effective Green, g (s)	9.9	20.2		19.4	29.7		17.2	46.0	70.4	24.4	53.2	68.1
Actuated g/C Ratio	0.08	0.16		0.15	0.23		0.13	0.35	0.54	0.19	0.41	0.52
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	258	504		512	719		227	1228	732	332	1434	738
v/s Ratio Prot	0.04	c0.11		c0.11	0.09		c0.10	0.25		0.08	c0.32	
v/s Ratio Perm									0.08			0.02
v/c Ratio	0.46	0.73		0.77	0.40		0.74	0.72	0.15	0.41	0.78	0.04
Uniform Delay, d1	57.5	52.3		53.2	42.6		54.2	36.4	14.9	46.4	33.2	15.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	5.5		6.9	0.4		12.2	3.7	0.1	3.7	4.2	0.0
Delay (s)	58.8	57.8		60.0	43.0		66.4	40.1	15.0	50.1	37.4	15.1
Level of Service	E	E		E	D		E	D	B	D	D	B
Approach Delay (s)		58.1			52.5			40.3			37.8	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	44.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	88.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	4	66	2	131	3	848	55	174	1605	0
Future Volume (vph)	2	0	4	66	2	131	3	848	55	174	1605	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	16	12	12	12	11	10	12	11	10	12
Grade (%)		-1%			-9%			1%			-2%	
Total Lost time (s)	6.0	6.0			6.0		4.0	5.5	5.5	4.0	5.5	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99			1.00		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85			0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00			0.98		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1814	1280			1744		1736	3133	1452	1762	3272	
Flt Permitted	0.37	1.00			0.89		0.13	1.00	1.00	0.30	1.00	
Satd. Flow (perm)	713	1280			1574		237	3133	1452	555	3272	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2	0	4	66	2	131	3	848	55	174	1605	0
RTOR Reduction (vph)	0	4	0	0	48	0	0	0	15	0	0	0
Lane Group Flow (vph)	2	0	0	0	151	0	3	848	40	174	1605	0
Confl. Peds. (#/hr)			1	1					1			1
Heavy Vehicles (%)	0%	0%	25%	2%	0%	2%	0%	7%	8%	0%	4%	3%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	17.4	17.4			17.4		111.3	110.3	110.3	121.1	116.1	
Effective Green, g (s)	17.4	17.4			17.4		111.3	110.3	110.3	121.1	116.1	
Actuated g/C Ratio	0.12	0.12			0.12		0.74	0.74	0.74	0.81	0.77	
Clearance Time (s)	6.0	6.0			6.0		4.0	5.5	5.5	4.0	5.5	
Vehicle Extension (s)	2.0	2.0			2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	82	148			182		185	2303	1067	502	2532	
v/s Ratio Prot		0.00					0.00	0.27		c0.02	c0.49	
v/s Ratio Perm	0.00				c0.10		0.01		0.03	0.26		
v/c Ratio	0.02	0.00			0.83		0.02	0.37	0.04	0.35	0.63	
Uniform Delay, d1	58.8	58.6			64.9		6.2	7.2	5.4	3.7	7.5	
Progression Factor	1.00	1.00			1.00		1.04	0.97	0.95	1.00	1.00	
Incremental Delay, d2	0.0	0.0			25.3		0.0	0.4	0.1	0.2	1.2	
Delay (s)	58.8	58.6			90.2		6.5	7.5	5.2	3.9	8.7	
Level of Service	E	E			F		A	A	A	A	A	
Approach Delay (s)		58.7			90.2			7.3			8.3	
Approach LOS		E			F			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology supports speed limit in the range of 25 to 55 mph.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	2	598	1	0	1	62	765	1	3	1464	118
Future Volume (vph)	70	2	598	1	0	1	62	765	1	3	1464	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	12	12	11	10	12	11	10	12
Grade (%)		-7%			0%			-1%			0%	
Total Lost time (s)		4.5	4.0		4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.99		0.99		1.00	1.00	0.94	1.00	1.00	0.92
Flpb, ped/bikes		0.99	1.00		1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt		1.00	0.85		0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.95	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1685	1617		1707		1609	3165	1521	1721	3240	1387
Flt Permitted		0.73	1.00		0.91		0.16	1.00	1.00	0.36	1.00	1.00
Satd. Flow (perm)		1292	1617		1599		275	3165	1521	645	3240	1387
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	70	2	598	1	0	1	62	765	1	3	1464	118
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	17
Lane Group Flow (vph)	0	72	598	0	0	0	62	765	1	3	1464	101
Confl. Peds. (#/hr)	5		2	2		5	10		7	7		10
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	3%	0%	2%	0%	0%	0%	9%	7%	0%	0%	4%	7%
Turn Type	Perm	NA	Free	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4		Free	4			2		2	2		2
Actuated Green, G (s)		13.6	150.0		13.6		127.4	127.4	127.4	127.4	127.4	127.4
Effective Green, g (s)		13.6	150.0		13.6		127.4	127.4	127.4	127.4	127.4	127.4
Actuated g/C Ratio		0.09	1.00		0.09		0.85	0.85	0.85	0.85	0.85	0.85
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)		2.0			2.0		2.5	2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)		117	1617		144		233	2688	1291	547	2751	1178
v/s Ratio Prot								0.24			c0.45	
v/s Ratio Perm		c0.06	0.37		0.00		0.23		0.00	0.00		0.07
v/c Ratio		0.62	0.37		0.00		0.27	0.28	0.00	0.01	0.53	0.09
Uniform Delay, d1		65.7	0.0		62.0		2.2	2.2	1.7	1.7	3.1	1.8
Progression Factor		1.00	1.00		1.00		0.28	0.03	1.00	1.00	1.00	1.00
Incremental Delay, d2		6.6	0.7		0.0		2.7	0.3	0.0	0.0	0.7	0.1
Delay (s)		72.3	0.7		62.0		3.3	0.3	1.7	1.7	3.8	2.0
Level of Service		E	A		E		A	A	A	A	A	A
Approach Delay (s)		8.3			62.0			0.6			3.7	
Approach LOS		A			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	3.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	5	11	3	0	2	17	845	3	4	2047	11
Future Volume (vph)	8	5	11	3	0	2	17	845	3	4	2047	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	11	12	12
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.91	
Frpb, ped/bikes		0.98			0.99		1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00			0.98		1.00	1.00	1.00	1.00	1.00	
Frt		0.94			0.95		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98			0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1639			1704		1597	3406	1551	1396	5080	
Flt Permitted		0.89			0.83		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1479			1460		1597	3406	1551	1396	5080	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	8	5	11	3	0	2	17	845	3	4	2047	11
RTOR Reduction (vph)	0	10	0	0	5	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	14	0	0	0	0	17	845	3	4	2058	0
Confl. Peds. (#/hr)	5		14	14		5			7			12
Confl. Bikes (#/hr)			1									5
Heavy Vehicles (%)	0%	0%	10%	0%	0%	0%	13%	6%	0%	25%	2%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			
Actuated Green, G (s)		7.0			7.0		3.6	128.4	128.4	1.1	125.9	
Effective Green, g (s)		7.0			7.0		3.6	128.4	128.4	1.1	125.9	
Actuated g/C Ratio		0.05			0.05		0.02	0.86	0.86	0.01	0.84	
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)		1.0			1.0		3.0	3.0	3.0	3.0	0.2	
Lane Grp Cap (vph)		69			68		38	2915	1327	10	4263	
v/s Ratio Prot							c0.01	0.25		0.00	c0.41	
v/s Ratio Perm		c0.01			0.00				0.00			
v/c Ratio		0.20			0.00		0.45	0.29	0.00	0.40	0.48	
Uniform Delay, d1		68.8			68.2		72.2	2.1	1.6	74.1	3.3	
Progression Factor		1.00			1.00		1.17	0.08	1.00	0.99	0.54	
Incremental Delay, d2		0.5			0.0		7.6	0.2	0.0	21.7	0.3	
Delay (s)		69.3			68.2		92.1	0.4	1.6	95.3	2.1	
Level of Service		E			E		F	A	A	F	A	
Approach Delay (s)		69.3			68.2			2.2			2.3	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	2.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
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)	8	5	11	3	0	2	17	845	3	4	2047	11
Future Volume (veh/h)	8	5	11	3	0	2	17	845	3	4	2047	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.94	0.96		0.95	1.00		1.00	1.00		0.97
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	1752	1900	1900	1900	1707	1811	1900	1530	1870	1900
Adj Flow Rate, veh/h	8	5	11	3	0	2	17	845	3	4	2047	11
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	0	10	0	0	0	13	6	0	25	2	0
Cap, veh/h	62	42	61	104	9	50	196	2452	1142	164	3693	20
Arrive On Green	0.08	0.08	0.08	0.08	0.00	0.08	0.12	0.71	0.71	0.23	1.00	1.00
Sat Flow, veh/h	360	492	721	774	109	589	1626	3441	1602	1457	5240	28
Grp Volume(v), veh/h	24	0	0	5	0	0	17	845	3	4	1329	729
Grp Sat Flow(s),veh/h/ln	1573	0	0	1472	0	0	1626	1721	1602	1457	1702	1864
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	1.4	14.0	0.1	0.3	0.0	0.0
Cycle Q Clear(g_c), s	2.0	0.0	0.0	0.4	0.0	0.0	1.4	14.0	0.1	0.3	0.0	0.0
Prop In Lane	0.33		0.46	0.60		0.40	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	165	0	0	163	0	0	196	2452	1142	164	2399	1314
V/C Ratio(X)	0.15	0.00	0.00	0.03	0.00	0.00	0.09	0.34	0.00	0.02	0.55	0.55
Avail Cap(c_a), veh/h	281	0	0	271	0	0	196	2452	1142	164	2399	1314
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.91	0.91	0.91	0.87	0.87	0.87
Uniform Delay (d), s/veh	63.7	0.0	0.0	63.0	0.0	0.0	58.6	8.2	6.2	51.7	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.0	0.1	0.8	1.5
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	0.9	0.0	0.0	0.2	0.0	0.0	0.6	5.2	0.0	0.1	0.3	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.9	0.0	0.0	63.1	0.0	0.0	58.8	8.6	6.2	51.7	0.8	1.5
LnGrp LOS	E	A	A	E	A	A	E	A	A	D	A	A
Approach Vol, veh/h		24			5			865			2062	
Approach Delay, s/veh		63.9			63.1			9.5			1.1	
Approach LOS		E			E			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	21.4	111.4		17.2	22.6	110.2		17.2				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	106.9		24.1	6.7	105.7		24.1				
Max Q Clear Time (g_c+I1), s	2.3	16.0		4.0	3.4	2.0		2.4				
Green Ext Time (p_c), s	0.0	4.8		0.0	0.0	0.8		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			4.2									
HCM 6th LOS			A									

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	105	46	831	568	121	1937
Future Volume (vph)	105	46	831	568	121	1937
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	16	10	13	9	10
Grade (%)	-2%		0%			0%
Total Lost time (s)	5.0	5.0	5.5	5.0	5.0	5.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	2970	1697	3120	1568	1533	4700
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	2970	1697	3120	1568	1533	4700
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	105	46	831	568	121	1937
RTOR Reduction (vph)	0	41	0	102	0	0
Lane Group Flow (vph)	105	5	831	466	121	1937
Confl. Peds. (#/hr)		2		3		
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	27%	7%	8%	6%	6%	3%
Turn Type	Prot	Perm	NA	custom	Prot	NA
Protected Phases	4		1	4 7	2	1 2
Permitted Phases		4		2		
Actuated Green, G (s)	16.9	16.9	90.4	123.0	27.2	123.1
Effective Green, g (s)	16.9	16.9	90.4	123.0	27.2	123.1
Actuated g/C Ratio	0.11	0.11	0.60	0.82	0.18	0.82
Clearance Time (s)	5.0	5.0	5.5		5.0	
Vehicle Extension (s)	3.0	3.0	2.5		3.0	
Lane Grp Cap (vph)	334	191	1880	1338	277	3857
v/s Ratio Prot	0.04		0.27	c0.22	0.08	c0.41
v/s Ratio Perm		0.00		0.07		
v/c Ratio	0.31	0.03	0.44	0.35	0.44	0.50
Uniform Delay, d1	61.2	59.2	16.1	3.4	54.6	4.1
Progression Factor	1.00	1.00	1.00	1.00	0.91	0.26
Incremental Delay, d2	0.5	0.1	0.8	0.2	1.0	0.1
Delay (s)	61.8	59.3	16.9	3.6	50.5	1.1
Level of Service	E	E	B	A	D	A
Approach Delay (s)	61.0		11.5			4.1
Approach LOS	E		B			A

Intersection Summary			
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support exclusive ped or hold phases.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	41	1	0	1	43	1386	2	1	2016	2
Future Volume (vph)	5	0	41	1	0	1	43	1386	2	1	2016	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.0		3.0		3.0	3.0	4.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00		1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00		0.98		0.97		1.00	1.00	0.96	1.00	1.00	0.87
Flpb, ped/bikes	0.96		1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00		0.85		0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1729		1051		1119		1236	3406	1031	1805	3505	1405
Flt Permitted	0.76		1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1377		1051		1119		1236	3406	1031	1805	3505	1405
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	0	41	1	0	1	43	1386	2	1	2016	2
RTOR Reduction (vph)	0	0	39	0	2	0	0	0	0	0	0	0
Lane Group Flow (vph)	5	0	2	0	0	0	43	1386	2	1	2016	2
Confl. Peds. (#/hr)	30		4	4		30			8			40
Heavy Vehicles (%)	0%	0%	51%	0%	0%	100%	46%	6%	50%	0%	3%	0%
Turn Type	D.Pm		Perm	Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases					4		5	2		1	6	
Permitted Phases	4		4	4					2			6
Actuated Green, G (s)	5.7		5.7		5.7		9.1	119.6	119.6	1.2	111.7	111.7
Effective Green, g (s)	7.2		7.2		7.2		10.6	121.1	120.1	2.7	113.2	113.2
Actuated g/C Ratio	0.05		0.05		0.05		0.08	0.86	0.86	0.02	0.81	0.81
Clearance Time (s)	4.5		4.5		4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0		3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	70		54		57		93	2946	884	34	2834	1136
v/s Ratio Prot							c0.03	0.41		0.00	c0.58	
v/s Ratio Perm	c0.00		0.00		0.00				0.00			0.00
v/c Ratio	0.07		0.04		0.00		0.46	0.47	0.00	0.03	0.71	0.00
Uniform Delay, d1	63.2		63.1		63.0		62.0	2.2	1.4	67.4	6.0	2.6
Progression Factor	1.00		1.00		1.00		1.20	0.70	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4		0.3		0.0		3.2	0.5	0.0	0.4	1.5	0.0
Delay (s)	63.7		63.4		63.0		77.4	2.0	1.4	67.7	7.6	2.6
Level of Service	E		E		E		E	A	A	E	A	A
Approach Delay (s)		63.4			63.0			4.3			7.6	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	3	0	0	529	17	891	23	316	1677	7
Future Volume (vph)	2	0	3	0	0	529	17	891	23	316	1677	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.0				3.5	4.0	3.0	3.0	2.0	2.0	2.0
Lane Util. Factor	0.95	0.95				1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.96				0.99	1.00	1.00	0.95	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85				0.86	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1715	1473				1476	1805	3343	1540	3127	3505	1535
Flt Permitted	0.95	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1715	1473				1476	1805	3343	1540	3127	3505	1535
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2	0	3	0	0	529	17	891	23	316	1677	7
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	11	0	0	2
Lane Group Flow (vph)	2	0	0	0	0	529	17	891	12	316	1677	5
Confl. Peds. (#/hr)			6						5			10
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	10%	0%	8%	0%	12%	3%	0%
Turn Type	Split	NA				Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	3					5	2		1 4	6	
Permitted Phases						1 2 3 4			2			6
Actuated Green, G (s)	8.3	8.3				140.0	2.2	68.8	68.8	50.4	94.7	94.7
Effective Green, g (s)	8.3	8.8				131.0	3.7	70.3	70.3	51.9	96.2	96.2
Actuated g/C Ratio	0.06	0.06				0.94	0.03	0.50	0.50	0.37	0.69	0.69
Clearance Time (s)	4.5	4.5					5.5	4.5	4.5		3.5	3.5
Vehicle Extension (s)	3.0	3.0					0.2	0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	101	92				1381	47	1678	773	1159	2408	1054
v/s Ratio Prot	0.00	0.00					0.01	0.27		0.10	c0.48	
v/s Ratio Perm						c0.36			0.01			0.00
v/c Ratio	0.02	0.00				0.38	0.36	0.53	0.01	0.27	0.70	0.00
Uniform Delay, d1	62.0	61.5				0.5	67.0	23.7	17.5	30.8	13.1	6.9
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.00	1.13	0.86	1.00
Incremental Delay, d2	0.1	0.0				0.2	1.7	1.2	0.0	0.1	1.2	0.0
Delay (s)	62.1	61.5				0.6	68.7	24.9	17.5	34.8	12.5	6.9
Level of Service	E	E				A	E	C	B	C	B	A
Approach Delay (s)		61.7			0.6			25.5			16.0	
Approach LOS		E			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology expects strict NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	545	39	87	594	83	0	0	0	108	246	55
Future Volume (vph)	42	545	39	87	594	83	0	0	0	108	246	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5					4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95					1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98					1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00					0.95	1.00	
Frt	1.00	0.99		1.00	0.98					1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)	1641	3246		1671	3194					1621	1687	
Flt Permitted	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)	1641	3246		1671	3194					1621	1687	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	42	545	39	87	594	83	0	0	0	108	246	55
RTOR Reduction (vph)	0	5	0	0	10	0	0	0	0	0	11	0
Lane Group Flow (vph)	42	579	0	87	667	0	0	0	0	108	290	0
Confl. Peds. (#/hr)			68			65				40		80
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	10%	7%	41%	8%	9%	5%	0%	0%	0%	6%	9%	0%
Turn Type	Prot	NA		Prot	NA					Perm	NA	
Protected Phases	1	6		5	2						4	
Permitted Phases										4		
Actuated Green, G (s)	5.2	39.7		8.3	42.8					18.5	18.5	
Effective Green, g (s)	5.2	39.7		8.3	42.8					18.5	18.5	
Actuated g/C Ratio	0.07	0.50		0.10	0.53					0.23	0.23	
Clearance Time (s)	4.5	4.5		4.5	4.5					4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)	106	1610		173	1708					374	390	
v/s Ratio Prot	0.03	0.18		c0.05	c0.21						c0.17	
v/s Ratio Perm										0.07		
v/c Ratio	0.40	0.36		0.50	0.39					0.29	0.74	
Uniform Delay, d1	35.9	12.4		33.9	10.9					25.3	28.6	
Progression Factor	1.00	1.00		0.89	0.93					1.00	1.00	
Incremental Delay, d2	2.4	0.6		2.2	0.7					0.4	7.5	
Delay (s)	38.3	13.0		32.4	10.9					25.8	36.1	
Level of Service	D	B		C	B					C	D	
Approach Delay (s)		14.7			13.3			0.0			33.3	
Approach LOS		B			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	52.3%	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)	42	545	39	87	594	83	0	0	0	108	246	55
Future Volume (veh/h)	42	545	39	87	594	83	0	0	0	108	246	55
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.97				1.00		0.88
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1752	1796	1292	1781	1767	1826				1811	1767	1900
Adj Flow Rate, veh/h	42	545	39	87	594	83				108	246	55
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	10	7	41	8	9	5				6	9	0
Cap, veh/h	63	1708	122	111	1645	229				404	319	71
Arrive On Green	0.04	0.53	0.53	0.09	0.74	0.74				0.23	0.23	0.23
Sat Flow, veh/h	1668	3214	229	1697	2943	410				1725	1361	304
Grp Volume(v), veh/h	42	289	295	87	338	339				108	0	301
Grp Sat Flow(s),veh/h/ln	1668	1706	1736	1697	1678	1675				1725	0	1665
Q Serve(g_s), s	2.0	7.6	7.7	4.0	5.6	5.7				4.1	0.0	13.5
Cycle Q Clear(g_c), s	2.0	7.6	7.7	4.0	5.6	5.7				4.1	0.0	13.5
Prop In Lane	1.00		0.13	1.00		0.24				1.00		0.18
Lane Grp Cap(c), veh/h	63	907	923	111	938	936				404	0	390
V/C Ratio(X)	0.66	0.32	0.32	0.78	0.36	0.36				0.27	0.00	0.77
Avail Cap(c_a), veh/h	282	907	923	286	938	936				507	0	489
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33				1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.97	0.97	0.97				1.00	0.00	1.00
Uniform Delay (d), s/veh	38.0	10.6	10.6	36.0	5.3	5.3				25.0	0.0	28.6
Incr Delay (d2), s/veh	11.3	0.9	0.9	11.1	1.0	1.1				0.4	0.0	5.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.9	3.0	2.0	1.9	1.9				1.7	0.0	5.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.3	11.5	11.5	47.0	6.3	6.3				25.4	0.0	34.5
LnGrp LOS	D	B	B	D	A	A				C	A	C
Approach Vol, veh/h		626			764						409	
Approach Delay, s/veh		14.0			10.9						32.1	
Approach LOS		B			B						C	
Timer - Assigned Phs	1	2		4	5	6						
Phs Duration (G+Y+Rc), s	7.5	49.2		23.3	9.7	47.0						
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5						
Max Green Setting (Gmax), s	13.5	29.5		23.5	13.5	29.5						
Max Q Clear Time (g_c+I1), s	4.0	7.7		15.5	6.0	9.7						
Green Ext Time (p_c), s	0.0	4.6		1.4	0.1	3.7						
Intersection Summary												
HCM 6th Ctrl Delay			16.8									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	658	0	0	701	20	60	56	95	0	0	0
Future Volume (vph)	0	658	0	0	701	20	60	56	95	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5			
Lane Util. Factor		0.95			0.95		1.00	1.00	1.00			
Frpb, ped/bikes		1.00			1.00		1.00	1.00	0.94			
Flpb, ped/bikes		1.00			1.00		1.00	1.00	1.00			
Frt		1.00			1.00		1.00	1.00	0.85			
Flt Protected		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (prot)		3438			3346		1318	1681	1493			
Flt Permitted		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (perm)		3438			3346		1318	1681	1493			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	658	0	0	701	20	60	56	95	0	0	0
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	59	0	0	0
Lane Group Flow (vph)	0	658	0	0	720	0	60	56	36	0	0	0
Confl. Peds. (#/hr)			51			75			42			
Confl. Bikes (#/hr)			1			3						
Heavy Vehicles (%)	0%	5%	0%	0%	7%	11%	37%	13%	2%	0%	0%	0%
Turn Type		NA			NA		custom	NA	Perm			
Protected Phases		2			2		3	8				
Permitted Phases							4		8			
Actuated Green, G (s)		58.5			58.5		8.0	12.5	12.5			
Effective Green, g (s)		58.5			58.5		8.0	12.5	12.5			
Actuated g/C Ratio		0.73			0.73		0.10	0.16	0.16			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)		2514			2446		205	262	233			
v/s Ratio Prot		0.19			c0.22		c0.02	0.03				
v/s Ratio Perm							0.02		0.02			
v/c Ratio		0.26			0.29		0.29	0.21	0.15			
Uniform Delay, d1		3.6			3.7		34.0	29.5	29.2			
Progression Factor		0.84			1.00		1.00	1.00	1.00			
Incremental Delay, d2		0.2			0.3		0.8	0.4	0.3			
Delay (s)		3.2			4.0		34.8	29.9	29.5			
Level of Service		A			A		C	C	C			
Approach Delay (s)		3.2			4.0			31.1			0.0	
Approach LOS		A			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	270	194	27	2	0	125
Future Volume (vph)	270	194	27	2	0	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5		3.5	3.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.86	
Flt Protected	0.95	1.00		0.96	1.00	
Satd. Flow (prot)	1556	1570		1766	1284	
Flt Permitted	0.95	1.00		0.96	1.00	
Satd. Flow (perm)	1556	1570		1766	1284	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	270	194	27	2	0	125
RTOR Reduction (vph)	0	0	0	0	91	0
Lane Group Flow (vph)	270	194	0	29	34	0
Confl. Peds. (#/hr)						2
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	16%	2%	3%	0%	0%	25%
Turn Type	Prot	custom	custom	NA	NA	
Protected Phases	4	4	2	2	6	
Permitted Phases		2 6	2			
Actuated Green, G (s)	16.5	53.0		16.5	16.5	
Effective Green, g (s)	16.5	53.0		16.5	16.5	
Actuated g/C Ratio	0.28	0.88		0.28	0.28	
Clearance Time (s)	3.5	3.5		3.5	3.5	
Lane Grp Cap (vph)	427	1570		485	353	
v/s Ratio Prot	c0.17	c0.03		0.02	0.03	
v/s Ratio Perm		0.09				
v/c Ratio	0.63	0.12		0.06	0.10	
Uniform Delay, d1	19.1	0.5		16.0	16.2	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.0	0.2		0.2	0.5	
Delay (s)	26.0	0.6		16.3	16.8	
Level of Service	C	A		B	B	
Approach Delay (s)	15.4			16.3	16.8	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support custom phasing.

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			↰	↱		✣			✣	
Traffic Vol, veh/h	5	54	3	31	124	117	0	11	20	51	7	2
Future Vol, veh/h	5	54	3	31	124	117	0	11	20	51	7	2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	40	25	0	5	10	25	0	0	6	27	14	0
Mvmt Flow	5	54	3	31	124	117	0	11	20	51	7	2
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	8.7	8.5	7.6	8.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	8%	20%	0%	85%
Vol Thru, %	35%	87%	80%	0%	12%
Vol Right, %	65%	5%	0%	100%	3%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	31	62	155	117	60
LT Vol	0	5	31	0	51
Through Vol	11	54	124	0	7
RT Vol	20	3	0	117	2
Lane Flow Rate	31	62	155	117	60
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.038	0.089	0.215	0.139	0.089
Departure Headway (Hd)	4.362	5.183	4.99	4.273	5.312
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	821	693	724	845	676
Service Time	2.385	3.204	2.69	1.973	3.333
HCM Lane V/C Ratio	0.038	0.089	0.214	0.138	0.089
HCM Control Delay	7.6	8.7	9.1	7.7	8.9
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0.3	0.8	0.5	0.3

Intersection	
Int Delay, s/veh	7.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	55	0	0	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	55	0	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	6	6	0	0	8	0	10	10	0	8
Sign Control	Yield	Yield	Yield	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	55	0	0	0	0	0	0	0	0

Major/Minor	Major2			Minor2		
Conflicting Flow All	6	0	0	-	116	8
Stage 1	-	-	-	-	110	-
Stage 2	-	-	-	-	6	-
Critical Hdwy	4.1	-	-	-	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	-	4	3.3
Pot Cap-1 Maneuver	1628	-	-	0	778	1080
Stage 1	-	-	-	0	808	-
Stage 2	-	-	-	0	-	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1628	-	-	-	0	1080
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

Approach	WB	SB
HCM Control Delay, s	7.3	0
HCM LOS		A

Minor Lane/Major Mvmt	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1628	-	-	-
HCM Lane V/C Ratio	0.034	-	-	-
HCM Control Delay (s)	7.3	0	-	0
HCM Lane LOS	A	A	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	407	102	353	390	136	232	1229	153	161	899	73
Future Volume (vph)	235	407	102	353	390	136	232	1229	153	161	899	73
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	5.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.95		1.00	0.94		1.00	1.00	0.78	1.00	1.00	0.85
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	3258		3467	3206		1787	3574	1257	1752	3505	1369
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	3258		3467	3206		1787	3574	1257	1752	3505	1369
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	235	407	102	353	390	136	232	1229	153	161	899	73
RTOR Reduction (vph)	0	17	0	0	25	0	0	0	28	0	0	34
Lane Group Flow (vph)	235	492	0	353	501	0	232	1229	125	161	899	39
Confl. Peds. (#/hr)			141			139			112			75
Heavy Vehicles (%)	0%	3%	0%	1%	2%	1%	1%	1%	0%	3%	3%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	custom
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2 3			6 7
Actuated Green, G (s)	14.4	27.1		16.6	29.3		21.8	55.1	76.7	21.2	54.5	73.9
Effective Green, g (s)	14.4	27.1		16.6	29.3		21.8	55.1	76.7	21.2	54.5	73.9
Actuated g/C Ratio	0.10	0.19		0.12	0.21		0.16	0.39	0.55	0.15	0.39	0.53
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	360	630		411	670		278	1406	688	265	1364	722
v/s Ratio Prot	0.07	0.15		c0.10	c0.16		c0.13	c0.34		0.09	0.26	
v/s Ratio Perm									0.10			0.03
v/c Ratio	0.65	0.78		0.86	0.75		0.83	0.87	0.18	0.61	0.66	0.05
Uniform Delay, d1	60.4	53.6		60.6	51.9		57.3	39.2	15.9	55.5	35.1	16.1
Progression Factor	1.00	1.00		1.00	1.00		0.88	1.00	1.55	1.00	1.00	1.00
Incremental Delay, d2	4.2	6.2		16.2	4.6		16.7	6.8	0.1	10.0	2.5	0.0
Delay (s)	64.6	59.9		76.7	56.4		67.1	46.1	24.8	65.5	37.6	16.1
Level of Service	E	E		E	E		E	D	C	E	D	B
Approach Delay (s)		61.4			64.6			47.1			40.2	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	51.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	91.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	4	15	76	8	188	17	1659	119	223	1248	7
Future Volume (vph)	34	4	15	76	8	188	17	1659	119	223	1248	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	10	12	11	10	12
Grade (%)		-1%			-9%			1%			-2%	
Total Lost time (s)	6.0	6.0			6.0		4.0	5.5	5.5	4.0	5.5	5.5
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.88			0.91		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00			0.99		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1633	1496			1583		1562	2987	1446	1570	2974	1468
Flt Permitted	0.32	1.00			0.90		0.22	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	549	1496			1442		354	2987	1446	135	2974	1468
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	34	4	15	76	8	188	17	1659	119	223	1248	7
RTOR Reduction (vph)	0	13	0	0	58	0	0	0	18	0	0	2
Lane Group Flow (vph)	34	6	0	0	214	0	17	1659	101	223	1248	5
Confl. Peds. (#/hr)			2	2								
Heavy Vehicles (%)	0%	0%	0%	3%	0%	0%	0%	1%	0%	1%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	21.0	21.0			21.0		96.0	94.5	94.5	101.5	101.5	101.5
Effective Green, g (s)	21.0	21.0			21.0		96.0	94.5	94.5	101.5	101.5	101.5
Actuated g/C Ratio	0.15	0.15			0.15		0.69	0.68	0.68	0.72	0.72	0.72
Clearance Time (s)	6.0	6.0			6.0		4.0	5.5	5.5	4.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0			2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	82	224			216		260	2016	976	190	2156	1064
v/s Ratio Prot		0.00					0.00	c0.56		c0.08	0.42	
v/s Ratio Perm	0.06				c0.15		0.04		0.07	c0.78		0.00
v/c Ratio	0.41	0.03			0.99		0.07	0.82	0.10	1.17	0.58	0.00
Uniform Delay, d1	53.9	50.8			59.4		8.5	16.6	7.9	33.4	9.1	5.3
Progression Factor	1.00	1.00			1.00		0.78	0.66	0.67	0.84	1.56	1.00
Incremental Delay, d2	1.2	0.0			59.1		0.0	2.9	0.2	118.2	1.1	0.0
Delay (s)	55.2	50.8			118.5		6.6	13.9	5.5	146.2	15.3	5.3
Level of Service	E	D			F		A	B	A	F	B	A
Approach Delay (s)		53.6			118.5			13.3			35.0	
Approach LOS		D			F			B			C	

Intersection Summary			
HCM 2000 Control Delay	30.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	102.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology supports speed limit in the range of 25 to 55 mph.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	5	420	6	7	4	63	1577	0	1	1218	206
Future Volume (vph)	162	5	420	6	7	4	63	1577	0	1	1218	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	12	12	11	10	12	11	10	12
Grade (%)		-7%			0%			-1%			0%	
Total Lost time (s)		4.5	4.0		4.5		4.5	4.5		4.5	4.5	4.5
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.99		1.00		1.00	1.00		1.00	1.00	0.89
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.97		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1747	1600		1799		1719	3320		1745	3240	1444
Flt Permitted		0.72	1.00		0.91		0.20	1.00		0.13	1.00	1.00
Satd. Flow (perm)		1320	1600		1662		370	3320		236	3240	1444
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	162	5	420	6	7	4	63	1577	0	1	1218	206
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	45
Lane Group Flow (vph)	0	167	420	0	14	0	63	1577	0	1	1218	161
Confl. Peds. (#/hr)	1		4	4		1	15		9	9		15
Confl. Bikes (#/hr)			4									
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	2%	2%	0%	0%	4%	0%
Turn Type	Perm	NA	Free	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4		Free	4			2		2	2		2
Actuated Green, G (s)		21.6	140.0		21.6		109.4	109.4		109.4	109.4	109.4
Effective Green, g (s)		21.6	140.0		21.6		109.4	109.4		109.4	109.4	109.4
Actuated g/C Ratio		0.15	1.00		0.15		0.78	0.78		0.78	0.78	0.78
Clearance Time (s)		4.5			4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)		2.0			2.0		2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)		203	1600		256		289	2594		184	2531	1128
v/s Ratio Prot								c0.48			0.38	
v/s Ratio Perm		c0.13	0.26		0.01		0.17			0.00		0.11
v/c Ratio		0.82	0.26		0.05		0.22	0.61		0.01	0.48	0.14
Uniform Delay, d1		57.3	0.0		50.5		4.0	6.4		3.4	5.4	3.8
Progression Factor		1.00	1.00		1.00		0.03	0.02		1.00	1.00	1.00
Incremental Delay, d2		21.8	0.4		0.0		1.5	0.9		0.1	0.7	0.3
Delay (s)		79.2	0.4		50.5		1.6	1.1		3.4	6.0	4.0
Level of Service		E	A		D		A	A		A	A	A
Approach Delay (s)		22.8			50.5			1.1			5.7	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	0	18	8	0	5	18	1621	5	1	1631	6
Future Volume (vph)	17	0	18	8	0	5	18	1621	5	1	1631	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	11	12	12
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.91	
Frpb, ped/bikes		0.99			0.99		1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		0.99			0.99		1.00	1.00	1.00	1.00	1.00	
Frt		0.93			0.95		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98			0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1697			1722		1687	3539	1549	1745	4985	
Flt Permitted		0.88			0.87		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1522			1542		1687	3539	1549	1745	4985	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	17	0	18	8	0	5	18	1621	5	1	1631	6
RTOR Reduction (vph)	0	31	0	0	12	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	4	0	0	1	0	18	1621	4	1	1637	0
Confl. Peds. (#/hr)	7		5	5		7			8			8
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	7%	2%	0%	0%	4%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			
Actuated Green, G (s)		15.4			15.4		2.2	110.0	110.0	1.1	108.9	
Effective Green, g (s)		15.4			15.4		2.2	110.0	110.0	1.1	108.9	
Actuated g/C Ratio		0.11			0.11		0.02	0.79	0.79	0.01	0.78	
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)		1.0			1.0		3.0	3.0	3.0	3.0	0.2	
Lane Grp Cap (vph)		167			169		26	2780	1217	13	3877	
v/s Ratio Prot							0.01	c0.46		0.00	c0.33	
v/s Ratio Perm		c0.00			0.00				0.00			
v/c Ratio		0.02			0.01		0.69	0.58	0.00	0.08	0.42	
Uniform Delay, d1		55.6			55.5		68.6	5.9	3.2	68.9	5.1	
Progression Factor		1.00			1.00		1.34	0.04	1.00	1.15	0.72	
Incremental Delay, d2		0.0			0.0		39.1	0.6	0.0	2.3	0.3	
Delay (s)		55.6			55.5		131.0	0.8	3.2	81.5	4.0	
Level of Service		E			E		F	A	A	F	A	
Approach Delay (s)		55.6			55.5			2.2			4.0	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	3.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	59.6%	ICU Level of Service	B
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)	17	0	18	8	0	5	18	1621	5	1	1631	6
Future Volume (veh/h)	17	0	18	8	0	5	18	1621	5	1	1631	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.97	0.97		0.97	1.00		0.99	1.00		0.97
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	1796	1870	1900	1900	1841	1900
Adj Flow Rate, veh/h	17	0	18	8	0	5	18	1621	5	1	1631	6
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	0	0	0	0	0	7	2	0	0	4	0
Cap, veh/h	74	12	50	94	9	38	31	2462	1109	265	4244	16
Arrive On Green	0.06	0.00	0.06	0.06	0.00	0.06	0.02	0.69	0.69	0.29	1.00	1.00
Sat Flow, veh/h	555	185	784	807	147	597	1711	3554	1601	1810	5168	19
Grp Volume(v), veh/h	35	0	0	13	0	0	18	1621	5	1	1057	580
Grp Sat Flow(s),veh/h/ln	1524	0	0	1552	0	0	1711	1777	1601	1810	1675	1837
Q Serve(g_s), s	0.8	0.0	0.0	0.0	0.0	0.0	1.5	36.1	0.1	0.1	0.0	0.0
Cycle Q Clear(g_c), s	2.9	0.0	0.0	1.0	0.0	0.0	1.5	36.1	0.1	0.1	0.0	0.0
Prop In Lane	0.49		0.51	0.62		0.38	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	136	0	0	142	0	0	31	2462	1109	265	2751	1508
V/C Ratio(X)	0.26	0.00	0.00	0.09	0.00	0.00	0.59	0.66	0.00	0.00	0.38	0.38
Avail Cap(c_a), veh/h	294	0	0	296	0	0	67	2462	1109	265	2751	1508
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.54	0.54	0.54	0.91	0.91	0.91
Uniform Delay (d), s/veh	62.6	0.0	0.0	61.7	0.0	0.0	68.2	12.1	6.6	42.3	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.1	0.0	0.0	9.2	0.8	0.0	0.0	0.4	0.7
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	1.2	0.0	0.0	0.4	0.0	0.0	0.7	13.7	0.0	0.0	0.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.9	0.0	0.0	61.8	0.0	0.0	77.4	12.9	6.6	42.3	0.4	0.7
LnGrp LOS	E	A	A	E	A	A	E	B	A	D	A	A
Approach Vol, veh/h		35			13			1644			1638	
Approach Delay, s/veh		62.9			61.8			13.6			0.5	
Approach LOS		E			E			B			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	25.0	101.5		13.5	7.0	119.5		13.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	97.0		24.0	5.5	97.0		24.0				
Max Q Clear Time (g_c+I1), s	2.1	38.1		4.9	3.5	2.0		3.0				
Green Ext Time (p_c), s	0.0	13.2		0.0	0.0	0.6		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			7.9									
HCM 6th LOS			A									

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	185	117	1535	545	38	1619
Future Volume (vph)	185	117	1535	545	38	1619
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	16	10	13	9	10
Grade (%)	-2%		0%			0%
Total Lost time (s)	5.0	5.0	5.5	5.0	5.0	5.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frpb, ped/bikes	1.00	0.98	1.00	0.99	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3699	1727	3303	1612	1533	4700
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3699	1727	3303	1612	1533	4700
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	185	117	1535	545	38	1619
RTOR Reduction (vph)	0	101	0	71	0	0
Lane Group Flow (vph)	185	16	1535	474	38	1619
Confl. Peds. (#/hr)		4		7		
Heavy Vehicles (%)	2%	5%	2%	3%	6%	3%
Turn Type	Prot	Perm	NA	custom	Prot	NA
Protected Phases	4		1	4 7	2	1 2
Permitted Phases		4		2		
Actuated Green, G (s)	19.2	19.2	80.8	116.4	24.5	110.8
Effective Green, g (s)	19.2	19.2	80.8	116.4	24.5	110.8
Actuated g/C Ratio	0.14	0.14	0.58	0.83	0.18	0.79
Clearance Time (s)	5.0	5.0	5.5		5.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	507	236	1906	1397	268	3719
v/s Ratio Prot	0.05		c0.46	c0.22	0.02	c0.34
v/s Ratio Perm		0.01		0.07		
v/c Ratio	0.36	0.07	0.81	0.34	0.14	0.44
Uniform Delay, d1	54.9	52.6	23.4	2.8	48.9	4.6
Progression Factor	1.00	1.00	1.78	1.40	0.81	0.19
Incremental Delay, d2	0.4	0.1	2.9	0.1	1.0	0.3
Delay (s)	55.3	52.7	44.4	4.0	40.6	1.2
Level of Service	E	D	D	A	D	A
Approach Delay (s)	54.3		33.8			2.1
Approach LOS	D		C			A

Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support exclusive ped or hold phases.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	24	1	0	2	23	2076	0	2	1766	8
Future Volume (vph)	5	0	24	1	0	2	23	2076	0	2	1766	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5		4.5		4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00		1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00		0.98		0.96		1.00	1.00		1.00	1.00	0.80
Flpb, ped/bikes	0.95		1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00		0.85		0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95		1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1707		984		1623		1135	3539		1805	3505	1290
Flt Permitted	0.93		1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1671		984		1623		1135	3539		1805	3505	1290
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	0	24	1	0	2	23	2076	0	2	1766	8
RTOR Reduction (vph)	0	0	23	0	3	0	0	0	0	0	0	1
Lane Group Flow (vph)	5	0	1	0	0	0	23	2076	0	2	1766	7
Confl. Peds. (#/hr)	39		5	5		39			7			66
Heavy Vehicles (%)	0%	0%	61%	0%	0%	0%	59%	2%	0%	0%	3%	0%
Turn Type	D.Pm		Perm	Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases					4		5	2		1	6	
Permitted Phases	4		4	4					2			6
Actuated Green, G (s)	4.3		4.3		4.3		6.0	120.9		1.3	116.2	116.2
Effective Green, g (s)	4.3		4.3		4.3		6.0	120.9		1.3	116.2	116.2
Actuated g/C Ratio	0.03		0.03		0.03		0.04	0.86		0.01	0.83	0.83
Clearance Time (s)	4.5		4.5		4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	3.0		3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	51		30		49		48	3056		16	2909	1070
v/s Ratio Prot							c0.02	c0.59		0.00	0.50	
v/s Ratio Perm	c0.00		0.00		0.00							0.01
v/c Ratio	0.10		0.02		0.00		0.48	0.68		0.12	0.61	0.01
Uniform Delay, d1	66.0		65.8		65.8		65.5	3.2		68.8	4.1	2.0
Progression Factor	1.00		1.00		1.00		0.83	1.86		0.96	0.73	1.00
Incremental Delay, d2	0.8		0.3		0.0		5.3	0.9		3.2	0.9	0.0
Delay (s)	66.8		66.1		65.8		59.8	6.7		68.9	3.9	2.0
Level of Service	E		E		E		E	A		E	A	A
Approach Delay (s)		66.3			65.8			7.3			3.9	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	2	13	0	0	488	4	1605	17	414	1370	3
Future Volume (vph)	4	2	13	0	0	488	4	1605	17	414	1370	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5				3.5	5.5	4.5	4.5	3.5	4.5	4.5
Lane Util. Factor	0.95	0.95				1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.98				0.99	1.00	1.00	0.97	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.87				0.86	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1715	1545				1531	1805	3539	1563	3303	3505	1530
Flt Permitted	0.95	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1715	1545				1531	1805	3539	1563	3303	3505	1530
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	2	13	0	0	488	4	1605	17	414	1370	3
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	7	0	0	1
Lane Group Flow (vph)	4	3	0	0	0	488	4	1605	10	414	1370	2
Confl. Peds. (#/hr)			1						4			11
Confl. Bikes (#/hr)						3						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%	0%	2%	0%	6%	3%	0%
Turn Type	Split	NA				Perm	Prot	NA	custom	Prot	NA	custom
Protected Phases	3	3					5	2		1 4	6	
Permitted Phases						1 2 3 4			6			2
Actuated Green, G (s)	6.5	6.5				140.0	0.8	79.6	84.7	41.4	84.7	79.6
Effective Green, g (s)	6.5	6.5				131.0	0.8	79.6	84.7	41.4	84.7	79.6
Actuated g/C Ratio	0.05	0.05				0.94	0.01	0.57	0.61	0.30	0.61	0.57
Clearance Time (s)	4.5	4.5					5.5	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0					3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	79	71				1432	10	2012	945	976	2120	869
v/s Ratio Prot	0.00	0.00					0.00	c0.45		c0.13	0.39	
v/s Ratio Perm						c0.32			0.01			0.00
v/c Ratio	0.05	0.04				0.34	0.40	0.80	0.01	0.42	0.65	0.00
Uniform Delay, d1	63.8	63.8				0.4	69.4	23.8	11.0	39.7	17.9	13.0
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.00	1.25	0.57	1.00
Incremental Delay, d2	1.2	1.0				0.1	24.2	3.4	0.0	0.2	1.3	0.0
Delay (s)	65.0	64.7				0.6	93.6	27.2	11.0	50.0	11.5	13.0
Level of Service	E	E				A	F	C	B	D	B	B
Approach Delay (s)		64.8			0.6			27.2			20.4	
Approach LOS		E			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	553	54	115	519	142	0	0	0	129	221	57
Future Volume (vph)	69	553	54	115	519	142	0	0	0	129	221	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5					4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95					1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	0.91					1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00					0.90	1.00	
Frt	1.00	0.99		1.00	0.97					1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)	1770	3273		1787	3008					1591	1697	
Flt Permitted	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)	1770	3273		1787	3008					1591	1697	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	69	553	54	115	519	142	0	0	0	129	221	57
RTOR Reduction (vph)	0	8	0	0	26	0	0	0	0	0	13	0
Lane Group Flow (vph)	69	599	0	115	635	0	0	0	0	129	265	0
Confl. Peds. (#/hr)			162			166				84		132
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	2%	4%	31%	1%	7%	0%	0%	0%	0%	2%	5%	4%
Turn Type	Prot	NA		Prot	NA					Perm	NA	
Protected Phases	1	6		5	2						4	
Permitted Phases										4		
Actuated Green, G (s)	7.2	41.2		8.1	42.1					17.2	17.2	
Effective Green, g (s)	7.2	41.2		8.1	42.1					17.2	17.2	
Actuated g/C Ratio	0.09	0.52		0.10	0.53					0.21	0.21	
Clearance Time (s)	4.5	4.5		4.5	4.5					4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)	159	1685		180	1582					342	364	
v/s Ratio Prot	0.04	0.18		c0.06	c0.21						c0.16	
v/s Ratio Perm										0.08		
v/c Ratio	0.43	0.36		0.64	0.40					0.38	0.73	
Uniform Delay, d1	34.5	11.5		34.5	11.4					26.8	29.2	
Progression Factor	1.00	1.00		0.85	1.15					1.00	1.00	
Incremental Delay, d2	1.9	0.6		7.0	0.7					0.7	7.1	
Delay (s)	36.4	12.1		36.4	13.8					27.5	36.4	
Level of Service	D	B		D	B					C	D	
Approach Delay (s)		14.6			17.2			0.0			33.6	
Approach LOS		B			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	52.5%	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)	69	553	54	115	519	142	0	0	0	129	221	57
Future Volume (veh/h)	69	553	54	115	519	142	0	0	0	129	221	57
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.82	1.00		0.90				1.00		0.83
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1870	1841	1441	1885	1796	1900				1870	1826	1841
Adj Flow Rate, veh/h	69	553	54	115	519	142				129	221	57
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	2	4	31	1	7	0				2	5	4
Cap, veh/h	89	1618	157	145	1405	381				422	317	82
Arrive On Green	0.05	0.51	0.51	0.16	1.00	1.00				0.24	0.24	0.24
Sat Flow, veh/h	1781	3152	306	1795	2582	701				1781	1337	345
Grp Volume(v), veh/h	69	305	302	115	342	319				129	0	278
Grp Sat Flow(s),veh/h/ln	1781	1749	1709	1795	1706	1576				1781	0	1682
Q Serve(g_s), s	3.1	8.2	8.3	4.9	0.0	0.0				4.8	0.0	12.1
Cycle Q Clear(g_c), s	3.1	8.2	8.3	4.9	0.0	0.0				4.8	0.0	12.1
Prop In Lane	1.00		0.18	1.00		0.44				1.00		0.21
Lane Grp Cap(c), veh/h	89	898	877	145	928	857				422	0	399
V/C Ratio(X)	0.77	0.34	0.34	0.79	0.37	0.37				0.31	0.00	0.70
Avail Cap(c_a), veh/h	234	898	877	236	928	857				479	0	452
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.96	0.96	0.96				1.00	0.00	1.00
Uniform Delay (d), s/veh	37.5	11.5	11.5	32.9	0.0	0.0				25.1	0.0	27.9
Incr Delay (d2), s/veh	13.1	1.0	1.1	9.0	1.1	1.2				0.4	0.0	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	3.3	3.2	2.3	0.3	0.3				2.0	0.0	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.7	12.5	12.6	41.9	1.1	1.2				25.5	0.0	31.9
LnGrp LOS	D	B	B	D	A	A				C	A	C
Approach Vol, veh/h		676			776						407	
Approach Delay, s/veh		16.4			7.2						29.9	
Approach LOS		B			A						C	
Timer - Assigned Phs	1	2		4	5	6						
Phs Duration (G+Y+Rc), s	8.5	48.0		23.5	11.0	45.6						
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5						
Max Green Setting (Gmax), s	10.5	34.5		21.5	10.5	34.5						
Max Q Clear Time (g_c+I1), s	5.1	2.0		14.1	6.9	10.3						
Green Ext Time (p_c), s	0.1	5.1		1.3	0.1	4.2						
Intersection Summary												
HCM 6th Ctrl Delay			15.5									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	683	0	0	656	27	120	130	149	0	0	0
Future Volume (vph)	0	683	0	0	656	27	120	130	149	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5			
Lane Util. Factor		0.95			0.95		1.00	1.00	1.00			
Frpb, ped/bikes		1.00			0.99		1.00	1.00	0.88			
Flpb, ped/bikes		1.00			1.00		1.00	1.00	1.00			
Frt		1.00			0.99		1.00	1.00	0.85			
Flt Protected		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (prot)		3438			3493		1492	1759	1412			
Flt Permitted		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (perm)		3438			3493		1492	1759	1412			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	683	0	0	656	27	120	130	149	0	0	0
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	39	0	0	0
Lane Group Flow (vph)	0	683	0	0	681	0	120	130	110	0	0	0
Confl. Peds. (#/hr)			86			142			98			
Confl. Bikes (#/hr)			1			3						
Heavy Vehicles (%)	0%	5%	0%	0%	2%	0%	21%	8%	1%	0%	0%	0%
Turn Type		NA			NA		custom	NA	Perm			
Protected Phases		2			2		3	8				
Permitted Phases							4		8			
Actuated Green, G (s)		54.3			54.3		12.2	16.7	16.7			
Effective Green, g (s)		54.3			54.3		12.2	16.7	16.7			
Actuated g/C Ratio		0.68			0.68		0.15	0.21	0.21			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)		2333			2370		311	367	294			
v/s Ratio Prot		c0.20			0.19		c0.05	0.07				
v/s Ratio Perm							0.03		0.08			
v/c Ratio		0.29			0.29		0.39	0.35	0.37			
Uniform Delay, d1		5.2			5.1		31.3	27.0	27.2			
Progression Factor		0.74			1.00		1.00	1.00	1.00			
Incremental Delay, d2		0.3			0.3		0.8	0.6	0.8			
Delay (s)		4.1			5.4		32.1	27.6	28.0			
Level of Service		A			A		C	C	C			
Approach Delay (s)		4.1			5.4			29.1			0.0	
Approach LOS		A			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	29	38	200	2	0	101
Future Volume (vph)	29	38	200	2	0	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5		3.5	3.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1543	1506		1810	1488	
Flt Permitted	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1543	1506		1810	1488	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	29	38	200	2	0	101
RTOR Reduction (vph)	0	0	0	0	73	0
Lane Group Flow (vph)	29	38	0	202	28	0
Confl. Peds. (#/hr)		4				6
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	17%	6%	0%	0%	0%	7%
Turn Type	Prot	custom	Split	NA	NA	
Protected Phases	4	4	2	2	6	
Permitted Phases		2 6				
Actuated Green, G (s)	16.5	53.0		16.5	16.5	
Effective Green, g (s)	16.5	53.0		16.5	16.5	
Actuated g/C Ratio	0.28	0.88		0.28	0.28	
Clearance Time (s)	3.5	3.5		3.5	3.5	
Lane Grp Cap (vph)	424	1506		497	409	
v/s Ratio Prot	c0.02	0.01		c0.11	c0.02	
v/s Ratio Perm		0.02				
v/c Ratio	0.07	0.03		0.41	0.07	
Uniform Delay, d1	16.1	0.4		17.8	16.1	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.0		2.5	0.3	
Delay (s)	16.4	0.4		20.2	16.4	
Level of Service	B	A		C	B	
Approach Delay (s)	7.3			20.2	16.4	
Approach LOS	A			C	B	

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support custom phasing.

Intersection	
Intersection Delay, s/veh	7.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	38	3	12	14	6	0	4	52	11	1	0
Future Vol, veh/h	0	38	3	12	14	6	0	4	52	11	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	67	0	0	50	0	0	0	7	0	0
Mvmt Flow	0	38	3	12	14	6	0	4	52	11	1	0
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	7.3	7.6	6.7	7.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	46%	0%	92%
Vol Thru, %	7%	93%	54%	0%	8%
Vol Right, %	93%	7%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	56	41	26	6	12
LT Vol	0	0	12	0	11
Through Vol	4	38	14	0	1
RT Vol	52	3	0	6	0
Lane Flow Rate	56	41	26	6	12
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.054	0.047	0.035	0.007	0.015
Departure Headway (Hd)	3.475	4.1	4.872	3.94	4.369
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	1022	873	736	909	814
Service Time	1.526	2.127	2.594	1.662	2.421
HCM Lane V/C Ratio	0.055	0.047	0.035	0.007	0.015
HCM Control Delay	6.7	7.3	7.8	6.7	7.5
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0.1	0.1	0	0

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	112	0	0	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	112	0	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	30	30	0	0	7	0	28	28	0	7
Sign Control	Yield	Yield	Yield	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	21	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	112	0	0	0	0	0	0	0	0

Major/Minor	Major2			Minor2		
Conflicting Flow All	30	0	0	-	254	7
Stage 1	-	-	-	-	224	-
Stage 2	-	-	-	-	30	-
Critical Hdwy	4.31	-	-	-	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.389	-	-	-	4	3.3
Pot Cap-1 Maneuver	1468	-	-	0	653	1081
Stage 1	-	-	-	0	722	-
Stage 2	-	-	-	0	-	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1468	-	-	-	0	1081
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

Approach	WB	SB
HCM Control Delay, s	7.7	0
HCM LOS		A

Minor Lane/Major Mvmt	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1468	-	-	-
HCM Lane V/C Ratio	0.076	-	-	-
HCM Control Delay (s)	7.7	0	-	0
HCM Lane LOS	A	A	-	A
HCM 95th %tile Q(veh)	0.2	-	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	407	102	353	390	136	232	1264	153	161	915	73
Future Volume (vph)	235	407	102	353	390	136	232	1264	153	161	915	73
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	5.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.95		1.00	0.94		1.00	1.00	0.78	1.00	1.00	0.85
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	3258		3467	3206		1787	3574	1257	1752	3505	1369
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	3258		3467	3206		1787	3574	1257	1752	3505	1369
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	235	407	102	353	390	136	232	1264	153	161	915	73
RTOR Reduction (vph)	0	17	0	0	25	0	0	0	28	0	0	34
Lane Group Flow (vph)	235	492	0	353	501	0	232	1264	125	161	915	39
Confl. Peds. (#/hr)			141			139			112			75
Heavy Vehicles (%)	0%	3%	0%	1%	2%	1%	1%	1%	0%	3%	3%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA	custom	Prot	NA	custom
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2 3			6 7
Actuated Green, G (s)	14.4	27.1		16.6	29.3		21.8	55.1	76.7	21.2	54.5	73.9
Effective Green, g (s)	14.4	27.1		16.6	29.3		21.8	55.1	76.7	21.2	54.5	73.9
Actuated g/C Ratio	0.10	0.19		0.12	0.21		0.16	0.39	0.55	0.15	0.39	0.53
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	360	630		411	670		278	1406	688	265	1364	722
v/s Ratio Prot	0.07	0.15		c0.10	c0.16		c0.13	c0.35		0.09	0.26	
v/s Ratio Perm									0.10			0.03
v/c Ratio	0.65	0.78		0.86	0.75		0.83	0.90	0.18	0.61	0.67	0.05
Uniform Delay, d1	60.4	53.6		60.6	51.9		57.3	39.8	15.9	55.5	35.3	16.1
Progression Factor	1.00	1.00		1.00	1.00		0.88	0.99	1.53	1.00	1.00	1.00
Incremental Delay, d2	4.2	6.2		16.2	4.6		16.4	8.1	0.1	10.0	2.6	0.0
Delay (s)	64.6	59.9		76.7	56.4		67.1	47.7	24.5	65.5	38.0	16.1
Level of Service	E	E		E	E		E	D	C	E	D	B
Approach Delay (s)		61.4			64.6			48.3			40.4	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	51.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	92.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	4	15	78	8	188	17	1700	123	223	1267	7
Future Volume (vph)	34	4	15	78	8	188	17	1700	123	223	1267	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	10	12	11	10	12
Grade (%)		-1%			-9%			1%			-2%	
Total Lost time (s)	6.0	6.0			6.0		4.0	5.5	5.5	4.0	5.5	5.5
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.88			0.91		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00			0.99		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1633	1496			1583		1562	2987	1446	1570	2974	1468
Flt Permitted	0.32	1.00			0.90		0.21	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	552	1496			1440		345	2987	1446	124	2974	1468
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	34	4	15	78	8	188	17	1700	123	223	1267	7
RTOR Reduction (vph)	0	13	0	0	56	0	0	0	18	0	0	2
Lane Group Flow (vph)	34	6	0	0	218	0	17	1700	105	223	1267	5
Confl. Peds. (#/hr)			2	2								
Heavy Vehicles (%)	0%	0%	0%	3%	0%	0%	0%	1%	0%	1%	3%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	21.0	21.0			21.0		96.0	94.5	94.5	101.5	101.5	101.5
Effective Green, g (s)	21.0	21.0			21.0		96.0	94.5	94.5	101.5	101.5	101.5
Actuated g/C Ratio	0.15	0.15			0.15		0.69	0.68	0.68	0.72	0.72	0.72
Clearance Time (s)	6.0	6.0			6.0		4.0	5.5	5.5	4.0	5.5	5.5
Vehicle Extension (s)	2.0	2.0			2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	82	224			216		253	2016	976	182	2156	1064
v/s Ratio Prot		0.00					0.00	c0.57		c0.08	0.43	
v/s Ratio Perm	0.06				c0.15		0.04		0.07	c0.81		0.00
v/c Ratio	0.41	0.03			1.01		0.07	0.84	0.11	1.23	0.59	0.00
Uniform Delay, d1	53.9	50.8			59.5		8.7	17.2	8.0	35.1	9.2	5.3
Progression Factor	1.00	1.00			1.00		0.78	0.68	0.67	0.82	1.58	1.00
Incremental Delay, d2	1.2	0.0			63.5		0.0	3.3	0.2	138.5	1.1	0.0
Delay (s)	55.2	50.8			123.0		6.8	14.9	5.5	167.5	15.7	5.3
Level of Service	E	D			F		A	B	A	F	B	A
Approach Delay (s)		53.6			123.0			14.2			38.2	
Approach LOS		D			F			B			D	

Intersection Summary			
HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	103.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology supports speed limit in the range of 25 to 55 mph.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	5	424	6	7	4	71	1622	0	1	1239	206
Future Volume (vph)	162	5	424	6	7	4	71	1622	0	1	1239	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	12	12	11	10	12	11	10	12
Grade (%)		-7%			0%			-1%			0%	
Total Lost time (s)		4.5	4.0		4.5		4.5	4.5		4.5	4.5	4.5
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.99		1.00		1.00	1.00		1.00	1.00	0.89
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.97		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1747	1600		1799		1719	3320		1745	3240	1444
Flt Permitted		0.72	1.00		0.91		0.20	1.00		0.12	1.00	1.00
Satd. Flow (perm)		1320	1600		1662		360	3320		222	3240	1444
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	162	5	424	6	7	4	71	1622	0	1	1239	206
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	45
Lane Group Flow (vph)	0	167	424	0	14	0	71	1622	0	1	1239	161
Confl. Peds. (#/hr)	1		4	4		1	15		9	9		15
Confl. Bikes (#/hr)			4									
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	2%	2%	0%	0%	4%	0%
Turn Type	Perm	NA	Free	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4		Free	4			2		2	2		2
Actuated Green, G (s)		21.6	140.0		21.6		109.4	109.4		109.4	109.4	109.4
Effective Green, g (s)		21.6	140.0		21.6		109.4	109.4		109.4	109.4	109.4
Actuated g/C Ratio		0.15	1.00		0.15		0.78	0.78		0.78	0.78	0.78
Clearance Time (s)		4.5			4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)		2.0			2.0		2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)		203	1600		256		281	2594		173	2531	1128
v/s Ratio Prot								c0.49			0.38	
v/s Ratio Perm		c0.13	0.26		0.01		0.20			0.00		0.11
v/c Ratio		0.82	0.27		0.05		0.25	0.63		0.01	0.49	0.14
Uniform Delay, d1		57.3	0.0		50.5		4.2	6.5		3.4	5.4	3.8
Progression Factor		1.00	1.00		1.00		0.04	0.03		1.00	1.00	1.00
Incremental Delay, d2		21.8	0.4		0.0		1.8	1.0		0.1	0.7	0.3
Delay (s)		79.2	0.4		50.5		2.0	1.2		3.4	6.1	4.0
Level of Service		E	A		D		A	A		A	A	A
Approach Delay (s)		22.7			50.5			1.2			5.8	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	0	18	8	0	5	18	1674	5	1	1656	6
Future Volume (vph)	17	0	18	8	0	5	18	1674	5	1	1656	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	11	12	12
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.91	
Frpb, ped/bikes		0.99			0.99		1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		0.99			0.99		1.00	1.00	1.00	1.00	1.00	
Frt		0.93			0.95		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98			0.97		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1697			1722		1687	3539	1549	1745	4985	
Flt Permitted		0.88			0.87		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1522			1542		1687	3539	1549	1745	4985	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	17	0	18	8	0	5	18	1674	5	1	1656	6
RTOR Reduction (vph)	0	31	0	0	12	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	4	0	0	1	0	18	1674	4	1	1662	0
Confl. Peds. (#/hr)	7		5	5		7			8			8
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	7%	2%	0%	0%	4%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			
Actuated Green, G (s)		15.4			15.4		2.2	110.0	110.0	1.1	108.9	
Effective Green, g (s)		15.4			15.4		2.2	110.0	110.0	1.1	108.9	
Actuated g/C Ratio		0.11			0.11		0.02	0.79	0.79	0.01	0.78	
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)		1.0			1.0		3.0	3.0	3.0	3.0	0.2	
Lane Grp Cap (vph)		167			169		26	2780	1217	13	3877	
v/s Ratio Prot							0.01	c0.47		0.00	c0.33	
v/s Ratio Perm		c0.00			0.00				0.00			
v/c Ratio		0.02			0.01		0.69	0.60	0.00	0.08	0.43	
Uniform Delay, d1		55.6			55.5		68.6	6.1	3.2	68.9	5.2	
Progression Factor		1.00			1.00		1.33	0.06	1.00	1.15	0.71	
Incremental Delay, d2		0.0			0.0		37.3	0.6	0.0	2.3	0.3	
Delay (s)		55.6			55.5		128.3	0.9	3.2	81.8	4.0	
Level of Service		E			E		F	A	A	F	A	
Approach Delay (s)		55.6			55.5			2.3			4.1	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	3.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
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)	17	0	18	8	0	5	18	1674	5	1	1656	6
Future Volume (veh/h)	17	0	18	8	0	5	18	1674	5	1	1656	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.97	0.97		0.97	1.00		0.99	1.00		0.97
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	1796	1870	1900	1900	1841	1900
Adj Flow Rate, veh/h	17	0	18	8	0	5	18	1674	5	1	1656	6
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	0	0	0	0	0	7	2	0	0	4	0
Cap, veh/h	74	12	50	94	9	38	31	2462	1109	265	4244	15
Arrive On Green	0.06	0.00	0.06	0.06	0.00	0.06	0.02	0.69	0.69	0.29	1.00	1.00
Sat Flow, veh/h	555	185	784	807	147	597	1711	3554	1601	1810	5168	19
Grp Volume(v), veh/h	35	0	0	13	0	0	18	1674	5	1	1073	589
Grp Sat Flow(s),veh/h/ln	1524	0	0	1552	0	0	1711	1777	1601	1810	1675	1837
Q Serve(g_s), s	0.8	0.0	0.0	0.0	0.0	0.0	1.5	38.3	0.1	0.1	0.0	0.0
Cycle Q Clear(g_c), s	2.9	0.0	0.0	1.0	0.0	0.0	1.5	38.3	0.1	0.1	0.0	0.0
Prop In Lane	0.49		0.51	0.62		0.38	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	136	0	0	142	0	0	31	2462	1109	265	2751	1508
V/C Ratio(X)	0.26	0.00	0.00	0.09	0.00	0.00	0.59	0.68	0.00	0.00	0.39	0.39
Avail Cap(c_a), veh/h	294	0	0	296	0	0	67	2462	1109	265	2751	1508
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.51	0.51	0.51	0.90	0.90	0.90
Uniform Delay (d), s/veh	62.6	0.0	0.0	61.7	0.0	0.0	68.2	12.5	6.6	42.3	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.1	0.0	0.0	8.7	0.8	0.0	0.0	0.4	0.7
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	1.2	0.0	0.0	0.4	0.0	0.0	0.7	14.6	0.0	0.0	0.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.9	0.0	0.0	61.8	0.0	0.0	76.9	13.3	6.6	42.3	0.4	0.7
LnGrp LOS	E	A	A	E	A	A	E	B	A	D	A	A
Approach Vol, veh/h		35			13			1697			1663	
Approach Delay, s/veh		62.9			61.8			13.9			0.5	
Approach LOS		E			E			B			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	25.0	101.5		13.5	7.0	119.5		13.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	97.0		24.0	5.5	97.0		24.0				
Max Q Clear Time (g_c+I1), s	2.1	40.3		4.9	3.5	2.0		3.0				
Green Ext Time (p_c), s	0.0	14.0		0.0	0.0	0.7		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			8.1									
HCM 6th LOS			A									

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	331	170	1535	611	63	1619
Future Volume (vph)	331	170	1535	611	63	1619
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	16	10	13	9	10
Grade (%)	-2%		0%			0%
Total Lost time (s)	5.0	5.0	5.5	5.0	5.0	5.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frpb, ped/bikes	1.00	0.98	1.00	0.99	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3699	1727	3303	1612	1533	4700
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3699	1727	3303	1612	1533	4700
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	331	170	1535	611	63	1619
RTOR Reduction (vph)	0	143	0	79	0	0
Lane Group Flow (vph)	331	27	1535	532	63	1619
Confl. Peds. (#/hr)		4		7		
Heavy Vehicles (%)	2%	5%	2%	3%	6%	3%
Turn Type	Prot	Perm	NA	custom	Prot	NA
Protected Phases	4		1	4 7	2	1 2
Permitted Phases		4		2		
Actuated Green, G (s)	22.4	22.4	77.6	116.4	24.5	107.6
Effective Green, g (s)	22.4	22.4	77.6	116.4	24.5	107.6
Actuated g/C Ratio	0.16	0.16	0.55	0.83	0.18	0.77
Clearance Time (s)	5.0	5.0	5.5		5.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	591	276	1830	1397	268	3612
v/s Ratio Prot	c0.09		c0.46	0.25	0.04	c0.34
v/s Ratio Perm		0.02		0.08		
v/c Ratio	0.56	0.10	0.84	0.38	0.24	0.45
Uniform Delay, d1	54.3	50.2	26.0	2.9	49.7	5.7
Progression Factor	1.00	1.00	1.70	1.67	0.82	0.26
Incremental Delay, d2	1.2	0.2	3.6	0.1	1.9	0.4
Delay (s)	55.5	50.3	47.7	5.0	42.5	1.8
Level of Service	E	D	D	A	D	A
Approach Delay (s)	53.7		35.5			3.4
Approach LOS	D		D			A

Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support exclusive ped or hold phases.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	24	1	0	2	23	2142	0	2	1912	8
Future Volume (vph)	5	0	24	1	0	2	23	2142	0	2	1912	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5		4.5		4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00		1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00		0.98		0.96		1.00	1.00		1.00	1.00	0.80
Flpb, ped/bikes	0.95		1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00		0.85		0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95		1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1707		984		1623		1135	3539		1805	3505	1290
Flt Permitted	0.93		1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1671		984		1623		1135	3539		1805	3505	1290
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	0	24	1	0	2	23	2142	0	2	1912	8
RTOR Reduction (vph)	0	0	23	0	3	0	0	0	0	0	0	1
Lane Group Flow (vph)	5	0	1	0	0	0	23	2142	0	2	1912	7
Confl. Peds. (#/hr)	39		5	5		39			7			66
Heavy Vehicles (%)	0%	0%	61%	0%	0%	0%	59%	2%	0%	0%	3%	0%
Turn Type	D.Pm		Perm	Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases					4		5	2		1	6	
Permitted Phases	4		4	4					2			6
Actuated Green, G (s)	4.3		4.3		4.3		6.0	120.9		1.3	116.2	116.2
Effective Green, g (s)	4.3		4.3		4.3		6.0	120.9		1.3	116.2	116.2
Actuated g/C Ratio	0.03		0.03		0.03		0.04	0.86		0.01	0.83	0.83
Clearance Time (s)	4.5		4.5		4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	3.0		3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	51		30		49		48	3056		16	2909	1070
v/s Ratio Prot							c0.02	c0.61		0.00	0.55	
v/s Ratio Perm	c0.00		0.00		0.00							0.01
v/c Ratio	0.10		0.02		0.00		0.48	0.70		0.12	0.66	0.01
Uniform Delay, d1	66.0		65.8		65.8		65.5	3.3		68.8	4.5	2.0
Progression Factor	1.00		1.00		1.00		0.84	2.00		1.08	0.73	1.00
Incremental Delay, d2	0.8		0.3		0.0		5.3	1.0		3.2	1.1	0.0
Delay (s)	66.8		66.1		65.8		60.0	7.6		77.7	4.3	2.0
Level of Service	E		E		E		E	A		E	A	A
Approach Delay (s)		66.3			65.8			8.2			4.4	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	92.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	2	13	0	0	548	4	1611	17	516	1414	3
Future Volume (vph)	4	2	13	0	0	548	4	1611	17	516	1414	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5				3.5	5.5	4.5	4.5	3.5	4.5	4.5
Lane Util. Factor	0.95	0.95				1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.98				0.99	1.00	1.00	0.97	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.87				0.86	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1715	1545				1531	1805	3539	1563	3303	3505	1530
Flt Permitted	0.95	1.00				1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1715	1545				1531	1805	3539	1563	3303	3505	1530
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	2	13	0	0	548	4	1611	17	516	1414	3
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	7	0	0	1
Lane Group Flow (vph)	4	3	0	0	0	548	4	1611	10	516	1414	2
Confl. Peds. (#/hr)			1						4			11
Confl. Bikes (#/hr)						3						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%	0%	2%	0%	6%	3%	0%
Turn Type	Split	NA				Perm	Prot	NA	custom	Prot	NA	custom
Protected Phases	3	3					5	2		1 4	6	
Permitted Phases						1 2 3 4			6			2
Actuated Green, G (s)	6.5	6.5				140.0	0.8	79.2	84.7	41.8	84.7	79.2
Effective Green, g (s)	6.5	6.5				131.0	0.8	79.2	84.7	41.8	84.7	79.2
Actuated g/C Ratio	0.05	0.05				0.94	0.01	0.57	0.61	0.30	0.61	0.57
Clearance Time (s)	4.5	4.5					5.5	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0					3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	79	71				1432	10	2002	945	986	2120	865
v/s Ratio Prot	0.00	0.00					0.00	c0.46		c0.16	0.40	
v/s Ratio Perm						c0.36			0.01			0.00
v/c Ratio	0.05	0.04				0.38	0.40	0.80	0.01	0.52	0.67	0.00
Uniform Delay, d1	63.8	63.8				0.5	69.4	24.2	11.0	40.8	18.3	13.2
Progression Factor	1.00	1.00				1.00	1.00	1.00	1.00	1.31	0.53	1.00
Incremental Delay, d2	1.2	1.0				0.2	24.2	3.6	0.0	0.4	1.3	0.0
Delay (s)	65.0	64.7				0.6	93.6	27.8	11.0	53.9	11.0	13.2
Level of Service	E	E				A	F	C	B	D	B	B
Approach Delay (s)		64.8			0.6			27.8			22.4	
Approach LOS		E			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	93.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	652	54	115	578	142	0	0	0	129	221	58
Future Volume (vph)	72	652	54	115	578	142	0	0	0	129	221	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5					4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95					1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	0.92					1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00					0.90	1.00	
Frt	1.00	0.99		1.00	0.97					1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)	1770	3300		1787	3037					1591	1696	
Flt Permitted	0.95	1.00		0.95	1.00					0.95	1.00	
Satd. Flow (perm)	1770	3300		1787	3037					1591	1696	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	72	652	54	115	578	142	0	0	0	129	221	58
RTOR Reduction (vph)	0	6	0	0	22	0	0	0	0	0	13	0
Lane Group Flow (vph)	72	700	0	115	698	0	0	0	0	129	266	0
Confl. Peds. (#/hr)			162			166				84		132
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	2%	4%	31%	1%	7%	0%	0%	0%	0%	2%	5%	4%
Turn Type	Prot	NA		Prot	NA					Perm	NA	
Protected Phases	1	6		5	2						4	
Permitted Phases										4		
Actuated Green, G (s)	7.3	41.2		8.1	42.0					17.2	17.2	
Effective Green, g (s)	7.3	41.2		8.1	42.0					17.2	17.2	
Actuated g/C Ratio	0.09	0.52		0.10	0.52					0.21	0.21	
Clearance Time (s)	4.5	4.5		4.5	4.5					4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)	161	1699		180	1594					342	364	
v/s Ratio Prot	0.04	0.21		c0.06	c0.23						c0.16	
v/s Ratio Perm										0.08		
v/c Ratio	0.45	0.41		0.64	0.44					0.38	0.73	
Uniform Delay, d1	34.4	11.9		34.5	11.7					26.8	29.3	
Progression Factor	1.00	1.00		0.84	1.10					1.00	1.00	
Incremental Delay, d2	2.0	0.7		7.0	0.8					0.7	7.4	
Delay (s)	36.4	12.7		36.0	13.8					27.5	36.7	
Level of Service	D	B		D	B					C	D	
Approach Delay (s)		14.9			16.8			0.0			33.8	
Approach LOS		B			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	54.6%	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)	72	652	54	115	578	142	0	0	0	129	221	58
Future Volume (veh/h)	72	652	54	115	578	142	0	0	0	129	221	58
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.82	1.00		0.90				1.00		0.83
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1870	1841	1441	1885	1796	1900				1870	1826	1841
Adj Flow Rate, veh/h	72	652	54	115	578	142				129	221	58
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	2	4	31	1	7	0				2	5	4
Cap, veh/h	93	1647	136	145	1436	351				423	316	83
Arrive On Green	0.05	0.51	0.51	0.16	1.00	1.00				0.24	0.24	0.24
Sat Flow, veh/h	1781	3210	265	1795	2651	648				1781	1331	349
Grp Volume(v), veh/h	72	354	352	115	371	349				129	0	279
Grp Sat Flow(s),veh/h/ln	1781	1749	1726	1795	1706	1592				1781	0	1680
Q Serve(g_s), s	3.2	9.9	10.0	4.9	0.0	0.0				4.8	0.0	12.1
Cycle Q Clear(g_c), s	3.2	9.9	10.0	4.9	0.0	0.0				4.8	0.0	12.1
Prop In Lane	1.00		0.15	1.00		0.41				1.00		0.21
Lane Grp Cap(c), veh/h	93	897	886	145	924	862				423	0	399
V/C Ratio(X)	0.77	0.39	0.40	0.79	0.40	0.40				0.31	0.00	0.70
Avail Cap(c_a), veh/h	234	897	886	236	924	862				479	0	452
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.96	0.96	0.96				1.00	0.00	1.00
Uniform Delay (d), s/veh	37.4	11.9	11.9	32.9	0.0	0.0				25.1	0.0	27.9
Incr Delay (d2), s/veh	12.6	1.3	1.3	9.0	1.2	1.4				0.4	0.0	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	3.9	3.9	2.3	0.3	0.3				2.0	0.0	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.0	13.2	13.2	41.9	1.2	1.4				25.5	0.0	32.0
LnGrp LOS	D	B	B	D	A	A				C	A	C
Approach Vol, veh/h		778			835						408	
Approach Delay, s/veh		16.6			6.9						29.9	
Approach LOS		B			A						C	
Timer - Assigned Phs	1	2		4	5	6						
Phs Duration (G+Y+Rc), s	8.7	47.8		23.5	11.0	45.6						
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5						
Max Green Setting (Gmax), s	10.5	34.5		21.5	10.5	34.5						
Max Q Clear Time (g_c+I1), s	5.2	2.0		14.1	6.9	12.0						
Green Ext Time (p_c), s	0.1	5.6		1.3	0.1	4.9						
Intersection Summary												
HCM 6th Ctrl Delay			15.3									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	782	0	0	715	27	120	130	149	0	0	0
Future Volume (vph)	0	782	0	0	715	27	120	130	149	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5			
Lane Util. Factor		0.95			0.95		1.00	1.00	1.00			
Frpb, ped/bikes		1.00			0.99		1.00	1.00	0.88			
Flpb, ped/bikes		1.00			1.00		1.00	1.00	1.00			
Frt		1.00			0.99		1.00	1.00	0.85			
Flt Protected		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (prot)		3438			3497		1492	1759	1412			
Flt Permitted		1.00			1.00		0.95	1.00	1.00			
Satd. Flow (perm)		3438			3497		1492	1759	1412			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	782	0	0	715	27	120	130	149	0	0	0
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	26	0	0	0
Lane Group Flow (vph)	0	782	0	0	740	0	120	130	123	0	0	0
Confl. Peds. (#/hr)			86			142			98			
Confl. Bikes (#/hr)			1			3						
Heavy Vehicles (%)	0%	5%	0%	0%	2%	0%	21%	8%	1%	0%	0%	0%
Turn Type		NA			NA		custom	NA	Perm			
Protected Phases		2			2		3	8				
Permitted Phases							4		8			
Actuated Green, G (s)		53.9			53.9		12.6	17.1	17.1			
Effective Green, g (s)		53.9			53.9		12.6	17.1	17.1			
Actuated g/C Ratio		0.67			0.67		0.16	0.21	0.21			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)		2316			2356		318	375	301			
v/s Ratio Prot		c0.23			0.21		0.05	0.07				
v/s Ratio Perm							0.03		c0.09			
v/c Ratio		0.34			0.31		0.38	0.35	0.41			
Uniform Delay, d1		5.5			5.4		30.9	26.7	27.1			
Progression Factor		0.84			1.00		1.00	1.00	1.00			
Incremental Delay, d2		0.4			0.3		0.8	0.6	0.9			
Delay (s)		5.0			5.8		31.7	27.3	28.0			
Level of Service		A			A		C	C	C			
Approach Delay (s)		5.0			5.8			28.9			0.0	
Approach LOS		A			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support custom phasing.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	120	38	200	2	0	300
Future Volume (vph)	120	38	200	2	0	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5		3.5	3.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1543	1506		1810	1488	
Flt Permitted	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1543	1506		1810	1488	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	120	38	200	2	0	300
RTOR Reduction (vph)	0	0	0	0	218	0
Lane Group Flow (vph)	120	38	0	202	83	0
Confl. Peds. (#/hr)		4				6
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	17%	6%	0%	0%	0%	7%
Turn Type	Prot	custom	Split	NA	NA	
Protected Phases	4	4	2	2	6	
Permitted Phases		2 6				
Actuated Green, G (s)	16.5	53.0		16.5	16.5	
Effective Green, g (s)	16.5	53.0		16.5	16.5	
Actuated g/C Ratio	0.28	0.88		0.28	0.28	
Clearance Time (s)	3.5	3.5		3.5	3.5	
Lane Grp Cap (vph)	424	1506		497	409	
v/s Ratio Prot	c0.08	0.01		c0.11	c0.06	
v/s Ratio Perm		0.02				
v/c Ratio	0.28	0.03		0.41	0.20	
Uniform Delay, d1	17.1	0.4		17.8	16.7	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.0		2.5	1.1	
Delay (s)	18.8	0.4		20.2	17.8	
Level of Service	B	A		C	B	
Approach Delay (s)	14.4			20.2	17.8	
Approach LOS	B			C	B	

Intersection Summary			
HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Edition methodology does not support custom phasing.

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	137	3	12	60	51	0	4	52	111	1	0
Future Vol, veh/h	0	137	3	12	60	51	0	4	52	111	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	67	0	0	50	0	0	0	7	0	0
Mvmt Flow	0	137	3	12	60	51	0	4	52	111	1	0
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	8.5	7.9	7.4	8.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	17%	0%	99%
Vol Thru, %	7%	98%	83%	0%	1%
Vol Right, %	93%	2%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	56	140	72	51	112
LT Vol	0	0	12	0	111
Through Vol	4	137	60	0	1
RT Vol	52	3	0	51	0
Lane Flow Rate	56	140	72	51	112
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.064	0.176	0.102	0.061	0.152
Departure Headway (Hd)	4.093	4.528	5.101	4.314	4.886
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	875	792	703	831	735
Service Time	2.119	2.552	2.826	2.038	2.91
HCM Lane V/C Ratio	0.064	0.177	0.102	0.061	0.152
HCM Control Delay	7.4	8.5	8.4	7.3	8.8
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0.6	0.3	0.2	0.5

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	112	0	0	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	112	0	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	30	30	0	0	7	0	28	28	0	7
Sign Control	Yield	Yield	Yield	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	21	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	112	0	0	0	0	0	0	0	0

Major/Minor	Major2			Minor2		
Conflicting Flow All	30	0	0	-	254	7
Stage 1	-	-	-	-	224	-
Stage 2	-	-	-	-	30	-
Critical Hdwy	4.31	-	-	-	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.389	-	-	-	4	3.3
Pot Cap-1 Maneuver	1468	-	-	0	653	1081
Stage 1	-	-	-	0	722	-
Stage 2	-	-	-	0	-	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1468	-	-	-	0	1081
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

Approach	WB	SB
HCM Control Delay, s	7.7	0
HCM LOS		A

Minor Lane/Major Mvmt	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1468	-	-	-
HCM Lane V/C Ratio	0.076	-	-	-
HCM Control Delay (s)	7.7	0	-	0
HCM Lane LOS	A	A	-	A
HCM 95th %tile Q(veh)	0.2	-	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	86	40	882	523	100	2056
v/c Ratio	0.29	0.20	0.45	0.38	0.37	0.53
Control Delay	63.4	17.9	16.7	2.1	53.4	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	17.9	16.7	2.1	53.4	1.6
Queue Length 50th (ft)	41	0	224	0	88	54
Queue Length 95th (ft)	65	36	328	62	148	5
Internal Link Dist (ft)	172		874			254
Turn Bay Length (ft)					180	
Base Capacity (vph)	495	316	1940	1412	269	3905
Starvation Cap Reductn	0	0	0	0	0	119
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.13	0.45	0.37	0.37	0.54

Intersection Summary

Lane Group	EBL	EBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	2	3	474	17	909	23	307	1717	7
v/c Ratio	0.02	0.01	0.32	0.20	0.57	0.03	0.25	0.68	0.01
Control Delay	61.5	0.0	0.6	69.4	27.9	0.0	32.6	13.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Total Delay	61.5	0.0	0.6	69.4	27.9	0.0	32.6	13.2	0.0
Queue Length 50th (ft)	2	0	0	15	305	0	116	330	0
Queue Length 95th (ft)	11	0	0	41	372	0	163	421	m0
Internal Link Dist (ft)		446			2339			873	
Turn Bay Length (ft)				50		160	325		145
Base Capacity (vph)	128	495	1458	141	1599	793	1233	2509	1122
Starvation Cap Reductn	0	0	0	0	0	0	0	101	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.33	0.12	0.57	0.03	0.25	0.71	0.01

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	188	219	32	103
v/c Ratio	0.44	0.16	0.07	0.09
Control Delay	21.9	0.5	16.6	0.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	21.9	0.5	16.6	0.2
Queue Length 50th (ft)	56	0	9	0
Queue Length 95th (ft)	102	0	24	0
Internal Link Dist (ft)	1527		344	286
Turn Bay Length (ft)		40		
Base Capacity (vph)	427	1386	485	1093
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.44	0.16	0.07	0.09

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	230	133	1545	568	46	1629
v/c Ratio	0.42	0.36	0.83	0.40	0.17	0.45
Control Delay	56.2	10.9	48.1	3.1	42.0	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.2	10.9	48.1	3.1	42.0	1.7
Queue Length 50th (ft)	97	0	740	0	36	4
Queue Length 95th (ft)	139	59	823	147	76	4
Internal Link Dist (ft)	172		875			254
Turn Bay Length (ft)					180	
Base Capacity (vph)	607	394	1872	1434	268	3655
Starvation Cap Reductn	0	0	0	0	0	268
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.34	0.83	0.40	0.17	0.48

Intersection Summary

Lane Group	EBL	EBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	4	15	508	4	1618	17	449	1391	3
v/c Ratio	0.05	0.18	0.33	0.08	0.80	0.02	0.46	0.62	0.00
Control Delay	65.2	35.7	0.6	69.5	28.1	0.0	52.5	10.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.2	35.7	0.6	69.5	28.1	0.0	52.5	10.1	0.0
Queue Length 50th (ft)	4	2	0	4	596	0	204	110	0
Queue Length 95th (ft)	17	27	0	17	703	0	273	326	m0
Internal Link Dist (ft)		602			2363			851	
Turn Bay Length (ft)				50		160	325		145
Base Capacity (vph)	79	84	1514	51	2011	1024	990	2230	905
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.18	0.34	0.08	0.80	0.02	0.45	0.62	0.00

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	59	41	216	172
v/c Ratio	0.14	0.03	0.43	0.18
Control Delay	17.5	0.2	21.2	0.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	17.5	0.2	21.2	0.4
Queue Length 50th (ft)	16	1	64	0
Queue Length 95th (ft)	40	0	118	0
Internal Link Dist (ft)	1532		327	286
Turn Bay Length (ft)		40		
Base Capacity (vph)	424	1330	498	949
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.03	0.43	0.18

Intersection Summary

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	105	46	831	568	121	1937
v/c Ratio	0.31	0.20	0.44	0.40	0.44	0.50
Control Delay	62.0	16.1	18.1	2.1	54.1	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.0	16.1	18.1	2.1	54.1	1.7
Queue Length 50th (ft)	49	0	215	0	108	71
Queue Length 95th (ft)	76	38	335	60	169	1
Internal Link Dist (ft)	172		874			254
Turn Bay Length (ft)					180	
Base Capacity (vph)	495	321	1905	1430	277	3841
Starvation Cap Reductn	0	0	0	0	0	200
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.14	0.44	0.40	0.44	0.53

Intersection Summary

Lane Group	EBL	EBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	2	3	529	17	891	23	316	1677	7
v/c Ratio	0.02	0.01	0.36	0.20	0.56	0.03	0.26	0.67	0.01
Control Delay	61.5	0.0	0.7	69.4	27.6	0.1	33.0	13.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Total Delay	61.5	0.0	0.7	69.4	27.6	0.1	33.0	13.3	0.0
Queue Length 50th (ft)	2	0	0	15	297	0	120	322	0
Queue Length 95th (ft)	11	0	0	41	362	0	168	408	m0
Internal Link Dist (ft)		446			2339			873	
Turn Bay Length (ft)				50		160	325		145
Base Capacity (vph)	128	495	1455	141	1599	793	1226	2490	1114
Starvation Cap Reductn	0	0	0	0	0	0	0	115	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.01	0.36	0.12	0.56	0.03	0.26	0.71	0.01

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	270	194	29	125
v/c Ratio	0.63	0.14	0.06	0.11
Control Delay	27.0	0.4	16.6	0.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	27.0	0.4	16.6	0.2
Queue Length 50th (ft)	85	0	8	0
Queue Length 95th (ft)	#157	0	24	0
Internal Link Dist (ft)	1527		344	286
Turn Bay Length (ft)		40		
Base Capacity (vph)	427	1386	485	1097
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.63	0.14	0.06	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	331	170	1535	611	63	1619
v/c Ratio	0.56	0.41	0.84	0.42	0.24	0.45
Control Delay	58.2	10.1	48.8	3.5	43.0	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.2	10.1	48.8	3.5	43.0	2.0
Queue Length 50th (ft)	144	0	736	0	51	1
Queue Length 95th (ft)	195	66	816	193	97	1
Internal Link Dist (ft)	172		875			254
Turn Bay Length (ft)					180	
Base Capacity (vph)	607	425	1831	1439	268	3596
Starvation Cap Reductn	0	0	0	0	0	249
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.40	0.84	0.42	0.24	0.48

Intersection Summary

Lane Group	EBL	EBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	4	15	548	4	1611	17	516	1414	3
v/c Ratio	0.05	0.18	0.36	0.08	0.80	0.02	0.52	0.63	0.00
Control Delay	65.2	35.7	0.7	69.5	28.2	0.1	55.5	9.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.2	35.7	0.7	69.5	28.2	0.1	55.5	9.6	0.0
Queue Length 50th (ft)	4	2	0	4	594	0	235	97	0
Queue Length 95th (ft)	17	27	0	17	697	0	308	286	m0
Internal Link Dist (ft)		602			2363			851	
Turn Bay Length (ft)				50		160	325		145
Base Capacity (vph)	79	84	1518	51	2003	1024	990	2230	901
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.18	0.36	0.08	0.80	0.02	0.52	0.63	0.00

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	120	38	202	300
v/c Ratio	0.28	0.03	0.41	0.31
Control Delay	19.4	0.3	20.7	0.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.4	0.3	20.7	0.9
Queue Length 50th (ft)	34	1	59	0
Queue Length 95th (ft)	72	0	111	0
Internal Link Dist (ft)	1532		327	286
Turn Bay Length (ft)		40		
Base Capacity (vph)	424	1330	498	959
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.28	0.03	0.41	0.31

Intersection Summary